



Contents lists available at ScienceDirect

Journal of Oral Biology and Craniofacial Research

journal homepage: www.elsevier.com/locate/jobcr

Dental curriculum reform in India: Undergraduate students' awareness and perception on the newly proposed choice based credit system

Laxmi Kabra, Varkey Nadakkavukaran Santhosh^{*}, Richa Naomi Sequeira, Anil V. Ankola, David Coutinho

Department of Public Health Dentistry, KLE VK Institute of Dental Sciences, KLE Academy of Higher Education and Research (KLE University), Belagavi, 590010, India

ARTICLE INFO

Keywords:

Dental education
Dental students
Perception
Awareness
Choice based credit system
Dental curriculum

ABSTRACT

Background: Dental education plays a crucial role in producing competent dental professionals who can cater to the diverse needs of patients. This study aimed to assess the awareness and perception of the newly proposed Choice Based Credit System (CBCS) by the Dental Council of India (DCI) among dental undergraduate students in Belagavi City, India.

Methods: The study adopted a cross-sectional design and was conducted among undergraduates and interns of two dental colleges in Belagavi, India. A pilot study was conducted, which was followed by sample size estimation. A total 480 participants were recruited by simple random sampling technique. The questionnaire used was self-administered and comprising 23 close-ended questions in English, for which the Cronbach's alpha coefficient was found to be 0.85, with an 84% score for face validity and a content validity ratio of 0.78.

Results: The mean awareness and perception scores were highest among interns, while it was lowest among the first years. Majority of the study participants (62.7%) were unaware of this new curriculum whereas almost half (49%) of them found it to be student-friendly. A positive correlation was seen between the perception and awareness scores ($r = +0.270$, $P \leq 0.001$).

Conclusion: The findings of this study reveal that a significant proportion of dental undergraduates lacked awareness regarding the implementation of the new curriculum, however they had a positive outlook towards it. The adoption of this model appears to be a promising initiative towards enhancing the quality of dental education at a national level.

1. Introduction

"Education is not the filling of a pail, but the lighting of a fire." - William Butler Yeats.

Dental education plays a crucial role in producing competent dental professionals who can cater to the diverse needs of patients. However, in India, the dental curriculum has been criticized for its traditional structure and lack of flexibility, leading to a skills gap between graduates and industry expectations. On the flip side, the students who have joined dental institutions are under a considerable amount of stress in accommodating themselves to the existing dental curriculum. The stress caused by academic factors is due to misfit of the curriculum with the generation of the students. The major cause being that "Physicians of tomorrow are taught by teachers of today using curricula of yesterday" as stated by Sethuraman.¹ A probable solution would be to upgrade the

dental education in all perspectives. This gap can be attributed to various factors, such as outdated curriculum, inadequate exposure to clinical practice, and a lack of emphasis on research and critical thinking skills. The teaching methodology of patient management is characterized by a segmented approach lacking horizontal or vertical integration.^{2,3}

The current Bachelor of Dental Sciences (BDS) curriculum in India largely focuses on theoretical knowledge, with limited opportunities to explore interests and acquire practical skills. Traditional lecture-based teaching is predominant, which may not be effective in promoting active learning.³ There are lack of courses on advanced technologies such as digital dentistry, communication skills and training on ethical and legal issues are also inadequate. In 2011, the Medical Council of India introduced reforms to undergraduate medical courses, including the inclusion of electives. These electives provide opportunities for

^{*} Corresponding author.

E-mail addresses: lakshmikabra@gmail.com (L. Kabra), nsvrkey29@gmail.com (V.N. Santhosh), richasequ@gmail.com (R.N. Sequeira), dranilankola55@gmail.com (A.V. Ankola), coutinho.david8@gmail.com (D. Coutinho).

<https://doi.org/10.1016/j.jobcr.2023.08.003>

Received 9 May 2023; Received in revised form 22 July 2023; Accepted 8 August 2023

2212-4268/© 2023 Published by Elsevier B.V. on behalf of Craniofacial Research Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

projects, self-directed learning, and improving critical thinking and research skills.⁴ Similar electives should also be introduced in dental education to equip students with well-rounded skills for their future careers.

