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Evaluation of Oral Health Awareness and Practices among Dental Students in Different Stages of Training at Bharati Vidyapeeth Dental College and Hospital Navi Mumbai

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Abstract

Background:

Dental students are expected to serve as role models for oral health, influencing their patients, families, and communities. Their attitudes and behaviors evolve with education, reflecting their knowledge and clinical exposure. This study examines oral health attitudes and behaviors among dental students at Bharati Vidyapeeth Dental College and Hospital, Navi Mumbai, across different academic years, focusing on educational impact and knowledge gaps.

Objective:

To evaluate self-reported oral health attitudes and behaviors among dental students and compare differences across preclinical and clinical years.

Methods:

A cross-sectional study was conducted using a self-administered questionnaire adapted from the Hiroshima University Dental Behavior Inventory (HU-DBI) and Spalj's questionnaire. Approximately 400 dental students and interns participated. Data were analyzed for significant differences in behaviors and attitudes based on academic year using p-values (<0.05).

Results:

- **Significant Improvements:** Clinical-year students reported better knowledge of brushing techniques (p=0.00), increased use of interdental aids (floss, p=0.00; toothpick, p=0.003; mouthwash, p=0.001), and proactive responses to gum bleeding (p=0.01).

- **Behavioral Patterns:** Two-thirds of students brushed twice daily, aligning with global norms. Concerns about gum aesthetics (67%) and bad breath (64%) were higher compared to international peers.

- **Persistent Gaps:** Knowledge of interdental aids and smoking's impact on gum disease remained insufficient.

Discussion:
The study reaffirms the influence of dental education on oral health attitudes and behaviors. Current trends, such as the integration of technology, emphasis on preventive care, and cultural factors, were considered. While significant progress was observed in clinical years, gaps in specific areas highlight opportunities for curriculum enhancement.
Conclusion:
Oral health attitudes and behaviors improve with education, but targeted interventions are needed to address persistent deficits. By integrating preventive care training, behavioral models, and technology, dental education can produce graduates who are competent practitioners and advocates of oral health.
Keywords:
Oral health, dental students, education, attitudes, behaviors, preventive care, interdental aids.

Introduction:
Oral health is a cornerstone of general health and well-being, with significant implications for quality of life, self-esteem, and systemic health outcomes. As future healthcare providers, dental students hold a dual responsibility: not only maintaining exemplary oral health for themselves but also serving as influential role models and educators for their patients, families, and communities. The behaviors, attitudes, and knowledge they develop during their education are pivotal in shaping their future professional practices [1-4].
Research has consistently shown that attitudes toward oral health evolve with education and exposure. Dental students in their preclinical years primarily focus on theoretical knowledge, whereas clinical-year students engage more deeply with practical applications, patient interactions, and preventive care. These differing experiences often translate into variances in self-reported oral health attitudes and behaviors [2-6].
Globally, studies using standardized tools like the Hiroshima University Dental Behavior Inventory (HU-DBI) have explored oral health behaviors among dental students in countries like Japan, Turkey, Jordan, and the UK. However, cross-cultural and regional differences often limit direct comparisons. In India, where oral health education is deeply intertwined with societal and cultural expectations, there remains a need to investigate how educational stages influence students' oral health behaviors and attitudes [7-9].
This study examines dental students at Bharati Vidyapeeth Dental College and Hospital, Navi Mumbai, a premier institution fostering professional competence and ethical practice. By comparing self-reported attitudes and behaviors across different academic years, this research aims to:

1. Identify areas of strength and gaps in oral health practices among students.
2. Highlight the role of dental education in fostering positive behavioral changes.
3. Provide insights into tailoring educational interventions to address persistent knowledge deficits.

Understanding these dynamics is essential for designing educational strategies that not only improve students' personal oral health but also empower them to advocate for and deliver high-quality

preventive care to their future patients. This research will contribute to a broader understanding of how to optimize dental education for better professional and societal outcomes.

Methodology

The study utilized a **self-administered questionnaire** adapted from the Hiroshima University Dental Behavior Inventory (HU-DBI) and Spalj's questionnaire. A sample of approximately **400 dental students and interns** was surveyed.

