

# Knowledge, Attitudes, and Awareness Regarding Corticosteroid Use and Side Effects among Dental patients: A Cross-Sectional Study

Bin Mubayrik A<sup>\*</sup>, Alfaraj FM, Alohali IO, Alsaad NHS, Aldubayyan RA, Alkhalil MJA, Aljameel AH

Oral Medicine and Diagnostic Science Department, College of Dentistry, King Saud University, Riyadh, Saudi Arabia.

## Abstract

**Background:** Corticosteroids are one of the most widely prescribed drugs in the world because of their profound immunomodulatory activity. Corticosteroid abuse and misuse has been reported in the literature.

**Aim:** There is a lack of information worldwide on the awareness, & knowledge about corticosteroids as related to dental treatment among public. This study aimed to assess the level of knowledge, attitude and awareness regarding corticosteroid side effects among dental patients.

**Methods:** A descriptive cross-sectional study was conducted with a convenience sample using social media outlets, including Twitter and WhatsApp. The questionnaire was developed after reviewing the relevant research literature, and aimed to assess knowledge, attitudes and awareness, related to corticosteroid use among dental patients. Statistical analyses were performed using frequency distribution tables, one-way analysis of variance (ANOVA), and post-hoc tests.  $P < 0.05$  was considered statistically significant.

**Results:** Three hundred twenty-two completed questionnaires were received. Fifty-two (16.1%) of the respondents were using or had used cortisone, whereas 121 (37.6%) had a first-degree class relative who was using or had used cortisone. The most common recognized use of the respondents 46.3% think that cortisone was for multiple medical problems (46.3%), followed by its anti-inflammatory effect on skin inflammation (16.8%), and acne (11.8%). When asked about its side effects, 57.1% of participants indicated cortisone had multiple side effects and 23% of the participants indicated that weight gain was a side effect for using cortisone. Just over 4 out of 10 participants (41.6%) of the participants would not tell their dentist about their use of cortisone, but 22% of them had not asked by their dentist about their cortisone use. About half of the respondents (51.9%) believed that it is important to mention their use of cortisone to their dentist. Two hundred and twenty-two (68.9%) of the participants would follow their dentist's instructions about using cortisone, but 27.6% were not given instructions they should follow when using cortisone.

**Conclusion:** There is a strong need to improve awareness about cortisone side effects and its impact and relation to dental treatment. Dentists should emphasize the importance of revealing medications to minimize any potential and avoidable risks in the dental office.

**Keywords:** Dentistry; Corticosteroid; Awareness; Knowledge; Attitudes

**\*Corresponding Author:** Bin Mubayrik A, Oral Medicine and Diagnostic Science Department, College of Dentistry, King Saud University, Riyadh, Saudi Arabia, Email: aalmobeirik@ksu.edu.sa

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## Introduction

Adrenal cortex releases a group of hormones that includes glucocorticoids and mineralocorticoids [1]. The glucocorticoids, which are usually referred to as corticosteroids [1], are one of the most widely prescribed drugs because of their profound immunomodulatory action, and their worldwide market is estimated to worth a more than \$10 billion per year [2].

Corticosteroids have become a clinical mainstay for treating numerous inflammatory and autoimmune diseases, such as asthma, allergies, rheumatoid arthritis, inflammatory bowel disease, and multiple sclerosis [2]. They are also widely used for cosmetic reasons, such as skin lightener [3,4]. In the dental practice, Steroids are used for managing several conditions and lesions affecting dental, oral mucosa and peri-oral skin [5]. For example, they are used in intracanal medicaments to reduce pulpal inflammation and prevent root resorption. In addition, they are widely used as a treatment of choice for several oral diseases, such as vesiculobullous diseases, temporal arteritis, and other oral mucosal disorders [6,7]. Additionally, Corticosteroids are also used as a treatment modality for many medical emergencies in the dental office.

