Original Article
International Journal of Medical and Dental Sciences, *Vol 10(1), DOI: 10.18311/ijmds/2021/26669, January 2021*
ISSN (Print) : 2454-8952
ISSN (Online) : 2320-1118

Self-Perceived Competence of Contemporary Restorative Practices of Dental Students in North India

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Abstract

Background: There has been a paradigm shift in the restorative dentistry practiced in the clinics with an increased share of resin-composites in contrast to dental amalgam due to various factors, however, this has not found its way into the Indian dental school curriculum. **Aim:** To evaluate the self-perceived competence of contemporary restorative practices of dental students in North India. **Materials and Methods:** 232 dental students from 4 colleges in North India completed a survey comprising 11 polar questions about their perception of contemporary restorative dental practice and their curriculum update regarding the same. Further, the collected data was tabulated and finally extracted data was subjected to descriptive analysis using Chi-square test. **Results:** All 11 questions showed statistically significant responses. Only 15.5% of students thought that the current curriculum of restorative dentistry was adequate. Moreover, only 20.7% of the respondents were confident about using rubber dam for isolation. About 93.1% felt that the quality of their composite restorations was not at par with those seen on social media. A clear majority of 91.4% felt that the maximum uploads of restorative dentistry involved composite restorations. A huge number of 91.45% did not use rubber dam for isolation in composite restorations. 79.3% students felt that the current curriculum is not teaching them about the various instruments, and developing their skills about instrumentation and operative procedures of composite restorations matching the trending composite practices. **Conclusion:** Considering the results of this study as the student's mandate will help shape the guidelines for possibly a new curriculum of conservative dentistry in India.

Keywords: Conservative Dentistry, Dental Amalgam, Dental Education, Restorations, Resin-Base Composites, Teaching

1. Introduction

The present era of information technology and booming of social media has made it easy for the dental students of today to access contemporary practices in clinics and market acceptable trends. They also find it easier to acquire knowledge of the newer innovations through this platform. When they view a plethora of presentations

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uploaded on various dental forums online on social media, they evaluate them and later introspect over them wishing to emulate them. However, there is difference between the contemporary practices and the curriculum in dental schools in India.

This divide diminishes the morale of the Indian dental student and he/she feels academics to be inadequate to prepare him/her for practice. In an Indian study conducted in 2014, it was found that 88% of the respondents felt that they had not gained sufficient knowledge and confidence during their course of study to be able to practice independently immediately after college[1]. Another study reported similar findings with students lacking confidence to be successful professionally. It also reported a difference between the students' expectations of dental school versus reality[2].

With respect to the domain of restorative dentistry, the curriculum in India still focuses more on amalgam clinically over direct composites. However, current teaching practices internationally give equal importance to both and have maintained a dynamic curriculum[3,4]. Furthermore, increased use of composites in the restoration of Class I and Class II cavities has been found in general dental practice as reported by various surveys[5-7]. Advancements in material science, demand for esthetic restorations and reduction in public confidence in the safety of silver amalgam has led to a significant decline in the use of amalgam[3,8]. Current popular opinion suggests that the use of amalgam in general dental practice will diminish over the coming years[9]. There is a need for this to get incorporated into the Indian dental system as well.

Keeping these factors in mind a study was designed and conducted to evaluate the self-perceived competence of contemporary restorative practices of dental students in North India. This article is aimed at stimulating criticism, debate as well as review of the current curriculum of conservative dentistry in order to address the findings of this survey.

2. Subjects and Methods

A survey was conducted amongst final year students from four dental colleges North India. Ethical clearance was obtained from the Institutional Review Board before carrying out the study. A total of 232 students completed the survey. The questionnaire, comprising a total of 11 questions, was an original, first of its kind survey. The questions were polar in nature i.e., Yes or No type. Completed forms were taken, and the data extracted and descriptive analysis was carried out using Chi-square test. Data was analyzed using Statistical Package for Social Sciences (SPSS v.20, Chicago, IL, USA).