Undergraduate education in India has undergone significant changes, with initiatives introduced during the Eleventh Five Year Plan (2007–2012) to improve education based on recommendations from the National Knowledge Commission (2008–2009) and Yashpal Committee (2009).^{5,6} One of those modifications is the introduction of the Choice Based Credit System (CBCS) by the University Grants Commission (UGC, 2015).⁷ CBCS was implemented in India to enhance education quality and provide students with flexibility in course selection, credit weightage, and evaluation mode. It aims to create a student-centered

environment that supports customized learning based on individual interests, strengths, and career aspirations.⁸ Making CBCS more advantageous over the conventional mode of education.⁹

The National Educational Policy (NEP) 2020 of India focuses on acknowledging and nurturing the distinct abilities of each student.¹⁰ CBCS model for dental education proposed by Dental Council of India (DCI) aims to fulfil these characteristics of NEP 2020. Studies conducted nationwide among students and teachers from various fields of education, such as arts and sciences, reveal a positive and accepting attitude and perception towards the CBCS model of education.^{11,12} This study intends to offer valuable insights on this newly proposed curriculum for which no related research currently exists in the literature. The successful implementation of the CBCS depends on the awareness and

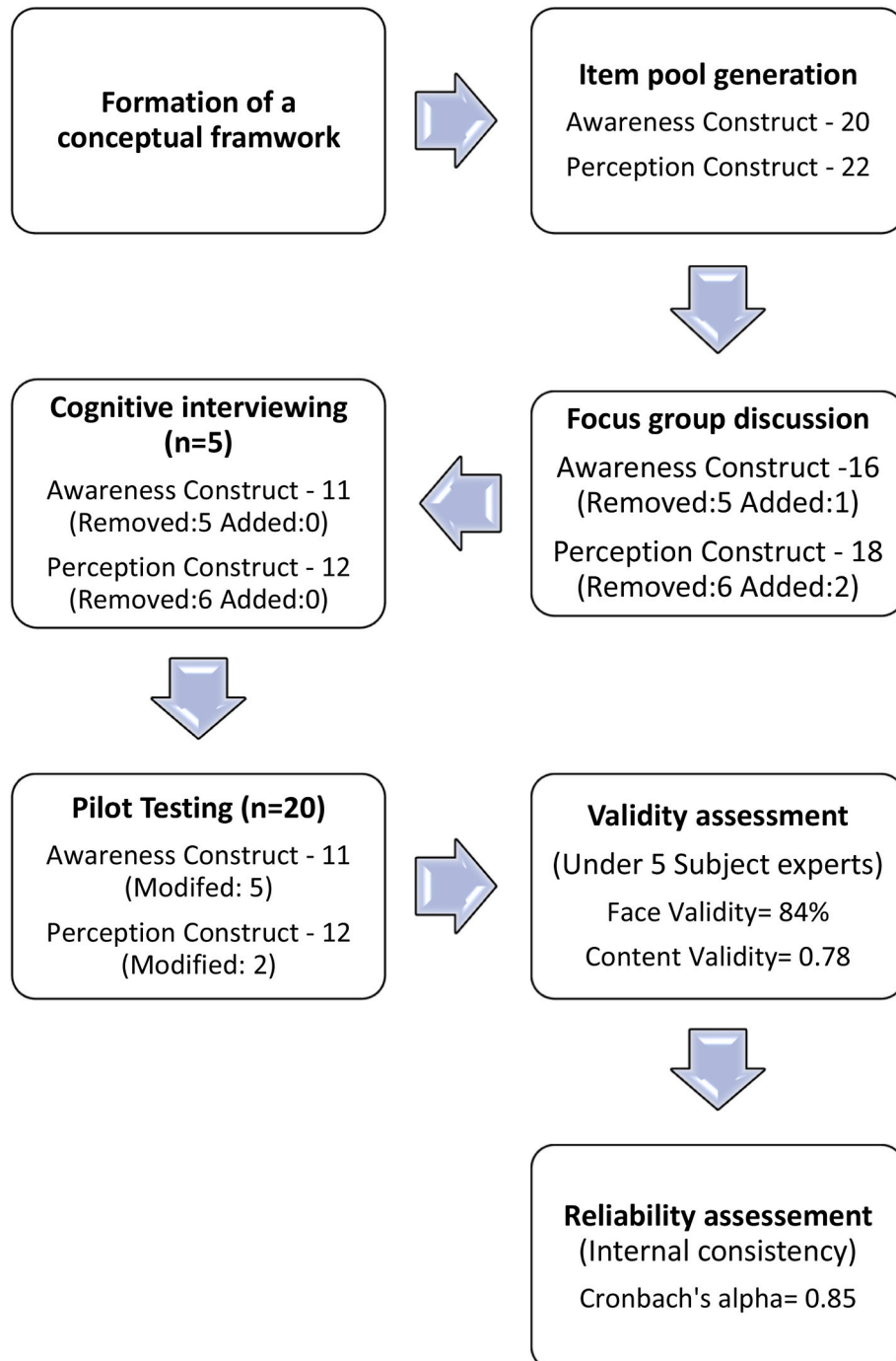


Fig. 1. Steps involved in questionnaire development.

