

## Awareness and attitude toward the usage of fake braces as an intermaxillary fixation for diet control purposes in Saudi Arabia

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### ABSTRACT

The increased demands towards the usage of fake braces are relatively high. One possible reason behind its usage is to lose weight. The use of Intermaxillary fixation for diet control (IMFDC) is ethically questionable since it causes more harm than good for the patients. No studies have reported the use of Fake Braces as an Intermaxillary Fixation in Saudi Arabia. Therefore, the aim of this study is to evaluate the knowledge and awareness toward the usage of Intermaxillary Fixation (fake braces) for diet controlling in Saudi Arabia. The study utilized a cross-sectional questionnaire with random sampling. An online-based questionnaire was distributed through all social media platforms, and it consisted of two sections. The first section included demographic data of the participants, and the second section included questions about fake braces in relation to diet control. Out of the 1230 respondents, only 72 participants believed that fake braces could be used as an intermaxillary fixation for diet control purposes. Out of the 72 participants, only 2 of them have worn fake braces for diet control purposes. 58.33% of the participants were aware that wearing fake braces has many drawbacks. Knowledge and awareness toward the usage of Intermaxillary Fixation (fake braces) for diet controlling in Saudi Arabia was high. The prevalence of the population in Saudi Arabia who use it in the five main regions was very low and insignificant. More studies discussing intermaxillary fixation for the purpose of diet control on a larger sample size are needed.

**Keywords:** Intermaxillary Fixation, Fake braces, Diet control, weight loss

### 1. INTRODUCTION

Nowadays being fit and esthetics, in general, is an important feature in determining the attractiveness of oneself. Therefore, the increased demands towards the usage of fake braces are relatively high in some countries. Fake braces are most commonly used for fashion purposes (Wilding, 1997).



Another possible reason behind its usage is to lose weight rather than doing diet management programs or doing exercise or behavioral therapy which have been proved to be an effective and safe regimen to reduce weight. People tend to do fake braces for diet control instead of these healthy methods due to the lack of compliance and commitment as well as the time and effort needed to reduce weight (Wilding, 1997; Behbehani, 2006). Fake braces are made from materials found at home, local stores, or online. Since it's not therapeutic and not made by an orthodontist it is associated with many disadvantages such as gingivitis, mouth ulcers, malocclusion, caries, and infections from unsterilized instruments (Hakami et al., 2020). Intermaxillary fixation (IMF) is an old procedure that allows for stabilizing the maxillary or mandibular fractures using various types of tooth-mounted devices like arches, dental and interdental wiring, ligatures, or screws, which are attached to the dental arches (Behbehani, 2006). Bodyweight loss was always noticed in some cases after orthognathic surgery due to the usage of intermaxillary fixation (Hakami et al., 2020). It was found in a study done by (Ooi et al., 2019) that the usage of both intermaxillary fixation and elastic traction following orthognathic surgery showed a significant body-weight loss by 1.4% to 2.6%.

Several doctors have attempted to do some modifications to the IMF technique and utilize it for obese patients in order to lose weight. Patients have found that Intermaxillary fixation for diet control (IMFDC) is an affordable simple technique to lose weight rapidly with less compliance (Goss, 1979; Wood et al., 1977). The use of Intermaxillary fixation for diet control (IMFDC) is ethically questionable since it causes more harm than good for the patients. Considering that liquid or soft diet are the only things patients can eat while having IMF, the longer the time undergoing IMFDC, the more tendency and severity of having oral and gastrointestinal side effects (Shephard et al., 1982). Possible side effects reported in the literature are dysarthria as a consequence of difficulty controlling the muscles, Temporary trismus, oral-facial pain, extrusion of the ligated teeth which will result in changes in the bite, Halitosis, dysgeusia, and gingival bleeding, teeth staining and fracture. Moreover, long-term usage may lead to a nutritional deficiency like anemia (Behbehani, 2006).

In Saudi Arabia, specifically Jazan a study was done by (Alhazmi et al., 2021) have concluded that participants were not aware of the associated health problems and adverse effects of wearing fake braces because they had not discussed it with an orthodontist. No studies have reported the use of Fake Braces as an Intermaxillary Fixation for diet control (IMFDC) In Saudi Arabia. Therefore, the aim of this study is to evaluate the knowledge and awareness toward the usage of Intermaxillary Fixation (fake braces) for diet controlling in Saudi Arabia.

## 2. METHOD

### Study design and sample size

The study utilized a cross-sectional questionnaire with the random sampling technique to evaluate the knowledge and awareness toward the usage of Intermaxillary Fixation (fake braces) for diet controlling in Saudi Arabia. According to Ngamjarus et al., (2014) the sample size was calculated based on n4studies and it was estimated to have a minimum of 385 responses. Based on the study objectives, an online questionnaire was formulated and conducted among the Saudi population. A pilot study was conducted among 30 participants to assess the validity and reliability of the questionnaire. Participants included in the study were both Saudi and non-Saudi citizens of both genders who aged 11 years old and above.

