

Unveiling Dental Horizons: Exploring Career Avenues In India And Gauging Its Awareness Among Bds Students At A Government Dental College In Kerala

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Abstract:

Background: There is an increased competition in the field of dentistry in India. This has largely been due to an exponential increase in the number of dental undergraduate and postgraduate seats and subsequent saturation in traditional perceived career opportunities. However, there has been no comprehensive review of scope of dentistry and the assessment of the level of its awareness among dental undergraduates in India.

Materials and Methods: The initial section of the article comprises a review of the career prospects for BDS students. Six domains of scope of dentistry were identified. These included general practice, academics & specialty practice, government service, scope in foreign countries, research and alternate career options. The subsequent section is an evaluation of the level of awareness for the scope of dentistry among BDS using a 20-item validated questionnaire. All BDS students and interns at the government dental college, Alappuzha were enrolled in the study.

Results: For all students, the overall score was 26.6 (%), which was found to be adequate. The students were most aware of specialty practice and academics and also showed adequate awareness for general practice. However, an inadequate awareness about other domains including government service, foreign service, research and alternate career option was found. The total awareness score for first BDS, second BDS, third BDS, fourth BDS and interns were 22.7 (42.8%), 25.7 (48.5%), 28.8 (54.3%), 25.9 (48.9%), 29.8 (56.2%) respectively. For third BDS and interns the awareness score was found to be adequate.

Conclusion: The BDS course still offers a range of choices for dental undergraduates but the level of awareness among certain domains is still lacking. It is imperative that the dental undergraduate be aware of the full potential of field of dentistry. Awareness programs are needed to further their knowledge in these domains.

Key Word: scope of dentistry, dental education.

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I. Introduction

Dentistry, a branch of medicine dedicated to diagnosing, preventing, and treating oral cavity diseases has traditionally been recognized as a lucrative career option. The Bachelor of Dental Surgery (BDS) course, spanning five years, including academics and internship, had opened the doors to a promising career prospect for many in India and abroad. However, in recent years there has been a shift in the perception of dentistry in India, influenced by various factors.

Over the past three decades, there has been a significant expansion in the number of dental colleges, resulting in a substantial rise in both undergraduate and postgraduate dental seats in India. During the early 1990s, there were 77 dental colleges in the country, and the count of registered dentists was fewer than 25,000.^[1] However, recent data reveals a remarkable surge, with the current tally of dental colleges escalating to 313, and the number of registered dentists skyrocketing to 312,521.^[2] The situation may be considerably worse in south India where the majority of dental colleges (135 out of 313) are located.^[3]

However, the reported national average dentist to population of 1:10,272 is still lower than the WHO-recommended standard of 1:7500 suggesting general shortage of dentists. This may be misleading as there is an urban-rural disparity in dentist distribution. While the urban areas are showing signs of saturation with a ratio of 1:4,000, the rural areas are still short of dentists with estimated ratio ranging from 1:30,000-1:1,00,000.^[1] The

prevailing challenges is also confounded by factors like a general lack of awareness about oral health and subsequent reluctance to address dental issues particularly in lower economic strata.

Moreover, only 5% of dentists are able to secure government jobs^[4] and the rest have to find career opportunities in private sector. The demand for BDS course is also showing trend reversal as many undergraduate and post-graduate dental seats particularly in private colleges are left vacant in recent admissions.^[5]

Despite these challenges, the BDS program unfolds various career opportunities. Private practice, academia, specialty practice, research, and government departments present avenues for BDS graduates. The field also offers alternative career paths, often unknown to students, providing a diverse range of possibilities. Recognizing the plethora of career choices after BDS is crucial for students to navigate their desired career paths. As dentistry undergoes rapid transformation, being aware of the future scope becomes imperative.

The initial section of the article comprises a literature review of the career prospects for BDS students. The subsequent section is an evaluation of the level of awareness for the scope of dentistry among BDS students at Government Dental College, Alappuzha.

II. Scope of dentistry in India

A comprehensive search of various databases and search engines like PubMed, google scholar and web search using google was done and various articles and materials related to scope of dentistry in India were identified. This was combined with personal interviews with dental professionals, students, and educators; and subsequently six distinct domains of scope of dentistry in India emerged. This includes general practice, academics & specialty practice, government service, scope in foreign countries, research and alternate career options.

