

AWARENESS AND TREATMENT DECISIONS ON TOOTH WEAR AMONG SAUDI DENTISTS; A CROSS-SECTIONAL SURVEY STUDY

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<https://doi.org/10.51847/3MwdO9bIUo>

ABSTRACT

In contrast to caries, where it has been demonstrated that the harmful repercussions affect both the surface and the subsurface region, dental erosion is often represented as a surface occurrence. Tooth erosion occurs when the pH is low; however, there is no defined essential pH value for tooth erosion. An online survey was used to perform cross-sectional research among Saudi dental practitioners. This research involved 500 dentists from around Saudi Arabia. Findings revealed that a significant proportion of the sample was male participants accounting for 60.1%. 72.3% of the total sample was less experienced and working as a general practitioners. 74.7% of the practitioners often check those having problems and register patients with tooth wear. Almost half of the dentists usually find the cause for tooth wear and thought Bruxism is the most common cause of the problem. Most dentists occasionally take the dietary history of the patients. 52.6% of dentists did not believe in caries as a cause of tooth wear. Dentists treat the maxillary front region, maxillary and mandibular premolar region, and second molars via restoring with inlay/onlay and RCT. 62.1% think they need more information on learning how to manage patients with tooth wear. The present study reported that dentists are moderately confident in diagnosing the problem and finding out its cause. Minute gender differences were reported. Specialists and more experienced were more confident in diagnosing and treating the problem. The common cause was Bruxism, and the treatment method was restoring the composite an ovary/onlay.

Key words: Awareness, Treatment decision, Tooth wear, Saudi dentists.

Introduction

In contrast to caries, where it has been demonstrated that the harmful repercussions affect both the surface and the subsurface region, dental erosion is often represented as a surface occurrence. Nonetheless, erosion promotes mineral disintegration under the surface of the softened layer, as well as surface loss. This process is now known as 'near-surface demineralization,' to distinguish it from the carious process. When the pH is low, tooth erosion occurs; however, there is no defined essential pH value for tooth erosion [1, 2].

Screening for early symptoms of tooth wear in each clinical examination is a need for efficient therapy. When tooth wear is identified, all probable etiological factors should be evaluated, such as general medical problems, oral hygiene habits, discomfort, and functional challenges, for example, through extensive questioning by the dentist. The patient should be instructed to keep a food diary for a set amount of time, detailing their eating and drinking habits. Salivary flow rates can be defined when necessary. Evidence about clinical presentation and etiological variables must be thoroughly studied. A patient should be offered an individually developed preventative regimen based on these examinations [3, 4].

Dental disease management is shifting away from surgical therapy and toward preventative and minimally invasive methods. Tooth loss is no exception to prevention and control because tooth wear is an irreversible process. Pathological tooth wear has become more common in both the younger and older generations, and patients are unaware of the changes until symptoms such as dentine hypersensitivity or functional loss appear. For the prevention and control of dental wear, a reliable method of monitoring tooth loss is essential. With conventional radiography and visual inspection, three-dimensional imaging has been employed to improve diagnosis [5, 6].

According to a study of Danish dentists, oral hygiene reinforcement using a soft brush and non-abrasive fluoride toothpaste, as well as non-erosive eating and drinking behaviors, were nearly mandatory. Topical fluoride treatments were the most popular non-operative option for first molars, whereas direct composite restorations were the most popular restorative option. Less than 3% of respondents thought about ceramic laminates/Onlays and crown repairs. Treatment selections for more severe and less severe erosions were not significantly different [7].

Another research of Jordanian dentists indicated that the country's prosthodontists and dentists are well-versed in

tooth wear processes. Despite this, general dentists placed a low priority on inspection and documentation in the patient file. Although prosthodontists agreed that the least invasive procedure should be used for treating tooth wear, general practitioners' lack of trust in diagnosing and dealing with tooth wear is troubling. To prevent further tooth damage, all patients who wore braces were given a sleep guard. When restorative therapy for damaged dentition is advised, remember that resin composite should be the 1st substance evaluated. In some cases, traditional therapies are still necessary, but the basic minimum should always be examined first [8].

It is critical to remember that TW includes health implications, which must be considered during the rehabilitation process and material selection. The supply of a well-fabricated strong occlusal stabilizing splint to safeguard the restorations and reduce additional wear is essential to monitor and recall [9].