Since corticosteroids abuse and misuse have been reported in the literature [8-12], it is crucial to increase the awareness of patients and as well as doctors about this problem. It is also important for dental patients with a history of corticosteroids use to tell their dentist about it prior to any dental treatment, to minimize the risk of adverse undesirable complications that could require special attention [6].

## Materials and Methods

A descriptive cross-sectional study was conducted in Riyadh, Saudi Arabia, to assess the level of knowledge and awareness regarding corticosteroid use and its impact on dental care.

The questionnaire, which was developed after reviewing the relevant literature, was composed of three sections:

an introduction to the study and request for participation (consent); demographic questions (e.g., age and gender); and a list multiple-choice questions that measured knowledge, awareness, and attitudes about corticosteroid use and its impact on dental care.

The data were collected through an online self-report questionnaire in the Arabic language. A pilot study was conducted before actual data collection with 30 individuals with different demographic characteristics to assess the clarity of the questions. The results of the pilot study revealed that the questionnaire was

easy to understand and complete; thus, no further adjustments were made. The questionnaire was distributed to a convenient sample through social media outlets, including Twitter and WhatsApp.

## Statistical Analysis

The data were collected, summarized, and coded. All the statistical analyses were performed using the Statistical Package for Social Sciences (BM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp). The following statistical procedures were performed: the construction of frequency distribution tables, one-way analysis of variance (ANOVA), and post-hoc tests.  $P \leq 0.05$  was considered statistically significant.

## Results

The distributions of the age and gender of the study sample are presented in Table 1. The sample consisted of 322 participants, the majority of whom were female (271 females, 84.2%; 51 males, 15.8%). The two largest age groups were persons 15-20 yold (26.7%) and 21-26 yold (24.8%).

Of the 322 participants, 52 (16.1%) were using or had used cortisone, while 121 (37.6%) had a first-degree relative who was using or had used cortisone. A total of 142 (44.1%) respondents reported that the reason for cortisone use was therapeutic. Almost half of the respondents (46.3%) thought cortisone was useful for treating multiple medical problems, followed by those who thought that cortisone was useful because it has an anti-inflammatory effect on body-skin inflammation (16.8%) and facial skin/acne (11.8%) (Table 2).

When asked their opinion about cortisone's side effects, more than half of the respondents believed that it had multiple side effects (57.1%), followed by those who indicated weight gain was a side effect of using cortisone (23.0%) (Table 2).

When asked about their dental visits, 59.0% of respondents reported that they visited a dental clinic on a regular basis, whereas 30.1% reported visiting a dentist only for emergency care, and 11% reported they had never visited a dentist. One hundred and thirty-four (41.6%) of the participants would not tell their dentist about their use or their relative's use of cortisone, and 22.0% of them noted that their dentist had not asked them about their cortisone use. More than half of the respondents (51.9 %) believed it was important to mention cortisone use to their dentist, and 222 (68.9%) reported that they would follow their doctor's instructions about cortisone use. However, 27.6% of the study sample reported their doctor did not give them instructions they should follow regarding

cortisone use (Table 2).

More than a third of the sample (114, 35.4%) had sought information about cortisone use and its side effects from multiple sources. Sixty-four (20.0%) of the participants obtained their information about cortisone from their doctors, and the same number of participants obtained their information from friends and acquaintances (Figure 1).

ANOVA and Tukey post-hoc tests revealed the following results. Participants who did not know if they used cortisone believed it was important to inform their dentist about their cortisone use ( $P=0.015$ ), whereas participants who knew they used cortisone did not believe it was important to inform their dentist about their cortisone use ( $P=0.004$ ) or to follow their doctor's instructions regarding cortisone use ( $P=0.031$ ). The cosmetic

benefit of cortisone was mentioned significantly more often by those who used cortisone ( $P=0.004$ ).

