

## Awareness of Indian medical students regarding corticosteroid misuse

Shetty YC<sup>1</sup>, Vinchurkar P<sup>3</sup>, More S<sup>2</sup>, Siddiqui A<sup>4</sup>, Tilak S<sup>3</sup>, Ginodia S<sup>3</sup>, Jinturkar S<sup>4</sup>, Pancholi V<sup>4</sup>, Nair N<sup>4</sup>, Goyal R<sup>3</sup>, Dongre T<sup>4</sup>

1- Associate Professor, Department of Pharmacology & Therapeutics

2 -Assistant Professor, Department of Internal Medicine

3 -3<sup>rd</sup> MBBS student

4 -2<sup>nd</sup> MBBS student

Seth GS Medical College and KEM Hospital, Parel, Mumbai -India, 400012

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### ABSTRACT

**Background** - Corticosteroids are one of the most widely used drugs because of their potent anti-inflammatory actions, however they are being misused by the patients, illegal sized by the pharmacist, made by the pharmaceutical companies and irrationally prescribed by the general practitioners. Current study is done to assess awareness of the Indian medical students who're going to be the future clinicians regarding the current affair of steroid misuse.

**Materials and methods** - It was a cross sectional observational study, an online survey form was circulated by means of social media and email. snow ball sampling method was used, 221 students answered the questionnaire after giving their consent.

**Results** - When students were asked about Problems associated with use of corticosteroids, 90% (199/221) answered irrational use of steroids to be a problem, 70.6% (156/221) stated OTC sale without prescription, 44.8% (99/221) said steroid addiction, but only 22.6% (50/221) identified steroid phobia as a problem. 81% (180/221) students agreed to the statement that irrational use of steroids is a burning issue, half of the medical students were unaware of it indicating a dangerous unfamiliarity with what constitutes a rational prescription. 76% (168/221) and 74.6% (165/221) were unaware of the fact that both rational and irrational FDCs of steroids respectively, exist in the market.

**Conclusion** - we found the students knew that misuse of corticosteroids is an issue in healthcare and were also aware of majority of stakeholders involved, but a deeper knowledge regarding the multi-faceted aetiology of misuse, rational and irrational FDCs as well as of emerging

phenomena like Steroid phobia and steroid addiction, was missing. Thus it is important for them to develop habit of reading recent medical literature.

### I. INTRODUCTION

Corticosteroids are one of the most widely used drugs today and play a key role in medical practice. However, their severe and extensive side effect profile warrants rational prescription practices and careful monitoring. Unfortunately, several gaps have been found in carrying out the same in the Indian scenario, leading to a misuse of steroids, with irrational prescription, over the counter sale, poor health-seeking behaviour and a culture of self-medication being some of the most important contributing phenomena.

It is very important for medical students to be cognisant of the seriousness of the issue of corticosteroid misuse and to be aware of the multiple stakeholders within this issue right from their undergraduate MBBS years, especially those points of awareness that translate right from the textbook know-how of rational and irrational FDCs, rational drug prescription and schedules of drugs into a real-world healthcare burden like steroid abuse. A good level of knowledge and awareness among current medical students may help enforce the efforts of future doctors in changing behavioural practices among patients and the general population.

Hence, this study seeks to assess the awareness of Indian medical students about the current scenario of steroid misuse.

## II. MATERIALS AND METHODS

The study was designed as a questionnaire-based, cross-sectional study conducted over a period of 4 months. An online survey was designed from the platform of a survey portal “Google forms” (<https://docs.google.com/forms/u/0/>). The survey consisted of 3 sections:

1. Informed consent with email address
2. Preliminary data (age , gender , year of study )
3. Questionnaire

The questionnaire was designed in 9 parts that tested the important points of awareness within the issue of steroid misuse. These were:

- Problems associated with use of corticosteroids
- Whether misuse of corticosteroids is a burning issue (5-point Likert scale)
- Components of irrational use of a drug
- Level at which the problem of steroid misuse lies
- Availability of steroids over the counter
- Availability of rational fixed dose combinations
- Availability of irrational fixed dose combinations of steroids
- Whether the consumption of steroids was ever advised by them
- Possible solutions for the problem of steroid misuse

Content validation was done by a group of subject experts from Community medicine , Pharmacology , Dermatology and General Medicine. The content validity ratio (CVR) obtained for every question was in the range of 0.62-1 , content validity index (CVI) was 0.92. The study was commenced after obtaining permission from the Institutional Ethics Committee (IEC2/OUT/511/19). Following this, the survey link was circulated via social media platforms like WhatsApp, inviting participation from MBBS

students (2nd year onwards) across India. Snowball sampling was the method of sampling used and circulation was done until the desired sample size was reached, following which the link was closed. 221 students agreed to participate in the study. The google form had the Informed Consent Document on its first page, and participants were able to access the questionnaire section only after giving Informed Consent. The time duration of the survey was 5-10 minutes. Confidentiality was maintained by coding all the filled questionnaires with unique identifiers. The responses were entered in MS excel of version 2016 , analysed using SPSS version 23.0. The data was analysed using descriptive statistics. To analyse the qualitative question regarding solutions to the problem of steroid misuse, we carried out thematic analysis.

## III. RESULTS

221 students gave consent to participate in the study . The age group of the participants ranged from 19 to 25 years. 55.2% (122/221) students were males , 43% (95/221) were females , 1.8 % (4/190) preferred not to disclose the gender. Among the students who participated in this online survey, 42% (93/221) were from second year , 25.8% (57/221) from third minor , 24.4% (54/221) from third major and 7.7% (17/221) were interns.

