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How aware the dental graduates of Kashmir are related to the pharmacology, drug reaction and efficacy of medicines they prescribe

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Abstract

Pharmacology is the science of drugs, their pharmacokinetics, pharmacodynamics and their use in the treatment of disease and as a dental health care professional we need to be fully aware of the art of rational drug prescription. A questionnaire based study was distributed amongst dental internes of Government Dental College, Srinagar Kashmir to study the need of knowledge of pharmacology, the disease forms in dental practice and the type of medication prescribed and was conducted on 48 interns and junior residents of the hospital. From the survey it was concluded that 38 percent of them regularly updated themselves on the newer drugs available in the market and knew about the dosage of each medicine while as 42% often read about the updates. Of them 38% preferred brand names and 54% were aware of the mode of action of the drugs that were prescribed by them and of them informed the patient about the possible side effects after prescribing the certain medications. It was concluded that the majority of the practitioner had good knowledge of the pharmacology of medicine they prescribed.

Keywords: Pharmacology, rational drug prescription, brand names

Introduction

Pharmacology which was developed in the 18th century as a biomedical science deals with the uses, effects and mode of action of drugs and follows the principle of scientific experimentation to therapeutic contexts^[1]. A dentist should be able to prescribe drugs relevant to the oral health care, know about the various medical conditions and the ways in which the drugs need to be prescribed accurately without any side effects on the patients health^[2]. Working on the quality of dental prescription writing will reduce the risk for medication errors and will help in promoting the rational use of pharmacotherapy and ensure patient safety over the period of time^[3].

Rational drug prescription may be defined as using least number drugs to obtain the best possible effect in the shortest period of time over a reasonable cost^[4].

Methodology

A pre-tested questionnaire comprising of 10 questions was distributed among 48 dental interns and junior residents of Government dental college Srinagar to access the knowledge of pharmacology, side effects, efficacy and the dosage of medication given in dental practice (Table 1). The question was based on previous studies undertaken for medical and dental graduates and was suitably modified for the present study. The study was a WhatsApp based survey in which the students were asked to mark an option A, B, C and Respondents were instructed not to reveal the identity in the questionnaire. The completed data was collected and analysed.

Table 1: Questionnaire

S. No.	Question	Option A	Option B	Option C
1	What is your gender?	Male	Female	
2	As a clinician prescribing medicine are you aware of need and knowledge of pharmacology, pharmacokinetics and pharmacodynamics of the medicine you prescribe?	Yes	No	Sometimes
3	Do you read about an update on recent drugs, their dosage according to the age and weight and their interactions regularly?	Yes	No	Sometimes
4	For evaluating the efficacy of the medicine do you always keep the patient on follow up?	Yes	No	Sometimes
5	Do you prescribe the medicines brand name or generic name?	Brand name	Generic name	Brand name mostly
6	Do you have knowledge of all the emergency medications available in your setup to manage a medical emergency?	Yes	No	Some of them
7	In case of any medical condition do you always take consent from the doctor before prescribing dental medications?	Yes	No	Sometimes
8	If you diagnose any nutritional deficiency do you prescribe the vitamins calcium or iron supplements?	Yes	No	Sometimes I do
9	Do you know about the side effects of each drug and inform your patient in advance about it?	Yes	No	Sometimes
10.	Have you faced antibiotic resistance or seen a case of anti bioma due to the overuse of antibiotics?	Yes	No	Have seen a case of anti bioma but never seen and any case about antibiotic resistance

Table 2: The answers of the respondents where n is the number of respondents

S. No.	Option A n (%)	Option B n (%)	Option C n (%)	Skipped
1.	16 (33%)	32 (67%)	-	0
2.	30 (62%)	0	18 (38%)	0
3.	18 (38%)	10 (21%)	20 (42%)	0
4.	18 (38%)	8 (34%)	22 (46%)	0
5.	18 (38%)	12 (25%)	18 (38%)	0
6.	34 (71%)	4 (8%)	10 (21%)	0
7.	32 (67%)	2 (4%)	14 (29%)	0
8.	26 (54%)	8 (17%)	14 (29%)	0
9.	26 (54%)	6 (12%)	16 (33%)	0
10.	20 (42%)	16 (33%)	12 (25%)	0

Results

Amongst all the 48 participants who participated in the study 33% were male and 67% were female (Figure 1) (Table 2).

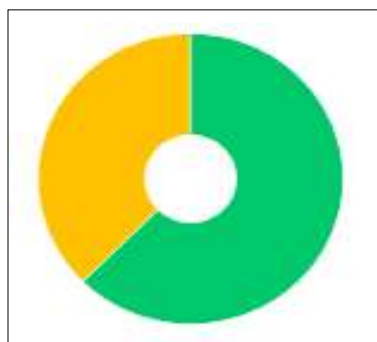


Fig 1: Pie diagram showing the percentage of male (yellow) and female (green respondents)

From the survey it was evident that 62% of the dental respondents were fully aware of the knowledge of pharmacology, pharmacokinetics and pharmacodynamic of the medicine they prescribed (Figure 2).



Fig 2: Respondents aware of the pharmacology, pharmacokinetics and pharmacodynamics of the medicine they prescribed

Of all the dental graduates 38% had read an update on the recent drugs and their dosage according to the age and weight of the patient and the various interactions amongst drugs. (Figure 3).

