

# Knowledge and practices of dental students of Kashmir regarding antibiotic prescription and development of resistance : A cross sectional study

**Dr. Iram Kahkashan**, Tutor Department of Pharmacology ,Skims Medical College ,Srinagar

**Dr. Sana Farooq**, Tutor, MDS Department of Pedodontics and Preventive Dentistry, Government Dental College and Hospital, Srinagar , Jammu and Kashmir

**Dr. Nazia Lone**, HOD and Associate Professor, MDS Department of Pedodontics and Preventive Dentistry, Government Dental College and Hospital, Srinagar , Jammu and Kashmir

## **ABSTRACT :**

*As odontogenic infections have multimicrobial etiology like Gram-positive, Gram-negative, facultative anaerobes, and obligate anaerobic bacteria so major proportion of analgesics and antibiotics are prescribed by dentist. The aim of the study was to assess knowledge , practices and awareness of dentist of Kashmir regarding antibiotic prescription and development of resistance .75% of dentist agreed self medication as a prime reason of antibiotic resistance and abuse. As per the survey there was overprescription of antibiotic by the dentist and over the counter use of these medication by patients.*

*Key words: Odontogenic infection , Antibiotic resistance, Over the counter use,*

## **INTRODUCTION :**

Inappropriate, indiscriminate and irrational use of antibiotics lead to antibiotic resistance and dentist can overprescribe them other than over the counter use by patients.<sup>1</sup> National Centre for disease control and prevention stated one third of all out patient antibiotic prescription is unnecessary.<sup>2</sup>

A critical approach to treat odontogenic infections by antibiotic therapy is needed to avoid indiscriminate use .<sup>3</sup> This study will evaluate the antibiotic prescribing practices among dentist of Kashmir and their attitude toward growing concern of antibiotic resistance.

**MATERIALS AND METHODOLOGY:** A cross-sectional study was carried out on 72 interns and junior residents prescribing medication at OPD at Government Dental College and Hospital, Srinagar, Jammu and Kashmir using a validated questionnaire that included demographic details and survey items to evaluate the dentists knowledge, attitude, and practice (KAP) on overprescription of antibiotics and antibiotic resistance through a whatsapp based survey. The data was analyzed using the survey tool survey monkey.

<b>1.What is your gender ?</b>	a.Male	b.Female			
<b>2.If a patient reports to you with odontogenic infection what medicine will you prescribe?</b>	a.Amoxicillin	b.Amoxicillin plus clauvanic acid	c.Metronidazole	d.Cephalosporin	
<b>3.What is the number of days you prescribe an antibiotic for?</b>	a.3 days	b.5 days	c.7 days	d.10 days	
<b>4.Do you agree self medication by patients is a prime reason of antibiotic resistance?</b>	a.Yes	b.No	c.May be		
<b>5. In which of the following condition do we prescribe antibiotics</b>	a.Tooth trauma	b.Dentoalveolar abscess	c.Pericoronitis	d.Extractions performed in aseptic condition	e.All of the above
<b>6The factors for educating dentists about antibiotic resistance are?</b>	a.CDE Programme	b.Cost of drug	c.Experience of dentist	d.All of the above	

<b>7.Does your patient consume the same medication or change the medication prescribed?</b>	a.My patient shows me the medication to confirm	b.The pharmacist changes the medication but gives the same salt	c.My patient didn't comment on medication		
<b>8.Does your patient stop the medication as soon as the symptoms start?</b>	a.Yes	b.No my patient consumes antibiotic for complete duration	c.Patient takes the antibiotic on and off		
<b>9.Does your patient report to you with dental swelling complaint after taking medication from local pharmacist?</b>	a.Yes	b.No	c.Sometimes		
<b>10. After abating of symptoms does your patient stop the antibiotics and keep it for next time by self prescribing if the symptoms reappear?</b>	a.Yes	b.No	c.Many of my patients do so		

Table 1

Q.no	A	B	C	D	E	SKIPPED
1	44.44%(32)	55.56%(40)				
2	14%(10)	80%(56)	3%(2)	3%(2)		2
3	58%(42)	33%(24)	8%(6)	0%(0)		
4	75%(54)	8%(6)	17%(12)			
5	0%	26%(18)	6%(4)	3%(2)	65%(44)	4
6	41% (26)	0%	6%(4)	53%(34)		8
7	44% (32)	25%(18)	31%(22)			
8	41% (28)	44%(30)	15%(10)			4
9	15%(10)	26%(18)	59%(40)			4
10	35%(24)	12%(8)	53%(36)			4

**TABLE 2**

**RESULTS:**

A total of 10 pretested close ended questions were whatsapped to 72 dentists who were interns and junior residents at Government Dental College and Hospital Srinagar and were prescribing antibiotics to patients at OPD of the said hospital. Ethical clearance was taken . 55.56% were female dentist and 44.44% were male dentist (Figure 1).