### Data collection process

The study duration was 4 months (from June to September 2020) starting with questionnaire formation and proposal submission till data collection and manuscript completion. The questionnaire was conducted in July 2020 and distributed through all social media platforms such as WhatsApp, Twitter, and Snapchat. Data collection began in duration of one month after ethical approval had been obtained from King Abdullah international medical research center. Based on the study objectives the questionnaire was distributed and data was collected from different regions (central, western, eastern, and northern region) to assess and compare the participants' level of awareness based on the region. A consent form was included in the questionnaire and taken from all study participants.

### Questionnaire

The questionnaire was developed in the English language then translated into Arabic language and distributed to Arabic speaking population. The first section of the questionnaire included general questions about the participant's age, sex, nationality of both Saudi and Non-Saudi. Moreover, educational level was assessed using three variables (High School or less, Diploma/bachelor degree, Higher Education) as well as regions which included (Western region, Northern region, Eastern region, Southern region,

Central region). Also, income that was divided into three categories: 9000-14900 SR, < 8999 SR, >15000 SR. The above variables were used to compare the Knowledge and Experience of the participants.

The second section included specific questions about intermaxillary fixations (fake braces) in relation to diet control. This section evaluated the Knowledge and Experience Related to IMFDC. The participants were asked if they have an idea about it, intended to use it, or used it already. Furthermore, the participants were asked about their ways of discovering the intermaxillary fixation for diet control purposes whether it is through (social media, friends, family, or others). The last question was about the drawbacks of fake braces that are considered by the Participants which included 10 choices such as choking, ulceration, resorption, taste alteration or no effect at all, etc., each choice from the drawbacks was assessed separately using dichotomous questions (closed-ended).

**Data analysis**

The data from the questionnaire was entered into Microsoft Excel sheet. After that, the data were analyzed using SPSS 22 for statistical analysis. Missing variables and normality distribution were cleaned and checked at the beginning of the analysis. P-value was set at 0.05.

**3. RESULT**

**Demographical Data Result**

Out of the 1230 respondents, only 72 participants believed that fake braces could be used as an intermaxillary fixation for diet control purposes. Most of the responses who believed that fake braces could be used as an intermaxillary fixation for diet control purposes were female with 65,2 % and most of them were 35 years old and older (40.28%). The youngest groups of the respondents (from 11-15 years old) were the least interested in wearing fake braces for diet control purposes by 1.39%. Central and Western regions had the highest response with a percentage of 47.22% and 22.22% respectively. Regarding the educational level and income, participants with diploma/bachelor’s degree were the highest with 65.28% and participants with the least income (<8999 SR) were the majority by 45.83% as shown in (Table 1).

**Table 1** Baseline characteristics of participants.

Variable	N (%)
Nationality	
Saudi	70 (97.22)
Non-Saudi	2 (2.78)
Sex	
Male	25 (34.72)
Female	47 (65.28)
Age	
From 11 to 15 years old	1 (1.39)
From 16 to 20 years old	12 (16.67)
From 21 to 25 years old	12 (16.67)
From 26 to 30 years old	10 (13.89)
From 31 to 35 years old	8 (11.11)
More than 35 years old	29 (40.28)
Region	
Northern region	9 (12.5)
Western region	16 (22.22)
Central region	34 (47.22)
Eastern region	5 (6.94)
Southern region	8 (11.11)
Educational	
High School or less	11 (15.28)
Diploma/bachelor’s degree	47 (65.28)
Higher Education	14 (19.44)
Income	
< 8999 SR	33 (45.83)
9000-14900 SR	12 (16.67)
>15000 SR	27 (37.5)