3. Results

232 out of 287 students participated in the study resulting in an 80.8% response rate. All findings were highly significant. 89.7% respondents said that they significantly ($p<0.001$) followed various dental forums on social media. The same number of students felt that the pictures, videos and discussions in those forums benefitted them. 65.5% students significantly ($p<0.001$) felt that the academic curriculum was not shaping them towards the trending restorative practices as seen on social media. A clear majority of 91.4% significantly felt that the maximum uploads of restorative dentistry involved composite restorations. 91.45% subjects did not use rubber dam for isolation in composite restorations. Only 20.7% of the respondents were confident significantly about using rubber dam for isolation. A massive chunk of 93.1% felt that the quality of their composite restorations was not at par with those seen on social media. Only 22.4% students felt that their curriculum gave them an adequate amount of knowledge about the different newer composites to be used in different clinical scenarios. 79.3% students felt that the current curriculum is not teaching them about the various instruments, and developing their skills about instrumentation and operative procedures of composite restorations matching the trending composite practices. A dismal 15.5% felt that the current curriculum is adequately teaching them about the various finishing and polishing protocols for composites as seen in the dental forums on social media. All the participants' felts that incorporating Class II composite restorations under rubber dam in final year exam will better prepare them for contemporary dentistry in the future (Table 1, Figure 1).

Table 1. Table representing questioner with quantified responses and results after application of chi square test

Question		Options		Chi square test	p value
		Yes n (%)	No n (%)		
1.	Follow dental forums on social media	208 (89.7%)	24 (10.3%)	Chi = 145.9	p <0.001**
2.	Think the pictures, videos and discussion in those dental forums benefit you	208 (89.7%)	24 (10.3%)	Chi = 145.9	p <0.001**
3.	Academic curriculum shaping you towards the trending restorative practices as seen on social media	80(34.5%)	152 (65.5%)	Chi = 22.34	p <0.001**
4.	Maximum uploads of restorative dentistry involving composite restorations	212 (91.4%)	20 (8.6%)	Chi = 158.8	p <0.001**
5.	Do you use rubber dam for isolation in composite restorations	20 (8.6%)	212 (91.45)	Chi = 158.8	p <0.001**
6.	Confident about using rubber dam for isolation	48(20.7%)	184 (79.3%)	Chi = 79.7	p <0.001**
7.	Quality of your composite restorations, are at par with those seen on social media	16 (6.9%)	216 (93.1%)	Chi = 172.4	p <0.001**
8.	Curriculum give you adequate amount of knowledge about the different newer composites to be used in different clinical scenarios	52 (22.4%)	180 (77.6%)	Chi = 70.6	p <0.001**

Table 1 Continued

9.	Curriculum teaching you about the various instruments, and developing your skills about instrumentation and operative procedures of composite restorations matching trending composite practices	48 (20.7%)	184 (79.3%)	Chi = 79.72	p <0.001**
10.	Curriculum teaching you about the various finishing and polishing protocols for composites as seen in the dental forums on social media	36(15.5%)	196 (84.5%)	Chi =110.3	p <0.001**
11.	Incorporating Class II composite restorations under rubber dam in final year exam will better prepare you for the contemporary dentistry in the future	232 (100%)	0 (0%)	---	---

*p<0.05 – significant difference **p<0.001 – highly significant difference

4. Discussion

In 2018, India ratified the Minamata convention on mercury and has agreed that from September 2020 it will significantly reduce mercury usage in the industrial and dental fields which was accepted on the administrative levels. This had been already discussed in the 32nd IACDE & 25th IES National Conference as well. However, no curriculum change has been implemented till date. It is noteworthy to mention here that the students who join the second year BDS pre-clinics in 2018 should also have been trained more in adhesive dentistry as amalgam usage is expected to further diminish in the near future and by the time, they pass out dental amalgam restorations might become very minimal, if not completely phased out.

Since the worldwide web has become a powerful tool available to the general masses, the dental students have been no exception to this technology. They today have access to contemporary treatment options updated on a day-to-day basis and are well versed with the widely accepted trends in dentistry especially through the means of social media. Once students view and read the various posts in a plethora of online dental forums, they tend to compare the current trends with their own curriculum and introspect whether they are ready for the general dental practice.