perception of students towards it. Therefore, this study aims to assess the awareness and perception of the CBCS among dental undergraduate students in Belagavi City, India, which has not been previously explored.

2. Materials and methods

2.1. Study design and setting

The present study utilized a cross-sectional observational design and adhered to the STROBE reporting guidelines. The study was conducted among undergraduate students (1st to 4th year) and the interns of two dental colleges located in the Belagavi District, India.

2.2. Ethical clearance and informed consent

The research obtained ethical clearance from the Institutional Research and Ethics Committee and was conducted in the month of February 2023. All participants were fully informed about the purpose of the study and provided written informed consent.

2.3. Questionnaire development

The questionnaire was developed through a six-stage process. Initially, a conceptual framework was developed by drawing on existing literature and expert insights. Subsequently, an item pool was generated, consisting of 20 items for the awareness construct and 22 items for the perception construct. In the third stage, a focus group discussion was conducted with subject experts, followed by cognitive interviews with five representative samples. Throughout these stages, items were subject to continuous evaluation, leading to the addition and removal of specific items based on their relevance (Fig. 1).

2.4. Pilot testing

A pilot study was conducted with 20 undergraduate students (15 female, 5 male) to identify potential design flaws in the questionnaire. Participants of the pilot study were representative of the target population. The primary focus of the pilot study was to identify ambiguities in wording or comprehension issues. Five questions related to awareness and two questions concerning perception were found to be unclear to the participants. These questions were modified based on the feedback from the participants to enhance the clarity of the questionnaire.

2.5. Validity and reliability assessments

Face validity was assessed by determining the percentage agreement among a panel of five subject experts and it was found to be 84%. Additionally, content validity ratio was determined for the questionnaire, and the results indicated that it was a valid tool, with a content validity ratio of 0.78. This was followed by assessment of reliability using Cronbach's alpha coefficient, which was estimated to be 0.85. This indicates that the questionnaire has high internal consistency. Collectively, these assessments indicate that the questionnaire is robust and suitable for capturing the intended data in the study.

2.6. Sample size estimation and sample distribution

The sample size for the study was estimated based on the findings of the pilot study. The pilot study found that 76.69% of female and 58.85% of male participants had low awareness. The allocation ratio for females to males was 3:1. These proportions were used to calculate the required sample size. Considering Type-I (α) error of 0.05 and Power ($1-\beta$) of 0.95, a minimum sample size of 460 participants was determined for the study using G*Power statistical software (Ver. 3.1.9.4.). The final sample size was set as 480 and the list of undergraduate students from two dental colleges in Belagavi was obtained, and it was used as the sampling

frame. The participants were selected from this list using a simple random sampling technique by random number table method.

2.7. Questionnaire characteristics

The questionnaire used for the study was self-administered and comprised of 23 close-ended questions in English. It consisted of two sections, with the first section containing sociodemographic information about the participants, and the second section covering the awareness and perception on CBCS. Out of the 23 questions, 11 were related to awareness, while the remaining 12 were related to perception. The responses were recorded on a 5-point psychometric Likert scale (scored from 1 to 5) and the summative scores were calculated for each question pertaining to awareness and perception. The participants with higher mean awareness and perception score had increased awareness and more positive perception towards CBCS.

2.8. Data collection

A single investigator administered the physical questionnaire during working hours at the two dental colleges. The questionnaire was distributed year-wise in a classroom setting on a specified date and time. To ensure unbiased completion in the classroom, volunteers closely supervised the process. Participants were instructed to complete all questions within 15 min.

