

## **EVIDENCE BASED PRACTICE OF MINIMAL INVASIVE DENTISTRY AMONG DENTISTS**

S. A. Haider<sup>1</sup>, M. Irfan<sup>2</sup>, N; Zahid<sup>3</sup>, A. Butt<sup>4</sup>, M. Arslan<sup>5</sup>, M. Hassan<sup>6</sup>, A. Tariq<sup>7\*</sup>

<sup>1</sup>Islamic International Dental College Islamabad, Riphah International University

<sup>2</sup>Islamic International Dental College, Riphah International University

<sup>3</sup>Lecturer, Department of Operative Dentistry, University College of Medicine and Dentistry, University of Lahore.

<sup>4</sup>Dental Surgeon, Surayya Azeem Teaching Hospital, Lahore

<sup>5</sup>Postgraduate Resident (MDS), Department of Prosthodontics, University College of Medicine and Dentistry, University of Lahore

<sup>6</sup>Associate professor, Department of Science of Dental Materials, University College of Medicine and Dentistry, University of Lahore

<sup>7\*</sup>Postgraduate Research Coordinator, University College of Medicine and Dentistry, University of Lahore

**ABSTRACT:** This study aimed to explore the evidence based practice of minimally invasive dentistry among the dentists in Lahore. This quantitative research study was a cross-sectional survey research conducted on general dentists working in posh areas of Lahore using convenient sampling. 70 dentists were recruited in the study. Majority of the participants (42.90%) reported that caries assessment should be carried out for all patients whereas 15.70% dentists disagree with the statement. 47.10% participants reported that fluoride is an effective way of preventing dental caries. 30% of the dentists always repair defective restorations instead of replacement. In conclusion, the dentists are quite familiar with the evidence based practice of minimal invasive dentistry in Lahore city.

**Keywords:** Minimal invasive dentistry, Dentists, Caries, Preventive resin restoration.

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### **INTRODUCTION**

“Extension for prevention” is one of the most important rule proposed by G. V. Black in late 1800s. This rule was based on the ideology of removing the caries as well as tooth structure which had the chances of developing caries. Therefore, the tooth restoration consisted of healthy tissue removal at a considerable amount rather than just eliminating actual carious area. On the contrary, the concept of minimal invasive dentistry based on respecting the healthy living tissue while saving it (Ericson, Kidd, McComb, Mjör, and Noack, 2003). To deal with the tooth decay, surgical perspective does not eradicate the etiology but headed towards the replacement process in dentistry in which the carious portion expands making the tooth weaker (Mount, 2009). Considering this idea resulted in minimally invasive dentistry emergence established on the scientific detail that under specific conditions in local environment, remineralization of hydroxyapatite is possible Featherstone, and Doméjean, 2012). Therefore, minimally invasive dentistry involves the prevention, remineralization, and exposure of tooth to minimal treatment for the restoration placement as well as replacement (MM, 2014).

The aims of minimal treatment exposure include caries prevention, lessening the number of cariogenic bacteria, early lesions remineralization, cavity lesions

treatment with minor surgical treatment and repairing the cavity instead of improper restorations replacement (Mount, and Ngo, 2000).

Minimum Intervention Dentistry (MID) is based on early diagnosis and evaluation of dental caries, taxonomy of depth as well as prognosis of caries, evaluation of risk of caries individually, noticing the activity in carious lesion, remineralization and monitoring non-avitated lesions and evaluating ailment management results (Shah, *et al.*, 2016).

Tooth decay prevention is the most significant approach in minimal invasive dentistry. For preventing from cavitated lesions formation and limiting demineralization of tooth due to cariogenic bacteria, these approaches are developed.

Regardless of age groups, the dental caries prevalence found to be quite high in Pakistan (Dawani, Nisar, Khan, Syed and Tanweer, 2012). Oral health awareness with minimal consideration towards measures of prevention and too much intake of processed carbohydrates are the noticeable reasons of decreased dental health in the population (Al-Malik, and Rehmini, 2006; Al-Otaibi, and Angmar-Mansson, 2004). Numerous researches concluded that regardless of the minimal invasive dentistry benefits, its clinical application is not yet as common (Katz, de Andrade Mdo, Lira, Vieira, and Heimer, 2013). Therefore, a need was felt to conduct this study aiming to explore the evidence

based practice of minimally invasive dentistry among the dentists in Lahore.