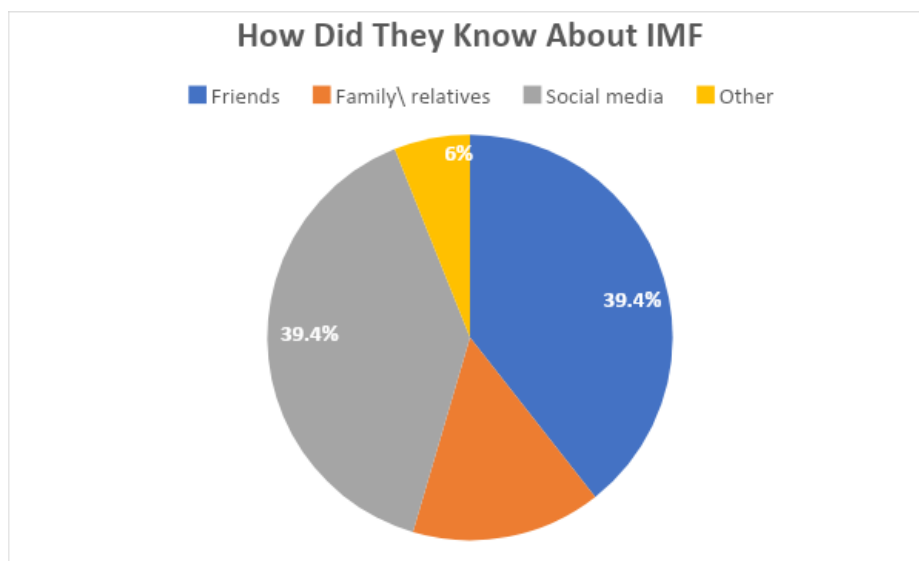
**Participants’ Knowledge and Experience Related to IMF**

Out of the 72 participants who believed that fake braces could be used as an intermaxillary fixation (IMF) for diet control purposes, 54.17% of them have no idea about fake braces and 84.72% are not planning to wear them. Only 2 of the participants have worn fake braces for diet control purposes in their life (Table 2).

**Table 2** Participants’ Knowledge and Experience Related to IMF

Variable	N (%)
Idea about it	
Yes	33 (45.83)
No	39 (54.17)
Planning to wear	
Yes	11 (15.28)
No	61 (84.72)
Have worn	
Yes	2 (2.78)
No	70 (97.22)

Social media and friends have the highest impact on the participants by 39.39 % in discovering the intermaxillary fixation for diet control purposes (figure 1). 58.33% out of the whole participants are aware that wearing fake braces as an intermaxillary fixation have many drawbacks. The highest chosen 2 drawbacks that are considered by the participants are oral health and hygiene and oral ulceration with the same percentage by 48.6% and the least drawback chosen by the participants was tooth resorption with a percentage of 9.72% (Table 3).



**Figure 1** How Did They Know About IMF

**Table 3** Drawbacks that are considered by the Participants

Minerals		
NO (did not choose it)	44	(61.11)
YES (chose it)	28	(38.89)
Choking		
NO (did not choose it)	49	(68.1)
YES (chose it)	23	(31.94)
Ulceration		
NO (did not choose it)	37	(51.39)
YES (chose it)	35	(48.61)

Resorption		
NO (did not choose it)	65	(90.2)
YES (chose it)	7	(9.72)
Position		
NO (did not choose it)	58	(80.56)
YES (chose it)	14	(19.44)
Hygiene		
NO (did not choose it)	37	(51.39)
YES (chose it)	35	(48.61)
Pronunciation		
NO (did not choose it)	38	(52.78)
YES (chose it)	34	(47.22)
Taste		
NO (did not choose it)	63	(87.5)
YES (chose it)	9	(12.5)
Pain		
NO (did not choose it)	41	(56.9)
YES (chose it)	31	(43.1)
No effect		
NO (did not choose it)	63	(87.5)
YES (chose it)	9	(12.5)

#### 4. DISCUSSION

This study explores the awareness of the Saudis and residents who live in Saudi Arabia regarding their knowledge of the usage of intermaxillary fixation (IMF) for diet control purposes. The survey was distributed in the five main regions in Saudi Arabia. Central and Western regions had the highest responses with a percentage of 47.22% and 22.22%, respectively. Out of 1230 respondents, only 72 (5.8%) participants believed that fake braces could be used for diet control purposes, fortunately, that shows a high awareness level among the sample. Participants with diploma/bachelor's degree were the highest with 65.28%, and participants with the least income (>8999 SR) were the majority by 45.83%.

##### Demographical Data

Diploma/bachelor's degree, low-income families were the highest who believed that IMF could be used for diet control purposes. Similarly, (Hakami et al., 2020) had most of the participants who use the fake braces for reasons other than orthodontic therapeutical purposes were the university educational level and the low family incomes.

##### Participants' Knowledge and Experience Related to IMF

In this study, only two participants out of 1230 have worn the IMF for diet control purposes previously in their lives. That revealed a high educational level among the Saudi Arabian population. After asking the participants regarding their knowledge of the IMF, most of the respondents had no idea about it and not planning to wear it in the future for diet control purposes. In contrast, a study that had been conducted in Malaysia, 95% of the participants had an idea about the fake braces that is used for purposes other than therapeutic purposes (Rohaya et al., 2019).

In the same study (Rohaya et al., 2019) that was conducted in Malaysia, that found 37% of the participants who knew about the fake braces from social media. Similar to this study, social media had the highest impact on the participants by 39.4% in discovering the intermaxillary fixation for diet control purposes. That shows the high impact of social media in both populations.