1. **General practice:** A BDS graduate opting for general practice embarks on a versatile journey, catering to a diverse range of oral health needs. From routine check-ups to addressing common dental issues, general practice offers a broad scope to contribute to community health. To excel as a clinician in one's private practice, a dentist must not only master clinical skills but also recognize the contemporary significance of acquiring and enhancing soft skills.^[6]
2. **Academics & specialty practice:** BDS graduates can opt for post graduate courses which paves the way in academics and specialty practice. Choosing academia allows BDS graduates to share their knowledge and expertise with the next generation of dental professionals. This domain fosters a collaborative environment for research, teaching, and continuous learning, contributing significantly to the advancement of dental education. Post-BDS journey opens doors to diverse educational avenues, providing specialized knowledge and expanding career horizons. The scope of dentistry will also increase as more people seek out specialized treatments and services. Following are the various courses and career options available for dental graduates after BDS.
 - a) Master in Dental Surgery (Various specialty).
 - b) Master in Public Health.
 - c) Career as a Lecturer in General Dentistry courses.
 - d) Degrees from international universities in the field.
 - e) Indian & international Fellowships/Master programs for specialized training.
 - f) Fellowship in Implantology for expertise in dental implants.
 - g) Post Graduate Diploma program to further enhance your skills after BDS.
3. **Government service:** Joining government service after BDS generally involves working in a public hospital in the health services. This domain allows BDS graduates to contribute to community well-being, especially in areas with limited access to oral healthcare, while also providing stable employment. Joining in government sector involves clearing Union Public Service Examination (UPSC) or State Public Service Examination (PSC) which usually includes a theoretic examination and an interview. Various options in government service includes the following.
 - a) **Government Hospitals:** Secure positions as dental officers in government hospitals, ensuring widespread access to dental care in both urban and rural healthcare settings.
 - b) **Défense Services:** Serve in prestigious roles like Army Dental Corps, Dental Officer in Indian Navy or Indian Airforce, or as a Territorial Officer in the Indian Army.
 - c) **Railway Services:** Contribute to dental healthcare as dental officers in the railway sector, addressing the unique oral health needs of railway employees.
 - d) **Contractual Positions:** Explore opportunities as contractual dental surgeons in ESI hospitals, under the National Health Mission, or in the Navy or Airforce, offering flexibility and diverse experiences.
 - e) **Central Government Departments:** Join research and advisory departments under the Central Government, contributing to policy-making and public health initiatives.

- f) **AIIMS and Other Central Institutes:** Apply for positions in prestigious central government institutes such as AIIMS, Forensic Department, and the Agricultural Sector, contributing to specialized fields.
 - g) **Civil Services:** Pursue the UPSC exam, present the chance to join Civil Services (IAS, IPS, IFS, IRS), providing a broader scope for public service.
 - h) **Industry Opportunities:** Explore government job opportunities in industries manufacturing oral care products, contributing to the regulation and development of oral healthcare products.
 - i) **Government Dental Colleges:** BDS graduates can work as Lecturer in the Medical Education Department, fostering education and healthcare.
 - j) **Professional Employment Exchange:** Register with a professional employment exchange for opportunities in government hospitals or dental colleges on a contractual basis, offering a pathway into public service.^[7]
4. **Scope in Foreign Countries:** Exploring opportunities abroad broadens horizons for BDS graduates. International exposure not only offers diverse cultural experiences but also provides a chance to contribute to global healthcare systems, bringing a unique perspective to dental practices. Consider the following steps to navigate the diverse criteria set by different countries:
- a) **USA:** In the USA, clearing the NBDE Part 1 and 2 exams is the initial requirement. Subsequently, joining a dental college to pursue the DDS degree is essential for obtaining recognition as a dentist in the United States.
 - b) **New Zealand:** A foreign dental degree isn't directly recognized in New Zealand. Prospective dentists must successfully pass the New Zealand Dentist Registration Exam (NZDREX) to qualify for registration with the Dental Council of New Zealand.
 - c) **Canada:** Aspiring dentists in Canada must undergo a series of exams and steps to secure legal certification for practice. Successful completion of these exams is crucial for recognition as a dentist in the Canadian healthcare system.
 - d) **Australia:** To practice dentistry in Australia, candidates must undergo a thorough assessment process conducted by the Australian Dental Council (ADC). Successfully passing all three stages of the assessment allows eligibility to apply for a dentist license through the Dental Board of Australia (DBA).
 - e) **Singapore:** Eligibility to practice dentistry in Singapore requires possession of a dental degree approved by the Singapore Dental Council.
 - f) **Gulf countries:** In Gulf countries, a Ministry of health (MOH) license from the Health Authority is mandatory for dental practitioners. BDS graduate should have completed a one-year internship in a teaching hospital and two years of general practice for qualifying for licence.^[7]
5. **Research:** Beyond traditional practice, B.D.S. graduates can venture into clinical research, engaging in the evaluation of medication efficacy, testing healthcare devices, and contributing to the development of novel treatment procedures or pharmaceuticals. Roles such as medical advisor, principal investigator, co-investigator, drug developer, clinical research physician, or regulatory affairs manager become accessible career paths. These opportunities extend beyond medical colleges and laboratories, as renowned hospitals also actively seek professionals in research capacity.
6. **Alternate career options:** Dentistry opens doors to a myriad of unconventional career options. These career options generally require additional training after BDS. Consider the following alternative paths for a fulfilling professional journey.
- a) **Medical Transcription:** Transition into the realm of healthcare documentation, ensuring accuracy in medical records and bridging the gap between healthcare providers and patients.
 - b) **Insurance Industry:** Explore opportunities in the insurance sector, applying your dental knowledge to assess and mitigate risks related to oral health.
 - c) **Dental Blogging:** Embrace the digital era by sharing your expertise through blogging, creating valuable content to educate and engage audiences about oral health.
 - d) **Master in Business Administration:** Combine dental expertise with business acumen by pursuing an MBA, opening avenues in healthcare administration and management.
 - e) **Dietitian Career:** Leverage your knowledge of nutrition and oral health to embark on a career as a dietitian, promoting holistic well-being.
 - f) **Healthcare Content Creation:** Become a dental and healthcare content creator through YouTube, blogging, podcasts, or influencing, educating and inspiring a wider audience.
 - g) **Call Centres and Insurance in Health Sector:** Explore roles in call centres and insurance, contributing to the efficiency of healthcare operations and ensuring quality patient care.
 - h) **Nanotechnology and R&D in Medical Instrumentation:** Dive into the cutting-edge field of nanotechnology, contributing to research and development in advanced medical instrumentation.