Participants who used multiple sources of information were significantly more likely to be aware of the multiple benefits ( $P<0.001$ ) as well as the side effects of cortisone ( $P=0.034$ ). Participants who received information about cortisone from friends and acquaintances were significantly more likely to tell their dentist about their cortisone use ( $P<0.001$ ) and to follow their doctor's instructions about the use of cortisone ( $P<0.001$ ). Table 3 summarizes the ANOVA results.

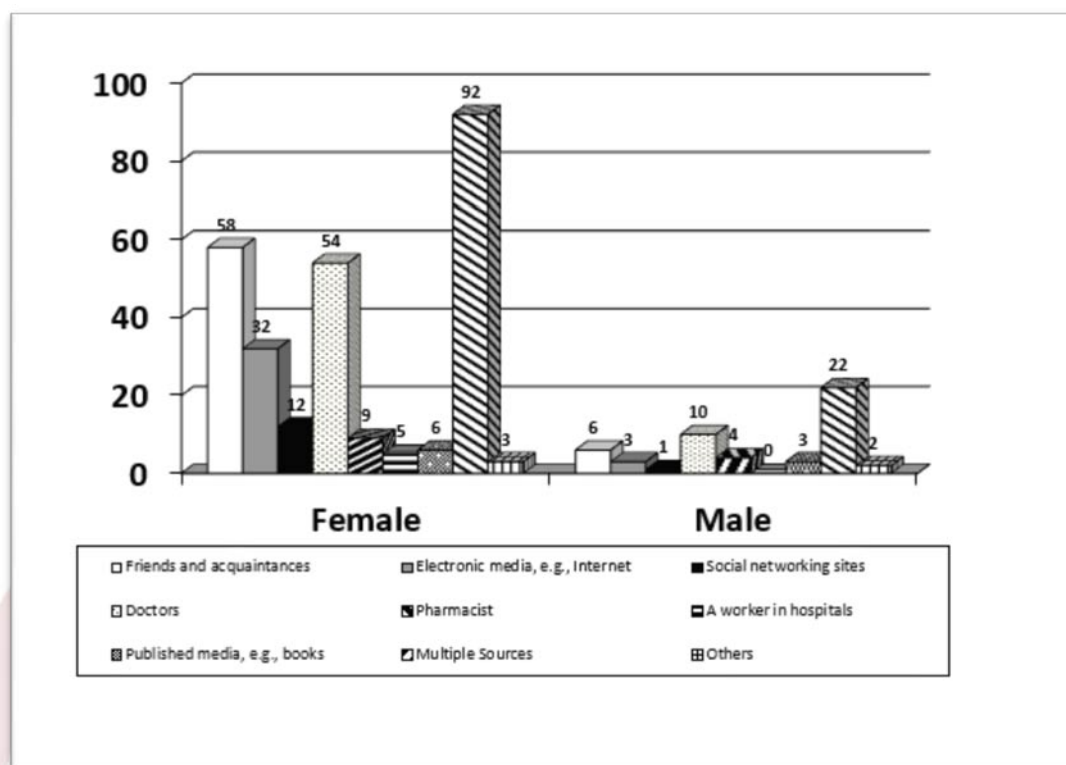
Variable		Frequency	Percent
Age	15-20 y	86	26.7
	21-26 y	80	24.8
	27-31 y	29	9.0
	32-37 y	35	10.9
	38-43 y	38	11.8
	44+	54	16.8
Gender	Female	271	84.2
	Male	51	15.8



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**Table 1:** Demographic characteristics of the sample.

