

Awareness about side effects of corticosteroids among dental students – A questionnaire-based study

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ABSTRACT

Introduction: Corticosteroids are substances that are naturally produced in our body. They are produced by the adrenal glands and regulate our immune system and the salt-water balance and water in our system and help to reduce inflammation. Corticosteroids include two main classes which are glucocorticoids and mineralocorticoids. Glucocorticoids such as cortisol affect carbohydrate, fat, and protein metabolism and have anti-inflammatory, immunosuppressive, antiproliferative, and vasoconstrictive effects. Mineralocorticoids such as aldosterone are primarily involved in the regulation of electrolyte and water balance by modulating ion transport in the epithelial cells of the renal tubules of the kidney. **Aim:** The aim of the study is to assess the awareness of dental students about the harmful effects of corticosteroids. **Methodology:** A structured, self-assessed online questionnaire eliciting information regarding side effects of corticosteroids was prepared and circulated among the students in Saveetha Dental College and Hospitals. The data collected were tabulated and assessed. **Results:** Nearly 81% of respondents knew about corticosteroids whereas 19% were not aware of the applications of steroids in dentistry. 72% said they were aware of the adverse effects of this drug while 28% said they were not aware of the side effects of corticosteroids. **Conclusion:** The present study shows that the majority of the students were aware of what corticosteroids are and their adverse effects and can use this knowledge in their future practices.

KEY WORDS: Awareness,corticosteroids,side effects,students

INTRODUCTION

Adrenal cortex releases a group of hormones that include glucocorticoids and mineralocorticoids.^[1] The glucocorticoids, which are usually referred to as corticosteroids,^[1] are one of the most widely prescribed drugs due to their profound immunomodulatory action.^[2]

Corticosteroids are substances that are naturally produced in our body. They are produced by the adrenal glands and regulate our immune system and the salt-water balance and water in our system^[3] and help to reduce inflammation.^[4] Corticosteroids include two main classes which are glucocorticoids and mineralocorticoids. Glucocorticoids such as cortisol affect carbohydrate, fat, and protein metabolism and have anti-inflammatory, immunosuppressive, antiproliferative, and vasoconstrictive effects.^[5] Mineralocorticoids such as aldosterone are primarily

involved in the regulation of electrolyte and water balance by modulating ion transport in the epithelial cells of the renal tubules of the kidney.^[5] Since their discovery in the 1940s, corticosteroids have become one of the most widely used and effective treatments for the various inflammatory and autoimmune disorder.^[5]

Most of the anti-inflammatory and immunosuppressive actions of glucocorticoids are attributable, either directly or indirectly, to their interaction with the cytosolic glucocorticoids receptor, which alters gene transcription to either induce or repress gene transcription in both inflammatory leukocytes and in structural cells, such as epithelium.^[6-8] Based on the route of administration, there are many different corticosteroids such as oral, topical, and inhalation. Each of these has their advantages and disadvantages. At present, corticosteroids are widely used for clinical conditions. Steroids are known to cause many pathological effects including chemically induced diabetes.

They are used as intracanal medicaments to reduce pulpal inflammation and prevent root

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resorption. In addition, they are widely used as a treatment of choice for several oral diseases, such as vesiculobullous lesions, temporal arteritis, and other oral mucosal disorders.^[8,9] In addition, 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 literature,^[10-15] 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 before any dental treatment, to minimize the risk of adverse undesirable complications that could require special attention. Considering the important risk factors with the use of these, this study evaluates the level of awareness among dental undergraduates.

METHODOLOGY

A structured, self-assessed online questionnaire having 10 questions eliciting information regarding side effects of corticosteroids was prepared and circulated among the students in Saveetha Dental College and Hospitals. The data collected were tabulated and assessed.

RESULTS

The participants were first asked if they were aware that corticosteroids can be used as a medication for dental problems. To this, 81% replied that they knew whereas 19% were not aware of the applications of steroids in dentistry. This data are represented in Graph 1.

The participants were then asked if they prescribed corticosteroids to their patients when it is applicable. To this, 64% replied that they prescribed steroid medication when needed and 36% replied that they did not prescribe the medication. This data are seen in Graph 2.