- i) Influencer in a Micro-Niche Market: Establish yourself as an influencer in a specialized market like dental implants or dental materials, leveraging your expertise to cater to a specific audience and contributing to the popularity of this emerging product.^[7]

III. Material And Methods

All BDS students and interns at the government dental college, Alappuzha were enrolled in the study. Institutional review board and Institutional Ethics committee clearance was obtained. Informed consent was obtained from each of the students enrolled in the study. A questionnaire was developed covering each of the 6 identified domains; and its face and content validity was assessed using an iterative process as described below.

Identification of domains and item generation for the questionnaire

6 domains which were identified as mentioned earlier are general practice, post-graduation and specialty practice, government service, opportunities in foreign countries, alternate career options, and research. Initially the questionnaire consisted of 10 questions.

Face validity and content validity of the questionnaire

For assurance of face validity, the questionnaire underwent scrutiny by five BDS students/interns and five experts possessing a minimum of 10 years of teaching experience in dental institutes. Insights into the wording, clarity, ambiguity, reasonability, and relevance of each item were sought.

To establish content validity, the questionnaire underwent a comprehensive evaluation by five subject experts having a minimum of 10 years of teaching experience in BDS institutes. The experts assessed the relevance of each item using a four-point Likert scale (1 = not relevant, 2 = relevant with major revisions, 3 = relevant with minor revisions, and 4 = very relevant). Their feedback encompassed qualitative aspects such as item accuracy, organization, clarity, appearance, purpose, understandability, and adequacy. The evaluation of whether the questions effectively measured their intended domains was done using a format given in Supplementary file. This ensured the questionnaire aligned with the core identified domains of the scope of dentistry in India.

Corrections were made and the process was repeated until a satisfactory questionnaire was obtained. The final questionnaire consisted of 20 items is given as Supplementary Table I. For each item question, the CVI was calculated, and a total score of 0.86 was obtained, indicating a strong alignment with the intended domains.

Scoring

Most of the questions had multiple correct options scored based on relative importance. The maximum total score was 53 and a score of more than 26.5 (50%) was considered 'adequate awareness' about scope of dentistry for the purpose of this study. Domain-wise scores were also calculated to identify areas of deficiencies in awareness.

Data was entered in Microsoft excel 2016 and analyzed.

IV. Result

A total of 201 BDS students from different academic years and interns participated in the study out of which of 179 were females and 22 males (Table 1).

Table No 1: The number of students in each academic year and their gender distribution

Gender	1 st year	2 nd year	3 rd year	4 th year	Internship	Total
Male	3	4	4	5	6	22
Female	43	31	33	33	39	179
Total	46	35	37	38	45	201

The total awareness score for first BDS, second BDS, third BDS, fourth BDS and interns were 22.7 (42.8%), 25.7 (48.5%), 28.8 (54.3%), 25.9 (48.9%), 29.8 (56.2%) respectively (Table 2). With a cut-off of 26.5 (50%) for adequate awareness, the total awareness score for third BDS and interns was found to be adequate. However, for first BDS, second BDS and final year BDS the awareness score was found to be inadequate. For all students, the overall score was 26.6 (%) which was found to be adequate (Table 2).

