SCIENTIFIC ARCHIVES OF DENTAL SCIENCES (ISSN: 2642-1623)

Volume 5 Issue 6 June 2022

Research Article

Awareness about Minimally Invasive Dentistry among Dental Under Graduates and Interns: A Cross-Sectional Study

Shreya Rani[1], Soni Patel[1], Nilotpol Kashyap[2]*, Aparna Dey[3] and Nishi Singh[4]

[1]2nd Year PG, Department of Pedodontics, Vananchal Dental College and Hospital, Jharkhand, India

[2]Professor, Department of Pedodontics, Vananchal Dental College and Hospital, Jharkhand, India

[3]3rd Year PG, Department of Pedodontics, Vananchal Dental College and Hospital, Jharkhand, India

[4]1st Year PG, Department of Pedodontics, Vananchal Dental College and Hospital, Jharkhand, India

***Corresponding Author:** Nilotpol Kashyap, Professor, Department of Pedodontics, Vananchal Dental College and Hospital, Jharkhand,

Received: April 06, 2022; **Published:** May 31, 2022

Abstract

Background: Minimally Invasive Dentistry (MID) is a modern concept that attempt to keep teeth functional for life. It is the management of caries with biological approach rather than traditional surgical approach. It is to leave the traditional GV Black concept of 'Extension for Prevention' behind. Now, the present-day principle is 'Constriction with Conservation'. This has been noticed that the concept of MID is still very unclear to the practicing dentists and even to the undergraduates. To understand the knowledge and awareness of undergraduates about MID a survey is important.

Aim: The aim of this study is:

- Firstly, to assess the knowledge about MID technique among the undergraduate students and interns from my dental institution.
- Secondly, to also investigate whether the knowledge acquired by the students reflects in the form of a positive attitude towards practice of MID principles.

Methodology: A cross-sectional survey involving 50 dental students and interns of my dental institution. The questioner is close ended. The questions are to assess the respondent levels of agreement regarding diagnostic, preventive and minimally invasive restorative techniques.

Result Synthesis: In this study it was found that interns had greater knowledge of MID than final years as they had greater clinical exposure.

Conclusion: There is a need to introduce evidence-based dentistry in the dental curriculum as well as establish guidelines for caries detection, diagnosis, treatment discussion and treatment performance.

Keywords: *Minimally Invasive Dentistry (MID); Dental Under Graduates; Interns*

Introduction

Minimally Invasive Dentistry (MID) is a modern concept that attempts to keep teeth functional for life. It is the management of caries with biological approach rather than traditional surgical approach. It is to leave the traditional GV Black concept of 'Extension for Prevention' behind. Now, the present-day principle is 'Constriction with Conservation'. Irrespective of the growing evidence and emphasis on MID practice, limited data is available to evaluate the knowledge and attitude towards MID practice among the dental students [1]. So, this has been noticed that the concept of MID is still very unclear to the practicing dentists and even to the undergraduates.

Aim of the Study

- Firstly, to assess the knowledge about MID technique among the undergraduate students and interns from the institution.
- Secondly, to also investigate whether the knowledge acquired by the students reflects in the form of a positive attitude towards practice of MID principles.

Materials and Methods

Study design: It was a study having a cross-sectional design.

Study population: The study population of 50 both male and female dental students and interns belonging from the institution.

Study tool: Close ended questionnaire-based online survey.

Sample size: A purposive sample of about 50 dental students and interns were taken from the institution.

Inclusion criteria: Dental interns and final year students in clinical training years.

Data collection procedure

A pre-validated questionnaire consisting of questions on knowledge and attitude toward MID practice was employed. The questionnaire was circulated online among the dental students and interns. The first section is to assess the demography of the respondents - year of study. The second part of the questionnaire consisted of 10 questions. Three questions assessed the knowledge, 3 questions assessed the attitude and 4 questions assessed the practice- based on screening, prevention and curative measures.

Data analysis

The data obtained were subjected to statistical analysis using Statistical Package for the Social Sciences (SPSS Version 23; Chicago Inc., IL, USA). Data comparison was done by applying specific statistical tests to find out the statistical significance of the comparisons. To test for awareness regarding MID among dental students, Kolmogorov-Smirnov and Shapiro Wilk tests were performed to determine the normality of the data.

Validation of questionnaire

A 10 variable, close ended questionnaire was developed elaborating various information regarding knowledge, techniques and procedures of MID.