## MATERIALS AND METHODS

**Study Design:** This quantitative research study was a cross-sectional survey research.

**Study sample and sampling technique:** General dentists working in posh areas of Lahore using convenient sampling using a previously available list of registered dentists in those areas. 70 dentists were recruited in the study

**Survey Methodology:** Data was collected from 70 general dentists from posh areas of Lahore. A questionnaire booklet was given to each dentist who was willing to participate in the study. Questionnaire booklet consisted of research information sheet, demographic variable proforma and questionnaire extracted from studies conducted by Shah *et al.*,(2016), Rayapudi, and Usha, (2018), and Suma and Salman, (2017). Questionnaire consisted of 11 items on Preventive measure, screening ways and treatment options.

**Statistical Analysis:** Data were entered into SPSS version 23.0 for data analysis. Descriptive statistics was used to report the evidence based practice of minimal invasive dentistry among dentists.

## RESULTS

The sample consisted of 24.28% dentists each who were having 2-5years experience, 5-10 years' experience and 10 years above whereas 27.14% dentists were having 0-2 years clinical experience.

Thorough training of minimal invasive dentistry was reported by 4.29% dentists. 52.86% dentists reported that they are trained in minimal invasive dentistry to some extent where as 42.86% dentists reported that they don't have any training of minimal invasive dentistry.

Majority of the dentists (72.86%) reported that they learn minimal invasive dentistry during BDS whereas 27.14% dentists reported that they learn this approach during their internship time.

Majority of the participants (42.90%) reported that caries assessment should be carried out for all patients whereas 15.70% dentists disagree with the statement. 47.10% participants reported that fluoride is an effective way of preventing dental caries whereas 5.70% show disagreement with the statement. 37.10% dentists reported that it is important to plan restorative materials and techniques based on patient caries risk assessment whereas 17.10% dentists disagree with the statement. Application of pit and fissure sealants is for the longer benefit to society was positively answered by 47.10% dentists whereas 29% dentists were against this statement. 48.60% dentists were in favor of using of magnification loupes – Diagnodent – is effective in diagnosing early carious lesion whereas 8.60% were against it.

Majority of dentists (45.70%) often practice slot and tunnel preparations, 48.60% dentists have often practice remineralization with topical fluoride application, 50% of dentists sometimes practice remineralization with CPP-ACP, 42.90% dentists sometimes practice PRR in their clinical practice, 47.10% dentists sometimes practice ART in their clinical practice, 30% of the dentists always repair defective restorations instead of replacement.