The beginning of the new millennium witnessed a paradigm shift in the preferences of the restorative material by the dental practitioner. Improvements in composites, dentin adhesive systems as well as associated armamentarium such as high intensity LED-curing lights and novel matrix systems[5] and a greater esthetic demand by patients have led to an increased acceptance of composites as an established element of everyday clinical practice. These, coupled with concerns of amalgam safety[8], have led to a steady increase in the market share

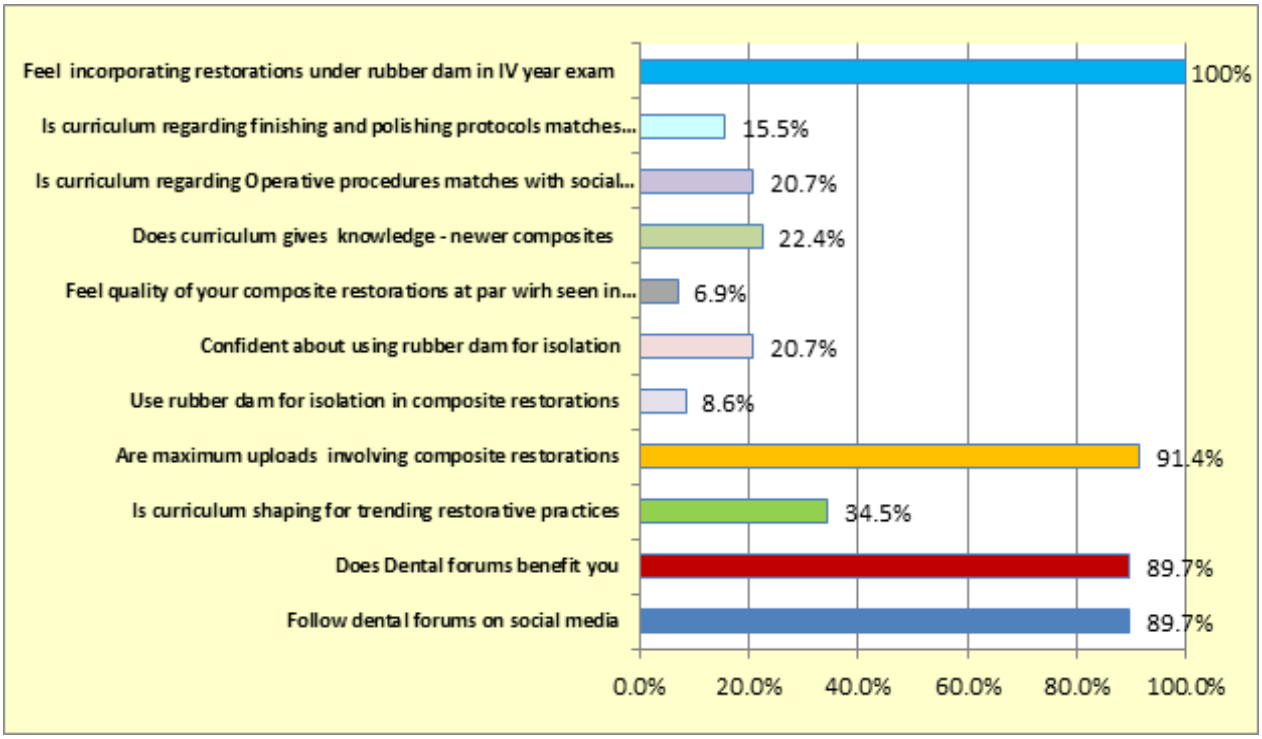

Figure 1. Knowledge and attitude of study subjects regarding restorative dentistry i.e., specifically, composite restorations.

of resin composites. This questionnaire thus aimed to compare if this changing trend in restorative dentistry is noticed by our students as well. One of the best ways of learning is through self-assessment and by comparing their work to that of the highly appreciated, scientifically valid restorations, the students become aware of the various lacunae where his/her knowledge and skill-set can be improved.