Key focus areas of the questionnaire included:

1. Frequency of dental visits and reasons for visits.
2. Awareness and practice of proper brushing techniques.
3. Influence of instructors on oral hygiene habits.
4. Frequency of gum issues, consumption of sweets, and use of interdental aids.
5. Attitudes towards gum disease prevention and smoking-related impacts on oral health.

Data Analysis: Responses were analyzed to compare attitudes and behaviors across academic years, focusing on significant results (p-value < 0.05).

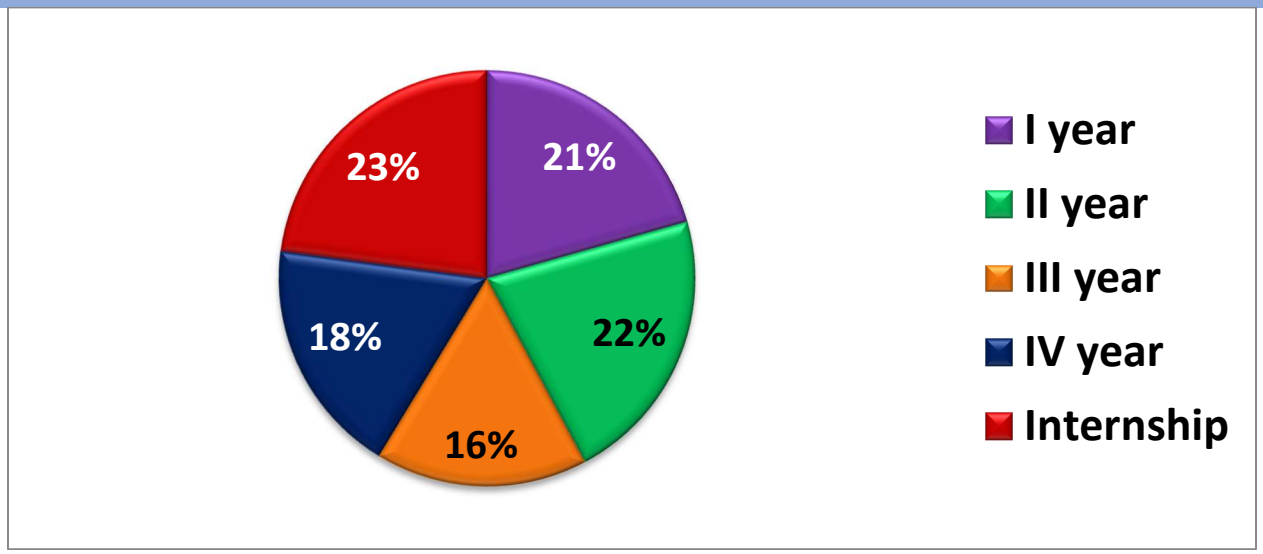
Results

1. **Significant Variations Observed by Academic Year:**

- Knowledge of proper brushing techniques: **P-value 0.00**.
- Influence of parents and dentists as instructors: **P-values 0.01**.
- Use of interdental aids like floss, toothpicks, and mouthwash: **P-values 0.00 to 0.003**.
- Actions taken during gum bleeding: **P-value 0.01**.
- Attitudes on gum disease prevention with brushing alone: **P-value 0.03**.