Benefits of the study

The findings of this study may be useful in the diagnosis and handling of tooth wear in the future.

Scope of the study

This research focused on the knowledge and practice of Saudi dental practitioners in the area of tooth wear management.

Aims of the study

To assess Saudi dentists' knowledge and practice in the diagnosis and management of tooth wear.

To compare responses based on gender, work skills, and job title.

Materials and Methods

Study design

An online survey was used to perform cross-sectional research among Saudi dental practitioners.

Study sample

500 dentists from all over Saudi Arabia were utilized in this study.

Study tool

An online examination was created that included demographic questions, as well as knowledge and practice questions about the causes of tooth decay, diagnosis, and management.

Validity and reliability of the instrument

A pilot research was conducted by mailing the survey to 20 people, and the data was entered into SPSS version 22 to establish the reliability using Cronbach's coefficient alpha (value: 0.741). The questionnaire's validity was checked by sending it to experienced REU researchers, but no changes were made.

Statistical analysis

The collected data were analyzed using SPSS version 22, which included both descriptive and inferential statistics. The Chi-square test was used to make comparisons between groups with a significance level of less than 0.05.

Results and Discussion

Power of sample

Table 1. Power of sample

Mean	3.27
Std Deviation	0.71
Sample size	500
Alpha	0.05
Sample mean	3.30
Standard Error of Mean	0.03
Critical Value	3.25
Beta	0.07
Power	0.93

Table 2. Frequency

Variable	Frequency Percentage
Gender	
Male	60.1%
Female	39.9%

Work Experience	
10 Years or Less	72.3%
For more than a decade	27.7%
Designation	
General Dentist	62.8%
Specialist/Consultant	37.2%
How often do you see patients with tooth wear in your practice?	
Always	21.3%
Often	74.7%
Never	4%
Do you register tooth wear in the patient file?	
Yes	59.7%
No	40.3%
If not, why don't you register tooth wear?	
It is not the chief complaint	71.4%
I am not sure how to register	16.5%
I find tooth wear difficult to diagnose	12%
Do you usually find a probable cause for tooth wear?	
Mostly yes	46.2%
Occasionally	45.8%
Mostly Not	7.9%
What do you think is the most common cause of tooth wear in KSA?	
Bruxism	64.4%
Gastroesophageal reflex	5.1%
Consumption of acidic foods and drinks	27.3%
Rampant caries	3.2%
Do you take a dietary history of the patients who present with the tooth wear?	
Always	41.1%
Occasionally	45.5%
Never	13.4%
Do you think that the people with tooth wear have more caries?	
Yes	32%
No	52.6%
I do not know	15.4%
How would you treat the maxillary front region?	
RCT	0.8%
Restore with a crown	10.7%
Restore with a composite	32.8%
Restore with overlay/Onlay	37.9%
Construct a night guard	4.3%
Treat locally with fluoride	7.1%
No treatment	6.3%
How would you treat the maxillary and mandibular premolar region?	
RCT	47.9%
Restore with a crown	34.7%
Restore with a composite	17.4%
Restore with overlay/Onlay	39.1%
Construct a night guard	10.3%
Treat locally with fluoride	4%
No treatment	7.1%
How would you treat maxillary and mandibular second molars?	
RCT	47%
Restore with a crown	27.4%
Restore with a composite	25.6%
Restore with overlay/Onlay	42.7%
Construct a night guard	11.5%
Treat locally with fluoride	1.6%
No treatment	10.3%

Do you think you need more information on how to manage tooth wear patients?

Yes	62.1%
No	12.3%
May be	25.7%

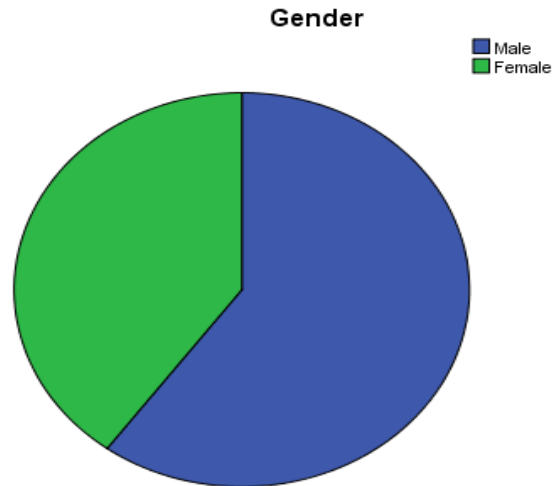


Figure 1. Gender ratio of the current study



Figure 2. Work experience ratio of study participants

Table 3. Comparison of responses across gender

Variable	Male	Female	p-value
How often do you see patients with tooth wear in your practice?			
Always	22.4%	19.8%	.887
Often	73.7%	76.2%	
Never	3.9%	4% %	
Do you register toot wear in the patient file?			
Yes	61.2%	57.4%	.551
No	38.8%	42.6%	