When students were asked about Problems associated with use of corticosteroids, 90% (199/221) answered irrational use of steroids to be a problem , 70.6% (156/221) stated OTC sale without prescription , 44.8% (99/221) said steroid addiction, but only 22.6% (50/221) identified steroid phobia as a problem. 81% (180/221) students agreed to the statement that irrational use of steroids is a burning issue. In response to the question on components of irrational use, the following responses were gathered (Table 1):

**Table no. 1: Response to question \***

<b>*Irrational use of therapeutic steroids occurs when -</b>
The patient doesn't receive medication according to his/her clinical needs -54.8%(121/221)
The given dose is inappropriate -51.6%(114/221)
The medication given is for inadequate time -51.1%(113/221)
Expensive alternatives are chosen even when cheap ones are available -38.9%(86/221)
The patient self-medicates with steroids -78.3%(173/221)

**Table no. 1: Response to question \***

Patients are non-adherent to dosage regimen - 55.2%(122/221)
Sold by pharmacist without a prescription -70% (154/221)
There is a lack of communication between the physician and the patient - 53.4%(118/221)

In response to the question regarding levels of corticosteroid misuse, the following responses were given (Table 2):

**Table no.2 Response to question #**

# At what level does the problem lie ?
Drug regulatory authority -46.6%(103/221)
Hospital administration -26.2%(58/221)
Physician -67.9%(150/221)
Pharmacist -65.2%(144/221)
Patient - 67.4%(149/221)

On availability of steroids over the counter, surprisingly over 86.9% (192/221) said that Schedule H drugs like steroids are available over the counter. 76% (168/221) and 74.6% (165/221) were unaware of the fact that both rational and irrational FDCs of steroids respectively, exist in the market. On whether consumption of steroids was ever advised by the students, 82.8% (183/221) responded “No”. Regarding solutions to the problem of steroid misuse, the main themes that emerged were spreading awareness to Patients, Physicians and Pharmacists, and making the sale of steroids more stringent.

#### IV. DISCUSSION

The relatively high participation of third year students may have been due to the increased awareness of steroid vigilance practices in clinical postings. The least number of responses from interns could be due to low motivation to respond in the traditionally busy and stressful interns. . The survey responses revealed a heartening overall awareness about the existence of the corticosteroid misuse 81.9%(181/221) and 84.2%(186/221) students respectively agreed to the statement that irrational use of corticosteroids and anabolic

steroids is a burning issue. Unfortunately, some terms like steroid phobia and steroid addiction were not known to the students, possibly due to them being largely absent from the undergraduate curriculum. Moreover, there were clear gaps in a deeper understanding of the issue, which was uncovered in the responses to specific questions pertaining to the various facets of misuse.

Awareness of each specific stakeholder was found to be low, with the lowest awareness regarding the Drug Regulatory Authorities, perhaps because students do not know of their existence, concurrent to the findings of Garg P et al<sup>[1]</sup>. Ignorance regarding the various stakeholders is problematic and needs to be curbed right from the undergraduate years of MBBS so that the next generation of practitioners are better able to navigate through the various stakeholders within steroid misuse.

Astonishingly 86.9% of the students thought steroids to be over-the-counter drugs and some even mentioned prednisolone as over-the-counter. Awareness of students regarding FDCs was very poor. This is a serious problem in the Indian scenario, with a high number of pharmacists acting as substitute doctors leading to widespread

sale and use of steroidal preparations illegally over-the-counter. The worst offenders are FDC preparations of steroids and anti-fungals or antibiotics which can in no way be considered scientific or rational as reported by Subodh Kumar et al<sup>[2]</sup>, and were therefore banned in 2016, but continue to be manufactured, circulated and sold. We found it alarming that knowledge about the schedule H status and banning of FDCs was poor among medical students, and therefore stress the need for specific information-delivery in these domains.

Majority of students were not in the practice of advising drugs which is a good sign and contradictory to findings of an article published in Indian Dermatology Online journal by where 61.1% of the pharmacy students were in habit of giving advice<sup>[3]</sup>. Thematic analysis revealed Majority of students felt making physicians, pharmacist and patients aware about the problem of steroid misuse and making sale of steroids stringent could solve the problem to some extent.

Though the WHO has given a definition with examples of what constitutes irrational use of a drug<sup>[4]</sup>, 49% of the medical students were unaware of indicating a dangerous unfamiliarity with what constitutes a rational prescription.

## V. CONCLUSION

In our study, we found the students knew that misuse of corticosteroids is an issue in healthcare and were also aware of majority of stakeholders involved, but a deeper knowledge regarding the multi-faceted aetiology of misuse, rational and irrational FDCs as well as of emerging phenomena like Steroid phobia and steroid addiction, was missing. This indicates a poor exposure to recent medical literature, and a need for disseminating crucial information pertaining to the issue among medical students.

## VI. LIMITATIONS

Limitations of the study included the small sample size with an unequal representation of students from various states of the country. The results obtained may not reflect that of all UG medical students of the entire country. The data was collected from an unmonitored questionnaire thus opening up the results to inaccuracy as the answers given by students could be obtained from

other sources like the internet. Due to the google form being an untimed, unmonitored medium of survey, students may not have marked genuine answers due to impatience.

## VII. RECOMMENDATIONS

- The undergraduate medical students are the most malleable to evidence-based information-dissemination and primordial interventions that can enforce behavioural change in the future practices of patients and the general population. These groups should therefore maintain a good level of knowledge and awareness regarding the issue of corticosteroid misuse, by keeping abreast of the medical literature and imbibing the application of this knowledge in the real-world.
- WHO has set guidelines about rationality of a physician's prescription but no set guidelines exist questioning the rationality of the drug sales by pharmacists or drug use by patients. It is of par importance that WHO should recognise that it is not merely the physicians prescription but dispensing practices by pharmacist and usage of drugs by patients which should be given a formal definition of rationality.

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