Original Article

Educator Competencies in Implant Dentistry among Postgraduate Prosthodontic Dental Faculty in Academic Dental Institutions of India - A Need Analysis

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Abstract

Background

Competence-based education is increasingly recognized as essential in dental education, particularly in implant dentistry. This shift focuses on ensuring students achieve and demonstrate essential knowledge, attitudes, and skills required for independent practice. However, the competencies required for dental educators, especially in the context of implant dentistry, are not well-documented. This study aims to assess the current competencies of dental educators in implant dentistry in India and identify the need for further development.

Materials and Methods

A cross-sectional study was conducted using a convenience sampling strategy. Data were collected from 125 faculty members across twenty dental institutions in India between June 2022 and June 2023. A self-administered competency-based survey instrument was distributed via Google Forms. The survey included sociodemographic information and assessed perceptions and self-assessment of competencies using Likert scales. Data were analyzed statistically to determine relevance, existing competency levels, and interest in competency development.

Results

The study found that 90-95% of participants reported a need for an educational competency program. Participants demonstrated basic knowledge and moderate experience in competencies. Relevance of competencies was rated between 69-78%, willingness to develop skills was 80-95%, and existing competency levels were 25-35%. Variations in educational preferences were noted based on age, gender, and qualifications of respondents.

Conclusion

The results indicate a significant need for competency development programs in implant dentistry among dental educators in India. Such programs are essential to address current gaps in knowledge and practice, ensuring that dental educators are well-equipped to train the next generation of dental practitioners effectively.

Keywords

Competence-based education, implant dentistry, dental education, competency assessment, dental faculty, India, prosthodontics, needs assessment.

INTRODUCTION –

Competence-based education is increasingly recognized as essential in dental education, particularly in implant dentistry. A needs assessment is fundamental for any curriculum development process (1). In recent years, efforts to improve education across various scientific and medical disciplines have led to a shift from traditional discipline-based educational systems to competence-based curricula (2-4). Dental education is progressively moving away from discipline-based curricula, where students were largely taught what teachers decided to teach them. Conversely, competence-based

education focuses on the essential knowledge, attitudes, and skills that students must achieve and demonstrate to a given standard when they begin practice. It also provides a sequence of defined learning experiences to help graduates become competent, independent dental practitioners (3, 5).

Competence-based curricula emphasize the integration of knowledge, skills, and behavior related to future professional requirements to ensure practical outcomes (3, 6). Prosthodontics, a key branch of dentistry, is divided into three main areas: removable prosthodontics, fixed prosthodontics, and dental implants. A dental implant is placed into the jawbone to support single or multiple span prostheses to replace missing teeth. It consists of a titanium screw with special surface features that allow it to integrate with the surrounding bone (osseointegration) while a fabricated prosthesis is retained coronally (7).

Clinical competence is defined as "the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of individuals and communities being served" (8). Despite the documented roles and skills required for dental educators, there is limited literature on the necessary competencies and roles they must fulfill.

Dental schools worldwide have different and divergent teaching and training methods, which could affect patient safety, especially with the international mobility of students and academic teachers. In 1998, the ministers of education of Germany, France, Italy, and the United Kingdom signed the Declaration of La Sorbonne, calling for the harmonization of higher education qualification systems in Europe. One recommendation to harmonize dental curricula across the European Union is to structure it as a 300-credit course, considering both learning outcomes and professional competencies (9). This harmonization should extend beyond the European Union and be generalized worldwide.

This study aims to conduct a needs analysis for educator competencies in implant dentistry among postgraduate prosthodontic dental faculty in academic dental institutions in India. The objectives are to determine the existing competencies of dental educators in these institutions using a self-assessment tool and to identify the need to develop these competencies and create awareness about them.

Materials and Methods

This educational research employed a cross-sectional design and a convenient sampling strategy. Ethical clearance was obtained, and informed consent was secured from all participants. Data collection was conducted between June 2022 and June 2023.

Participants

A total of 125 faculty members from twenty different dental institutions across India participated in the study. The participants included postgraduate prosthodontic dental faculty.

Instrumentation

A self-administered competency-based survey instrument was used to gather data. The survey instrument included a pre-validated questionnaire accompanied by an instruction manual. The questionnaire was distributed to participants via Google Forms.

Data Collection

The questionnaire collected sociodemographic information such as age, gender, qualifications, and current job titles of the participants. Additionally, the questionnaire assessed participants' perceptions regarding the need, design, and development of a graduate education program, and the

importance of competencies and skills. A self-assessment of competencies and their relevance to the respondents' current jobs was also included.

Measurement Scales

Three Likert scales were utilized in the questionnaire:

1. A four-point Likert scale to score participants' responses to perceptions (1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree).
2. A five-point Likert scale to assess participants' ranking of the importance of competencies and skills in general and concerning their work (1 = unimportant, 2 = of little importance, 3 = moderately important, 4 = important, and 5 = very important).
3. A six-point Likert scale for self-assessment of competencies (1–2: developing awareness/building knowledge, limited repertoire, limited experience, unaware of potential problems, or unaware of questions to ask; 3–4: applies knowledge routinely, basic repertoire; moderate amount of experience, solves problems as they arise, or aware of questions to ask and able to access resources to answer the questions at hand; 5–6: uses knowledge fluently and effectively, advanced repertoire, extensive experience, anticipates problems before they arise, poses questions to the field, or sought out for input).

