

# OVER PRESCRIPTION OF ANTIBIOTICS BY KARACHI DENTISTS WORKING IN PUBLIC AND PRIVATE SECTOR

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## ABSTRACT

*Study was conducted to assess the over prescription of antibiotics by Karachi dentists working in public and private sector. The sample size of the study was 500. A questionnaire was developed and distributed among the Registered Dental Practitioners. This study was spread over 6 months. Data entry and analysis was done on SPSS software version 20. Descriptive statistics were generated.*

*The present study provides evidence of over prescription of antibiotics by dentists of Karachi, Pakistan. Therefore, appropriate guidelines should be provided by regulatory bodies. Local measures should be prioritized by removing the cause. It is necessary to take educational initiatives to encourage rational and correct use of antibiotics.*

**Key Words:** *Over prescription, Antibiotics, Karachi Dentists.*

## INTRODUCTION

Oral conditions are mainly inflammatory therefore operative interventions are required rather than antibiotic therapy. For systemic antibiotics in dentistry, limited indications are available.<sup>1</sup> In Scotland, dentists frequently prescribed certain antimicrobials which are eloquent in dental practice. One of them is metronidazole which accounted for 45% of all prescriptions in the community services of the NHS.<sup>2</sup> Use of inappropriate antibiotics became a major problem in developing bacterial resistance. Resistant *Staphylococcus Aureus* (MRSA) being the most frequent example of extensive resistance.<sup>3</sup>

In UK, General Dental Services cost £4.5 million per year from dental profession through antibiotic prescriptions.<sup>4</sup> In recent years, resistance development became a major problem due to the over prescription of broad spectrum regimen instead of selective antibiotics by practitioner dentists. Around the globe, it is prevalent

to treat various orofacial infections with antibiotics, even when they can be effectively managed by oral hygiene measures. It is estimated that antimicrobial prescriptions are inappropriate in around one-third of the out-patients according to National Centre for Disease Control and Prevention.<sup>5</sup>

Overuse of antibiotics prescription includes incorrect dose and duration of antibiotic therapy and inappropriate choice of antibiotics. It has been found that 75% of antibiotic need is of controversial therapeutic value.<sup>6</sup> Adverse effects occur due to excessive and unnecessary use of antibiotics which may lead to several systemic problems like gastrointestinal disorders, fatal anaphylactic shock and other severe complications.<sup>7,8</sup>

Antibiotics are used extensively for treating minor infections as well as critical conditions.<sup>9</sup> A study has revealed that during past few years Pakistani dentists have been prescribing more antibiotics which may also have contributed in development of bacterial resistance,<sup>10</sup> so there is a need to identify oral conditions where dentist can easily manage through operative procedures without prescribing antibiotics. The purpose of this study was to assess the inappropriate use of antibiotics.

## METHODOLOGY

This descriptive cross-sectional study was conducted among private dental practitioners and those working as members of out-patient departments of dental teaching institutes of Karachi. A self administered structured questionnaire was developed and distributed among the Registered Dental Practitioners to assess the pattern

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of antibiotics prescription. The questionnaire composed of closed-ended questions. Participation was voluntary and confidentiality was assured.

Data entry and analysis was done in Statistical Package for Social Sciences (SPSS) version 20. Responses to each question expressed as absolute frequency and descriptive statistics were generated.

## RESULTS

The questionnaires were given to 500 dental surgeons of Karachi. Out of 500, (36.4%) were private dental practitioners and (63.6%) were working in dental teaching institutes. Response to each questionnaire was received from the respondents, thus giving a response rate of 100%. There was an unexpectedly increased number of GDP's following the recommendations that are provided by The Dental Formulary (76.7%). With an increasingly high rate of therapeutics being consumed in their daily practice, most of the practitioner's assumingly admitted the variety of drawbacks related to prescribing including the resistance to evolving bacterial strains (82.9%). Local measures play an important role in subsiding symptoms on primary basis and preferred by most of the practitioner's (64.9%). Practitioners were generally not influenced by chronic nature of condition (48.9%) and would prescribe even in cases such as chronic gingivitis. Most practitioners still prescribe antibiotics in cases of abscess (48.3%) to avoid further spread or patients expectation of receiving a drug or

TABLE 1: RESULTS

Number of records in this query	500
Total records in survey	500
Percentage	100%

TABLE 2: FIELD SUMMARY

What kind of practice do you have?		
Answer	Count	Percentage
Public sector (1)	318	63.6%
Private sector (2)	182	36.4%