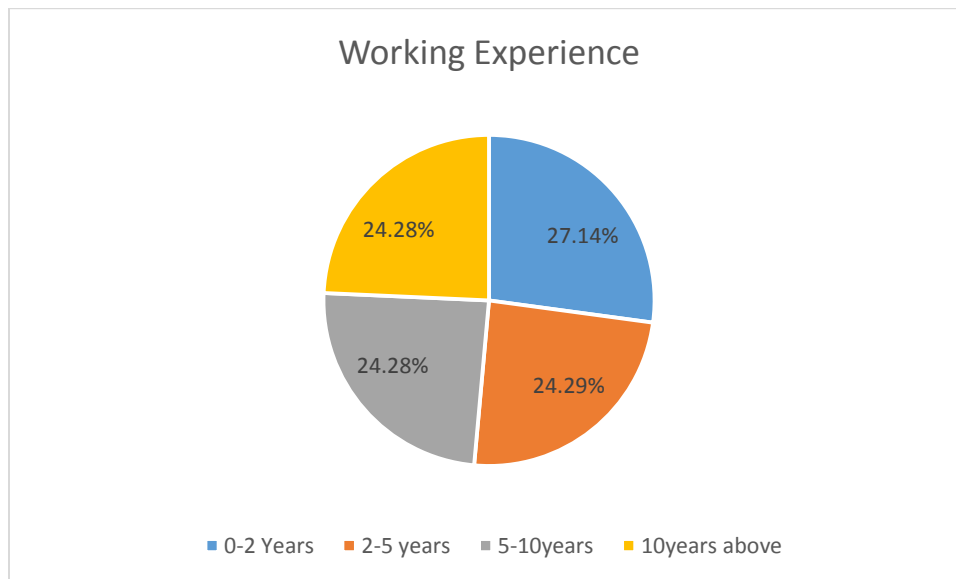
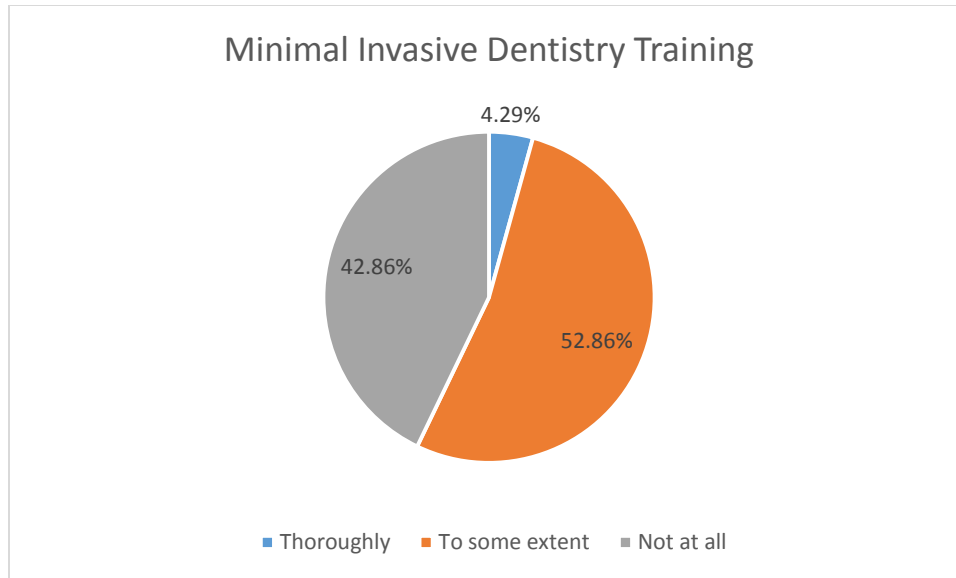
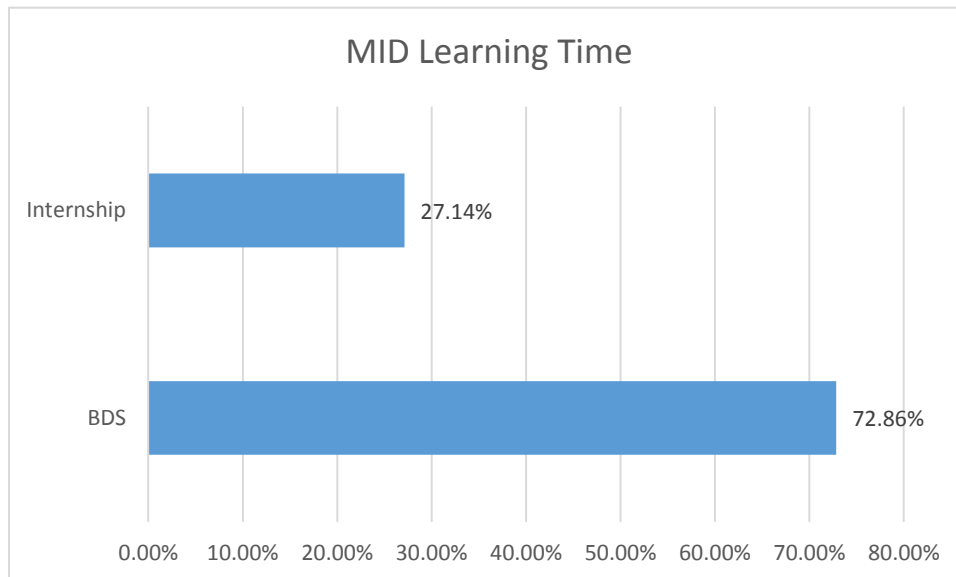


Figure 1| Sample distribution according to years of clinical experience.