If not, why don't you register tooth wear?			
It is not the chief complaint	38.2%	36.6%	.109
I am not sure how to register	5.3%	13.9%	
I find tooth wear difficult to diagnose	5.9%	6.9%	
Do you usually find a probable cause for tooth wear?			
Mostly yes	46.1%	46.5%	.594
Occasionally	47.4%	43.6%	
Mostly Not	6.5%	9.9%	
What do you think is the most common cause of tooth wear in KSA?			
Bruxism	60.5%	70.2%	.359
Gastroesophageal reflex	6.6%	3%	
Consumption of acidic foods and drinks	29.6%	23.8%	
Rampant caries	3.3%	3%	
What do you do if you have a patient with tooth wear requiring treatment?			
I treat him/her myself	42.1%	46.5%	.544
I refer him/her to a specialty/university clinic	49.3%	42.6%	
I refer him/her to another dentist	8.5%	10.9%	
Do you take a dietary history of the patients who present with the tooth wear?			
Always	42.1%	39.6%	.924
Occasionally	44.7%	46.5%	
Never	13.2%	13.9%	
Do you think that the people with tooth wear have more caries?			
Yes	32.9%	30.7%	.856
No	52.6%	52.5%	
I do not know	14.5%	16.8%	
How would you treat the maxillary front region?			
RCT	1.3%	00	.008
Restore with a crown	15.1%	4%	
Restore with a composite	30.9%	35.6%	
Restore with overlay/Onlay	38.8%	36.6%	
Construct a night guard	4.5%	4%	
Treat locally with fluoride	6.6%	7.9%	
No treatment	2.6%	11.9%	
How would you treat the maxillary and mandibular premolar region?			
RCT	2%	1%	.583
Restore with a crown	15.8%	10.9%	
Restore with a composite	26.3%	20.8%	
Restore with overlay/Onlay	36.2%	43.5%	
Construct a night guard	8.6%	12.9%	
Treat locally with fluoride	4.6%	3%	
No treatment	6.6%	7.9%	
How would you treat the maxillary and mandibular first molars?			
RCT	2%	00	
Restore with a crown	21.7%	10.9%	
Restore with a composite	19.1%	12.9%	
Restore with overlay/Onlay	41.4%	53.5%	
Construct a night guard	7.9%	11.9%	
Treat locally with fluoride	3.3%	2%	
No treatment	4.6%	8.9%	
How would you treat maxillary and mandibular second molars?			
RCT	4.6%	00	.008
Restore with a crown	21.7%	9.9%	
Restore with a composite	15.8%	11.9%	
Restore with overlay/Onlay	39.5%	47.5%	
Construct a night guard	9.9%	13.9%	
Treat locally with fluoride	2%	1%	
No treatment	6.6%	15.8%	

Do you think you need more information on how to manage tooth wear patients?

