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Use of rubber dam among dentists working in the west part of Iran

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Original Article

Abstract

BACKGROUND AND AIM: Although Rubber dam (RD) usage is one of the ideal and standard methods for isolating the teeth in several operative procedures of dentistry, General Dental Practitioners often neglect it. Many studies within several countries have reported various frequencies for RD application. There is no such study for Iran, so we conducted a study to report the frequency of its application and the effective factors.

METHODS: This cross-sectional study carried out across the west part of Iran in 2013. A total of 525 general Dental Practitioners from the public and private sectors selected by stratified random sampling using a list from 3 big western cities of Iran. The data were collected using self-administrated checklist.

RESULTS: The prevalence of RD application among General Dental Practitioner was 0.2% (confidence interval 95%: 0.196-0.204). RD instrument was existed in around 7.0% of cases. The main reason of the General Dental Practitioner to avoid RD application was supposing it is time-consuming procedure and causing patients stress (58.9%).

CONCLUSION: Despite the advantages of RD application, its usage is not recognized as a routine and common method of isolation during dental procedures even roots canal therapy by Iranian General Dental Practitioners.

KEYWORDS: Rubber Dam, Isolation, Endodontic Treatment, General Dental Practitioner

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Since the rubber dam (RD) introduction by Barnum in 1864, its application has improved operative General Dental Practitioner in many ways for more than 145 years. A drier field, better visibility and access, increased patient comfort, and infection control, prevention of aspiration instruments and ingestion of irrigation material and retraction of soft tissue are only a few of the many advantages of using a RD.^{1,2}

Although General Dental Practitioners are taught in school that RD isolate selected teeth and safeguard the rest of the patient's mouth during treatment, most of fresh General

Dental Practitioners falsely assume that RD are only training tools used for academic purposes at school.³

RD usage is considered as one of the ideal and standard method for isolating the working area in root channel treatment, adhesive procedures and operative procedures.⁴ General Dental Practitioners often avoid use of RD, supposing that it would stress the patient and its application is time consuming but in fact Isolation with RD cause less stress in children and adolescents comparing to relative isolation with cotton rolls if applied by an experienced General Dental Practitioner and also it can save

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valuable treatment time.^{5,6} Many studies have been done to evaluate the frequency of RD usage within several countries and showed various frequencies for RD application.⁷⁻¹⁰ We could not find any related research about usage of RD by Iranian dentists.

The aim of this study is designed to evaluate the frequency of RD application by the General Dental Practitioners working in three big cities located in the west part of Iran and find out the main reasons why General Dental Practitioners apply it or not.

Methods

The Kermanshah, Iran, Institutional Review Board approval for the publication of the curriculum and the post-simulation experience survey results was obtained for this study. This was a cross-sectional study carried out across the west part of Iran in 2013. Kermanshah, Kurdistan and Ilam in Iran were selected. A study conducted in the corresponding capital cities, Kermanshah, Sanandaj and Ilam.

Five hundred and twenty-five General Dental Practitioners from the public and private sectors selected by stratified random sampling using a list. We consider city as strata. Most of the cases were selected from Kermanshah (308) then Sanandaj (141) and 80 cases were selected in Ilam. Total numbers of General Dental Practitioners in these cities are as follows: 426 General Dental Practitioners in Kermanshah, 206 in Sanandaj and 113 in Ilam. We sampled 70% of them, on average. We excluded specialists, and only General Dental Practitioners were included.

We defined the socioeconomic status of the area based on the opinion of the local people. Three main categories were affluent areas, middle and disadvantage areas. The data were collected by using self-administrated checklist that included demographic information and items about the RD application. Data on frequency of RD usage and the associated reason for use or not, experience of aspiration the materials by

the client, availability of the instruments requires for management of aspiration in the office, their knowledge in managing the unlike aspiration case were collected.

Results

Five hundred and eighteen General Dental Practitioners entered in the study (response rate: 98.7%). Mean age was 39.91 (standard deviation: 6.21) and 63.3% were male. More than 60.0% were graduated from the public universities across Iran. Around 42.0% of the General Dental Practitioners were working for 5-10 years. About 61.8% of respondents worked in affluent areas, and only 17.4% were in low economic area. The basic characteristics of the study population are presented in table 1.