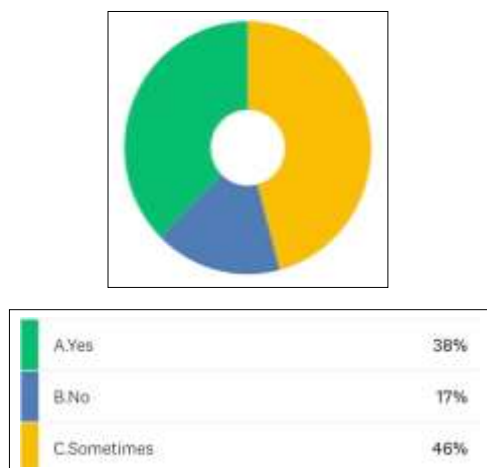


Fig 3: Respondents who had read an update on recent drugs and dosage and various interactions amongst drugs

38 Percent of the dental graduates had kept their patients on follow up to study about the efficacy of the medicine they prescribed. The medication prescribed mostly were the brand name by 38 percentage of the dental graduates Mostly 71% the dental graduates were aware of the various medications available in the setup to manage medical emergency. 67% of the graduates always took a medical consultation before prescribing any dental medication in children adults who were medically compromised (Figure 4).

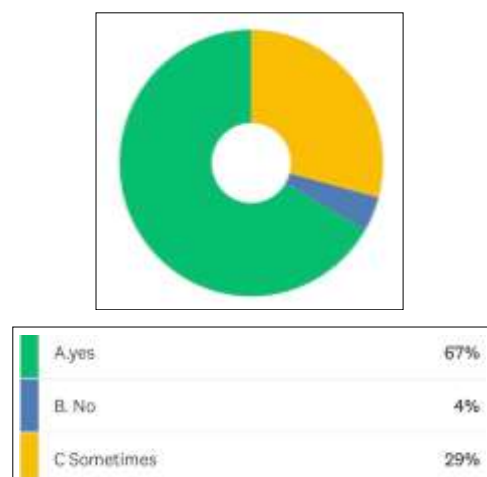


Fig 4: Dental graduates took medical consultation before prescribing dental medication in medically compromised patients

54% of the dental graduates knew how to diagnose the nutritional deficiency and were able to prescribe the necessary vitamins, calcium and iron supplements to the patients. 54% of the dental graduates knew about the side effects of each drug prescribed and inform the patient in advance about the various side effects they could face while consuming the drug (Figure 5).

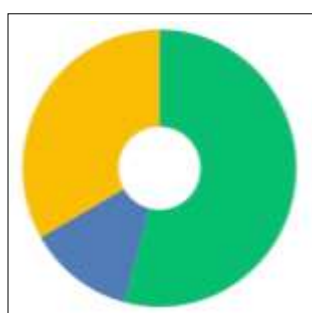


Fig 5: Dental graduates informed patients in advance about side effects of drug they prescribed

42% of the dental graduates had faced antibiotic resistance while prescribing the medicine and 25% had seen an antibioma but never seen any antibiotic resistance.

Discussion

In India the art of prescribing medicine, writing the medicine and knowledge about all aspects of drugs is studied in the second year BDS Or MBBS. Prescribing may be defined as an act of indicating one or more drugs to be administered by the patient its dosage and duration of the treatment.

A common practice of Poly pharmacy or prescribing one or more medicines for one indication may prevent a rational prescribing attitude and it's mostly seen that the dental students are unaware of patients allergies which may lead to toxicity when the drug is prescribed [4].

Though the most common drug prescribed by a dental practitioner is an antibiotic however an unnecessary prescription of antibiotics should be avoided as it may lead to bacterial resistance or over prescription may lead to anti bioma formation.

WHO has recommended guidelines on drug prescription which include that the prescription should include the identity of the clinician and the patient, the method of administration of the medicine, pharmaceutical form, it's dosage, frequency, duration of treatment and the various advices given to the patient by the dental practitioner [5]. Many a times many emergencies may occur while performing a dental treatment like your syncope, postural hypotension, swallowing of the foreign bodies, bronchospasm, anaphylaxis, hypoglycemia, seizures, angina pectoris, cardiac arrest and dentist should be well aware of all the medication given during such an emergency [6].

Antibiotic resistance may be defined as well established global public health problem and it's majorly seen that dentist by overprescribing and in appropriate prescribing lead to a major increase in the antibiotic resistance and dentist mostly prescribe the moderate to broad spectrum antibiotics over an appropriate narrow spectrum antibiotic which lead to it [7].

Achermann *et al.* in 2010 [8] said that Swiss doctors are more conservative about prescribing antibiotics which leads to less antibiotic resistance in the patients in that area. Though discovery of antibiotics has been considered as a boon but many regarded it as a double edged sword as injurious usage might lead to many complications over the period of time causing antibiotic resistance [9]. Only percentage of the participating dentist reported prescribing generics which when compared to the European countries or USA generics are relatively infrequently prescribed in Switzerland. Improving the quality of dental prescriptions will help in reducing the risk of any medication errors and help in providing patient safety and promoting the rational use of pharmacotherapy [10]. Most of the dental graduates are completely unaware of the fact that prescribing wrong medicines doing some errors while prescribing medicines may contribute to a significant rise in reported hospital adverse events which may lead to medico legal problems [11].

WHO 's guide to good helps in prescribing step by step guidance to a reasonable prescription writing together with many illustrative examples.

Conclusion

This study concluded that knowledge of pharmacology is essential to the dentist as they are able to prescribe the medication in right doses and avoid any unnecessary drug reactions or interactions. As a dentist it's important to be fully aware about the pharmacodynamics, pharmacokinetics and the various drug interactions with the various medication prescribed and also to know about the safety of the drugs and side effects. A dental practitioner should be fully aware about the art of prescription writing for the effective management of the condition for which the drug is prescribed.

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