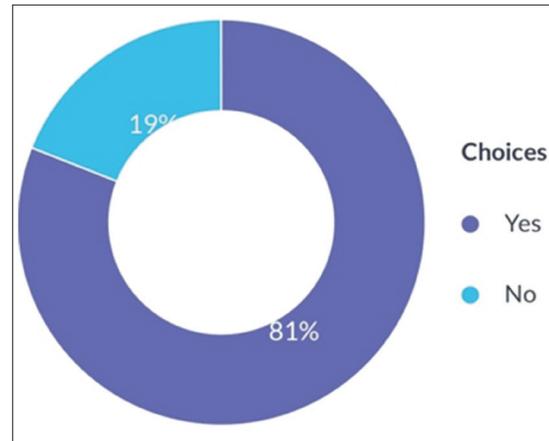
The participants were asked if they were aware of the adverse effects of corticosteroids. To this, 72% said they were aware of the adverse effects of this drug while 28% said they were not aware of the side effects of corticosteroids. This data are evident in Graph 3.

Next, the participants were asked if they knew about the maximum and minimum dosage of corticosteroids that can be prescribed for a patient. 67% of participants were aware of the dosage protocols whereas, 33% of them were not aware of the dosage regimens. This data are represented in Graph 4.

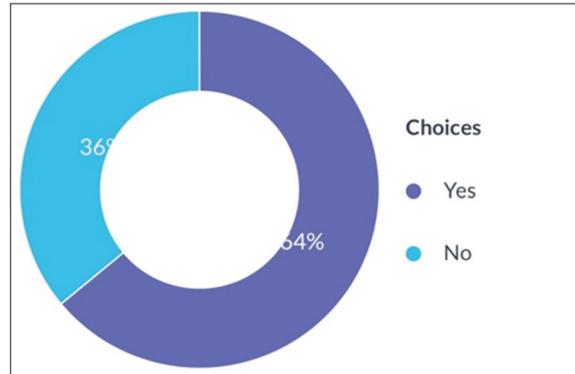
The participants were questioned about the cessation protocol of corticosteroid drugs. To this, 15% of

respondents said that the drug can be terminated any day. 12% replied that they were not aware of this. 73% replied that steroid drugs should be gradually tapered in dose and withdrawn slowly. This data are represented in Graph 5.

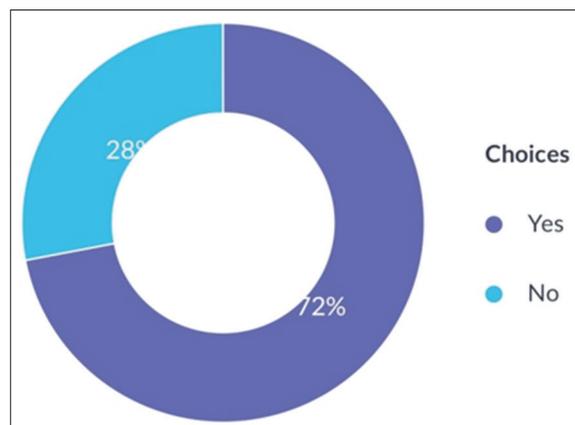
The participants were asked if they aware of the different types of corticosteroids available in the market. 70% replied that they were aware of the commercially available types of the drug whereas, 30% were unaware about this. This data are seen in Graph 6.



Graph 1: Awareness of corticosteroid as a medication



Graph 2: Prescription of corticosteroid as a medication



Graph 3: Awareness of side effects of corticosteroids

The participants were then asked which route of administration of corticosteroids had better bioavailability. 61% replied that the oral route had better bioavailability whereas, 39% preferred the parenteral route for drug administration. This data are seen in Graph 7.

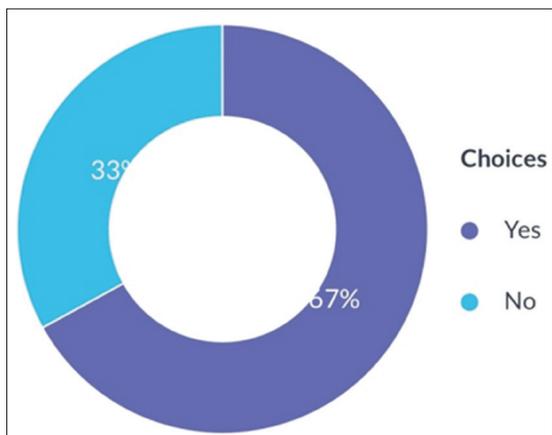
When the participants were asked if their patients reported back with any adverse effects following corticosteroid medication, 69% of respondents said they have had patients coming back to them with adverse effects to the steroid medication and 31% of them did not face any such problems. This data are seen in Graph 8.

