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Original Research Article

Knowledge, Attitudes and Practice of Rubber Dam use among dentists working in private clinics in Khartoum City

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Abstract: The aim of this study to evaluate knowledge, attitude and practice of rubber dam use among Sudanese dentists. Descriptive cross- sectional study among 250 Sudanese dentists (143 general dental practitioner and 57 specialist) working within Khartoum city. Self administered questionnaire including questions about knowledge, attitude and practice of rubber dam use. Years of experience, gender, speciality and place of graduation were compared and analysed by chi-square test with the level of significance set at $p \leq 0.05$. The response rate was 80%. Rubber dam as a routine use practiced by only 4.5%, however 31% used it occasionally. Cotton roll and saliva ejector were the methods of isolation for 40.5% of those doing dental operative procedure. Almost majority (69%); said they received training in rubber dam use during undergraduate period. The most barriers against rubber dam usage, was unavailability (45.5%). In spite of the majority of Sudanese dentists received training on rubber dam use during under graduate, few practiced it regularly and the main barrier was unavailability**.**

Keywords: rubber dam, Sudanese dentist, field isolation, KAP study.

INTRODUCTION

The need for proper tooth isolation during restorative procedures is obvious. Anything that obscures the operative field negatively impacts operator efficiency and effectiveness. Visibility, patient/operator safety, infection control and the physical properties of dental materials are all compromised when proper isolation is lacking. The rubber dam offers the practitioner with a wide variety of advantages such as isolation of the operative area, provision of aseptic field, prevention of infection transfer, ingestion or aspiration of instruments, materials or irrigants, as well as protection and retraction of soft tissue during operative procedures [1, 2]. Rubber dam is universally acknowledged as a mandatory adjunct particularly during endodontic treatment. Many authorities advocate its usage and encourage practitioners to adopt it in routine practice, stressing that it is an indispensable element of contemporary health service [3]. Provision of patient comfort is an additional advantage and studies revealed that most patients have a positive opinion about rubber dam experience [4]. Endodontic treatment and operative dentistry are two major areas where rubber dam must be commonly used. Specifically, endodontic textbooks and specialty organizations endorse rubber dam use during endodontic procedures, indicating it as a standard of care [1, 5]. The use of rubber dam is important in Medico-legal purposes because a lot of hazards can occur during dental procedure. In a busy dental practice many advantages of the routine use of rubber dam for day-to-day procedures are often not appreciated. With all these advantages as well as legal aspects favouring rubber dam, there still seem to be reluctance and some resistance by practitioners to use it in routine dental care. Rubber dam has been often overlooked by many general dental practitioners [2, 6]. This issue has been attracted by many authors who determined a significant underuse in general practice [7, 8]. It has been indicated that dentists believe that rubber dam is too time consuming and cumbersome and patients do not like rubber dam experience [9].

Many studies have been published dealing with the frequency of rubber dam usage within several countries. These studies showed that the frequency of rubber dam usage varies and is not dependent on the socio-economical level of the country or the year of the study. The declared portion of rubber dam users varies greatly, ranging from 3% to 90%, while the non-users from 44.5% to 95% [8, 10-11]. The use of rubber dam by Sudanese dentists has been studies before, and the results revealed less frequent in its use [12-13].

The general objective was to assess the knowledge, attitude and practice of rubber dam use among dentists in private clinics in Khartoum city, while the specific objective were to assess the

relationship between knowledge, attitude and practice according to the level of education, current occupation (GDPs Vs Specialist), number of practicing years and previous training in rubber dam use.

MATERIALS AND METHODS

Descriptive cross sectional study design carried on Khartoum locality one of the seven localities within Khartoum state during period from October 2013 –February 2014. A list of all private dental clinics and polyclinics or centers providing dental care was obtained from the directory of Private Sector, Ministry of Health (Khartoum State). Those who registered in Sudanese Medical Council and have licence to practice dentistry in private clinics were included. Those who do not practice dentistry in their clinics, with administrative jobs, dental house officers or dental students were excluded.

A self-administered questionnaire including questions about demographic data, methods of isolation of oral operative field , use of rubber dam, barriers against its uses, training and attitude toward its usage. A pilot testing of the questionnaire with a random sample of 20 dentists was conducted to ensure comprehensibility and reliability, with some measures being altered accordingly into the final revised questionnaire. Cronbach's alpha test showed the reliability coefficient of 0.86, which was found satisfactory for conducting the study. These 20 questionnaires were not included in the final study.A letter explaining the purpose of the study was distributed by one of the researchers.

Study was approved by ethical committee of university of medical science and technology (UMST), and permission from Ministry of Health – Khartoum State. Eligible dentists who fulfilled the criteria were requested to participate voluntary and informed written consent was taken.

Data was cleaned, organized and analyzed using (statistical package for social science SPSS Rel. 20.0. 2011. Chicago: SPSS Inc). Descriptive statistics of the results were displayed in form of tables and figures. Comparison between variables by chi - square test with the level of significance set at $p \leq 0.05$.

