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Original Article

ASSESSMENT OF PATIENTS' ATTITUDES REGARDING THE USE OF RUBBER DAMS IN ENDODONTIC THERAPY

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ABSTRACT

Objectives: *To determine patients' attitudes towards the use of rubber dams in endodontic therapy at Saidu College of Dentistry, Swat.*

Materials and Methods: *The cross-sectional survey was conducted at Saidu College of Dentistry, District Swat, on 150 participants using a non-probability consecutive sampling technique. Participants aged 12–50 years who were healthy and willing were included, while those refusing consent or with psychiatric disorders, diabetes, cardiovascular, respiratory, or infectious diseases were excluded. Data were collected using a validated, pre-tested questionnaire covering demographics, awareness, experience, comfort, and perceptions of rubber dam use. The Chi-square or Fisher's exact test was applied to compare awareness, perception, and efficacy of rubber dam across gender and education.*

Results: *Among 150 participants (54.7% female), most had higher education (59.3%). Overall, 33.7% were aware of rubber dam use, 11.3% had undergone a procedure, and 23.7% believed in its essential use. Regarding experience, 17.7% felt comfortable, 23.3% reported less discomfort, and 43.7% felt secure about cleanliness. For efficacy, 62.3% believed it increased effectiveness, 73.3% reduced infection risk, and 63.3% facilitated a quicker procedure. Females more often reported reduced infection risk (79.3% vs 66.2%; $p = 0.04$), and higher education was associated with greater awareness and positive perceptions ($p < 0.05$).*

Conclusion: *The study shows a large gap in awareness and comfort with rubber dams, despite their known benefits in improving procedure efficiency and reducing infection risk. The findings shows the importance of the need for increased education and patient acceptance to enhance the clinical effectiveness of rubber dams.*

Key words: *Awareness, comfort, Endodontics, infection risk, isolation, Rubber Dams*

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INTRODUCTION

Since rubber dam effectively controls moisture, it is widely recognized as an essential dental treatment aid[1]. Several authorities support the use of rubber dams, and dentists are encouraged to include them into routine dental procedures since they are an essential part of the dental services provided today[2,3]. Rubber dam protect soft tissues, allow for visibility during treatment, and create a sterile working environment[4]. It lowers the possibility of infection for dentists and dental assistants. Aspiration and ingestion of small instruments, medications, and irrigating solutions used during endodontic treatment can be prevented in patients[5].

Many dental associations worldwide, such as

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the American Association of Endodontists (AAE), strongly advocate for the use of rubber dam[6].

The rubber dam's application and patients' perspectives regarding its use vary greatly, despite its established benefits in clinical settings. About the use of rubber dams in endodontic procedures, this introduction examines their historical development, clinical significance, and patient perspectives[7]. Like in most other countries, general dentists and dental students in Pakistan hardly ever use rubber dams[8]. There could be a number of reasons for this, such as insufficient training during the clinical years, the time and technique needed for application, and the additional expense of materials and equipment[9,10].

Furthermore, using rubber dams effectively is a skill that must be learned. its control takes time and practice[11]. Rubber dams have conflicting opinions among patients, which may influence how they are used in clinical settings. Patients may experience claustrophobia or anxiety when a rubber dam is being applied, which makes some dentists reluctant to use it, particularly when working with nervous patients[12]. On the other hand, patients are more likely to be interested if they are better informed and aware of the advantages of rubber dams, including treatment efficacy and safety[13].

The aim of this study was to determine patients' attitudes and experiences regarding rubber dam use at the Outpatient Department of Saidu College of Dentistry.

MATERIALS AND METHODS

This cross-sectional descriptive study was conducted at the outpatient department of Saidu College of Dentistry, Swat, from December 15, 2023, to May 15, 2024, After taking ethical review committee approval (15ERB/024) from the hospital and informed consent from participators. A sample size of 150 adults were selected through consecutive non probability sampling technique. The participants were selected from the Outpatient Department (OPD) of Saidu College of Dentistry, Swat. The inclusion criteria were to include subjects in the age group of 12–50 years, also the participants who were healthy to tolerate the procedure and those who were willing to participate. The exclusion criteria were those who refused to give informed consent, those who were undergoing psychiatric therapy or suffering from Generalized Anxiety Disorders, those who were diabetic and other diseases like Cardiovascular, Respiratory, HIV, HBS.