Yes	59.2%	66.3%	.015
No	17.1%	4.9%	
May be	23.7%	28.7%	

Table 4. Comparison across Working Experience

Variable	Less than 10 years	More than 10 years	p-value
How often do you see patients with tooth wear in your practice?			
Always	23%	17.1%	.600
Often	73.2%	78.6%	
Never	3.8%	4.3%	
Do you register toot wear in the patient file?			
Yes	57.4%	65.7%	.227
No	42.6%	34.3%	
If not, why don't you register tooth wear?			
It is not the chief complaint	36.1%	41.4%	.365
I am not sure how to register	9.8%	5.7%	
I find tooth wear difficult to diagnose	7.1%	4.3%	
Do you usually find a probable cause for tooth wear?			
Mostly yes	43.7%	52.9%	.014
Occasionally	45.4%	47.1%	
Mostly Not	10.9%	00	
What do you think is the most common cause of tooth wear in KSA?			
Bruxism	63.9%	65.7%	.799
Gastroesophageal reflex	4.9%	5.7%	
Consumption of acidic foods and drinks	27.3%	27.1%	
Rampant caries	3.8%	1.4%	
What do you do if you have a patient with tooth wear requiring treatment?			
I treat him/her myself	39.3%	51.4%	.000
I refer him/her to a specialty/university clinic	55.7%	22.9%	
I refer him/her to another dentist	4.9%	21.4%	
Do you take a dietary history of the patients who present with the tooth wear?			
Always	39.9%	44.3%	.816
Occasionally	46.4%	42.9%	
Never	13.6%	12.9%	
Do you think that the people with tooth wear have more caries?			
Yes	33.9%	27.1%	.017
No	47.5%	65.7%	
I do not know	18.6%	7.1%	
How would you treat the maxillary front region?			
RCT	0.5%	1.4%	.637
Restore with a crown	12%	7.1%	
Restore with a composite	34.4%	28.6%	
Restore with overlay/Onlay	35%	45.7%	
Construct a night guard	4.9%	2.9%	
Treat locally with fluoride	7.1%	7.1%	
No treatment	6%	7.1%	

How would you treat the maxillary and mandibular premolar region?			
RCT	1.6%	1.4%	.969
Restore with a crown	13.7%	14.3%	
Restore with a composite	25.1%	21.4%	
Restore with overlay/Onlay	37.7%	42.9%	
Construct a night guard	9.8%	11.4%	
Treat locally with fluoride	4.4%	2.9%	
No treatment	7.7%	5.7%	
How would you treat the maxillary and mandibular first molars?			
RCT	1.6%	00	.445
Restore with a crown	16.9%	18.6%	
Restore with a composite	18%	12.9%	
Restore with overlay/Onlay	43.7%	52.9%	
Construct a night guard	8.7%	11.4%	
Treat locally with fluoride	3.3%	1.4%	
No treatment	7.7%	2.9%	
How would you treat maxillary and mandibular second molars?			
RCT	2.7%	2.9%	.986
Restore with a crown	18%	14.3%	
Restore with a composite	13.7%	15.7%	
Restore with overlay/Onlay	41.5%	45.7%	
Construct a night guard	12%	10%	
Treat locally with fluoride	1.6%	1.4%	
No treatment	10.4%	10%	
Do you think you need more information on how to manage tooth wear patients?			
Yes	65.6%	52.9%	.142
No	10.4%	17.1%	
May be	24%	30%	

Table 5. Comparison across Designation

Variable	General practitioners	Specialists/ consultants	p-value
How often do you see patients with tooth wear in your practice?			
Always	20.1%	23.4%	.759
Often	75.5%	73.4%	
Never	4.45	3.2%	
Do you register toot wear in the patient file?			
Yes	57.9%	62.8%	.442
No	42.1%	37.2%	
If not, why don't you register tooth wear?			
It is not the chief complaint	80.6%	43.6%	.027
I am not sure how to register	22.4%	4.3%	
I find tooth wear difficult to diagnose	19.4%	3.25	
Do you usually find a probable cause for tooth wear?			
Mostly yes	42.8%	52.1%	.149
Occasionally	47.2%	43.6%	
Mostly Not	10.1%	4.3%	
What do you think is the most common cause of tooth wear in KSA?			
Bruxism	64.8%	63.8%	.485
Gastroesophageal reflex	5%	5.3%	
Consumption of acidic foods and drinks	25.8%	30%	
Rampant caries	4.4%	1.1%	
What do you do if you have a patient with tooth wear requiring treatment?			
I treat him/her myself	39.6%	51.1%	.001
I refer him/her to a specialty/university clinic	54.7%	33%	
I refer him/her to another dentist	5.7%	16%	