The first step for achieving a good composite restoration is a good isolation protocol. Rubber dams are essential for achieving this objective and questions were specifically asked regarding this to assess the preparedness of the dental students about it. A 2009 study, conducted in Wales and Ireland, concluded that greater emphasis should be placed on the advantages of using rubber dams during restorative treatment whilst at dental school[10].

The students were further asked if theoretically they were being taught about the various new composites, instruments and techniques being practiced worldwide in order to gauge whether they were able to relate to the posts in the dental forums on social media. There is a need for a dynamic curriculum which keeps regularly updating and amending. Some might disagree that this is reserved for the MDS syllabus. However, this leads to discontentment and lowered morale amongst the BDS students. Disillusionment from BDS has resulted in a lot of graduates opting out of dentistry as well as a fall in the MDS admissions. Those who continue dentistry end up opting for non-standardized and unrecognized courses to enhance their skills even though it can be easily incorporated into the curriculum. Moreover, the students opting for foreign universities face a lot of difficulties as a majority of the foreign equivalency exams have Class II composite restorations under rubber dam in their format.

During the course of our investigations, we found anecdotal evidence from the students that their clinical postings with traditional operative practices were frustrating. They tend to concentrate much more on amalgam restorations and since resin composite restorations under rubber dam aren't included in the final year practical examination, the students are inadequately prepared even after passing the final year.

Evidently, the dental faculty nation-wide, thus have a responsibility to impart comprehensive knowledge about dental composites to the students. Teachers of operative dentistry as well as the Dental Council of India need to get proactive in adapting teaching programs to ensure that the graduating students are well prepared to face the transitioning into clinical practice from student life. It is the duty as well as the obligation of the Indian dental education system to reweigh resin composites and to bring about reforms in the current curriculum with reference to content, instrument methodologies and assessment practices. Failure to do will lead to dental graduates who are incompetent in this essential art required in today's dental practice. Given that the students who complete their BDS in 2020 will continue to practice dentistry till early 2060s, their incompetence in the use of composites would be significant. Furthermore, the question arises, has the Indian dental education system with respect to operative dentistry evolved enough to meet the demand in this area?

In a 2004 paper titled "The amalgam-free dental school[11]", reported the gradual replacement of amalgam with primarily composite over an extended period of time at the School of Dentistry, University of Nijmegen. Many western schools devote almost equal time to the teaching of amalgam and composites. Lynch *et al.*,[9] have summarized the various issues arising in the teaching of posterior composites as reported in various surveys which can be discussed constructively in order to be adopted to suit the Indian scenario.

In another similar questionnaire study, it was found that Jordanian dental students were equally minimally informed about the Minamata convention were facing similar drawbacks in their curriculum to phase down amalgam in there clinical practice[12].

Furthermore, in another study conducted to determine the prevalence and frequency of rubber dam usage for endodontic. While about 94% of the subjects knew the use of rubber dam, 30% have used it for root canal cases and 23% use them for all cases of root canal treatment. Use of rubber dam was 15.4% in pediatric patients and 34.4% in adult patients. 68% of subjects received knowledge about rubber dam usage in undergraduate school. 75% felt that rubber dam should be compulsory before endodontic treatment and 90% were willing to gain knowledge through training and continuing dental education programs[13].

Through the medium of this article, the authors wish to present a 'call-to-arms- for the DCI and the current teachers of operative dentistry to support the development and expansion of current teaching programs in the area of restorative dentistry to match the current trends so that the students don't 'lag-behind' in the 'real-world' of contemporary conservative dentistry.

5. Conclusion

The dismal findings of this study, though fraught, should be considered a student's mandate serving in the best interests of the future graduates as well as their patients when they spark debate, review and criticism to pave the way to planning a new curriculum for conservative dentistry.

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How to cite this article: Kaul R, Kaur S, Choudhary A, Kaul V and Saleem R. Self-Perceived Competence of Contemporary Restorative Practices of Dental Students in North India. Int. J. Med. Dent. Sci. 2021; 10(1): 1938-1944.