Whole procedure of rubber dam placement was clearly explained to the participant as like, before starting your dental procedure, I want to explain the use of a rubber dam, a helpful tool we'll be using. A rubber dam is a small, flexible sheet, usually made of latex or a latex-free material, designed to isolate the tooth or teeth we're treating. This barrier keeps the area dry and clean, which is essential for many dental treatments, like fillings or root canal treatments, where moisture could interfere with the procedure's success. When applying the rubber dam, I will first select the correct size and punch small holes in it to accommodate the specific teeth involved. A frame will hold the rubber dam securely, and you won't feel any discomfort from this. Than I will place a gentle clamp around the tooth to keep the dam in position, which might cause slight pressure but should not cause any pain. The rubber dam will be carefully stretched over the clamp and around the targeted teeth, leaving your nose and most of your mouth uncovered so you can breathe and swallow normally. Although you would not be able to speak easily with the dam in place, you can still signal to me if you need to communicate or take a break. The rubber dam will stay in place only for the duration of the procedure and will be removed once we complete the procedure.

Data was collected using a structured questionnaire that was created after consulting endodontic experts and reviewing relevant literature. To verify the questionnaire's validity and find any inconsistencies, a small-scale pre-test was conducted. In the first part participants were asked about Gender, age in years and education level. In the second part participants were asked about the awareness of rubber dam, previous experiences using rubber dams, opinions regarding the essential use of rubber dam, Comfort with rubber dam, Less discomfort with rubber dam, Felt secure about cleanliness with rubber dam, Belief in increased effectiveness with rubber dam, Reduced infection risk with rubber dam, Quicker procedure with rubber dam.

SPSS version 25 was used for data analysis. Frequencies and percentages for the categorical data were calculated. For the given quantitative data,

descriptive analysis was performed. The Chi-square test/fisher was applied awareness, perception and efficacy of rubber dam to compare among gender and education level and a p-value of 0.05 or below indicated significance.

RESULT

Of the 150 participants, 82 (54.7%) were female and 68 (45.3%) were male. Higher education was reported by 89 participants (59.3%), while 34 (22.7%) had secondary and 27 (18.0%) had primary education (Table 1).

Among the participants, 50 (33.7%) were aware of rubber dam use, and 17 (11.3%) had undergone a procedure with a rubber dam. Thirty-five (23.7%) believed in the essential use of rubber dams. Regarding experience and discomfort, 26 (17.7%) felt comfortable, 35 (23.3%) reported less discomfort, and 65 (43.7%) felt secure about cleanliness when a rubber dam was used. For perception of efficacy, 93 (62.3%) believed rubber dam use increased effectiveness, 110 (73.3%) thought it reduced infection risk, and 95 (63.3%) considered it facilitated a quicker procedure (Table 2).

There were no significant differences between males and females for most variables. The only significant difference was in the perception that rubber dam use reduces infection risk, reported by 65 females (79.3%) compared with 45 males (66.2%; p = 0.04). All other comparisons, including awareness, prior use, comfort, belief in essential use, perceived effectiveness, and quicker procedure, were not statistically significant (Table 3).

