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ARTICLE

ATTITUDE OF DENTISTS TOWARDS THE PRESCRIPTION OF ANTIBIOTICS IN DENTAL TEACHING HOSPITALS OF PESHAWAR, PAKISTAN: SHOULD WE BE CONCERNED?

Actitud de los odontólogos hacia la prescripción de antibióticos en los hospitales de enseñanza dental de Peshawar, Pakistán: ¿Es motivo de preocupación?

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ABSTRACT:

Objetive: The purpose of this study was to perform a comprehensive, multifaceted assessment of the attitudes of dentists and the dominant factors influencing their decisions regarding antibiotic prescription guidelines and applications in the dental teaching hospitals of Peshawar, Pakistan.

Material and Methods: A questionnaire was distributed to 250 dental practitioners working in the four main teaching dental hospitals in Peshawar. Dental practitioners were asked to provide answers to parameters influencing their decision towards the need to prescribe antibiotics. The questionnaire further aimed to evaluate how aware the dental clinicians were of antibiotic prophylaxis guidelines and whether they considered themselves adequately trained and confident while prescribing the said medications.

Results: Out of the 250 questionnaires sent to the practitioners, 219 (88%) forms were returned. From the total, 109 (49.8%) of the respondents were males, and 23% of the dentists were found to prescribe antibiotics to their patients upon their insistence and antibiotic selection was found to be done based on the patient's socio-economic status. A considerable percentage of the respondents (71%) preferred to rely on an expert opinion from their seniors or professors for prescribing the correct antibiotics while 30% of the respondents were found to prescribe them empirically. The survey further explored the dental practitioners' knowledge on calculating the dose of the selected antibiotic based on a patient's height and weight where only 19% of the respondents were found to present with some factual knowledge. The questionnaire also reviewed the dental practitioners' awareness regarding antibiotic prophylaxis guidelines; 72% responded positively, 42% admitted to not using the guidelines in their routine clinical practice while 84% of the respondents confirmed unawareness towards the use of any guidelines.

Conclusion: There seems to be a clear defect in the education and awareness of dentists concerning antibiotic guidelines influencing their attitudes and this study highlights the importance of gauging the severity of this problem.

KEYWORDS:

Anti-Bacterial Agents; attitude of health personnel; drug resistance; drug prescriptions; practice patterns, dentists'; hospitals, teaching.

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RESUMEN:

Objetivo: El propósito de este estudio fue realizar una evaluación integral y multifacética de las actitudes de los dentistas y los factores dominantes que influyen en sus decisiones con respecto a las pautas y aplicaciones de prescripción de antibióticos en los hospitales docentes dentales de Peshawar, Pakistán.

Material y Métodos: Se distribuyó un cuestionario a 250 odontólogos que trabajan en los cuatro principales hospitales docentes de odontología de Peshawar. Se pidió a los profesionales de la odontología que proporcionen respuestas a los parámetros que influyen en su decisión sobre la necesidad de prescribir antibióticos. El cuestionario tenía además como objetivo evaluar qué tan conscientes eran los odontólogos de las pautas de profilaxis antibiótica y si se consideraban adecuadamente capacitados y confiados al recetar dichos medicamentos.

Resultados: De los 250 cuestionarios enviados a los odontólogos, 219 (88%) formularios fueron devueltos.Del total, 109 (49,8%) de los encuestados eran hombres. Se encontró que el 23% de los dentistas prescriben antibióticos a sus pacientes ante su insistencia y se encontró que la selección de antibióticos se hizo en función del estado socioeconómico del paciente. Un porcentaje considerable de los encuestados (71%) prefirió confiar en la opinión experta de sus superiores o profesores para prescribir los antibióticos correctos, mientras que se encontró que el 30% de los encuestados los recetaba empíricamente. La encuesta exploró aún más el conocimiento de los odontólogos sobre el cálculo de la dosis del antibiótico seleccionado en función de la altura y el peso del paciente, donde se encontró que solo el 19% de los encuestados presentaba algún conocimiento fáctico. El cuestionario también revisó el conocimiento de los odontólogos sobre las pautas de profilaxis antibiótica. El 72% respondió positivamente, el 42% admitió no utilizar las guías en su práctica clínica habitual, mientras que el 84% de los encuestados confirmó el desconocimiento del uso de alguna guía.

Conclusion: Parece haber un claro defecto en la educación y la conciencia de los dentistas sobre las pautas de antibióticos que influyen en sus actitudes y este estudio destaca la importancia de medir la gravedad de este problema.

PALABRAS CLAVE:

Antibacterianos; actitud del personal de salud; resistencia a medicamentos; prescripciones de medicamentos; pautas de la práctica en odontología; hospitals, teaching.

INTRODUCTION.

Antibiotics are a mainstay of treatment for infection and are perhaps the most successful pharmacological therapy of the modern era. The use of antibiotics has markedly diminished mortality due to infectious diseases, reduced the burden of tuberculosis in the modern world, improved survival after trauma and allowed the development of therapies that intentionally or incidentally suppress the immune system for the treatment of autoimmune diseases and cancer.[1] Conversely, every single dose of antibiotic prescribed and used upsurges the likelihood of antimicrobial resistance (AMR).