Table 1. Basic characteristics of the dentists participating in the study

Variable	Frequency (%)
Sex	
Male	328 (63.3)
Female	190 (36.7)
University	
Public	313 (60.4)
Azad	99 (19.1)
Foreign	106 (20.5)
Location of clinic	
Affluent	320 (61.8)
Middle	108 (20.8)
Disadvantage	90 (17.4)
Carrier length (year)	
5 or less	131 (25.3)
5-10	216 (41.7)
10 or more	171 (33.0)

All the study population reported that they had been taught about RD in the University; however, only one of them was a regular RD user in the case of composite and amalgam restoration. The prevalence of RD application among General Dental Practitioner was 0.2% (confidence interval 95%: 0.196-0.204). The solo General Dental Practitioner, who applies RD, was a 45 aged with more than 10 years working experience. RD instrument was existed in around 7% of

cases. The main reason of the General Dental Practitioner to avoid RD application was supposing it is time-consuming procedure and causing patients stress (58.9%).

More than 90% of the General Dental Practitioners did not report any case of aspiration. Although, all the General Dental Practitioners were taught on the management of the emergency cases more than 10.0% of them had none of the requiring equipment. Emergency drugs were the only available equipment for the management of emergency cases (Table 2).

Discussion

Our study showed that only 1 (0.2%) out of 518 General Dental Practitioners participated in survey applies RD during dental procedures and 99.8% have never used RD, which is higher

than all studies done before such as the one done in USA,⁹ Nigeria,¹¹ United Kingdom,¹² Saudi Arabia,⁷ Cameroun,¹³ New Zealand,¹⁴ Czech¹⁵ and Denmark¹⁶ whereas our sample size was bigger than the ones in Cameroun-33,¹³ Nigeria-100¹¹ and Czech-450.¹⁵

All respondents reported being taught to apply RD during undergraduate period in both types of dental colleges (Public, Azad Universities) and even the ones graduated from universities in foreign countries, but in study by Kapitan and Sustova¹⁵ only 32 of respondents received RD application training.

The percentage of regular RD users (0.2%) indicates that almost all General Dental Practitioners disregard using RD due to different reasons, which is similar with the result of the study by Mala et al.¹⁶ who showed that 26.0% of students reported that

Table 2. Data on RD application among dentists

Variable	Frequency (%)
Being taught at the university	
Yes	518 (100)
No	0 (0.0)
Existing RD instrument in the office	
Yes	34 (6.6)
No	484 (93.4)
Use of RD	
Yes	1 (0.2)
No	517 (99.8)
Reasons for not using	
Patients stress and uncomfoting	62 (12.0)
Time consuming	147 (28.5)
Patients stress and uncomfoting and time consuming	304 (58.9)
Other reasons	3 (0.6)
Aspiration occurrence	
Yes	41 (7.9)
No	477 (92.1)
Being taught for the management of the aspiration case	
Yes	518 (100)
No	0 (0.0)
Existing equipments in the case of emergency	
Yes	458 (88.4)
No	60 (11.6)
Type of equipments in the case of emergency	
Just laryngoscope	0 (0.0)
Just emergency drugs	445 (97.4)
Either laryngoscope and emergency drugs	12 (2.6)

RD: Rubber dam

their RD usage would have decreased when starting their private practice.

An inverse association between working experience and application of RD is stated by Kapitan and Sustova¹⁵ and Peciuliene et al.,¹⁷ however Jenkins et al.¹⁸ found a positive association. In this study as the cases that uses the RD was so rare, despite a relatively large sample size this result in the lack of statistical power to study the associated factors. National studies to evaluate factors influencing General Dental Practitioners to apply RD are recommended.

The most common reasons for avoiding RD placement by our respondents were being time consuming the RD placement and stressing the patient, which are accordance with studies done by Ahmad¹⁹ and Filipović et al.²⁰ this finding is due to overestimating time by General Dental Practitioner while if aspiration occurs they would need more and more time to stable the situation and save their patient.

Conclusion

Considering the effect of RD application on

the dental procedures such as better visibility, providing a drier field, increasing patient comfort and preventing infection it is necessary to emphasis more on its application.^{1,2} Despite these advantages RD application is not recognized as a routine, and common method of isolation during dental procedures even root canal therapy by Iranian General Dental Practitioners. Their main reason is time-consuming and patient discomfort. It is needed to re-educate them and provide an opportunity to modify their attitude when they finished their course in the university.

Conflict of Interests

Authors have no conflict of interest.

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