

Short Communication

COMPARISON OF DENTAL CURRICULUM IN INDIA VERSUS DEVELOPED COUNTRIES

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Abstract:

As the importance of good dental care becomes increasingly paramount in a globally connected society, it is imperative that the dental curriculum keep up pace with it.

This means that the large numbers of Indian dental graduates who pass out every year are in sync with latest in the dental world.

Hence this study aims to compare the dental curriculum of the traditional Indian BDS undergraduate program with those of the developed countries (restricted to American and British universities).

It goes onto highlight the strengths of each of curriculums studied. Additionally it identifies specific features of other curriculums which could be incorporated into the Indian dental curriculum.

Keywords : Dental curriculum, undergraduate, comparison, strengths and weaknesses

Introduction :

Dentistry is a challenging and rewarding profession. With an aging population who are retaining teeth into old age and an ever increasing stressful life, the importance of quickly understanding interactions between general and oral health becomes paramount.

Excellent communication skills are absolute necessity to enable dentists to treat patients effectively. A sound understanding of the biological basis of the oral disease and preventive approaches to care constitute the essential foundation of dental practice.

Major advances in technology and dental materials have increased the scope of dental practice. The expansion in

t h e n u m b e r s o f
p r o f e s s i o n a l s
complementary to dentistry
has led to an increased
emphasis on the dentist's
role as a **diagnostician and
team leader**. This allows the
dentist to focus on more

complex dental treatments.

Undergraduate course in dentistry is a first step in this direction to provide one with a solid foundation of learning on which to base ones clinical experience and patient care. This is the best way to ensure that the patients receive the most effective care possible supported by solid scientific evidence.

Framework for a Dental program

Dental teaching is typically a combination of lectures, seminars, laboratory demonstrations, practical laboratory work, clinical demonstrations and practical clinical work.

Although it's difficult to generalize across various countries; BDS (or its equivalent) curriculum by and large can be broken down into

1st year: Work on basic building blocks related to Medicine and Dentistry.

2nd year: Start building ones knowledge and skills with introduction to Clinical Dentistry.

3rd year: Start integrating knowledge, skills and attitudes

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via exposure to Clinical studies.

4th year: Gain clinical competence

5th year: Moving to professional competence via internships and handling of complex dental cases.

However American Dental School takes a minimum of four academic years and leads to one of two equivalent degrees based on the university one attends: Doctor of Dental Surgery (DDS) or Doctor of Dental Medicine (DMD). By and large curriculum follows similar structure to the above.

Comparison of Dental curriculum structure

First year Dental undergraduate studies	
B.D.S degree in India	<ul style="list-style-type: none"> Basic medical sciences classes (General anatomy, physiology, biochemistry) Dental anatomy, oral histology Dental Materials Preclinical's in Prosthodontics and crown and bridge No clinical posting.
DMD degree in Penn University, Pennsylvania, USA	<ul style="list-style-type: none"> Basic dental and medical sciences subjects. Clinical rotations in oral medicine, Periodontics, health promotion, radiology, and hospital dentistry to assist upperclassmen in the clinics.
Kings college London, BDS	<ul style="list-style-type: none"> Biomedical sciences and basic topics relevant to the practice of dentistry. Introductory topics such as molecular and cell biology, and human systems very specific to dentistry is covered. Applied dental science introduces one to the clinical aspects of dental studies and shows the relevance of the basic sciences.

Table 1: First year Dental undergraduate curriculum comparison

Second year Dental undergraduate studies	
B.D.S degree in India	<p>Covers understanding the pathology of the oral cavity and the principles of diagnosis and treatment.</p> <p>Includes fundamental courses in</p> <ul style="list-style-type: none"> general microbiology general pharmacology, Dental materials. Preclinical conservative dentistry Preclinical prosthodontics <p>No introduction to Clinical Dentistry course is offered to the 2nd year students</p>
DMD degree in Penn University, Pennsylvania, USA	<p>Covers understanding the pathology of the oral cavity and the principles of diagnosis and treatment.</p> <p>Includes fundamentals of</p> <ul style="list-style-type: none"> pathology (an integration between general and oral pathology), pharmacology and Principles of medicine. <p>Preclinical restorative dentistry course with special focus on prosthetic therapy. This also includes additional rotations in the Virtual Reality Laboratory.</p> <p>Exposure to anesthesia and pain control, community health, endodontics, orthodontics, and periodontics through laboratory, and clinical experiences.</p> <p>Introduction to Clinical Dentistry.</p>
Kings college London, BDS	<p>Introduction and development of basic dental clinical skills.</p> <p>First term includes treatment of patients in the associated NHS trusts with minor gum problems. Restorative care of one's own patients is taken up in the third term.</p> <p>Study of biomedical science subjects such as</p> <ol style="list-style-type: none"> 1. anatomy of the head and neck 2. oral biology 3. pathology 4. microbiology and 5. General medicine.

