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The use of decorative braces in Jeddah, Saudi Arabia

Ahmed I. Masoud¹, Fatima A. Alshams²**Abstract:**

OBJECTIVE: To assess the practice of using orthodontic brackets as tooth decorations among dental offices and patients in Jeddah, Saudi Arabia.

MATERIALS AND METHODS: The study was a cross-sectional survey using 2 questionnaires. The first included 14 doctor questions where 300 dental offices in Jeddah, Saudi Arabia were contacted by phone. The second questionnaire included 22 patient questions where 50 patients who currently have or have had decorative braces answered the questions online.

RESULTS: Out of 250 dental offices that responded, 91 offices (36.4%) answered "yes" to offering decorative braces. Most dentists use metal brackets (96.3%) on both the upper and lower arches (98.8%) and ligate a wire (83.8%) using colored elastomeric ligatures. Out of 50 patients who answered the patient questions, 28 patients (56%) were females and the mean age was 19.84 years (± 2.32). 37 (74%) patients reported that their decorative braces were not placed by dentists and mostly by over the counter glue. Finally, 62% reported they were not satisfied, and 84% said they would not recommend getting decorative braces to their family and friends.

CONCLUSION: Our results indicate that the use of decorative braces is prevalent, and most are not being placed by dentist. As healthcare providers, we are obliged to educate the public of potential harm that can result when decorative braces are used, to hopefully limit the spread of this unfortunate practice.

Keywords:

Braces, dental bonding, dental esthetics, dental Jewelry, glue, orthodontic brackets

Introduction

Edward H. Angle, largely considered the father of modern day orthodontics, described orthodontics as a means to obtain ideal proximal and occlusal contact of the teeth (occlusion), facial esthetics, perfect function, and denture stability.^[1] Even in the simplest of definitions by dissecting the word into its Greek origins, orthodontics means straight "ortho-", teeth "-odont".^[2] However, regrettably orthodontic braces are being used inappropriately by some health care professionals.

Humans have always felt the need to modify their bodies by permanent or

temporary means for different reasons. Bodily modifications usually include the skin such as tattoos or piercings but can also extend to the oral tissues and teeth.^[3] Tooth decoration refers to "the process of deliberately changing or altering natural tooth tissue for reasons other than treating the disease".^[3] In ancient civilizations, tooth modification was performed for different reasons such as: enhancing attractiveness, symbolizing wealth, tribal identification, survival purposes, and cultural or religious beliefs.^[3,4]

Nowadays, esthetics is of utmost significance and people want to create their own visual style making them unique and identifiable among the crowd.^[5] Dental esthetics is not only considered a sign of beauty, but is also considered by some as a sign of wealth and

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higher social status.^[3] As a result, tooth decorations such as tooth jewelry and tattoos have been used by patients in different parts of the world to enhance dental esthetics,^[3-6] and in recent years in Saudi Arabia sadly the use of orthodontic brackets as tooth decorations or "decorative braces" has emerged. The objective in the current study was to assess the practice of using orthodontic brackets as tooth decorations among dental offices and patients in Jeddah, Saudi Arabia.

Materials and Methods

The study was a cross-sectional survey using 2 questionnaires. To construct the questionnaires, initially, several patients with decorative braces were contacted via social media to get a general understanding of these patients. This was followed by bringing 3 patients with decorative braces in a private clinic to examine their appliances and oral health. After a preliminary questionnaire was constructed, 8 orthodontists were interviewed, and the questionnaires were presented to them. Feedback was provided by the orthodontists to edit some of the questions and additional questions were added. Finally, final versions of the questionnaires were formed and were made available in both Arabic and English.

The first questionnaire (doctor questions) was comprised of 14 questions about decorative braces and their use [Table 1]. In an attempt to include all dental offices in Jeddah, Saudi Arabia, a list of 300 dental offices in Jeddah was constructed using information from insurance companies, dental supplies companies, and google searches. These offices were all contacted by phone and the questions were presented directly to doctors, or indirectly by having the receptionist in the office convey the questions to the doctor, then present the researcher with the doctor's answers. Offices were contacted 3 times on separate days during the week. If an office did not answer the phone call, a second attempt of 3 calls was done a month later, followed by a third attempt of 3 calls 1 month after that. If an office did not answer the phone on all three attempts, the office was listed as a non-responder. Care was taken to make sure calls were performed during working hours.