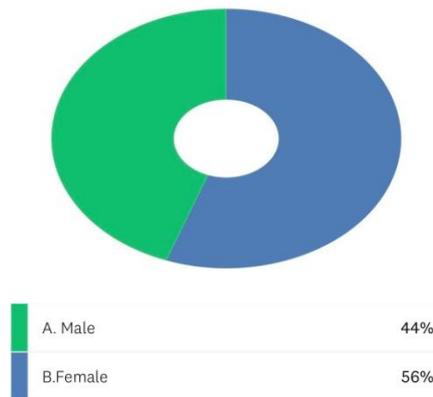
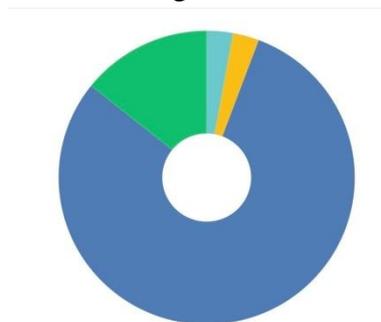


Figure 1

80% of the participants gave amoxicillin plus clauvanic acid to a patient who reported with odontogenic infection (Figure 2) (Table 2).

Figure 2



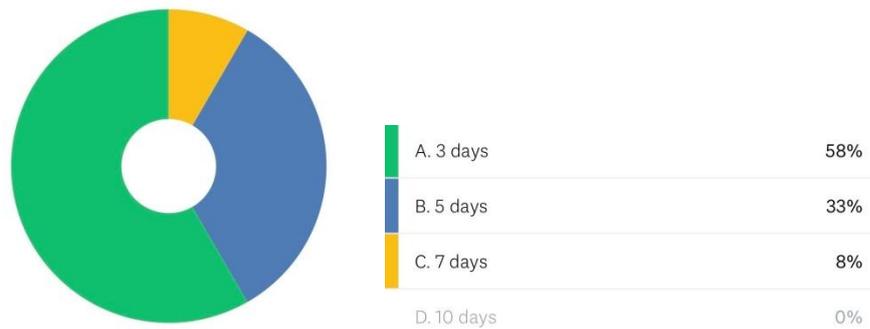


Figure 3

58% of dentist prescribed antibiotic medication for 3 days and 33% prescribed for 5 days (Figure 3) (Table 2).

A majority of dentists (75%) agreed self medication as a prime reason of antibiotic resistance and hence its abuse.65% of the dentists prescribed antibiotic in tooth tauma, dentoalveolar abscess ,pericoronitis and extractions performed in aseptic condition whereas 26% prescribed in only dentoalveolar abscess cases and 3% prescribed even in aseptic condition.

Amongst the factors it was seen CDE programme, cost of drug, experience of dentist were the major factors for educating dentists.

25% of the patients said that the pharmacist changed the medication being prescribed by the dentist but kept the salt same whereas 44% of the patient show the medication to confirm it (Figure 5 ).

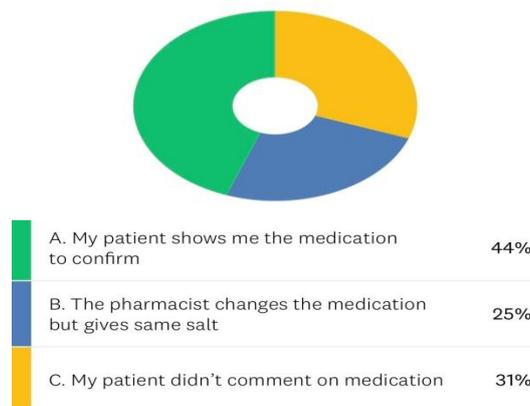


Figure 5

41% of the dentists complained that the patient stopped consuming medication as soon as the symptoms abated suggesting misuse of antibiotics and only 44% of the dentists were satisfied that their patient took the same medication being prescribed for the complete duration (Figure 6).