Variable	Frequency	Percent	
Do you use, or have you ever used cortisone?	Yes	52	16.1
	No	251	78.0
	I don't know	19	5.9
Do you have a first-degree relative who uses or has ever used cortisone?	Yes	121	37.6
	No	133	41.3
	I don't know	68	21.1
If yes, what do you think is or was the purpose for using it?	Therapeutic	142	44.1
	Cosmetic	15	4.7
	Others	8	2.5
	I don't know	157	48.8
In your opinion, what are the benefits of using cortisone, if any?	Treat acne and facial skin	38	11.8
	Anti-inflammatory for body-skin	54	16.8
	Arthritis	28	8.7
	Asthma	32	9.9
	Transplant	10	3.1
	Multiple medical use	149	46.3
	Others	11	3.4
In your opinion, what are the side effects of using cortisone, if any?	Skin pigmentation	21	6.5
	Hair growth	8	2.5
	Increase weight	74	23.0
	Water retention	19	5.9
	Ulcers	10	3.1
	Dysmenorrhea	6	1.9
	Multiple side effects	184	57.1
Do you visit the dentist?	Yes, regularly	190	59.0
	No	35	10.9
	For emergency only	97	30.1
When you visit a dentist, would you tell him/her about your/your relative's use of cortisone?	Yes	117	36.3
	No	134	41.6
	I have not been asked	71	22.0
Do you think it is important to mention your use of cortisone to the dentist?	Yes	167	51.9
	No	26	8.1
	I don't know	129	40.1
If you use cortisone, do you think you would follow the instructions that a doctor gave you about using it?	Yes	222	68.9
	No	11	3.4
	No instructions were given to me	89	27.6

**Table 2:** Participants' use of cortisone and their awareness about its uses and side effects, and related attitudes about dental care.**Figure 1:** Sources of participants' information about the use of cortisone and its effects, by gender.

Variable		Sum of squares	df	Mean Square	F	Sig.
<b>Do you use, or have you ever used cortisone?</b>						
When you visit a dentist, do you tell him/her about your/your relative's use of cortisone?	Between Groups	6.160	2	3.080	5.605	0.004
	Within Groups	175.269	319	0.549		
Do you think it is important to mention your use of cortisone to the dentist?	Between Groups	7.609	2	3.805	4.275	0.015
	Within Groups	283.906	319	0.890		
If you use cortisone, do you think you would follow the instructions that a doctor tells you about using it?	Between Groups	5.515	2	2.758	3.511	0.031
	Within Groups	250.550	319	0.785		
<b>If yes, what do you think is or was the purpose for using it?</b>						
In your opinion, what are the benefits of using cortisone, if any?	Between Groups	74.655	3	24.885	4.539	0.004

	Within Groups	1743.485	318	5.483		
<b>What is the main source of your information about using cortisone and its side effects?</b>						
In your opinion, what are the benefits of using cortisone, if any?	Between Groups	312.005	8	39.001	8.105	0.000
	Within Groups	1506.135	313	4.812		
When you visit a dentist, do you tell him/her about your/your relative's use of cortisone?	Between Groups	15.804	8	1.976	3.733	0.000
	Within Groups	165.624	313	.529		
If you use cortisone, do you think you would follow the instructions that a doctor gave you about using it?	Between Groups	20.280	8	2.535	3.365	0.001
	Within Groups	235.785	313	.753		
In your opinion, what are the side effects of using cortisone, if any?	Between Groups	73.650	8	9.206	2.117	0.034
	Within Groups	1360.912	313	4.348		

**Table 3:** One-way ANOVA results for use of and information about cortisone, and related questions.

## Discussion

This current study aimed to assess knowledge, attitude and awareness about corticosteroids use among a convenience sample of people living in Saudi Arabia. The results revealed about 16% of the study sample were using or had used cortisone, and almost 38% had relatives who were using or had used cortisone. This indicates a relatively high prevalence of corticosteroids users and highlights the importance of revising policies and practices about dispensing corticosteroids, to limit its misuse. The findings also showed the main reason for using cortisone was therapeutic, though a small percentage of participants used it for cosmetic purposes.

Another interesting finding was the use of cortisone among younger people age group, which might be because justified by the fact that one of the main uses of cortisone is treating acne and skin-related problems among younger individuals, who are usually more concerned about such issues [10,13].