RESULTS

Descriptive statistics of the results as displayed in tables (1-3) and figures (1&2). The response rate was 80% and all the participants filled the questionnaire with no missing data. Male were more predominant with a percentage of (74.5%) and females (25.5%). Majority (71.5%) were general dental practitioners. When they asked about the country of graduation, it was revealed that (74%) were from the Sudan. Also dentists were asked about their experience or years of practicing dentistry, where 32.5% (1-5) years, 36.5% (6-10) years and 30% were more than 10 years. When the participants asked about the method of isolation that they use; 41.5% use cotton roll with saliva ejector, whereas 16.9% use cotton rolls, saliva ejector and high volume suction.

All dentists (100%) agreed the important of using rubber dam. And when asked about the frequency of their rubber dam usage, 64.5% stated never, 31% occasionally and 4.5% stated regularly figure (1). Majority 71% use rubber dam when doing root canal treatment, while 29% said they used it for any operative procedure.

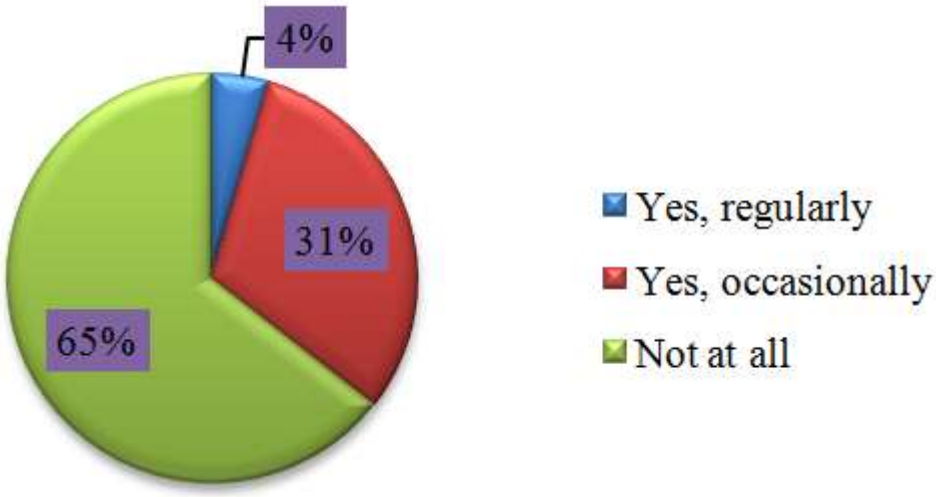

Fig-1: percentage of rubber dam usage among the participants.

Dentists were asked about the most common barrier against not using rubber dam during routine work, where 57.5% answered unavailability, 21% expensiveness, 16% patient refusal, 15.5% inconvenience and 11% believed it is unnecessary (figure 2)

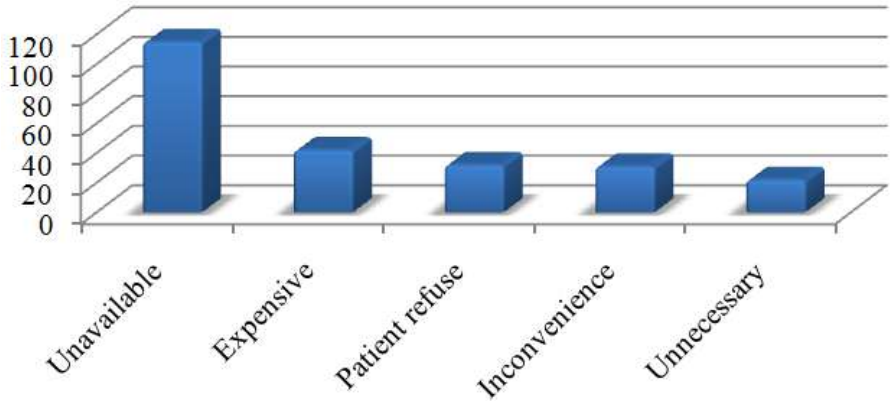

Fig-2: Most common reasons for not using rubber dam by dentists under the study.

When comparing specialist and general practitioners with regard to rubber dam use. It revealed that 28.6% of GDP use rubber dam while 52.6% of specialist use rubber dam, with P value ≤ 0.05)

Table-1: Shows the relationship between RD use and current occupation

Use of Rubber dam	Current occupation (CO)		Total
	General dental practitioner	Specialist	
Regularly	6	3	9
% within CO	4.2%	5.3%	4.5%
Occasionally	35	27	62
% within CO	24.4%	47.3%	31%
Not at all	102	27	129
% within CO	71.3%	47.3%	64.5%
Total	143	57	200
	71.5%	28.5%	100%

P-value = 0.005

Year of experience as compared to the use of rubber dam was displayed in table 2. It was revealed that out of (1-5) years of experience; 33.8% use RD, 46.5% from (6-10) years and 24.1% more than 10 years use RD, relationship was found to be significant as (p ≤ 0.05)

Table 2: Shows the relationship between RD use and years of experience,

Use of Rubber dam		Practicing years			Total
		(1-5)	(6-10)	More than 10	
	Yes, regularly	0	6	3	9
	% within prac. yrs	0%	8.2%	4.8%	4.5%
	Yes, occasionally	22	28	12	62
	% within prac. yrs	33.8%	38.3%	19.3%	31%
	Not at all	43	39	47	129
	% within prac. yrs	66.2%	53.4%	75.8%	64.5%
Total		65	73	62	200
		32.5%	36.5%	31%	100%

P-value = 0.017.