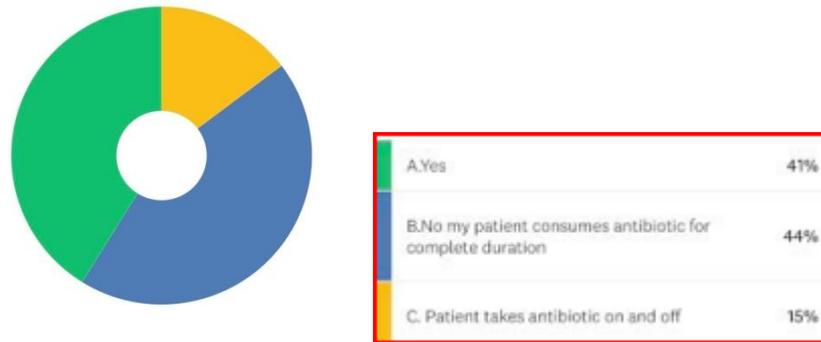


Figure 6

53% of patients strongly agreed that many of their patients admitted that they stopped the antibiotic and self prescribed it the next time (Figure 7)(Table 2).

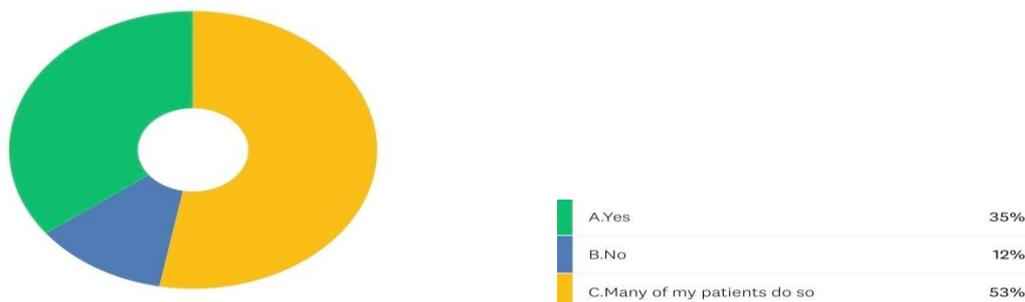


Figure 7

## DISCUSSION:

The world urgently needs proper way of prescribing antibiotics as antibiotic resistance is developing as a threat leading to prolonged hospital stays, increased mortality and higher medical costs as antibiotics are becoming less effective due to misuse, overuse and poor infection control and prevention.

Puranik MP, Sabbarwal B, Bose S in 2018 stated many dentists prescribe antibiotics for tooth fracture (56.7%), 53 % for dental caries and 54.5% for simple extraction.<sup>4</sup>

In our study amoxicillin and clauvanic acid was prescribed by majority (80%) of dentists (Table 2) amounting to 56 of the dentists which is consistent with findings of Esam Halboub et al who also noticed 52% of respondents first choice was the same.<sup>5</sup> Nowadays combined drug prescription is becoming important as doctors encounter resistant or mixed infections.<sup>6</sup> The most commonly prescribed antibiotic in Uttar Pradesh is amoxicillin while as Llor C et al noticed amoxicillin plus clauvanic acid as a leading antibiotic.<sup>7,8</sup> Amoxicillin was prescribed as the first choice antibiotic by 37% of respondents for oral infection and combination of amoxicillin metronidazole by 34%, amoxicillin clauvanic acid by 23% and ofloxacin+ ornidazole by 2% dentist.<sup>9</sup>

It is also seen that azithromycin doesn't find any role in treating oral infection because 82% of oral streptococci develop resistance to macrolides even after a single course.<sup>10</sup>

58% prescribed an antibiotic for 3 days and 33% prescribed for 5 days. A short term course of antibiotics is advisable in children as use of sub therapeutic dose for longer duration can

cause development of mutant strains causing destruction of gut and oral cavity microbial flora.<sup>11</sup>

The health care professionals should report antibiotic resistant infections to surveillance team, talk to patients about dangers of misuse, keep a clean working environment to prevent infections and prescribe antibiotics according to latest guidelines. The strength is that its first study in our region to provide preliminary data regarding extent of antibiotic resistance

### CONCLUSION:

Though having a limitation of small sample size this study provided a vista about the attitude and knowledge of dentists on antibiotic prescribing. Dentists are seen to prescribe antibiotics as a substitute treatment rather than an adjunct treatment leading to antibiotic resistance. So a rule should be if the cause of dental pain is not infection antibiotics should never be prescribed.

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