DonnishJournals

Donnish Journal of Dentistry and Oral Hygiene
Vol. 8(5) pp. 036-041 July 2022.
http://www.donnishjournals.org/djdoh
ISSN: 2984-8806
Copyright © 2022 Donnish Journals

Original Research Paper

Knowledge, Attitude and Skills of Saudi Dental Practitioners towards Minimally Invasive Dentistry Concepts: A Survey-based Study in Saudi Arabia.

Hadeel Nazmi[1], Layan Radwan[1], Gharam Alawad[1], and Shahzeb H. Ansari[2]*

[1]Dental intern, Riyadh Elm University, Riyadh, Saudi Arabia
[2]Faculty of Preventive Dentistry, Riyadh Elm University, Riyadh, Saudi Arabia

Accepted 19th May, 2022.

Introduction: In modern-day oral healthcare practice, minimally invasive choices must be offered, and may be anticipated to be the first choice of fully informed patients. Materials and methods: This is a cross-sectional study conducted among dental practitioners of Saudi Arabia using an online survey. Online questionnaire was constructed consisting of questions related to personal, professional, and demographic data followed by questions including knowledge, attitude, and skills towards minimal invasive dentistry. Results: It can be noted from the findings that all three variables are statistically significant with the level of knowledge shown by the study participants. Conclusion: Overall, there was a very high level of knowledge regarding MID among the study participants. However, the attitude and practice although satisfactory, did not complement the high level of knowledge.

Keywords: Minimally invasive dentistry, Attitudes, Knowledge, Saudi dentists.

INTRODUCTION

Minimally invasive dentistry (MID) is the application of "a systematic regard for the natural tissue." This indicates that the dental profession acknowledges that an artifact is of less biological significance than natural healthy tissue. MID is a notion that can incorporate into all aspects of dentistry. The common objective is tissue preservation, rather by preventing the disease from taking place and interrupting its progress, but also eliminating and restoring with as little tissue loss as possible (Gutmann, 2013; Banerjee, 2015).

Minimally invasive (MI) restorative procedures present a variety of well-documented advantages over more tissue-destructive old-style restorations by minimizing unwanted tooth tissue loss, abuse of the dentine-pulp complex, and reducing the risk of iatrogenic injury to neighboring hard and soft tissues. They also increase the strength of the remaining tooth structure by the utilization of optimal adhesive restorative materials devised to reestablish function and aesthetics with long-lasting restorations that are easy for the patient to retain. In modern-day oral healthcare practice, minimally invasive choices must be offered, and may be anticipated to be the first choice of fully informed patients (Mackenzie & Banerjee, 2017; Brennan, Balasubramanian & Spencer, 2015).

A study conducted in India assessed the knowledge and practice of dentists, which revealed that their knowledge about MID was observed to be high. Nonetheless, the use of preventive methods such as fluoride application, casein phosphopeptide - amorphous calcium phosphate, and other preventive approaches was found to be relatively minimal among the study subjects (Natarajan & Prabakar, 2019). Another similar study done in Hail, Saudi Arabia reported that majority of dentists acquired knowledge about MID and exhibited a positive attitude towards MID procedures. Even though lack of the application was noticed in their attitudes towards modern-day caries detection approaches as many study subjects still followed conventional caries diagnosis procedures (Alrasheedi et al., 2020).

A research done in Pakistan reported that 67.2% of dentists had obtained training in MID via some means of which 36% took training in MID through lectures and clinical training while 32.8% had no training in MID. MID techniques like ART and sandwich technique were found to be useful by 65% and 50.4% respectively. General Dental Practitioners were not entirely aware of the ideas and application of minimally invasive procedures and had slight knowledge regarding caries detection procedures and lacked the execution of MID techniques in their daily practice (Khan et al., 2019).

In theory, clinical dentists can depend on increasing evidence in cariology concerning less invasive treatment

*Corresponding Email: shahzebhasan@riyadh.edu.sa

options. In clinical routine, additional factors seem to hinder the implementation of these approaches. Future investigations should focus on these factors by including major stakeholders and examining their prioritized results to close the evidence gap (Schwendicke et al., 2015; Mirza et al., 2016).

AIMS OF THE STUDY

- To determine the knowledge, attitude, and skills of dental practitioners towards minimal invasive dentistry.
- To compare the responses on the basis of work experience and qualification.

MATERIALS AND METHODS

Study Design

This is a cross-sectional study conducted among dental practitioners of Saudi Arabia using an online survey.