2.9. Statistical analysis

Collected data were entered in Microsoft Excel 2019 and analysed using IBM-SPSS® Statistics-Version 21 (IBM Corp., Armonk, NY, USA). Descriptive statistics were computed, which included percentages, means and standard deviations. The normality of the data distribution was determined using the Kolmogorov–Smirnov test and it was found that the data was normally distributed. Chi-square test was used to check for the association between awareness and perception with the year of study. Analysis Of Variance (ANOVA) test were performed to check for any significant differences among the study groups. Pearson correlation coefficient was used between awareness and perception scores. For all the tests, confidence level and level of significance were set at 95% and 5%, respectively.

3. Results

Among the 480 participants, majority were females (71.9%) and the rest males (28.1%). The mean age of the participants was 21.30 ± 2.12 years. The distribution of undergraduates belonging to the academic years were 1st years (34.6%), 2nd years (9.8%), 3rd years (22.1%), 4th years (19.6%) and the interns (14%). The distribution of demographic variables among the study population are presented in Table 1.

Table 1
Distribution of demographic variables among participants.

Demographics variables	Frequency (%)
Gender	
Male	135 (28.1%)
Female	345 (71.9%)
Year of Study	
1st Year	166 (34.6%)
2nd Year	47 (9.8%)
3rd Year	106 (22.1%)
4th Year	94 (19.6%)
Internship	67 (14%)
Total	480 (100%)

All values are expressed as frequency with percentages (in parentheses).

Table 2 presents the frequency distribution of both perception and awareness-based questions among the study participants. It was found that all the questions had statistically significant associations with the year of study when Chi-square test was applied. Majority of the participants, 62.7%, were unaware of the CBCS model of education ($P = 0.001$), and 62.5% were unaware of its incorporation in the BDS degree curriculum by DCI ($P = 0.001$). The new curriculum was found to be student-friendly by almost half (49%) of the study participants ($P = 0.001$).

Table 3 shows the distribution of mean perception and awareness scores among the participants. When gender wise distribution was considered, female participants had higher awareness and perception scores compared to male participants. There were no significant differences in both perception ($P = 0.883$) and awareness ($P = 0.167$) scores

among both genders when unpaired Student t-test was applied. The mean awareness scores were highest among the interns (30.74 ± 6.83), while it was lowest among the 1st years (29.24 ± 7.38). A similar trend was seen in the mean perception scores, wherein the interns had the highest (42.52 ± 5.94) and the least among the 1st years (37.47 ± 7.50). Distribution of perception scores among different years of study showed significant difference ($P \leq 0.001$) when ANOVA test was applied, while awareness scores did not show any such significant difference ($P = 0.501$).

A positive linear correlation ($r = +0.270$) was seen between the perception and awareness scores that was statistically significant ($P \leq 0.001$) using Pearson correlation coefficient. This indicates that as the awareness on CBCS increases, the students had a predominantly positive attitude towards it.

Table 2
Association between awareness and perception questions with the year of study.