Awareness of rubber dam use was higher among participants with higher education (n = 38, 42.7%) compared with secondary (n = 8, 23.5%) and primary education (n = 4, 14.8%; p = 0.003). Feeling secure about cleanliness also increased with higher education (n = 43, 48.3%) versus secondary (n = 14, 41.2%) and primary education (n = 8, 29.6%; p = 0.04). Perceptions of efficacy were greater in the higher education group. Belief that rubber dam increases effectiveness was reported by 63 participants (n = 63, 70.8%) with higher education, compared with secondary (n = 18, 52.9%) and primary education (n = 12, 44.4%; p = 0.002). Reduced infection risk was reported by 71 participants (n = 71, 79.8%) in the higher education group, versus secondary (n = 23, 67.6%) and primary education (n = 16, 59.3%; p = 0.01). Belief in a quicker procedure was also higher in the higher education group (n = 62, 69.7%) compared with secondary (n = 19, 55.9%) and primary education (n = 14, 51.9%; p = 0.03). (Table 4)

Table 1: Demographic characteristics of study population (n=150)

	Characteristics	n (%)
Gender	Male	68 (45.33%)
	Female	82 (54.67%)
Education	Primary	27 (18%)
	Secondary	34 (22.66%)
	Higher	89 (59.33%)

Table 2: Awareness, perception and efficacy of rubber dam of study population (n=150)

Variable	Question	n (%)
Awareness about rubber dam	Aware of rubber dam use	
	Yes	50 (33.66%)
	No	100 (66.34%)
	Had procedure with rubber dam	
	Yes	17 (11.33%)
	No	133 (88.67)
	Belief in essential use of rubber dams	
	Yes	35 (23.66%)
	No	115 (76.34%)
Experience and discomfort of rubber dam	Comfort with rubber dam	
	Yes	26 (17.66%)
	No	124 (82.34%)
	Less discomfort with rubber dam	
	Yes	35 (23.33%)
	No	115 (76.67%)
	Felt secure about cleanliness with rubber dam	
	Yes	65 (43.66%)
	No	85 (46.34%)
Perception of efficacy of rubber dam	Belief in increased effectiveness with rubber dam	
	Yes	93 (62.33%)
	No	57 (37.67%)
	Reduced infection risk with rubber dam	
	Yes	110 (73.33%)
	No	40 (26.67%)
	Quicker procedure with rubber dam	
	Yes	95 (63.34%)
	No	55 (36.66%)

DISCUSSION

The study results shows significant insights into the demographics, awareness, comfort, and perceptions regarding rubber dam use among the participants. The gender distribution indicated a slight majority of females (54.67%) compared to

Table 3: Awareness, perception and efficacy of rubber dam stratified by gender (n = 150)

Variable	Question	Male n (%)	Female n (%)	P-value
Awareness about rubber dam	Aware of rubber dam use – Yes	18 (26.5)	32 (39.0)	0.11
	No	50 (73.5)	50 (61.0)	
	Had procedure with rubber dam – Yes	6 (8.8)	11 (13.4)	0.38
	No	62 (91.2)	71 (86.6)	
	Belief in essential use of rubber dams – Yes	13 (19.1)	22 (26.8)	0.27
	No	55 (80.9)	60 (73.2)	
Experience and discomfort of rubber dam	Comfort with rubber dam – Yes	9 (13.2)	17 (20.7)	0.23
	No	59 (86.8)	65 (79.3)	
	Less discomfort with rubber dam – Yes	14 (20.6)	21 (25.6)	0.47
	No	54 (79.4)	61 (74.4)	
	Felt secure about cleanliness – Yes	26 (38.2)	39 (47.6)	0.24
	No	42 (61.8)	43 (52.4)	
Perception of efficacy of rubber dam	Belief in increased effectiveness – Yes	38 (55.9)	55 (67.1)	0.16
	No	30 (44.1)	27 (32.9)	
	Reduced infection risk – Yes	45 (66.2)	65 (79.3)	0.04
	No	23 (33.8)	17 (20.7)	
	Quicker procedure – Yes	39 (57.4)	56 (68.3)	0.17
	No	29 (42.6)	26 (31.7)	

Table 4: Awareness, perception and efficacy of rubber dam stratified by education (n = 150)