Awareness and knowledge of corticosteroids was limited in some respects, in that most of the participants recognized the therapeutic effects but not the side effects of cortisone. For

example, 16.8% recognized its anti-inflammatory effect on skin, but only 1.9% knew about its side effect of dysmenorrhea. Misuse, according to the research literature [8-12], may result from lack of information.

In contrast to studies on a Qatari sample and Latinos [14,15] participants in the present study obtained information about the use and side effects of cortisone from a wide range of sources. Our findings are similar to those reported for students by Jean et al. [16]. Females showed a stronger tendency to obtain information from different sources, but they mainly obtained information from their doctors and friends, followed by the electronic media. It has been shown that seeking health information is associated with age, education, and income, but not gender in the USA population [17]. Findings indicate the importance of disseminating information in various ways to meet patients' needs to acquire information about health-related issues and to ensure that the sources of information are reliable and present consistent information. Our results emphasize the importance of the reliability of sources as those participants who received their information from doctors had the most accurate information. This also points to the responsibility of doctors to explain to the patients everything related to medication uses, side effects, and contraindications to minimize their misuse and side effects.

Many study participants reported that they did not or would not tell their dentist about their use of cortisone. Several reports have emphasized the importance of taking a medical history and the consequences of lacking patient information [18-21]. Patients may not provide their dentist with comprehensive medical history for many reasons, some of which may be related to the patients' themselves such as level of awareness and sociodemographic characteristics. Other reasons may be related to dentists failing to take a complete history and correlating findings [20,21]. Our results also showed that more than one third of the participants had not been asked by their dentist about their use of cortisone. This could be related to the healthcare system, such as the short time allocated for each patient, especially in primary care settings. This stresses the importance of tackling such problems from different perspectives to achieve the desired outcome. Patients should be educated not only about the importance of visiting a dentist regularly, but also about providing their dentist with a detailed and comprehensive medical history, including their current use of medications, to avoid adverse any undesirable consequences.

It is also evident from our results that physicians may contribute to the problem, by not providing their patients with enough information about prescribed medications. Although most participants reported that they would follow their doctors' instructions about using cortisone, more than a quarter of participants reported that their doctor had not given them any instructions. Communication and education gaps between physicians and patients about prescribed medications have been reported in the research literature [22,23]. This may also reflect the multifaceted nature of the problem and compartmentalization of oral health from general health, not only by patients but also by healthcare professionals. Such problems require collaboration between health sectors.

An incidental finding of this investigation, the low percentage of participants who about visited a dentist regularly. Approximately 10% of participants reported that they do not go to a dentist and one third of participants reported that they only visit a dentist in an emergency. This is a sign of poor dental behaviour that could result from many factors, one of which is a low level of awareness about the importance of maintaining good oral health and making regular dental visits. Although this topic area has been extensively examined in the dental literature [24-28], efforts should be made to address the causes of poor oral-related behaviors, including dental visits. Such collective efforts should start with simple patient education and strive to update policies that facilitate healthcare provision and improve access to healthcare services to everyone.

The limitations of this study include its sample size, which might not be large enough to draw definitive conclusions. Another limitation is that it only using the Internet to collect the data, which might contribute to underestimating the problem, as Internet users are likely to be more knowledgeable since they have access to all the needed information through online search engines.

### Conclusion

In conclusion, based on the findings of this study, a considerable proportion of people appear to use cortisone and a

high percentage of them are not aware of the importance of telling their dentist about their cortisone use or following their doctor's instructions about its use. Educating patients about all related aspects of medication use is important and collaborative efforts should be undertaken to do so. Sensitizing healthcare providers to the danger of corticosteroids misuse is essential to minimize the potential problems induced by its misuse. It is also of prime importance to develop legislation that limits advertising about and access to corticosteroids and other potent medications. Additionally, dentists should be aware of such issues that are associated with providing treatment and, if not considered carefully, might lead to problems that severely affect the lives of patients.

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