The second questionnaire (patient questions) included 22 questions directed to patients who currently have decorative braces or have removed them less than a month ago [Table 2]. The questions were related to the patient's experience with decorative braces. Recruitment was done using various social media venues and patients answered these questions online using Google Docs. The research ethics committee at King Abdulaziz University reviewed and approved the protocol #36 – 04 – 2020.

The data were collected for both questionnaires and entered into Microsoft Excel. Monetary amounts were converted into US dollars to make the data more reader friendly to all readers.

Results

Out of a total of 300 dental offices that were contacted by phone, 177 responded on the first attempt. After the second attempt a month later, the number of responders went up to 191. After the third and final attempt, the number of responders went up to 250 giving a response rate of 83.3%.

Out of 250 dental offices that responded, 91 offices (36.4%) answered "yes" to offering decorative braces. Eleven dental offices answered "upon diagnosis" to the remaining 13 questions and were excluded from further analysis. Therefore, questions 2 to 14 include answers of only 80 offices. Table 1 shows that most dentists use metal brackets (96.3%) on both the upper and lower arches (98.8%) and ligate a wire (83.8%) using colored elastomeric ligatures. While the majority of dentists bonded decorative braces to almost all upper and lower teeth (61.3%), other dentists bonded only the front teeth (36.3%). Other answers to doctor questions are displayed in Table 1.

A total of 50 patients answered the online patient questions between August 2019 and November 2019. Out of these patients, 28 (56%) were females and the mean age was 19.84 years (± 2.32). The answers to the patient questions are displayed in Table 2.

Discussion

This study was undertaken to better understand the unfortunate use of decorative braces in Jeddah, Saudi Arabia by directing questions to both dentists and patients. The two questionnaires gave us different insight into the practice of decorative braces, most importantly that most of these braces are being placed at home.

In an attempt to include all dental offices in Jeddah, Saudi Arabia we contacted 300 offices. Jeddah is a city in the Makkah region which has around 2700 dentists working in the private sector.^[7] About half of these dentists are in Jeddah, and if we consider each dental office has 3 to 5 dentists working, then 300 being the total number of dental offices in Jeddah is a reasonable number.

Our dental office participation rate was high at 83.3%. There were 11 dental offices who confirmed offering decorative braces but did not want to answer any further questions until further diagnosis. If we exclude these offices a more conservative 79.7% participation rate is found which is still very high. Studies have shown that

Table I: Answers to doctor questions

Q1	Does your office offer decorative braces?			
Yes=91*	No=159			no answer=50
Q2 How much do you charge for decorative braces? (in US dollars)				
Mean 371.1 usd (± 229.1)**	$\leq 200=16$	$>200, \leq 400=45$		$>400=19$
Q3 Can I bring my own braces to be bonded by the doctor?				
Yes=28	No=52			
If the answer is yes, how much do you charge for bonding decorative braces? (in US dollars)				
Mean 164.4 usd (± 69.1)***	100=3	$>100, 200=21$		$>200=4$
Q4 What are the types of decorative braces you offer?				
Metal=80	Clear=3		Other=0	
If other than metal, Is there a difference in price, how much?				
No, metal and ceramic are the same price=3				
Q5 Do you put decorative braces on upper only, lower only, or both upper and lower teeth?				
Upper only=1	Lower only=0		Upper and lower=79	
Is there a difference in price? How much?				
Yes=32 - Mean 223.82 usd (± 135.43)	No=48			
Q6 How many teeth will have brackets on them?				
All teeth=38	Front teeth only=29	10 upper and 10 lower teeth=11	10 upper teeth only=1	As you like=1
Q7 Do you put a wire with the decorative braces?				
Yes=67	No=12		As you like =1	
Q8 If something breaks, will you charge to fix it? How much?				
Yes=35 - mean 54.9 usd (± 25.82)	No=45			
Q9 Will my teeth move?				
Yes=18	No=62			
Q10 Will I need to wear a retainer after I take my decorative braces off?				
Yes=2	No=78			
Q11 How long do you recommend the patient keep the decorative braces?				
3 months=5	6 months=9	1 year=3	2 years=0	As long as they want=63
Q12 Are there any side effects with decorative braces?				
No=74	Yes=6			
If yes, what are the side effects				
Can be harmful to teeth=5	Caries=1			
Q13 Do I need to come in for follow up visits?				
No=42	Yes=38			
If yes, how often?				
Every month=2	Every 3 months=14	Every 6 months=4	Every year=0	Other (as you like or to change color)=18
If yes, how much are the follow up visits?				49.74 usd (± 18.72)
Q14 I have a carious tooth, can I still get decorative braces?				
Yes=52	No=28			