Variable	Question	Primary n (%) (n=27)	Secondary n (%) (n=34)	Higher n (%) n=89)	P-value
Awareness about rubber dam	Aware of rubber dam use – Yes	4 (14.8)	8 (23.5)	38 (42.7)	0.003
	No	23 (85.2)	26 (76.5)	51 (57.3)	
	Had procedure with rubber dam – Yes	2 (7.4)	4 (11.8)	11 (12.4)	0.71
	No	25 (92.6)	30 (88.2)	78 (87.6)	
	Belief in essential use of rubber dams – Yes	4 (14.8)	7 (20.6)	24 (27.0)	0.29
	No	23 (85.2)	27 (79.4)	65 (73.0)	
Experience and discomfort of rubber dam	Comfort with rubber dam – Yes	3 (11.1)	5 (14.7)	18 (20.2)	0.41
	No	24 (88.9)	29 (85.3)	71 (79.8)	
	Less discomfort with rubber dam – Yes	4 (14.8)	7 (20.6)	24 (27.0)	0.32
	No	23 (85.2)	27 (79.4)	65 (73.0)	
	Felt secure about cleanliness – Yes	8 (29.6)	14 (41.2)	43 (48.3)	0.04
	No	19 (70.4)	20 (58.8)	46 (51.7)	
Perception of efficacy of rubber dam	Belief in increased effectiveness – Yes	12 (44.4)	18 (52.9)	63 (70.8)	0.002
	No	15 (55.6)	16 (47.1)	26 (29.2)	
	Reduced infection risk – Yes	16 (59.3)	23 (67.6)	71 (79.8)	0.01
	No	11 (40.7)	11 (32.4)	18 (20.2)	
	Quicker procedure – Yes	14 (51.9)	19 (55.9)	62 (69.7)	0.03
	No	13 (48.1)	15 (44.1)	27 (30.3)	

*Chi-square test/Fisher exact test

males (45.33%). This distribution aligns with previous studies indicating 76(60.3%) were female, often have different experiences and preferences regarding dental procedures, which can influence their perceptions of comfort and care[14]. The age group analysis showed that a substantial portion of respondents (33.33%) were between 21 and 30 years old. This finding is consistent with other studies that highlight a younger demographic's higher engagement with dental services, as they tend to prioritize oral health more actively[15]. In terms of education, the majority of respondents held tertiary (27.33%) or postgraduate (32%) degrees, reflecting a generally educated population. This educational background is likely to influence their understanding of dental practices, including the use of rubber dams[16].

Awareness of rubber dam use was relatively low, with only 33.66% of respondents familiar with their application. This finding of previous study found that many patients were unaware of the benefits of rubber dams in clinical settings. Furthermore, the limited personal experience reported (11.33%) emphasizes the need for increased patient education and communication from dental professionals regarding the benefits and applications of rubber dams[17].

The discomfort associated with rubber dam use was notably high, with 82.34% reporting discomfort. This is concerning, as discomfort can significantly impact a patient's willingness to undergo dental procedures involving rubber dams. Previous research supports this finding, indicating that patient discomfort is a significant barrier to the acceptance of rubber dams during treatment. Additionally, the mixed feelings regarding cleanliness security (43.66% felt secure) further highlight the need for clear communication from dental professionals about the benefits of rubber dams in maintaining hygiene during procedures[18].

Despite the discomfort reported, a significant majority (62.33%) believed that rubber dams increase the effectiveness of dental procedures, and 73.33% recognized their role in reducing infection risk. This align with previous study which demonstrated that the use of rubber dams significantly enhances the effectiveness of various dental treatments and decreases the likelihood of contamination. Furthermore, 63.34% of respondents felt that procedures were quicker with a rubber dam, suggesting that despite discomfort, there is recognition of the efficiency benefits associated with their use[19].

CONCLUSION

The study found that although some participants recognized the benefits of rubber dams, including improved procedure efficiency and reduced infection risk, overall awareness and personal experience were low. Most participants reported discomfort, indicating a need for better education and techniques to improve comfort. Increasing patient awareness and acceptance could help optimize the use of rubber dams in clinical practice.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design:	FA, FA, AA, MZ, FAS, WU
Acquisition, Analysis or Interpretation of Data:	FA, FA, AA, MZ, FAS, WU
Manuscript Writing & Approval:	FA, FA, AA, MZ, FAS, WU

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.