Study Sample

570 dental surgeons were utilized in this study working in the private sector and were contacted using social media.

Study Instrument

Online questionnaire was constructed consisting of questions related to personal, professional, and demographic data followed by questions including knowledge, attitude, and skills towards minimal invasive dentistry.

Instrument Validity and Reliability

A pilot study was conducted by sending the survey to 20 participants and the data will be inserted in SPSS version 22 to determine the reliability by using Chronbach's coefficient alpha (value: 0.719). Validity of the questionnaire was tested by sending it to experienced researchers in REU and changes were made according to their feedback and comments.

Statistical Analysis

Collected data was analyzed using SPSS version 22, where descriptive as well as inferential statistics were conducted. Comparisons between groups were made with the value of significance kept under 0.05 using the Chi-square test.

RESULTS

A total of 570 dentists participated in this study with the power of sample of 0.86. Regarding the gender ratio of participants, 49% were females and 51% were males. On the basis of their qualification, 47% were specialists/consultants and 53% were general dentists. Regarding their work experience, 42.9% had 1-3 years of experience, 27.1% had 3-6 years and 30% had 6+ years of work experience (Figures 1, 2, & 3).

Table 2 shows the frequencies of knowledge-related responses with their association with gender, qualification, and work experience. It can be noted from the findings that all three variables are statistically significant with the level of knowledge shown by the study participants. Moreover, table 3 shows the similar association of three variables with the attitude and practice of study participants. The outcome revealed that gender and qualification were not statistically significant with the attitude or practice. However, work experience was highly significant with the attitude as well as practice of dental practitioners towards MID.

DISCUSSION

This study revealed the knowledge, attitude, and practice of dental practitioners regarding minimally invasive dentistry. It was noted from the findings that 43.8% of participants had always used sharp explorer for caries detection, 25.7% had always used the blunt instrument, 18.6% had always used magnification and only 8.6% had used the newer methods such as ECM, QLF or FOTI.

When these results were compared with a similar study done by Alrasheedi et al., (2020) in Hail city, it was reported that 37% had always used sharp explorer for caries detection, which is lower than our study; 27% always had the blunt instrument, which is almost similar to our results; 10% had always used magnification, which is lower than our findings; 7% had always used newer methods, which is slightly lower than our outcomes.

A Riyadh-based study conducted by Aldhafeeri, Ingle & Baseer (2020) among the general dental practitioners revealed that 62.3% of participants agreed that Atraumatic Restorative Treatment is effective in the treatment of caries. Moreover, a statistically significant association was observed when the perception of ART was related to work experience and gender. However, comparing these findings with our results, we observed that 57.5% of our study subjects reported ART being effective, which is slightly lower than the above-mentioned study. Furthermore, similarities were also found when these results were compared on the basis of gender and work experience, where statistically significant associations were revealed (p-value: .011 and .000, respectively).

Regarding the use of preventive dental materials, 85.7% of our study participants agreed that remineralization with fluoride varnish is highly effective in MID practice, 65.7% agreed that the use of high concentration fluoride toothpaste at home such as duraphat is an effective MID approach and 69.6% strongly agreed + 23.4% agreed (total: 93%) that pit and fissure sealants are effective in caries prevention. When these findings were compared with a similar study conducted by Rayapudi & Usha (2018) among dentists in Puducherry, India, it was noticed that 67.9% believed fluoride varnish is effective, which is considerably lower than our study; 77.9% believed using high concentration fluoride toothpaste can be effective, which is higher as compared to our findings; 91.3% reported that the use of pit and fissure sealants is effective in implementing MID, which is almost similar to what we observed.

Another previous study done in Riyadh and Alkharj by Shah et., (2016) reported that 38.5% had received training on MID from lectures and hands on. Moreover, there was no statistically significant association between their current level of knowledge with gender. Whereas years of experience had a statistically significant impact on the level of knowledge among study participants. When these results were compared with our findings, 61.4% of dentists revealed they had received training on MID from lectures and hands on, which is considerably higher than the previous study. Additionally, both gender and work experience had a statistically significant association with participants' perceived level of knowledge, which is slightly different from the previously mentioned study.