Do you take a dietary history of the patients who present with the tooth wear?			
Always	37.7%	46.8%	.311
Occasionally	47.2%	42.6%	
Never	15.1%	10.6%	
Do you think that the people with tooth wear have more caries?			
Yes	32.7%	30.9%	.770
No	50.9%	55.3%	
I do not know	16.4%	13.8%	
How would you treat the maxillary front region?			
RCT	0.6%	1.1%	.085
Restore with a crown	8.2%	14.9%	
Restore with a composite	39.6%	21.3%	
Restore with overlay/Onlay	35.2%	42.6%	
Construct a night guard	3.8%	5.3%	
Treat locally with fluoride	7.5%	6.4%	
No treatment	5%	8.5%	
How would you treat the maxillary and mandibular premolar region?			
RCT	1.9%	00	.021
Restore with a crown	12.6%	25.5%	
Restore with a composite	20.1%	10.6%	
Restore with overlay/Onlay	45.3%	47.9%	
Construct a night guard	9.4%	9.6%	
Treat locally with fluoride	4.4%	00	
No treatment	6.3%	6.4%	
How would you treat the maxillary and mandibular first molars?			
RCT	1.3%	2.1%	.140
Restore with a crown	10.1%	20.2%	
Restore with a composite	28.9%	15.9%	
Restore with overlay/Onlay	37.1%	42.6%	
Construct a night guard	11%	9.6%	
Treat locally with fluoride	4.4%	3.2%	
No treatment	7.5%	6.4%	
How would you treat maxillary and mandibular second molars?			
RCT	3.1%	2.1%	.543
Restore with a crown	14.5%	21.3%	
Restore with a composite	15.7%	11.7%	
Restore with overlay/Onlay	42.1%	43.6%	
Construct a night guard	11.9%	10.6%	
Treat locally with fluoride	2.5%	00	
No treatment	10.1%	10.6%	
Do you think you need more information on how to manage tooth wear patients?			
Yes	68.6%	51.1%	.000
No	5.7%	23.4%	
May be	25.8%	25.5%	

The current study about the teeth wearing finding revealed that a significant proportion of the sample was male participants accounting for 60.1%, and the rest were female (**Figure 1**). 72.3% of the total sample was those having to experience less than 10 years of working as general practitioners (**Figure 2**). 74.7% of the practitioners often check those having problems and register patients with tooth wear. Those not registering tooth wear patients reasoned it as not the chief complaint. Almost half of the dentists usually find the cause for tooth wear and thought Bruxism is the most common cause of the problem. Most dentists occasionally take the dietary history of the patients. 52.6% of dentists did not believe in caries as a cause of

tooth wear (**Table 2**). Whereas, **Table 1** shows the power of sample, which was calculated to be 0.93.

Dentists treat the maxillary front region, maxillary and mandibular premolar region, and second molars via restoring with overly/onlay and RCT. 62.1% think they need more information on learning how to manage patients with tooth wear. **Table 3** revealed non-significant differences across gender. Findings reported that male and female dentists both have experienced less than 10 years and are practicing as general dentists. Both groups often see tooth wear patients in their practice and register patients with this problem. The reason behind not registering

patients with tooth wear was that they did not consider it as the chief complaint. Females mostly find the cause of tooth wear as compared to a male who finds it often. Bruxism is the leading cause, according to them, behind this problem and treats them. Both groups occasionally take dietary history with this problem and do not think that people with this problem have more caries. Both groups treat the maxillary front region, maxillary mandibular premolar region, and maxillary and mandibular first and second region via restoring with overly/onlay. Male and female groups think they need more information for managing patients with tooth wear (**Table 3**).

Table 4 revealed differences across working experience and reported significant differences in designation and treatment requirement. Specialists have experience of more than 10 years while general practitioners have less experience. Both groups have seen tooth wear patients often and registered patients with this problem. Those who did not report the cases thought it was not a common occurrence, and experts often discovered the source of the problem, which was that gritted teeth were the most common basis for tooth decay. They are referred to specialized clinics since they have less experience, whereas specialists used to handle patients on their own. Those with more experience always take a dietary history and think people with tooth wear do not have caries. Both groups treat the maxillary front region, premolar region, and first and the second region via restoring with overly/onlay while experienced treat the premolar region with restoring with a composite. Both groups need more information for managing tooth wear patients.

Table 5 revealed non-differences across designation, and findings reported that both groups often see tooth wear patients and register patients with this problem. Those not reporting it did not consider it a chief complaint. Specialists mostly find out the cause of the problem. Bruxism is the most common cause according to both groups. General dentists refer patients to clinics while specialists treat them on their own. Both groups take dietary history occasionally and do not think people with tooth wear have more caries. Both groups treated all maxillary, and mandibular regions via restoring a composite or overly/onlay. Both groups think they might need more information for managing patients.