TABLE 3: QUESTIONNAIRE

	Yes	No	No Answer
Do you follow the standard recommendations of the dental formulary of Pakistan	76.75%	22.85%	0.6%
Do you agree frequent antibiotic intake increases bacterial resistance	82.97%	16.83%	0.4%
Do you agree that most clinical symptoms can be handled by some local interventions or NSAID	64.93%	38.87%	0.4%
Do you agree antibiotics work poorly in chronic conditions	48.90%	50.90%	0.4%
Dental abscess has no blood supply. Do you agree that antibiotic have poor absorption at the site of abscess	51.50%	48.30%	0.4%
Do you routinely prescribe antibiotics for acute pulpitis	61.52%	38.28%	0.4%
Is it necessary to give antibiotics after every non-surgical extractions?	40.08%	59.72%	0.4%
Should antibiotics be prescribed after routine scaling	36.47%	63.13%	0.6%

if treatment had to be delayed. Frequent prescriptions were made in cases of acute pulpitis (61.5%). Most of dentists (59.7%) did not feel the use of antibiotic after a routine procedure like extraction and scaling respectively. There is a wide variety of frequency, choice and administration of therapeutics among the GDP's for the management of common dental infections.

## DISCUSSION

Several studies that have been conducted in Pakistan suggest that irrational and over prescription of antibiotics is evident in both private and public sector.<sup>7</sup>

Using the standard provided by British National Formulary (BNF), duration and frequency of a course of antibiotics was calculated from prescribed antibiotic strength and the quantity dispensed.<sup>11</sup> In general, antibiotics were prescribed (90%) on account of the recommended dose of BNF.<sup>6</sup> In this study (76.7%) GDP's followed Dental Formulary recommendations.

There was an inclination in England and Australia that dental practitioners prescribed minor dosage of antibiotics over a longer period as compared with other part of the world.<sup>12,13</sup> For preventive and therapeutic purposes, dentists prescribe antibiotics for the treatment of odontogenic and non-odontogenic infections. It is noteworthy that 6-10% of all prescriptions have been found to be written by the dentists.

There are various oral conditions which required antibiotic therapy.<sup>15</sup> In literature evidence was not found to support antibiotic use in managing acute pulpitis cases. Local interventions like pulp capping, endodontic treatment or extraction are required in the management of acute pulpitis.<sup>17,18</sup> In this study, practitioners (61.52%) regularly prescribed antibiotics for treating cases of acute pulpitis. Previous studies showed that for acute periapical infection around 60% of the surveyed dental surgeons prescribed antibiotics before drainage and after drainage.<sup>19,20</sup>

Studies from developing countries mention some reasons which are responsible for inappropriate use of antibiotics such as lack of updated knowledge of dentist

and patient demand. Authors have highlighted that scientific information about pertinent and efficient prescription is lacking.<sup>21</sup>

Recently, it has been shown that minimum doses of treatment for long period increased the risk of resistance.<sup>22</sup> In the present study, most common issue related to antibiotic was bacterial resistance and emergence of new strains which can reduce the drug effectiveness significantly. So it is important that accurate antibiotics are prescribed to kill infecting bacteria.

It has never been shown through randomized control trials the optimal duration of antibiotic therapy for multiple dental infections. Current guidelines are based on expert opinion which is considered to be lowest level of evidence. To present a scientific foundation for recommendations on superlative practice there is an imperative need for randomized control trials with objective outcome measures. Until such data exist, the antimicrobial pharmacokinetics of vigorous dosage and short duration should be applied.<sup>6</sup>

Lack of guidelines on antimicrobial therapy may obstruct the selection of most suitable antibiotics. As a result, improving prescription practice of antibiotics required a synchronized effort between dentist, dental educators, patients and regulators.<sup>23</sup> Therefore, it is prudent that in severe infections microbiological sampling should be carried out.<sup>11</sup>

Manchester dental hospital ten years back concluded in their study that dentists prescribed too many antibiotics while there were only few substitute surgical procedures employed.<sup>26</sup> A similar study from Cardiff dental school suggested that in mid-90s situation had remained the same, while the preference of antibiotics had changed, with metronidazole being the most prescribed drug in the later study.<sup>27</sup>

In addition, the trained principals for treating dental and oral infections suggest that an antibiotic should only be used to sustain and not to replace conventional surgical methods. Many infections can be treated effectively by surgical means alone, with no alternative to antimicrobial drugs whatsoever, a fact which should be known to dental surgeons as part of the overall strategy to reduce antimicrobial prescribing in dentistry.<sup>6</sup>

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