Table 1 Power of sample

Mean	1.58
Std Deviation	0.88
Sample size	570
Alpha	0.05
Sample mean	1.68
Standard Error of Mean	0.04
Critical Value	1.64
Beta	0.14
Power	**0.86**

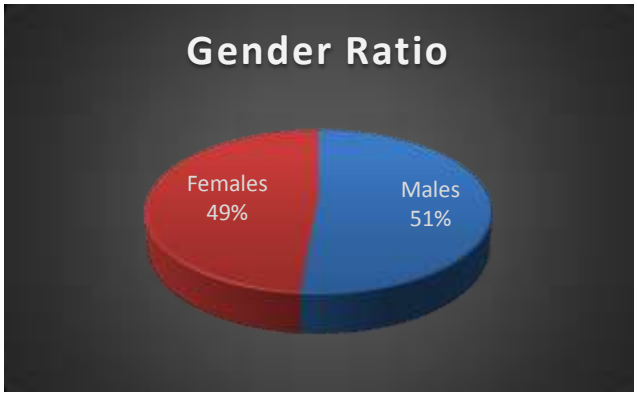

Figure 1 Gender ratio of study participants

Figure 2 Qualification of study participants

Figure 3 Work experience of study participants

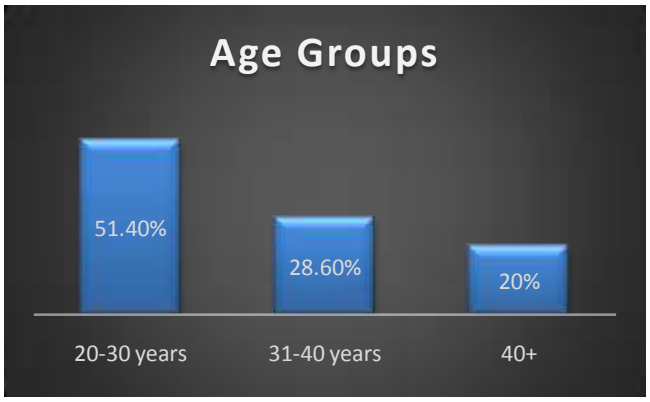

Figure 4 Age groups of study participants

Table 2 Knowledge related questions and their association with gender, qualification and work experience

Knowledge related questions	Responses (%)	Gender (*P*)	Qualification (*P*)	Work experience (*P*)
Method of obtaining knowledge about MID	Lectures only: 29.8% Hands on: 7.3% both lectures and hands on: 61.4% not obtained: 1.4%	.023*	.003*	.002*
What is the level of your knowledge regarding MID?	Very much: 21.4% Enough: 52.9% Little: 24.3% None: 1.4%	.015*	.000*	.000*
There is a direct relationship between carious lesions and carbohydrate intake	Strongly agree: 57.3% Agree: 35.5% Disagree: 5.2% Strongly disagree: 2%	.009*	.009*	.000*
Fluoride is an essential agent in the tooth remineralization process	Strongly agree: 48.8% Agree: 44.1% Uncertain: 1.8% Disagree: 3.6% Strongly disagree: 1.8%	.003*	.164	.000*
Sealants are effective for pit and fissure caries prevention	Strongly agree: 69.6% Agree: 23.4% Uncertain: 1.4% Disagree: 3.4% Strongly disagree: 2.1%	.027*	.004*	.000*
Caries risk assessment should be conducted with all patients	Strongly agree: 29.5% Agree: 47% Uncertain: 12.7% Disagree: 10.7% Strongly disagree: 0.2%	.500	.000*	.000*
Conservative cavity designs like tunnel and box preparations are effective	Strongly agree: 44.8% Agree: 36.8% Uncertain: 12.1% Disagree: 4.8% Strongly disagree: 1.4%	.002*	.011*	.123
Plan restorative materials and techniques based on patients caries risk assessment	Strongly agree: 38.8% Agree: 52.3% Uncertain: 4.3% Disagree: 2.9% Strongly disagree: 1.8%	.069	.000*	.000*

Table 3 Attitude and Practice related questions and their association with gender, qualification and work experience