Data Analysis

Data from the 125 responses were subjected to statistical analysis to determine:

- The relevance of the competencies.
- Existing competency levels.
- Interest in the development of these competencies.

The analysis also aimed to identify preferred educational strategies and methods, along with any differences in educational preferences based on the participants' age, gender, and qualifications.

Results

Participant Demographics

A total of 125 faculty members from twenty different dental institutions across India participated in the study. The sociodemographic information of the participants is summarized in Table 1.

Demographic Variable	**Category**	**Frequency (n)**	**Percentage (%)**
Age	<30	15	12.0
	30-39	40	32.0
	40-49	45	36.0
	50-59	20	16.0
	≥60	5	4.0
Gender	Male	80	64.0
	Female	45	36.0
Qualifications	BDS	50	40.0
	MDS	75	60.0
Current Job Title	Lecturer	50	40.0

Demographic Variable	Category	Frequency (n)	Percentage (%)
	Assistant Professor	30	24.0
	Associate Professor	25	20.0
	Professor	20	16.0

Perceptions of Educational Competency Program

Most participants (90-95%) reported a need for an educational competency program. Participants' perceptions regarding the need, design, and development of a graduate education program, and the importance of competencies and skills, are summarized in Table 2.

Perception Scale	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
Need for Program	0	0	25	100
Design of Program	0	5	30	90
Development of Program	0	0	40	85
Importance of Competencies	0	5	30	90

Relevance, Willingness to Develop, and Existing Competencies

The relevance, willingness to develop, and existing competency levels of the participants were assessed using three scales. The results are shown in Table 3.

Competency Scale	Relevance (%)	Willingness to Develop (%)	Existing Competency (%)
Clinical Skills	75	90	30
Technical Knowledge	78	85	35
Communication Skills	69	80	25
Clinical Reasoning	70	88	28
Reflective Practice	72	82	32

Educational Preferences

Participants expressed a variety of preferred educational strategies and methods. The differences in educational preferences according to age, gender, and qualifications are summarized in Table 4.

Educational Strategy	Age <30 (%)	Age 30-39 (%)	Age 40-49 (%)	Age 50-59 (%)	Age ≥60 (%)
Online Learning	60	50	40	20	0

Educational Strategy	Age <30 (%)	Age 30-39 (%)	Age 40-49 (%)	Age 50-59 (%)	Age ≥60 (%)
Hands-on Workshops	20	30	50	60	80
Peer Learning	10	10	5	10	10
Seminars and Lectures	10	10	5	10	10

Educational Strategy	Male (%)	Female (%)
Online Learning	50	40
Hands-on Workshops	30	60
Peer Learning	10	10
Seminars and Lectures	10	10

The majority of participants expressed a high need for educational competency programs and showed a strong willingness to develop their skills. However, the existing competency levels were relatively low, indicating a significant need for improvement. Differences in educational preferences based on age, gender, and qualifications suggest the necessity for tailored educational strategies to address diverse needs.

Overall, these results highlight the urgent need for targeted competency development programs in implant dentistry for dental educators in India.

Discussion

The findings of this study underscore the critical need for competence-based education in implant dentistry among postgraduate prosthodontic dental faculty in India. The shift from traditional discipline-based educational systems to competence-based curricula is imperative to ensure that dental practitioners are equipped with the necessary knowledge, skills, and attitudes for effective clinical practice (1, 2, 3). The high percentage (90-95%) of participants indicating the need for an educational competency program highlights a significant gap in the current educational framework.

The study revealed that the relevance of competencies was rated between 69-78%, with a strong willingness (80-95%) among faculty members to develop these skills. However, the existing competency levels were found to be relatively low (25-35%), indicating that most faculty members possess only basic knowledge and moderate experience. This gap emphasizes the necessity for comprehensive competency development programs to bridge the current deficiencies (4, 5).

The preferred educational strategies varied significantly with age, gender, and qualifications, suggesting that a one-size-fits-all approach may not be effective. Younger faculty members and those with less experience showed a preference for online learning, while more experienced and older faculty members favored hands-on workshops. These preferences highlight the importance of designing flexible and diverse educational programs that cater to the varying needs and learning styles of faculty members (6, 7).

The integration of competence-based curricula in dental education is essential to ensure that graduates are not only knowledgeable but also capable of

applying their skills in clinical settings. This approach aligns with the goals of clinical competence, defined as the judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice (8). Harmonizing dental education, as recommended by the Declaration of La Sorbonne, can help standardize competencies and improve patient safety globally (9).

The study underscores the role of educators not just as information providers but as facilitators of learning who need to be competent in various domains including teaching, research, and clinical practice. Despite the documented roles and skills required for dental educators, there is limited literature on the necessary competencies, underscoring the need for further research and development in this area (10). The harmonization of dental education should be extended beyond the European Union to ensure global standards are met (11).

Conclusion

This needs assessment survey represents a preliminary step in establishing a program that addresses the current gaps in knowledge and practice of prosthodontic implant dentistry among dental health professionals in India. The results indicate a strong need for targeted competency development programs. The findings also suggest that educational strategies should be tailored to meet the diverse needs of faculty members. Future initiatives should focus on creating awareness and readiness among all dental faculty members to learn and incorporate different professional skills and competencies.

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