The participants were asked if they were aware of the antidote for corticosteroid toxicity. 60% were aware of the antidote whereas, 40% were unaware of the antidote. This data are represented in Graph 9.

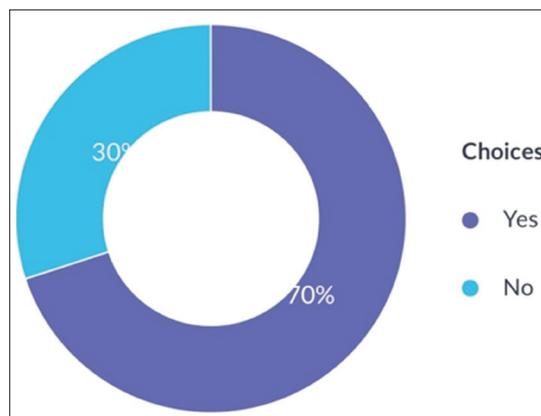
The participants were asked if they knew about drug interactions between corticosteroids and other drugs. 74% of them said they were aware while 26% were not aware of drug interactions. This data are tabulated in Graph 10.

DISCUSSION

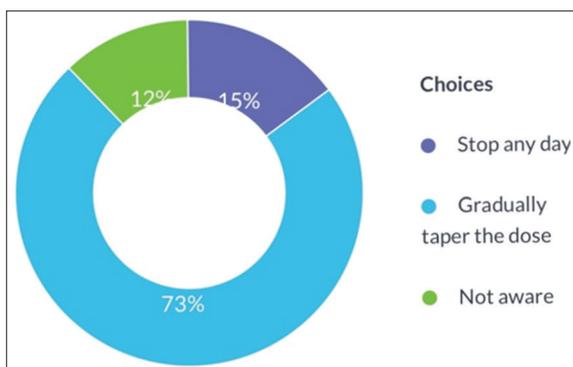
This study was conducted to evaluate the level of awareness about corticosteroids among dental



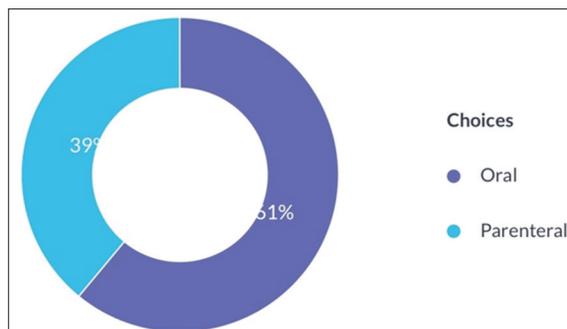
Graph 4: Awareness of dosage protocols



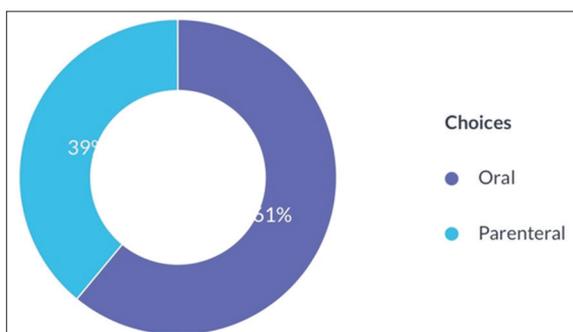
Graph 6: Awareness of different types of corticosteroids



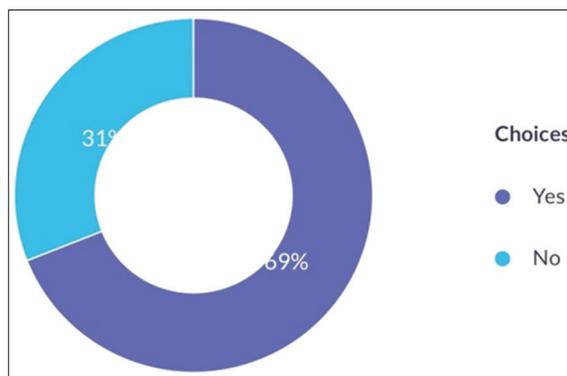
Graph 5: Awareness about cessation protocol of corticosteroid