*11 out of the 91 offices that confirmed using decorative braces answered "upon diagnosis" to all the remaining questions. **An outlier of 3466.6 usd was excluded from mean calculation. ***An outlier of 1333.3 usd was excluded from mean calculation

participation rates for telephone surveys range between 30% and 70%.^[8] Authors have shown that increasing the number of call attempts can maximize telephone response rate.^[9] In the current study three attempts, a month apart, were made to contact the dental offices with 3 calls per attempt. This might have contributed to the above average participation rate.

Another factor that probably had a bigger impact on the high participation rate is the distressed economy nowadays. Dental offices and dentists are eager to acquire patients by any means necessary. Regarding the

50 dental offices that did not respond we believe either the contact information was inaccurate, or more likely these offices have gone out of business given the state of the economy. The state of the economy might also be the reason why a staggering 36.4% of dental offices offer decorative braces to their patients [Table 1].

Orthodontic treatment has been linked to adverse effects some of which include: decalcification, caries, root resorption, pain, pulpal changes, and periodontal disease.^[10] Dentists should follow the principles of medical ethics and "do no harm". This not only concerns

Table 2: Answers to patient questions

Q1	How old are you?			
	19.84 (± 2.32)			
Q2	What is your gender?			
	Male=22		Female=28	
Q3	Why did you decide to get decorative braces?			
	Sign of being rich=1	Appearance=34	Fashion=14	Other (stupidity)=1
Q4	Who put on your decorative braces?			
	Dentist=13	Yourself=19		Other=18 (family or friend)
Q5	What was used to stick the brackets to the teeth?			
	Dental glue=13	Over the counter glue=36		Other=1 (no glue)
Q6	Type of braces for decoration?			
	Metal brackets=50		Ceramic brackets=0	
Q7	Do you have decorative braces on upper only, lower only, or both upper and lower teeth?			
	Upper only=13	Lower only=2		Upper and lower=35
Q8	Are your decorative braces with wire or without?			
	With wire=44		Without wire=6	
Q9	What is on the brackets?			
	Elastic ties=48	Steel ties=1		Nothing=1
Q10	Were you informed of possible side effects?			
	Yes=9		No=41	
Q11	have you experienced any side effects from decorative braces?			
	Yes=41		No=9	
	If yes, what are the side effects			
	Soft tissue or lip injury=29	Sensitivity=9	A cavity=7	Metallic taste=1
				Headache while eating=1
Q12	Do you brush your teeth differently now with decorative braces?			
	Yes=10		No=40	
Q13	Did your teeth shift?			
	Yes=12		No=38	
Q14	Were the braces painful?			
	Yes=22		No=28	
Q15	How much did you pay to get decorative braces including bonding? (in US dollars)			
	All: 168.75 (± 221.1)	By dentist=404.1 (± 332.91)		Not by dentist=86.05 (± 49)
Q16	How do you find the cost of decorative braces?			
	Low=20	Average=20		High=10
Q17	How long did you have them on?			
	≤ 3 months=19	>3 and ≤ 6 months=16	>6 and ≤ 1 years=14	>1 year=1
Q18	How long do you intend to keep them?			
	Already removed them=10	I do not intend to keep=3	≤ 3 months=20	>3 and ≤ 6 months=8
				>6 and ≤ 1 years=5
				>1 years=4
Q19	How did you hear about decorative braces?			
	Social media=33	Friend=10	Family member=6	Other (celebrity)=1
Q20	Are you satisfied with the decorative braces?			
	Yes=19		No=31	
Q21	Do you promote getting decorative braces to your family and friends?			
	Yes=8		No=42	
Q22	Do you want to come in for free consultation with an orthodontic consultant?			
	Yes=6		No=44	

the potential for harm of every therapy used, but also a consideration of the potential benefits of this therapy.^[11] As orthodontists we place brackets for specific periods of time and, knowing these associated risks, we remove braces as soon as our goals are achieved. Placing decorative braces exposes patients to these risks with no treatment goal in sight. In our study, 92.5% of dentists who offered decorative braces told patients there were no

side effects to these braces and 78.8% told patients that they could keep decorative braces on for as long they wanted. Also, 65% told their patients that they could get decorative braces even if they had a cavity [Table 1].