##### Drawbacks that are considered by the Participants

In comparison to another study that was conducted in 2006, regarding the side effects of the usage of intermaxillary for diet control (IMFCD) (Behbehani, 2006). A survey was distributed among users of (IMFDC). The most common side effects were speech problems and pain with a prevalence of 52.5 and 32.5%, respectively. Whereas in this study, the survey was distribute among the

population to explore their awareness. Oral hygiene 48.6%, ulceration 48.6%, and speech problems 47.2% were believed to be the highest side effects.

## 5. CONCLUSION

Knowledge and awareness toward the usage of Intermaxillary Fixation (fake braces) for diet controlling in Saudi Arabia was high. The prevalence of the population in Saudi Arabia who use Intermaxillary Fixation for diet controlling and weight loss according to the five main regions was very low and insignificant. Elderly participants have a low level of awareness compared to adolescence. The majorities have not wear \use fake braces and are not planning to wear it in the future. The participants' awareness regarding the side effects of using Intermaxillary Fixation for diet controlling and weight loss showed positive feedback. More studies discussing intermaxillary fixation for the purpose of diet control on larger sample size are needed.

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We would like to thank the participants who were all contributed samples to the study.

### Authorship contribution statement

Reuof Alessa: Literature search, Data acquisition, Manuscript preparation, Manuscript editing.

Norah Alghurairi: Literature search, Data acquisition, Manuscript preparation, Manuscript editing.

Rahaf Alalwan: Literature search, Data acquisition, Manuscript preparation, Manuscript editing.

Huda Alaqa'il: Literature search, Data acquisition, Manuscript preparation, Manuscript editing.

Nasir Alhamlan: Data acquisition, Manuscript review, Supervision.

Omar Aldibasi: Statistical analysis.

### Conference presentations

4th Career and research day

IADR Saudi Division Unilever HATTON COMPETITION (JUNIOR CATEGORY)

The 1st IADR Saudi Division Symposium

DLS5/ IADR Saudi Arabian Division E-Poster Competition

1st Dental students research meeting, Riyadh, Saudi Arabia

Health Professions Conference, Riyadh, Saudi Arabia

### Ethical approval

The study was approved by the medical committee of King Abdullah International Medical Research Center (ethical approval code: IRB/RC20/399/R).

### Conflicts of interest

The authors declare that they have no conflict of interest.

### Funding

This study has not received any external funding.

### Data and materials availability

All data associated with this study are present in the paper.

## REFERENCES AND NOTES

- Alhazmi A S, Al Agili D E, Aldossary M S, Hakami S M, Almalki B Y, Alkhaldi A S, Shubayr M A. Factors associated with the use of fashion braces of the saudiarabian youth: application of the health belief model. *BMC Oral Health* 2021; 21(1).
- Behbehani F, Al-Aryan H, Al-Attar A, Al-Hamad N. Perceived effectiveness and side effects of intermaxillary fixation for diet control. *Int J Oral Maxillofac Surg* 2006; 35(7): 618–623.
- Goss AN. Management of patients with jaws wired for obesity. *Br Dent J* 1979; 146: 335–339.

4. Hakami Z, Chung HS, Moafa S, Nasser H. Impact of fashion braces on oral health related quality of life: a web-based cross-sectional study. *BMC Oral Health* 2020; 20(1):236.
5. Ngamjarus C, Chongsuvivatwong V. n4Studies: Sample size and power calculations for iOS. The Royal Golden Jubilee Ph.D. Program - The Thailand Research Fund & Prince of Songkla University. 2014.
6. OoiK, Inoue N, Matsushita K, Yamaguchi H, Mikoya T, Kawashiri S, Tei K. Body weight loss after orthognathic surgery: comparison between postoperative intermaxillary fixation with metal wire and elastic traction, factors related to body weight loss. *J Maxillofac Oral Surg* 2019; 20(1):95–99.
7. Rohaya Megat A, Siti Khadijah H, Nor Ermamarsila M. Awareness of Fake Braces Usage among Y- Generations. *J Int Dent & Med Research* 2019; 12(2):663-666.
8. Shephard BC, Townsend GC, Goss AN. The oral effects of prolonged intermaxillary fixation by interdental eyelet wiring. *Int J Oral Surg* 1982; 11:292-298.
9. Wayne W, D. *Biostatistics: A foundation of analysis in the health sciences*. John Wiley & Sons Inc.1995; 180.
10. Wilding J. Science medicine and the future: obesity treatment. *Br Med J* 1997; 315: 997–1000.
11. Wood GD. The early results of treatment of the obese by diet regimen enforced by maxillomandibular fixation. *J Oral Surg* 1977; 35: 461–464.