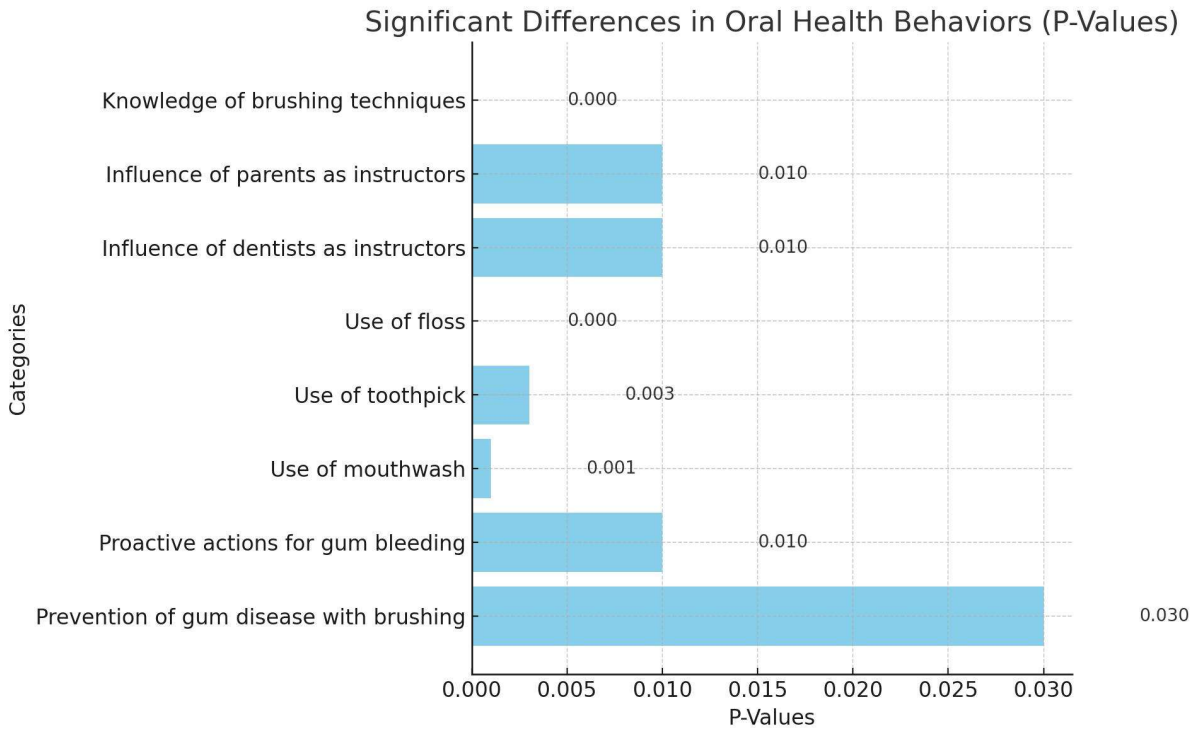
	Percent
Male	23.1
Female	76.9
Total	100.0

	Percent
I year	20.6
II year	21.6
III year	16.5
IV year	18.4
Internship	22.9
Total	100.0



2. **Behavioral Insights:**

- Two-thirds of students brushed twice daily, consistent with findings in Jordan and significantly higher than in Kuwait.
- 67% were concerned about gum color, higher than Turkish and British counterparts.
- 64% expressed concern about bad breath, exceeding similar concerns in Jordan and the UK.



Discussion:

The findings of this study reflect a pattern consistent with global research: oral health attitudes and

behaviors improve as students progress through dental education. This trend is attributable to increased exposure to clinical experiences, hands-on training, and a deeper understanding of the consequences of poor oral health. However, to contextualize these findings within current trends, it is essential to explore the evolving dynamics of oral health education and behavior in a global context.

Comparative Insights [10-14]

Studies from various regions provide valuable benchmarks for assessing oral health attitudes among dental students:

1. Global Comparisons:

- Indian dental students' twice-daily brushing habits (66%) are comparable to peers in Jordan and surpass those reported in countries like Kuwait and Turkey. This reflects a broader emphasis on preventive care in Indian dental curricula, aligned with global best practices.

- Concerns about gum aesthetics and bad breath were higher among Indian students compared to British and Turkish peers, suggesting heightened awareness of oral hygiene's social and cultural dimensions in India.

2. Influence of Education Level:

- The study confirms that clinical-year students exhibit superior behaviors, such as the use of interdental aids and proactive responses to gum bleeding. This aligns with research showing that direct patient care motivates students to practice better oral hygiene and reinforces theoretical knowledge.

Current Trends in Oral Health Education [15-21]

1. Technological Integration: The rise of digital learning tools, including virtual reality (VR) simulations and AI-powered oral health assessment tools, has transformed dental education. These technologies allow students to visualize the impact of oral hygiene on systemic health and practice procedures in a risk-free environment, enhancing their understanding and behavior.

2. Preventive Care Emphasis: Modern dental curricula emphasize preventive dentistry as a cornerstone of oral health. Techniques such as the "tell-show-do" approach in teaching brushing techniques and the promotion of interdental cleaning devices like water flossers have gained prominence. This focus aligns with the study's findings that clinical-year students showed increased use of interdental aids.

3. Mental Health and Anxiety Management: Increasing awareness of dental anxiety among patients has also influenced student training. Programs now include psychological strategies to address patient fears, which simultaneously encourage students to maintain their own oral health to build patient trust.