Table 2: Second year Dental undergraduate curriculum comparison

Third year Dental undergraduate studies	
B.D.S degree in India	<ul style="list-style-type: none"> Students begin to function as dental practitioner. Majority of 3rd year is spent providing general patient care with rotational clinical postings Additionally 3rd year curriculum includes <ol style="list-style-type: none"> 1. General medicine 2. General Surgery 3. Oral pathology and oral microbiology 4. Public health dentistry
DMD degree in Penn University, Pennsylvania, USA	<ul style="list-style-type: none"> Students begin to function as dental practitioner. Majority of 3rd year is spent providing general patient care with rotational clinical postings (both general and speciality clinics) Students provide patients screening and education in community based dental health programs at schools, health fairs, geriatric centers, and homes for disabled persons. Participation in selective programs.
Kings college London, BDS	<ul style="list-style-type: none"> Learn various aspects of human disease. Begin prosthetic work - using fixed and removable prosthesis including dental implants. Clinical care of patients in restorative dentistry Extraction of teeth and minor oral surgery. <p>This year begins to establish oneself as a dentist.</p> <p>Intercalated degree option to pursue subjects of one's interest in greater depth. Subjects can be wide ranging; from clinically relevant and related topics such as health services management or psychology to more traditional subjects, such as neuroscience and biochemistry.</p>

Table 3: Third year Dental undergraduate curriculum comparison

Fourth year Dental undergraduate studies	
B.D.S degree in India	<ul style="list-style-type: none"> Orthodontics & Dentofacial Orthopaedics. Oral Medicine and Radiology. Paediatric & Preventive Dentistry. Periodontology. Oral & Maxillofacial Surgery. Prosthodontics and Crown and Bridge. Conservative Dentistry & Endodontics. Public Health Dentistry
DMD degree in Penn University, Pennsylvania, USA	<ul style="list-style-type: none"> Expansion of clinical experiences of students which includes a four-week hospital externship. Part of the externship requirement may be fulfilled in affiliated institutions in other countries. Clinical seminars in which student's present clinical cases where the integration of knowledge, skills, and values is emphasized. Qualify as independent general dental practitioners.
Kings college London, BDS	<ul style="list-style-type: none"> Carry out advanced procedures in restorative dentistry. Major courses in periodontology, child dental healthcare and Orthodontics is covered. Introductory course in oral disease that will incorporate pathology and medicine directly relevant to disease in and around the mouth. Treatment of patients with complex dental problems.

Table 4: Fourth year Dental undergraduate curriculum comparison

Fifth year Dental undergraduate studies	
B.D.S degree in India	Compulsory rotatory internship program which covers all branches of dentistry. Inclusion of rural postings to cater to sections of society which might be deprived of effective dental care.
DMD degree in Penn University, Pennsylvania, USA	Not applicable as it's a 4 year course.
Kings college London, BDS	<ul style="list-style-type: none"> Provide comprehensive dental care for adult and child patients. Opportunity to work in clinics away from the main campus where one works directly with a dental nurse, dental hygienists and therapists, learning to work as a team leader in the provision of dental care for the patients.

	<ul style="list-style-type: none"> Elective period of study wherein one is given a chance to travel anywhere in the United Kingdom, or the world, to learn about how dental care is provided in that region. The final year is designed to allow you to develop as a dentist and to ease your transition, upon qualification into the dental profession.
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Table 5: Fifth year Dental undergraduate curriculum comparison

Conclusion :

Inclusion of rural postings to cater to sections of society which might be deprived of effective dental care marks out as a highlight of the Indian dental curriculum.

Additionally, comparison of the various curriculums highlights the following features which can be incorporated as part of the Indian dental curriculum.

- Early clinical experience to thoroughly map theoretical aspects of learning with practical aspects of dentistry.
- Intercalated Degree Option
- Flexibility in terms of electives

Electives could be grouped into 2 major categories

1. General: Sports, art, music, dance and yoga
2. Health care related: Forensic sciences, Biochemistry, Nanotechnology, Neuroscience, Health service management.

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Compulsory 2 subjects; one from each of the above category could be mandated as part of the curriculum for the 3rd year BDS students.

By understanding the various best practices followed worldwide by dental institutes in terms of curriculum, teaching methodologies, and cutting edge technologies any institute can help the development of a world class dentist with strong ethical value system. This is a proactive way of improvement.

Alternatively one can have tie ups with best institutes worldwide and thus inculcate the best practices/ curriculum followed.

Above provides a static recipe of graduating into a good dentist. It is imperative that each dental student takes utmost responsibility to continuously keep upgrading oneself for remainder of their careers so that they stay up to date on the latest scientific and clinical developments.