A) Frequency distribution of awareness questions among the participants and their Chi-square association						
Question	Very unaware (%)	Unaware (%)	Neither aware or unaware (%)	Aware (%)	Very aware (%)	P-Value
Are you aware of the Choice Based Credit System (CBCS) model of education?	40 (8.3%)	301 (62.7%)	33 (6.9%)	105 (21.9%)	1 (0.2%)	0.001*
Are you aware that CBCS is incorporated in the newly proposed curriculum by the DCI for BDS degree?	34 (7.1%)	300 (62.5%)	65 (13.5%)	80 (16.7%)	1 (0.2%)	0.001*
Are you aware the new curriculum which includes 9 semesters plus one-year compulsory rotatory internship?	24 (5%)	187 (39%)	69 (14.4%)	181 (37.7%)	19 (4%)	0.001*
Are you aware that in the new curriculum you can transfer your credits to a new college to pursue the remainder of the course?	20 (4.2%)	252 (52.5%)	108 (22.5%)	98 (20.4%)	2 (0.4%)	0.001*
Are you aware about the student's choice to select an elective subject like sports, yoga, soft skills, implantology, lasers etc.?	19 (4%)	178 (37.1%)	106 (22.1%)	162 (33.8%)	15 (3.1%)	0.001*
Are you aware about the added credit-based modules on forensics, basic and advanced life support courses?	20 (4.2%)	213 (44.4%)	91 (19%)	145 (30.2%)	11 (2.3%)	0.001*
Are you aware that the new curriculum aides in international exchange of students and transfer of credits in the future?	18 (3.8%)	238 (49.6%)	75 (15.6%)	143 (29.8%)	6 (1.3%)	0.001*
Are you aware that exams will be conducted at the end of the semester instead of yearly?	26 (5.4%)	189 (39.4%)	83 (17.3%)	167 (34.8%)	15 (3.1%)	0.001*
Are you aware about the "learner- centric" approach?	22(4.6%)	242 (50.4%)	116 (24.2%)	96 (20%)	4 (0.8%)	0.028*
Are you aware that the CBCS uses a credit-based grading system and not a percentage-wise system?	24 (5%)	271 (56.5%)	87 (18.1%)	92 (19.2%)	6 (1.3%)	0.001*
Are you aware of the National Education Policy 2020?	34 (7.1%)	227 (47.3%)	108 (22.5%)	106 (22.1%)	5 (1.0%)	0.001*
B) Frequency Distribution of perception awareness questions among the participants and their association with year of study						
Question	Strongly disagree (%)	Disagree (%)	Neither Agree or Disagree (%)	Agree (%)	Strongly Disagree (%)	P-Value
Do you feel the new curriculum for BDS will be student friendly?	16 (3.3%)	88 (18.3%)	122 (25.4%)	235 (49.0%)	19 (4.0%)	0.001*
What do you feel about the increase in duration from 5 years to 5.5 years?	60 (12.5%)	98 (20.4%)	139 (29%)	170 (35.4%)	17 (2.7%)	0.001*
Do you feel the new semester wise assessment will improve the clinical skills of a student?	2 (0.4%)	85 (17.7%)	113 (23.5%)	250 (52.1%)	30 (6.3%)	0.001*
Do you feel the new curriculum will invoke more interest among students?	2 (0.4%)	90 (18.8%)	122 (25.4%)	242 (50.4%)	24 (5%)	0.002*
Do you feel that sports and other extracurriculars should be considered for evaluating a student?	10 (2.1%)	69 (14.4%)	104 (21.7%)	233 (48.5%)	64 (13.3%)	0.001*
What do you feel about the incorporation of implantology, laser etc as an elective subject in new syllabus?	4 (0.8%)	60 (12.5%)	104 (21.7%)	243 (50.6%)	69 (14.4%)	0.001*
Do you think the new curriculum will improve placement opportunities among dental graduates?	3 (0.6%)	65 (13.5%)	125 (26%)	256 (53.3%)	31 (6.5%)	0.001*
Do you believe that the implementation of the new DCI curriculum will equip students with enough skills in patient care and management without further training beyond graduation?	6 (1.3%)	73 (15.2%)	146 (30.4%)	241 (50.2%)	14 (2.9%)	0.001*
Do you think the new curriculum will decrease the number of dropouts in dental education?	1 (0.2%)	92 (19.2%)	151 (31.5%)	213 (44.4%)	23 (4.8%)	0.001*
Do you think the new curriculum will increase the number of aspiring dental students?	14 (2.9%)	75 (15.6%)	160 (33.3%)	209 (43.5%)	22 (4.6%)	0.019*
Do you feel the new curriculum aligns with National Education Policy 2020?	6 (1.3%)	66 (13.8%)	195 (41%)	197 (41%)	16 (3.3%)	0.001*
Do you feel the new curriculum will reduce stress among dental students?	15 (3.1%)	97 (20.2%)	172 (35.8%)	183 (38.1%)	13 (2.7%)	0.001*

All values are expressed as the frequency with percentages (in parentheses). The statistical test used: Chi-square test; Level of significance: * $P \leq 0.05$ is considered a statistically significant association.

Table 3
Awareness and perception of study participants.

Study Characteristics	Perception score (Mean ± SD)	P
Gender^α		
Male	38.77 ± 6.01	0.883
Female	41.04 ± 6.19	
Year of Study^ω		≤0.001*
1st Year	37.47 ± 7.50	
2nd Year	37.67 ± 7.25	
3rd Year	40.40 ± 6.46	
4th Year	41.13 ± 4.60	
Internship	42.52 ± 5.94	
Study Characteristics	Awareness score (Mean ± SD)	P
Gender^α		
Male	29.44 ± 5.66	0.167
Female	29.71 ± 6.08	
Year of Study^ω		0.501
1st Year	29.24 ± 7.38	
2nd Year	29.31 ± 5.44	
3rd Year	29.57 ± 4.69	
4th Year	30.30 ± 6.16	
Internship	30.74 ± 6.83	

SD: Standard Deviation; The statistical test used: ^αUnpaired student t-Test and ^ωAnalysis of variance Test; Level of significance: *P ≤ 0.05 is considered statistically significant.