Attitude& Practice related questions	Responses (%)	Gender (*P*)	Qualification (*P*)	Work experience (*P*)
How frequently do you use **sharp explorer** for caries detection/ diagnosis on patients?	Always: 43.8% Most times: 38.9% Never: 17.3%	.000*	.126	.000*
How frequently do you use **blunt instrument** for caries detection/ diagnosis on patients?	Always: 25.7% Most times: 57.1% Never: 17.1%	.002*	.503	.000*
How frequently do you use **magnification** for caries detection/ diagnosis on patients?	Always: 18.6% Most times: 30% Never: 51.4%	.166	.000	.000*
How frequently do you use **radiographs** for caries detection/ diagnosis on patients?	Always: 85.7% Most times: 14.3% Never: 0%	.782	.580	.004*
How frequently do you use **newer methods like ECM, QLF, FOTI** for caries detection/ diagnosis on patients?	Always: 8.6% Most times: 24.3% Never: 67.1%	.461	.002*	.004*
What is your opinion about the usage of **Atraumatic Restorative Treatment** in MID practice	Effective: 57.5% Ineffective: 14.8% Not sure: 27.5%	.011*	.000*	.000*
What is your opinion about the usage of **GIC + Composite** in MID practice	Effective: 81.4% Ineffective: 10% Not sure: 8.6%	.661	.749	.045*
What is your opinion about the usage of **Remineralization with fluoride varnish** in MID practice	Effective: 85.7% Ineffective: 10% Not sure: 4.3%	.002*	.283	.000*
What is your opinion about the usage of **Remineralization with Duraphat, 2800-5000ppm** in MID practice	Effective: 65.7% Ineffective: 20% Not sure: 14.3%	.003*	.004*	.001*

One of the limitations of a survey-based study is that a few respondents may not feel encouraged to provide accurate and honest answers, which may affect the findings.

CONCLUSIONS

- Overall, there was a very high level of knowledge regarding MID among the study participants.
- However, the attitude and practice although satisfactory, did not complement the high level of knowledge.
- There is a need of encouraging dentists to incorporate more MID procedures and methods in their practice.
- Gender, qualification, and work experience were statistically significantly associated with knowledge.
- Gender and qualification were not statistically significantly associated with attitude and practice, whereas work experience was associated significantly.

CONFLICT OF INTEREST

There was no conflict of interest among the authors.

REFERENCES

1. Aldhafeeri, A., Ingle, N. and Baseer, M.A., 2020. Knowledge and Attitude towards Atraumatic Restorative Treatment (ART) among General Dental Practitioners of Riyadh, Kingdom of Saudi Arabia. International Journal of Dental Sciences and Research, 8(4), pp.91-94.
2. Alrasheedi, H.S., Mian, R.I., Hassan, I., Alrashidi, S.O., Al Harbi, T.M.A., Alrashedi, A.H.J., Albarrak, M.I. and Alsweed, M.A., 2020. Knowledge, Attitude and Practice of Minimally Invasive Dentistry Among Dental Graduates: A Cross-Sectional Survey from Saudi Arabia. International Journal of Pharmaceutical Sciences Review and Research, 62(1), pp. 192-198.
3. Banerjee, A., 2015. The contemporary practice of minimally invasive dentistry. Faculty Dental Journal, 6(2), pp.78-85.
4. Brennan, D.S., Balasubramanian, M. and Spencer, A.J., 2015. Treatment of caries in relation to lesion severity: Implications for minimum intervention dentistry. Journal of dentistry, 43(1), pp.58-65.
5. Gutmann, J.L., 2013. Minimally invasive dentistry (Endodontics). Journal of conservative dentistry: JCD, 16(4), p.282.
6. Khan, S.I., Asghar, S., Abid, A. and Aftab, F., 2019. Awareness Regarding Minimally Invasive Dentistry among Dentists of Karachi. Journal of Bahria University Medical & Dental College, 9(4), p.294.
7. Mackenzie, L. and Banerjee, A., 2017. Minimally invasive direct restorations: a practical guide. British dental journal, 223(3), p.163.

8. Mirza, A.J., Asad, M., Berkth, M. and Siddiqui, A.A., 2016. Is the Current Knowledge of Treating Caries Being Implemented in Saudi Arabia. Int J Dent Sci and Research, 4(5), pp.85-89.
9. Natarajan, K. and Prabakar, J., 2019. Knowledge, attitude, and practice on minimally invasive dentistry among dental professionals in Chennai. Drug Invention Today, 11(8), pp.1768-1772.
10. Rayapudi, J. and Usha, C., 2018. Knowledge, attitude and skills of dental practitioners of Puducherry on minimally invasive dentistry concepts: A questionnaire survey. Journal of conservative dentistry: JCD, 21(3), p.257.
11. Schwendicke, F., Doméjean, S., Ricketts, D. and Peters, M., 2015. Managing caries: the need to close the gap between the evidence base and current practice. British dental journal, 219(9), pp.433-438.
12. Shah, A.H., Sheddi, F.M., Alharqan, M.S., Khawja, S.G., Vohra, F., Akram, Z., Faden, A.A. and Khalil, H.S., 2016. Knowledge and attitude among general dental practitioners towards minimally invasive dentistry in Riyadh and AlKharj. Journal of clinical and diagnostic research: JCDR, 10(7), p.ZC90.