In this study, dentists in Saudi Arabia were asked about their awareness of tooth wear and treatment decisions. After data were collected using a cross-sectional survey study design, SPSS was utilized to test the hypothesis using chi-square and descriptive analysis. In the frequency analysis, the findings reported that a significant proportion of the sample was male participants accounting for 60.1%, and the rest were female. 72.3% of the total sample were those having experience of fewer than 10 years and working as a general practitioner. 74.7% of the practitioners often examine people having the problem and

register patients with tooth wear. Those not registering tooth wear patients reasoned it as not the chief complaint. Almost half of the dentists usually find the cause for tooth wear and thought Bruxism is the most common cause of the problem. Literature reported opposite results that eighty-eight percent of healthy teeth were appropriately diagnosed as being free of dental disease. Dentists performed much worse in detecting the existence of a dental problem. Most dentists occasionally take the dietary history of the patients. 52.6% of dentists do not think that caries are because of tooth wear. Dentists treat the maxillary front region, maxillary and mandibular premolar region, and second molars via restoring with overly/onlay and RCT. 62.1% think they need more information on learning how to manage patients with tooth wear [10].

Table 3 revealed non-significant differences across gender. Findings reported that male and female dentists have experienced less than 10 years and are practicing as general dentists. Both groups often see tooth wear patients in their practice and register patients with this problem. The reason behind not registering patients with tooth wear was that they did not consider it as the chief complaint. Females mostly find the cause of tooth wear as compared to a male who finds it often. Bruxism is the leading cause, according to them, behind this problem and treats them. However, literature reported opposite results that carbonated beverages (98%) were the most prevalent cause, followed by acidic juices (46%), sports drinks (46%), and fruit (46%). Reflux (24%) and eating problems (13%) were also commonly mentioned as contributing causes by dentists. Both groups occasionally take dietary history with this problem and do not think that people with this problem have more caries. Both groups treat the maxillary front region, maxillary mandibular premolar region, and maxillary and mandibular first and second region via restoring with overly/onlay. Male and female groups think they need more information for managing patients with tooth wear [7].

Specialists as well as general practitioners, both groups had seen tooth wear patients often and registered patients with this problem. Those not registering the cases thought it was not a chief complaint and specialists mostly found the cause of the problem and literature also reported that the majority of dentists (82 percent) said they generally identified the probable source of the erosive lesions, 17 percent thought it happened sometimes, and just 2 percent said they seldom found a plausible reason or did not know. Lesser experience refers them to specialty clinics while specialists used to treat a patient on their own. Those with more experience always take a dietary history and think people with tooth wear do not have caries. Both groups treat the maxillary front region, premolar region, and first and the second region via restoring with overly/onlay while experienced treat the premolar region with restoring with a composite. Both groups need more information for managing tooth wear patients wear [7].

Table 5 revealed non-differences across designation; findings reported that both groups often see tooth wear patients and register patients with this problem. Those not reporting it did not consider it a chief complaint. Specialists mostly find out the cause of the problem. Bruxism is the most common cause according to both groups. General dentists refer patients to clinics while specialists treat them on their own. Both groups take dietary history occasionally and do not think people with tooth wear have more caries. Both groups treated all maxillary, and mandibular regions via restoring a composite or overly/onlay. Both groups think they might need more information for managing patients, and previous studies reported that eighty-three percent of specialists examine those who have the problem. In the patient file, 61.5 percent had wear lesions, and 68.2 percent had discovered a plausible cause of the problem. 87.2 percent of dentists said that Bruxism is the most prevalent reason in Joran. Dentists treated 63.3 percent of people having this problem. Dietary history was taken by dentists. Seventy-seven percent of those polled did not believe that caries are due to tooth wear. General practitioners reported a lack of trust in identifying and treating tooth wear. In terms of therapy, most dentists opted to use composite to replace damaged teeth and make a night guard [8].

Conclusion

Minute gender differences were reported. Specialists and more experienced were more confident in diagnosing and treating the problem. The common cause was bruxism, and the treatment method was restoring the composite an overly/onlay. Dentists reported they might need more information for managing the cases.

Limitations

This study was carried out in a restricted area population and with a small sample size which arises the generalizability issues. Due to self-report measures, there are chances of faking social desirability, which questions its internal consistency.

Acknowledgments: We would like to extend our appreciation towards the research center of Riyadh Elm University.

Conflict of interest: None

Financial support: None

Ethics statement: Data from the participants will be kept confidential.

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