4. Discussion

The development and implementation of a curriculum are indispensable components of an academic program. Traditional system of education has been replaced by newer models that emphasize on practical learning, which requires a shift from teacher-centric to student-centric approaches. Introduction of CBCS model in dental education by DCI aimed to bring about such a change. This study aimed to assess the awareness and perception of dental undergraduates towards this new model proposed by DCI.

The dental curriculum underwent regulations in 2007 that followed a standardized cumulative assessment-based curriculum, where a comprehensive exam is held at the end of each academic year to evaluate students' mastery of the relevant course material.¹³ In a study conducted by Bains et al. almost 40% of the participants felt that there is a need to revise the curriculum in India according to the current trends.³ The new CBCS model has recently gained significant attention in academic and professional circles.¹⁴ A large proportion of the study participants showed lack of awareness regarding the CBCS model and its integration into the BDS curriculum. Similarly, almost half of the participants were unaware about the “learner-centric” approach of the new curriculum, while majority believed that it would be student friendly. The current model of education has five years of study with the fifth year being a compulsory rotatory internship. In this study, 35.4% of the participants agreed with the extension of the new curriculum's duration from 5 to 5.5 years, meanwhile, 29% were uncertain about it, and 20.4% disagreed with the increase. The new curriculum involves an assessment every six months, divided into nine semesters. This study reported a significant proportion of participants were unaware of these changes. However, more than half of the participants agreed that the new semester-wise assessment system would enhance a student's clinical skills. These results align with Bains et al. study, where majority of the participants recognized the importance of continuous formative assessment.³ In the CBCS model, students are not assigned a percentage for each credit module, instead they receive a grade point which is based on their performance and attendance throughout the course. The grade point is calculated by multiplying the grade value by the number of credits for the course and in this study, majority (56.5%) were unaware about this change in assessment methods.

In this new model of dental education, the students are given a choice to choose their electives. Most (37.1%) of the study participants were

unaware of this feature of the new model. These electives can invoke interests among the students and can facilitate active participation from them in the learning process and almost half (50.4%) of the study participants agreed to that. Furthermore, there is a perceived need to integrate advanced treatment modalities like implantology into the current curriculum.¹⁵ The study found that almost half of the participants supported the inclusion of elective courses like implantology and laser in the new syllabus. Credit-based modules on forensics, Basic Life Support (BLS), and Advanced Life Support (ALS) courses can provide dental students important skills and knowledge beyond traditional dental topics and in this study 44.4% were unaware of this added credit-based modules. The current dental curriculum has no emphasis on extra-curriculars such as soft skills, sports, yoga etc. which brings about the overall development of the student.¹⁶ Majority (48.5%) of the participants agreed that sports and other extracurriculars should be considered for evaluating a student.

There is an increasing unemployment rate among dental undergraduates in India and dental education needs a revamp.¹⁷ Multiple factors contribute to the limited employment prospects for dental graduates, such as a mismatch between supply and demand, inadequate job market training, and insufficient entrepreneurship skills. Sangappa et al. found that incorporating a communication skills course in the dental undergraduate curriculum improved dentist-patient interactions.¹⁶ The new curriculum emphasizes more on building the communication skills and other soft skills of the students. The current curriculum focused primary on abilities to memorize, ignoring manual clinical skills, hypothesis formation and decision-making as reported by Bains et al.³ Many participants were optimistic about the potential of the new curriculum to improve placement opportunities for dental graduates, and a large proportion believed it would equip students with the necessary patient care and management skills without requiring further training after graduation. One of the potential benefits of this model is to aid in the international exchange of students and transfer of credits in the future. This credit-based system provides a common language for comparing and evaluating courses across countries. The CBCS model can promote greater internationalization of dental education, facilitating student mobility. A significant proportion (49.6%) of the study participants were unaware of this aspect of the new curriculum.