Table No 2: The total score and domain specific awareness score for each academic year

Academic year	General practice (17)	Speciality practice & academics (14)	Govt. service (7)	Foreign service (7)	Research (6)	Alternate career (2)	Total (53)
1 st year	7.8	8.2	2.4	2.5	1.1	0.7	22.7 (42.8%)
2 nd year	9.0	8.9	3.3	2.6	1.0	0.9	25.7 (48.5%)
3 rd year	10.7	9.4	3.1	2.8	1.7	1.1	28.8 (54.3%)
4 th year	10.2	8.4	2.7	3.1	0.9	0.7	25.9 (48.9%)
Intern	11.3	9.7	3.3	3.4	1.3	0.9	29.8 (56.2%)
Total (%)	9.8 (57.6%)	8.9 (63.5%)	3.0 (42.85)	2.9 (41.4%)	1.2 (20%)	0.9 (45%)	26.6 (50.1%)

There was no meaningful difference between males and females for total awareness score or for year specific awareness scores (Table 3).

Table No 3: Gender wise distribution of awareness score

Gender	General practice (17)	Speciality practice & Academics (14)	Govt. Service (7)	Foreign Service (7)	Research (6)	Alternate Career (2)	Total (53)
Males	10.0	8.9	3.0	2.9	1.2	0.9	26.9
Females	9.7	8.9	2.9	2.9	1.2	0.8	26.3

V. Discussion

There has been a recent change in the outlook for dentistry as a career option in recent times. The reasons for this could be limited job opportunities available for dental professional because of increase in number of BDS and MDS seats thus leading to saturation in private practice and limited opportunities at academic institutions. This situation makes it imperative for the dental students to be aware of the full scope of dentistry to have a career plan which aligns with their talents and professional ambitions in these competitive times.

A comprehensive literature review and personal interviews with various stakeholders revealed the presence of 6 distinct domains for scope of dentistry for a dental graduate in India. This included general practice, academics & specialty practice, government service, scope in foreign countries, research and alternate career options. A 20-item questionnaire was developed covering these 6 domains using an iterative process ensuring face and content validity. The questionnaire was administered to the students and interns and results were obtained and analyzed.

The study revealed that overall awareness about scope of dentistry was adequate for BDS students and interns. But a year-wise analysis revealed that awareness about scope of dentistry was adequate for only 3rd BDS students and interns but inadequate for other year students. The lack of awareness about scope of dentistry among 1st and 2nd year BDS students indicates the need for career counselling and awareness about scope before they select the BDS course.

Year-wise analysis showed a trend for increasing awareness as the academic exposure increased with the progression of BDS course. This was expected as academic exposure about dental specialties may be related to increased awareness about scope of dentistry. The trend was found to be true for 1st BDS, 2nd BDS, 3rd BDS and interns but not for 4th BDS students. Various studies have found that peers effects have an influence on academic achievements.^[8] This may also apply for awareness about scope of dentistry and may thus account for the lower awareness about scope of dentistry among 4th BDS students.

The study reveals that BDS students at Government Dental College, Alappuzha, have varying levels of awareness about the different career options within dentistry. The students were most aware of specialty practice and academics and also showed adequate awareness for general practice. However, an inadequate awareness about other domains including government service, foreign service, research and alternate career option was found. This may be due to the fact that these areas are not adequately covered during the BDS training. Training programs for BDS students regarding various scope of dentistry will be useful in this situation. This should also include soft skills classes, comprehensive information about various PG entrance exams, PSCs, national board exams for doing foreign service and strategies for success in these exams. Imparting awareness about dental service disparities in rural-urban areas, and utilization of this untapped market is also the need of the hour. Limitations of this study include a lack of generalizability to private dental colleges as the study was done in a government college. But this does not undermine the need for making all the BDS students to be aware of scope of dentistry so that they can plan their career taking into account their unique skills and anticipating possible barriers and challenges.

VI. Conclusion

There is increased competition in the field of dentistry in India, but there is still scope in various domains including general practice, academics & specialty practice, government service, scope in foreign countries, research and alternate career options. The BDS students have adequate knowledge about general practice and academics & specialty practice. However, the students have inadequate awareness about scope other than general practice and academics & specialty practice. Awareness programs are needed to further their knowledge in these domains.

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