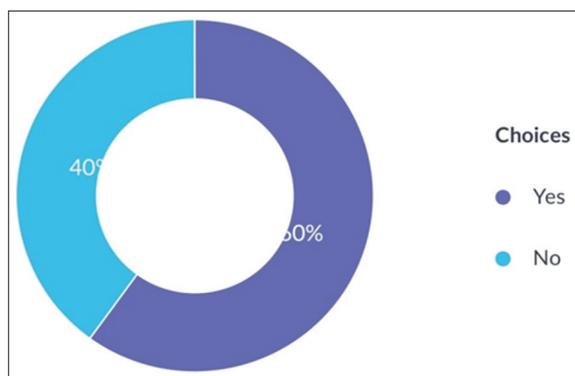
Graph 7: Route of administration of corticosteroids



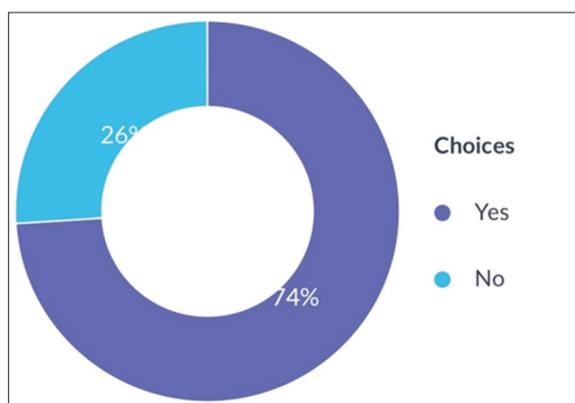
Graph 7: Route of administration of corticosteroids



Graph 8: Patient assessment of any adverse effects for corticosteroid



Graph 9: Awareness about the antidote for steroid toxicity



Graph 10: Awareness about drug interactions between corticosteroids and other drugs

undergraduates. In the present study, it was observed that the majority of them were aware of the adverse effects. The different types of corticosteroids available and their uses were familiar to more than an average number of the individuals. Few students were not aware that corticosteroids can be gradually stopped.

Corticosteroids are commonly used in the treatment of cancer, primarily due to their anti-inflammatory activities.^[16]

In a prospective study, the most common side effects associated with corticosteroid use were oral candidiasis, edema, cushingoid facies, dyspepsia, and weight gain.^[17] A separate study states that hyperglycemia occurs in a majority of hospitalized patients receiving high doses of corticosteroids.^[18] Many scientific and literature evidence highlight how the administration of corticosteroids results in a high incidence of mood elevation, satisfaction, and optimism.^[19] Less frequently, euphoria, insomnia, and increase in motor activity may occur.^[20]

Corticosteroids have a wide range of uses in dentistry. Steroids are used in intracanal medicaments such as Ledermix to reduce pulpal inflammation and prevent root resorption; widely used in oral medicine such as in vesiculobullous diseases, orofacial granulomatosis,

temporal arteritis, and other oral mucosal disorders.^[21] Hooley and Hohl described several instances of steroid use in the prevention of post-operative edema and topical use on the lips and corners of the mouth to prevent ulceration and excoriation as a consequence of retraction during surgery.^[22] Steroid administration influences the occurrence of root resorption. The percentage of root resorption has been found to be more on treatment with corticosteroids.^[23] However, steroid-antibiotic combinations like Ledermix have also been used as intracanal medicaments for management of root resorption with reasonable success. Steroids like hydrocortisone are also mixed with zinc oxide eugenol to be used as root canal sealers. It appears that the action of steroids on root resorption is chemistry dependent. Steroids can also be used as a medication to treat TMJ disorders.^[24]

Despite the known numerous side effects, the use of corticosteroid is widely spread considering the broad spectrum of clinical indications. Psychiatric adverse reactions are underestimated and therefore it is not always possible to identify the effective dose and at the same time the most secure. It seems only right to recall how the spontaneous reporting of adverse reactions by health professionals and patients is the easiest way to integrate the missing information on the potential and dangers of drugs.^[25,26]

CONCLUSION

The present study shows that the majority of the students were aware of what corticosteroids are and their adverse effects and can use this knowledge in their future practices. Corticosteroids being one of the most commonly prescribed anti-inflammatory, anti-allergic, and immune suppressant drug is used for a variety of health conditions. Where all possible it is given as inhalation, but mostly it is given through oral route. Thus, the dentist must be aware of the adverse effects and cautious while prescribing the medication so that unnecessary complications can be prevented.

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