Dropout rates among dental students have increased all around the globe.^{18,19} It is a concerning issue, with potential consequences for both students and the dental profession. It can represent a significant setback for those who have invested time and resources into their education and impact future availability of dental professionals. Identifying the factors contributing to dropout rates is crucial, and the new curriculum aims to address this issue. Majority (44.4%) of the participants agreed that the new curriculum will decrease the number of dropouts in dental education. Burnout among dental students is a significant concern that has been widely documented in the literature.^{20,21} The rigorous and demanding nature of dental education, coupled with clinical requirements and academic pressure, can lead to high levels of stress, emotional exhaustion, and a reduced sense of personal accomplishment.²² Some participants (38.1%) believed that the new curriculum could potentially reduce stress levels among dental students, while others (35.8%) were uncertain about its impact in this regard. Additionally, the CBCS model enables students to transfer credits between institutions, making it particularly useful for those pursuing higher education or specialized courses elsewhere. This system offers flexibility and mobility for students who may need to relocate due to personal or professional reasons. In this study, 52.5% of participants were unaware of this feature.

CBCS model of dental education is in line with India's NEP 2020, which calls for a flexible, multidisciplinary education system that promotes critical thinking, creativity, and innovation. This model allows dental students to choose courses that match their interests and career goals, encouraging lifelong learning and adaptability. Its objective is to prepare learners for future challenges through a student-centric and

outcome-oriented education system. The study found that a large portion of the participants (47.3%) were not aware about NEP 2020. In contrast, 41% of the participants believed that the new curriculum aligns with NEP 2020, while another 41% were uncertain.

The strength of this study lies in its ability to evaluate the awareness and perception of students towards this new model of dental education prior to its complete implementation, as they are important stakeholders in this process. The results of the study point out to an overall positive outlook on this new model. However successful implementation of this new model nationwide is a tremendous task for the authorities. It requires a comprehensive joint effort among various collaborators. Specialized training must be provided to teachers across various dental institutions and students should be made more aware of this change in curriculum. This new model certainly proves to be a step in the right direction by educators and policymakers to enhance the quality of dental education in India. A similar CBCS model of education has been proposed for other allied healthcare courses such as nursing²³ and physiotherapy.²⁴ The successful implementation of this model in these fields suggests that it has the potential to advance the dental education standards in the country.

5. Limitations of the study

The present study was confined to two dental colleges within the country, resulting in the limited coverage of the reference population. It is plausible that a comprehensive investigation encompassing multiple dental institutions situated in diverse regions of the country would provide a broader perspective on the newly proposed model. Such a large-scale study would facilitate a more robust understanding of the effectiveness and suitability of the CBCS model for dental education across the nation. Another potential limitation of this questionnaire study design lies in the possibility of response bias among the participants.

6. Conclusion

The findings of the study reveal that a significant proportion of dental undergraduate students lacked awareness regarding the implementation of the CBCS model in the BDS curriculum by DCI. However, the students who were aware of the new curriculum exhibited a predominantly positive perception towards it. Therefore, the adoption of the CBCS model appears to be a promising initiative towards enhancing the quality of dental education at a national level.

IRB approval

Obtained from KLE V.K Institute of Dental Sciences Institutional Review Board.

Authorship contribution statement

1. Laxmi Kabra: Conceptualization, Investigation, Project administration, Visualization, Writing - original draft, Writing - review & editing.

2. Varkey Nadakkavukaran Santhosh: Resources, Supervision, Validation, Data curation, Formal analysis, Methodology.

3. Richa Naomi Sequeira: Resources, Supervision, Methodology, Validation, Writing - review & editing.

4. Anil V. Ankola: Resources, Supervision, Validation, Writing - original draft, Writing - review & editing.

5. David Coutinho: Software, Data curation, Writing - original draft, Writing - review & editing.

Declaration of competing interest

There was NO conflict of interests associated with this original research article.

Acknowledgment

The authors extend their gratitude to Sagar Jalihal for their significant contributions to the quality of the manuscript.