Result

About knowledge regarding MID among dental students and interns (Table 1)

When the intern and final year student were asked whet which was fluoride is an essential agent in tooth remineralisation process, out of 25 final yr. student 13 (52%) strongly agreed about it while none of the intern or final yr. student disagree. P value was 0.868 which was found to be non-significant.

When asked whether caries risk assessment should be conducted with all patients 56% (14) of final year student strongly agreed while 76% (19) intern also did the same. 8% of final yr. student disagree while none of the intern disagreed. P value 0.6628 while was non-significant.

When asked whether cavity design like tunnel and box preparation were effective 20% (5) of final yr. strongly agree and 16% (4) disagree while 52% of intern agree and 4% disagree. P value was 0.0445 while was found to be signification.

Variables	Strongly agree N (%)	Agree N (%)	Neutral N (%)	Disagree N (%)	Total N (%)	Chi-Square statistic	P value
Fluoride is an essential agent in the tooth remineralization process							
Final years	13 (52.0)	8 (32.0)	4 (16.0)	0 (0.0)	25 (100)	0.9718	0.808 (NS)
Interns	19 (76.0)	6 (24.0)	0 (0.0)	0 (0.0)	25 (100)		
Total	32 (64.0)	14 (28.0)	4 (8.0)	0 (0.0)	50 (100.0)		
Caries risk assessment should be conducted with a 1 patients							
Final years	14 (56.0)	7 (28.0)	1 (4.0)	2 (8.0)	25 (100)	1.7386	0.6628 (NS)
Interns	19 (76.0)	5 (20.0)	1 (4.0)	0 (0.0)	25 (100)		
Total	33 (66.0)	12 (24.0)	2 (4.0)	2 (4.0)	50 (100.0)		
Conservative cavity designs like tunnel and box preparations are effective							
Final years	5 (20.0)	11 (44.0)	5 (20.0)	4 (16.0)	25 (100)	8.0698	0.0445*
Interns	13 (52.0)	10 (40.0)	1 (4.0)	1 (4.0)	25 (100)		
Total	18 (36.0)	21 (42.0)	6 (8.0)	5 (10.0)	50 (100.0)		

Table 1: *Knowledge regarding MID among dental students and interns.*

**=Significant; NS=Not Significant.*

Knowledge regarding instrument used in MID among dental students and interns (Table 2)

For sharp explorer 48% of FYS said sometimes while 8% said never while 60% of intern said sometimes and 32% said never. P value was 0.006 and was significant.

For radiograph 56% FYS said sometimes and 12% said never while 32% of interns said sometimes and 4% said never while 64% said always. P value was 0.7054 and was non-significant.

When asked about never method of caries detection 32% of FYS said sometimes 12% said always and 56% said never while among the interns 48% said sometimes 18% said always and 34% said never. P value 0.0045 and was found too significant.

When asked about the effectiveness of various MID techniques (Table 3)

ART -88% of final year students found it effective and 12% found it effective while 96% of interns found it effective and 8% did not. P value 1.087 was on significant.

Variables	Sometimes N (%)	Always N (%)	Never N (%)	Total N (%)	Chi-Square statistic	P value
Use of a sharp explorer						
Final years	12 (48.0)	11 (44.0)	21 (8.0)	25 (100)	10.1641	0.006*
Interns	15 (60.0)	2 (8.0)	8 (32.0)	25 (100)		
Total	27 (54.0)	13 (26.0)	10 (20.0)	50 (100.0)		
Use of radiographs						
Final years	14 (56.0)	8 (32.0)	3 (12.0)	25 (100)	5.3.3	0.7054 (NS)
Interns	8 (32.0)	16 (64.0)	1 (4.0)	25 (100)		
Total	22 (44.0)	24 (48.0)	4 (8.0)	50 (100.0)		
Use of newer methods like (ECM- Electronic Caries Monitor, QLF: Quantitative Light-induced Fluorescence, IRLF- Infra-red Laser Fluorescence, FOTI- Fibre-Optic Trans Illumination)						
Final years	8 (32.0)	3 (12.0)	14 (56.0)	25 (100)	10.784	0.0045*
Interns	16 (64.0)	6 (24.0)	3 (12.0)	25 (100)		
Total	24 (48.0)	9 (18.0)	17 (34.0)	50 (100.0)		

Table 2: *Knowledge regarding instruments used in MID among dental students and interns.*

Sandwich technique- 56% final year students found it effective and 44% found it effective and 72% intern found it effective while 28% didn't P value was 0.624 non-significant.

When asked about the effectiveness of remineralisation with high concentration fluoride toothpaste at home. 84% of final year students found it effective while 56% said it effective and 84% of interns found it effective and 16% found it be effective. P value 0.0072 which is significant.