**Figure 2| Minimal invasive dentistry training**



**Graph 1| Minimal Invasive Dentistry Learning Phase.**

**Table 1| Understanding of Minimal Invasive Dentistry among dentists.**

Items	Strongly Agree	Agree	Unsure	Disagree
Do you think caries assessment should be carried out for all patients?	24.30%	42.90%	17.10%	15.70%
Do you think fluoride is an effective way of preventing dental caries?	47.10%	21.40%	25.70%	5.70%
Is it important to plan restorative materials and techniques based on patient caries risk assessment?	12.90%	37.10%	32.90%	17.10%
Do you think application of pit and fissure sealants is for the longer benefit to society?	47.10%	38.60%	11.40%	29.00%
Use of magnification loupes – Diagnodent – is effective in diagnosing early carious lesion?	48.60%	12.90%	30.00%	8.60%

Table 2| Evidence based practice of Minimal Invasive Dentistry among dentists.

Items	Never	Rarely	Sometimes	Often	Always
Slot and tunnel preparations	0.00%	4.30%	37.10%	45.70%	12.90%
Remineralization with topical fluoride application	10.00%	18.60%	22.90%	48.60%	0.00%
Remineralization with CPP-ACP	1.40%	1.40%	50%	27.10%	20.00%
PRR in clinical practice	17.10%	0.00%	42.90%	32.90%	7.10%
ART in clinical practice	2.90%	2.90%	47.10%	20.00%	27.10%
Repair defective restorations instead of replacement?	14.30%	18.60%	24.30%	20.90%	30.00%

## DISCUSSION

The study aimed to explore the evidence based practice of minimally invasive dentistry among the dentists in Lahore. It was found that majority of the participants (42.90%) reported that caries assessment should be carried out for all patients whereas 49.6% dentists agree with this statement according to the study conducted in Chennai, India (Natarajan, and Prabakar, 2019, Fontana, and GonzalezCabezas, 2012; Tyas, Anusavice, Frencken, and Mount, 2000). 47.10% participants reported that fluoride is an effective way of preventing dental caries whereas 55.50% dentists in Chennai population show agreement with the statement (Natarajan, and Prabakar, 2019; Holmgren, Gaucher, Decerle, and Doméjean, 2014, Hallett, 2013). 37.10% dentists reported that it is important to plan restorative materials and techniques based on patient caries risk assessment whereas 48.7% dentists were found on same grounds in Chennai (Natarajan, and Prabakar, 2019; Hallett, 2013). Application of pit and fissure sealants is for the longer benefit to society was positively answered by 47.10% dentists which were almost equals to the dentists showed agreement in a study conducted by Natarajan, and Prabakar, in 2019. 48.60% dentists were in favor of using of magnification loupes – Diagnodent – is effective in diagnosing early carious lesion and in India, 46.20% dentists were not known to the usage of magnification loupes – Diagnodent – is effective in diagnosing early carious lesion (Natarajan, and Prabakar, 2019; Friedman, and Landesman, 1998; Tassery, *et al.*, 2013).

Majority of dentists (45.70%) often practice slot and tunnel preparations whereas 47.1% dentists sometimes practice slot and tunnel preparations in Chennai (Natarajan, and Prabakar, 2019). 48.60% dentists have often practice remineralization with topical fluoride application whereas according to the findings of Natarajan, and Prabakar, (2019), 51.3% dentists reported they sometimes practice remineralization with topical fluoride application. 50% of dentists sometimes practice remineralization with CPP-ACP which was quite similar to the finding of Natarajan, and Prabakar, (2019). 42.90% dentists sometimes practice PRR in their clinical practice which is slightly lower than the findings of Natarajan,

and Prabakar, (2019) according to which 44.50% dentists sometimes practice PRR. 47.10% dentists sometimes practice ART in their clinical practice in Lahore whereas in Chennai, 41.20% dentists sometimes practice ART in their clinical practice (Natarajan, and Prabakar, 2019). 30% of the dentists always repair defective restorations instead of replacement but in Chennai, only 3.4% dentists always repair defective restorations instead of replacement (Natarajan, and Prabakar, 2019).

In conclusion, the dentists are quite familiar with the evidence based practice of minimal invasive dentistry in Lahore city. The percentages of often practicing minimal invasive dentistry among dentists is average but more focus on training programs during educational years of basic degree is required.

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