References

- Ananthkrishnan N, K Raman S, Kumar S. *MEDICAL EDUCATION - PRINCIPLES AND PRACTICE*. K A N, MG S. second ed. NTT, JIPMER; 2000, 2021.
- Kakkar M, Pandya P, Kawalekar A, Sohi M. Evidence and existence of dental education system in India. *Int J Sci Stud*. 2015;3(1):186–188.
- Bains R, Parikh V, Pandey P. Undergraduate students' perception of the Indian dental curriculum: a focus-group based, multi-centric questionnaire survey. *J Oral Biol Craniofacial Res*. 2023;13(2):230–235.
- MCI_book.pdf [Internet]. [cited 2023 Mar 13]. Available from: https://www.tnmgrmu.ac.in/images/medical-council-of-india/MCI_book.pdf.
- Knowledge Commission Report | Government of India, All India Council for Technical Education [Internet]. [cited 2023 Mar 13]. Available from: <https://www.aicte-india.org/reports/overview/Knowledge-Commission-Report>.
- Yashpal Committee Report | Government of India, All India Council for Technical Education [Internet]. [cited 2023 Mar 13]. Available from: <https://www.aicte-india.org/reports/overview/Yashpal-Committee-Report>.
- Biswas S. Choices based credit system (CBCS)-An analytical study. *International Journal of Research and Analytical Reviews*. 2022;5(3):1362–1368, 2018.
- UGC GUIDELINES ON ADOPTION OF CHOICE BASED CREDIT SYSTEM.pdf [Internet]. [cited 2023 Mar 13]. Available from: https://www.iare.ac.in/sites/default/files/UGC_GUIDELINES_ON_ADOPTION_OF_CHOICE_BASED_CREDIT_SYSTEM.pdf.
- Aithal S, Kumar PMS. Analysis of choice based credit system in higher education. *Int J Eng Res Mod Educ IJERME ISSN Online 2455 - 4200*. 2016 Jun 2;1:28–284.
- Muralidharan K, Shanmugan K, Klochkov Y. The new education policy 2020, digitalization and quality of Life in India: Some reflections. *Educ Sci*. 2022 Feb;12(2): 75.
- Attitude towards choice based credit system of graduate level students in higher education: a study on government degree college for women anantnag kashmir. cited 2023 Mar 18 <https://ijip.in/pdf-viewer/?id=7673>.
- Mahakur S, Baral R, Meher V. Perception of teachers and students towards the implementation of choice based credit system at undergraduate level. *Issues Ideas Educ*. 2019 Mar 4;7:1–11.
- Dental Council of India [Internet]. [cited 2023 Apr 25]. Available from: <https://dciindia.gov.in/Dentistact1948.aspx>.
- BDS curriculum to be revamped. The Hindu [Internet]. 2022 Sep 12 [cited 2023 May 1]; Available from: <https://www.thehindu.com/education/bds-curriculum-to-be-revamped/article65882470.ece>.
- Chowdhary R, Chowdhary N. Need of implant dentistry at undergraduate dental curriculum in Indian dental colleges. *Indian J Dent Res Off Publ Indian Soc Dent Res*. 2011;22(3):436–439.
- Sangappa SB, Tekian A. Communication skills course in an Indian undergraduate dental curriculum: a randomized controlled trial. *J Dent Educ*. 2013 Aug;77(8): 1092–1098.
- Dagli N, Dagli R. Increasing unemployment among Indian dental graduates – high time to control dental manpower. *J Int Oral Health JIOH*. 2015 Mar;7(3) (i–ii).
- International AHH Dental Tribune. *Survey Shows 40% of UK Dental Students Consider Dropping*. Dental Tribune International; 2022. cited 2023 Apr 25 <https://www.dental-tribune.com/news/survey-shows-40-of-uk-dental-students-consider-dropping-out/?time=1651787021>.
- Okyno F, Filho A, Jacomini V, De-Carli A, Souza A, Ennes J. Dental students' dropout rates and professional practice adherence among graduates from a public institution. *Rev ABEENO*. 2021 Mar 24;21:1111.
- McKenzie CT, Kent MP, Volero A. A cross-sectional study investigating mental health and resilience among pre-doctoral students at a US dental school. *J Dent Educ*. 2022 Dec;86(12):1620–1627.
- MacAulay R, Morash J, Kenwell LS, Haslam SK. Burnout in oral health students: a scoping review. *J Dent Educ*. 2023 Apr;87(4):471–496.
- Brondani MA, Ramanula D, Pattanaporn K. Tackling stress management, addiction, and suicide prevention in a predoctoral dental curriculum. *J Dent Educ*. 2014 Sep;78(9):1286–1293.
- Kumar D, Agarwal A. Choice based credit system (CBCS) and nursing education. *Int J Adv Res Nurs*. 2021 Sep 18:4.
- Shinde S, Patil S, Shinde R, G V. The model of a physiotherapy syllabus based on choice based credit system (CBCS). *J Evol Med Dent Sci*. 2020 Jun 8;9:1818–1822.