Hall's technique was found to be ineffective according to the final years 52% while 84% of the interns found the technique to be effective.

Variables	Effective N (%)	Ineffective N (%)	Total N (%)	Chi-Square statistic	P value
Atraumatic restorative technique					
Final years	22 (88.0)	3 (12.0)	25 (100)	1.087	0.2971 (NS)
Interns	24 (96.0)	1 (4.0)	25 (100)		
Total	46 (92.0)	4 (8.0)	50 (100.0)		
Sandwich technique					
Final years	14 (56.0)	11 (44.0)	25 (100)	0.624	0.4295 (NS)
Interns	18 (72.0)	7 (28.0)	25 (100)		
Total	32 (64.0)	18 (36.0)	50 (100.0)		
Remineralization with high concentration fluoride toothpaste at home (Duraphat 2800/5000 ppm F)					
Final years	11 (44.0)	14 (56.0)	25 (100)	10.7843	0.0010*
Interns	22 (88.0)	3 (12.0)	25 (100)		
Total	33 (66.0)	17 (34.0)	50 (100.0)		
Halls technique					
Final years	12 (48.0)	13 (52.0)	25 (100)	7.2193	0.0072*
Interns	21 (84.0)	4 (16.0)	25 (100)		
Total	33 (66.0)	17 (34.0)	50 (100.0)		

Table 3: *Knowledge regarding the effectiveness of various MID technique.*

**=Significant; NS=Not Significant.*

Discussion

Regarding knowledge about MID among dental students and interns

In the study it was found that 52% of final year students strongly agreed and 32% agreed about the remineralization potential of fluoride while 76% of interns strongly agreed and 24% agreed and none of the final year students and interns disagreed about it [2]. This is in accordance to a study conducted in Chennai by Natarajan K, 2019 where 73% of participants agreed about the remineralization potential of fluoride [3]. So, in the study it was found that 56% of final year. and 76% of interns strongly agreed with the importance of performing caries risk assessment in all patients this confirms with the study done by Nagraj A in Jaipur 2015. Majority of the interns 52% strongly agreed to the use of conservative techniques like tunnel and box preparation while only 20% of final year strongly agreed to the same. Although the use of tunnel preparation is widely used in the management of proximal caries, study conducted by Y, 2004 found no significant advantage over conventional restoration [4].

Knowledge regarding instruments used in MID among dental students and interns

In the study it was found that only 44% of final yrs. and 8% of interns agreed on the use of a sharp explorer to detect caries, this is contradictory to the evidence of the use of sharp instruments as caries diagnostic tools as shown in a study done by Pitts NB, 2001 [5]. In the present study 32% of final yrs. and 64% of interns were in the favour of taking radiographs for caries detection and was compliant with the finding of Pitts NB. In this study it was also found that newer methods of caries detection were better known to interns (64%) than final year counterparts (32%) [6].

Conclusion

In this study it was found that interns had greater knowledge of MID than final years as they had greater clinical exposure. It was also found that there is a need to introduce evidence-based dentistry in the dental curriculum as well as establish guidelines for caries detection, diagnosis, treatment discussion and treatment performance.

Bibliography

1. Alrasheedi HS, Mian RI, Hassan I, Alrashidi SO. Knowledge, Attitude and Practice of Minimally Invasive Dentistry Among Dental Graduates: A Cross-Sectional Survey from Saudi Arabia. Int J Pharm Sci Rev Res. 2020;62(1):192-198.
2. Natarajan K, Prabakar J. Knowledge, attitude, and practice on minimally invasive dentistry among dental professionals in Chennai. Drug Invention Today. 2019;11(8):15-20.
3. Nagaraj A, Vishnani P, Yousuf A, Ganta S, Singh K, Acharya S. Perception of Dentists about Caries-risk Assessment tools in Jaipur, India: A Cross-sectional Study. J of Int Oral Health JIOH. 2015;7(8):77-81.
4. Kinomoto Y, Inoue Y, Ebisu S. A two-year comparison of resin-based composite tunnel and Class II restorations in a randomized controlled trial. Am J Dent. 2004;17(4):253-256.
5. Pitts NB. Clinical diagnosis of dental caries: a European perspective. J Dent Educ. 2001;65(10):972-978.
6. Walsh LJ, Brostek AM. Minimum intervention dentistry principles and objectives. Aus Dent J. 2013;58(1):3-16.

Volume 5 Issue 6 June 2022