A very worrisome fact is that although only 22.5% of dentists told their patients that teeth might shift with decorative braces, 83.8% engaged wires in these brackets.

Wires will evidently move teeth, and this is mostly happening under no supervision because more than half of these offices tell their patients that no follow up visits are needed [Table 1]. Unsupervised tooth movement can result in traumatic occlusion from abnormal tooth movement which can cause recession.^[12] Additionally, moving teeth without proper treatment planning can move these teeth out of the bone envelope resulting in bone dehiscence and recession.^[13]

Table 2 shows answers to patient questions. The most striking result was that 37 (74%) of decorative braces were not placed by dentists and sold directly to patients as either "connected decorative braces" or "separated decorative braces" [Figure 1 and 2]. Most of these decorative braces are bonded by over the counter glue. Superglue is toxic and can cause hypersensitivity reactions, swelling, and inflammation of the oral mucosa.^[14] Additionally, superglue and other Cyanoacrylates polymerize via an exothermic reaction which can cause thermal injuries to both the teeth and oral mucosa so their use in the oral cavity should be strongly discouraged.^[15] One patient reported that no bonding of any type was used, rather the design included clasps for retention [Figure 3]. This design might have the least potential adverse effects since it is removable.

There were 12 patients who reported their teeth shifted while they had decorative braces [Table 2]. After some investigation we found that only 4 of the 37 patients who had their decorative braces placed by someone other than a dentist, reported that their teeth shifted (10.8%). On the other hand, 8 of the 13 patients who had dentists put on their decorative braces reported that their teeth shifted which at 61.5% was a larger percentage. This is probably because dentists engage active wires in these braces, while decorative braces not placed by dentists can come in links that are less active [Figures 1 and 2].

A silver lining is that 62% reported they were not satisfied, and 84% said they would not recommend getting decorative braces to their family and friends [Table 2]. We tried to get some of these patients in for clinical examinations, and 6 initially agreed to come, but no one actually showed up. Our data were acquired using questionnaires, which was a limitation in this study, and a future study could add incentive to bring these patients in the clinic and perform a clinical examination.

Conclusion

Our results indicate that the use of decorative braces is prevalent with 36.4% of dental offices in Jeddah offering it. Furthermore, our patient-based questionnaire showed that 74% of decorative braces are not being placed by dentist, and rather by the patients themselves, or a friend



Figure 1: Connected decorative braces (assembled by the authors to resemble online ads)

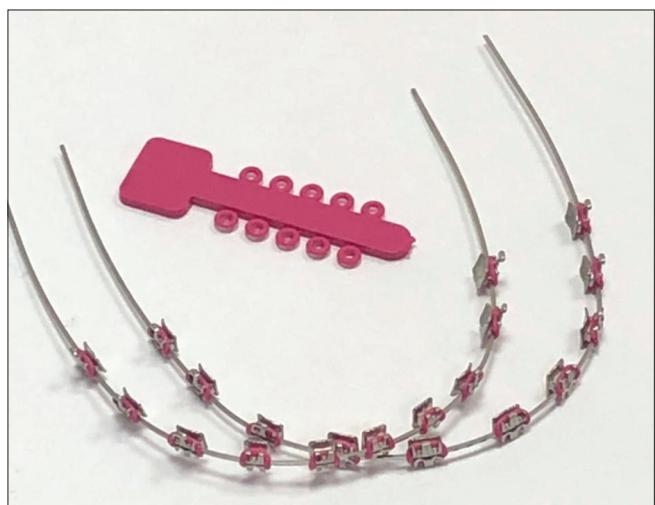


Figure 2: Separated decorative braces (assembled by the authors to resemble online ads)



Figure 3: Removable decorative braces with clasps

or family member using over the counter glue. Finally, as healthcare providers we are obliged to educate the public of potential harm that can result when decorative

braces are used, to hopefully limit the spread of this unfortunate practice.

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Conflicts of interest

There are no conflicts of interest.

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