It was found that 80.3% of dentists who use RD received training, the relationship was found to be significant as (P<0.05).

Table-3: The relationship between Rubber dam use and previous rubber dam training.

Use of Rubber dam		Do you receive training		
		Yes	No	Total
	Yes, regularly	9	0	9
	% within RD use	100%	0%	4.5%
	Yes, occasionally	48	14	62
	% within RD use	77.4%	22.6%	31%
	Not at all	81	48	129
	% within RD use	62.8%	37.2%	64.5%
		138	62	200
Total		69%	31%	100%

P-value = 0.015.

DISCUSSION

This study was conducted to evaluate the knowledge, attitude and practice of rubber dam among dentists as they are model to the dental student who will be the future generation of dentists. The majority of dental schools worldwide teach the use of the rubber dam as an important adjunct to restorative dentistry in both adult and child patients [14]. Many procedures are technique sensitive and use of the rubber dam can facilitate successful restorations. It also aids in patient protection from inhalation or aspiration of the instrument or dental material, which have been reported in many countries. The use of rubber dam is controversy although almost all dentist know the importance of using rubber dam still in many countries not regularly used [15, 16].

Most of our studied dentists never use rubber dam while some use it occasionally and it meant by occasionally once or twice which is considered as never, when considering the number of patient treated by these dentists only 4.5% use rubber dam regularly. A similar results were obtained from others[15-17], the reason may be due to lack of training in preclinical period, its availability or even they don't care in implementation of its use. Newly graduate dentists use RD more frequent than old one. The old dentists believed they can easily control the operative field from saliva contamination and other hazards similar results was obtained from survey done by Koshy and Chandler [14]. Almost all the respondent reported that RD use increases the quality of their treatment. In contradict to result of Irish general dental practitioner [18]. Our survey concluded that RD increases the quality.

Almost all the respondents mentioned that cotton rolls were not enough for isolation of operative field which is an encouraging percentage, while it was not in case in an another survey done in Saudi Arabia [19]. The educational process should place a greater emphasis on the reasons for rubber dam use, while ensuring efficiency in its placement. Improving skills using continuing professional education is considered to be the means of improving the quality of care [14]. Regarding placement of rubber dam majority of respondents mentioned that they had been taught how to use it, this considered as high percentage. However in a similar previous study many of respondents reported that despite they had been taught how to place rubber dam they found it difficult to apply and they did not routinely use it, which may be related to lack of proficiency that ordinarily comes with regular use [18]. Arising from this, there is an indication for contemporary survey of the teaching of rubber dam techniques within dental schools.

Proper isolation is required for operative procedures especially RCT, the majority of dentists reported that they will use RD with RCT only whiles the rest with any operative procedure. Similar result obtained by Lin *et al.* [20].

It would be interesting to report on the use of rubber dam in Sudan among private dental health providers as it has never been reported. Although rubber dam use is recommended in routine practice [3, 21] for a purposes of providing isolation, visibility, accessibility and protection. The result of this survey concluded that the importance of rubber dam has been learned, it is disappointing that many of our dentists had never use RD before, similar findings were found worldwide [22, 23] however higher percentages were reported in American and UK [24, 14]. Unavailability was the main reason behind the under use as reported by most of the respondents, which was dissimilar to another survey [10]. In this survey majority of dentists believed that RD is effective and affect the quality of the treatment and this was similar to the results reported in a survey done by Christopher and Hamed [7].

It was found that continuing education course attendees seem to be encouraging to use rubber dam [14], majority of surveyed dentists believed that RD approach needs to be increased for undergraduate dental students which reflect the deficiency in school training of RD among Sudanese dental schools.

Regarding the relationship between RD use and training received in undergraduate studies, the result confirm the important on continuous dental training in updating and application of uses of many materials, equipments and devices in dentistry. This can be proved by year of experiences as specialist use rubber dam more frequently than newly graduates.

CONCLUSION

Regular use of rubber dam among Sudanese private dentists was 4.5%. Unavailability was the main reason behind the under use as reported by most of the respondents (45.5%), followed by expensive (17%), unnecessary (11%), while 5.5% reported that patient refuse it. Rubber dam school training was adequate and most of surveyed dentists were trained during undergraduate

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