4. Global Health Initiatives: Global initiatives like the World Health Organization's Oral Health Program have advocated for community-oriented training in dental education. This shift encourages students to engage in outreach programs, bridging gaps in oral health awareness among underserved populations and reinforcing their personal habits as role models.

Cultural and Regional Influences

Cultural perceptions of oral health significantly shape student attitudes and practices. In India, the traditional emphasis on preventive care, including ayurvedic practices such as oil pulling, contrasts

with Western approaches dominated by high-tech interventions. Integrating cultural knowledge into modern education could enhance students' appreciation of diverse patient needs while fostering their personal commitment to oral health.

Future Directions

While the study demonstrates a general improvement in attitudes and behaviors with education, it also highlights critical areas for growth:

1. Knowledge Gaps: Deficits in understanding the use of interdental aids and the relationship between smoking and gum disease call for more targeted educational modules.

2. Behavioral Interventions: Incorporating behavior change models, such as the Theory of Planned Behavior, into dental education could help address persistent habits like irregular flossing or overreliance on brushing alone.

3. Collaborative Learning: Peer-led workshops and interdisciplinary training with medical students could foster a holistic approach to oral and systemic health.

Significance of Findings

This study underscores the transformative impact of dental education on students' oral health attitudes. By identifying specific behaviors that improve with training, it offers actionable insights for curriculum design. Moreover, the alignment of findings with global trends highlights the importance of fostering adaptability in dental education to meet evolving healthcare demands.

In conclusion, the integration of innovative teaching strategies, preventive care emphasis, and cultural awareness in dental education can address existing gaps, equipping students not only as practitioners of oral health but also as advocates of overall well-being in a rapidly changing healthcare landscape.

Conclusion:

The study successfully highlights the influence of dental education on shaping the oral health attitudes and behaviors of students. It demonstrates that as students progress through their academic years, they exhibit improved oral hygiene practices, greater awareness of preventive care measures, and better overall attitudes toward oral health. These findings reaffirm the critical role of structured dental education in fostering both personal and professional growth.

Key Findings

1. **Improvement with Education:** The transition from preclinical to clinical years is marked by enhanced behaviors such as proper brushing techniques, the use of interdental aids, and a proactive approach to managing oral health issues like gum bleeding.

2. **Knowledge Gaps:** Despite overall positive trends, deficits in areas such as the use of interdental aids and understanding the relationship between smoking and gum disease persist, emphasizing the need for targeted interventions.

3. **Cultural and Behavioral Influences:** Indian dental students exhibited high levels of concern for oral aesthetics and social implications of oral hygiene, such as bad breath, compared to peers in other countries. These cultural dimensions underscore the importance of tailoring education to regional and societal contexts.

Implications for Dental Education

The findings offer actionable insights for curriculum developers and educators:

1. **Enhanced Preventive Care Training:** Greater emphasis should be placed on comprehensive preventive strategies, including the proper use of floss, interdental brushes, and other aids.

2. **Behavioral Change Models:** Introducing psychological theories and motivational strategies into the curriculum could encourage students to adopt and sustain healthier oral hygiene practices.

3. **Integration of Technology:** Leveraging digital tools, such as virtual reality simulations and AI-powered diagnostics, can provide students with a deeper understanding of oral health issues and their systemic implications.

Global Relevance

The study's outcomes resonate with international research, reinforcing the universal value of progressive education in promoting oral health. By aligning local practices with global trends, Indian dental institutions can ensure their graduates are prepared to meet diverse healthcare needs in an increasingly interconnected world.

Future Directions

The study paves the way for further research in the following areas:

1. **Longitudinal Studies:** Tracking students post-graduation to understand how education impacts long-term professional behavior.

2. **Comparative Analyses:** Conducting cross-cultural studies to explore variations in oral health attitudes and behaviors among students from different regions and educational systems.

3. **Interdisciplinary Approaches:** Collaborating with medical and public health programs to address oral health in a broader healthcare context.

Final Thoughts

This research underscores the vital role of dental education in shaping not just competent practitioners but also advocates for preventive care and oral health awareness. By addressing identified gaps and leveraging innovations in teaching, dental institutions can empower students to excel as both role models and healthcare providers, contributing to the broader mission of improving oral health outcomes worldwide.

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