Hence, it is important to ensure the existence of a health care system that provides strong incentives for the appropriate prescription and use of these antimicrobial agents. The multiple benefits of appropriate prescription of antibiotics include but are not limited to a direct impact on clinical outcomes, the avoidance of adverse effects and perhaps most importantly, the prevention of the expected but unwelcome emergence of resistant strains.[2,3]

There have been increasing reports on the overuse of antibiotics by health care professionals, contributing to the global dilemma of antibiotic

resistance. Although the number of antibiotic prescriptions written by dentists is relatively miniscule compared to those written by medical practitioners, a significant correlation with AMR has nonetheless been established.[4]

The key factors when considering antibiotic resistance are dose and duration of therapy. Correct frequency of antibiotic is of utmost importance so that the infecting bacteria are killed rather than merely inhibited.[5] Based on clinical and bacterial epidemiological data, the microorganisms responsible for the infections can only be suspected and dose and duration of treatment is decided on a presumptive basis with broad-spectrum antibiotics being prescribed more habitually.[6]

Incorrect use of antibiotics in dentistry may be due to variability in the health care professionals' training, motivation, workload and setting including accessibility to consults and techniques required to diagnose infectious diseases.[7] Prescription errors related to name, dose, intervals and duration of treatment can contribute to microbial resistance and increase the risk of adverse events and costs of treatment.[4]

In developed countries, surveys about general dental practitioners' prescribing habits have raised awareness of the quality of prescriptions of antibiotics. Whilst some surveys have emphasized that dental prescriptions do not follow clinical guidelines, other authors have concluded that there is a lack of scientific information on appropriate and efficient prescription of the drugs in question. Moreover, changes in the dental pharmacotherapeutic field have been so rapid in recent years requiring dental practitioners' to constantly update their knowledge about new drugs, drug interactions and any other useful therapeutic trends.[7]

Several studies in the literature have evaluated antibiotic knowledge and prescribing patterns amongst dental practitioners. However, no comprehensive studies have been carried out to gauge the attitudes of the dentists towards the prescription of antibiotics in Peshawar, Pakistan.

The objective of this study was to perform a comprehensive, multifaceted assessment of the attitudes of dentists and the dominant factors influencing their decisions regarding antibiotic prescription guidelines and applications in the dental teaching hospitals of Peshawar, Pakistan.

This study further aimed to evaluate the need for establishing educational programs or courses in order to enhance the dentists' awareness of the correct prescription and use of antimicrobial drugs.

MATERIALS AND METHODS.

This is a descriptive, cross sectional, selfadministered structured questionnaire based study. The research has been approved by the research and ethics committee of Sardar Begum Dental College, Gandhara University, Peshawar, Pakistan. Two hundred and fifty printed questionnaires were distributed randomly to dental practitioners working in the four main teaching dental hospitals in Peshawar: Sardar Begum Dental College, Khyber College of Dentistry, Rehman College of Dentistry and Peshawar Dental College.

The study sample included house surgeons, interns, specialist trainees, associate professors, professors, medical officers, demonstrators working in the abovementioned teaching hospitals. The questionnaires were distributed to all working practitioners and recollected on the same day.

In addition to demographic information including the clinician's name, age, gender, number of years in the profession, designation, department and institute, the questionnaire contained a number of open and close-ended questions to make it flexible for the participants. Dental practitioners were asked to provide answers to parameters influencing their decision towards the need to prescribe antibiotics. The questionnaire further aimed to evaluate how aware the dental clinicians were of antibiotic prophylaxis guidelines and whether they considered themselves adequately trained and confident while prescribing the said medications.

After excluding incomplete surveys and surveys with failed intra-participant consistency, the data obtained was compiled, tabulated and subjected to

statistical analysis using SPSS (Statistical Package for Social Sciences) version 16.0. All descriptive data were projected as frequencies and percentages and compared using the chi-square test. The level of statistical significance of most of the performed tests was p-value<0.05.

RESULTS.

Out of the 250 questionnaires sent to the practitioners, 219 (88%) forms were returned. A total of 94 (42.9%) of the respondents were females and 109 (49.8%) were males.

Table 1 shows the demographic and professional characteristics of the respondents. Among the participants, the majority (38.8%) were house surgeons or internees belonging to the oral & maxillofacial surgery and clinical orthodontic departments (18.3%).

The associate professors were the minority (1.8%). The majority of the participants (78.5%) had practiced dentistry for less than 5 years. Important factors influencing the prescription of antibiotics by dentists were found to be diagnostic uncertainty, perceived patient demands and expectations, practice sustainability and financial considerations along with influences from medical representatives due to inadequate knowledge (Figure 1).

Almost 23% of the dentists were found to prescribe antibiotics to their patients upon their insistence while almost the same percentage was found to prescribe the drugs for their ease and convenience deferring the patient for a later appointment. Antibiotic selection was done based on the patient's socio-economic status as 31% of the dentists were found to prefer cheap but commonly used antibiotics for their cases.

Figure 1. Factors influencing the prescription of antibiotics by dental practitioners in Peshawar, Pakistan.

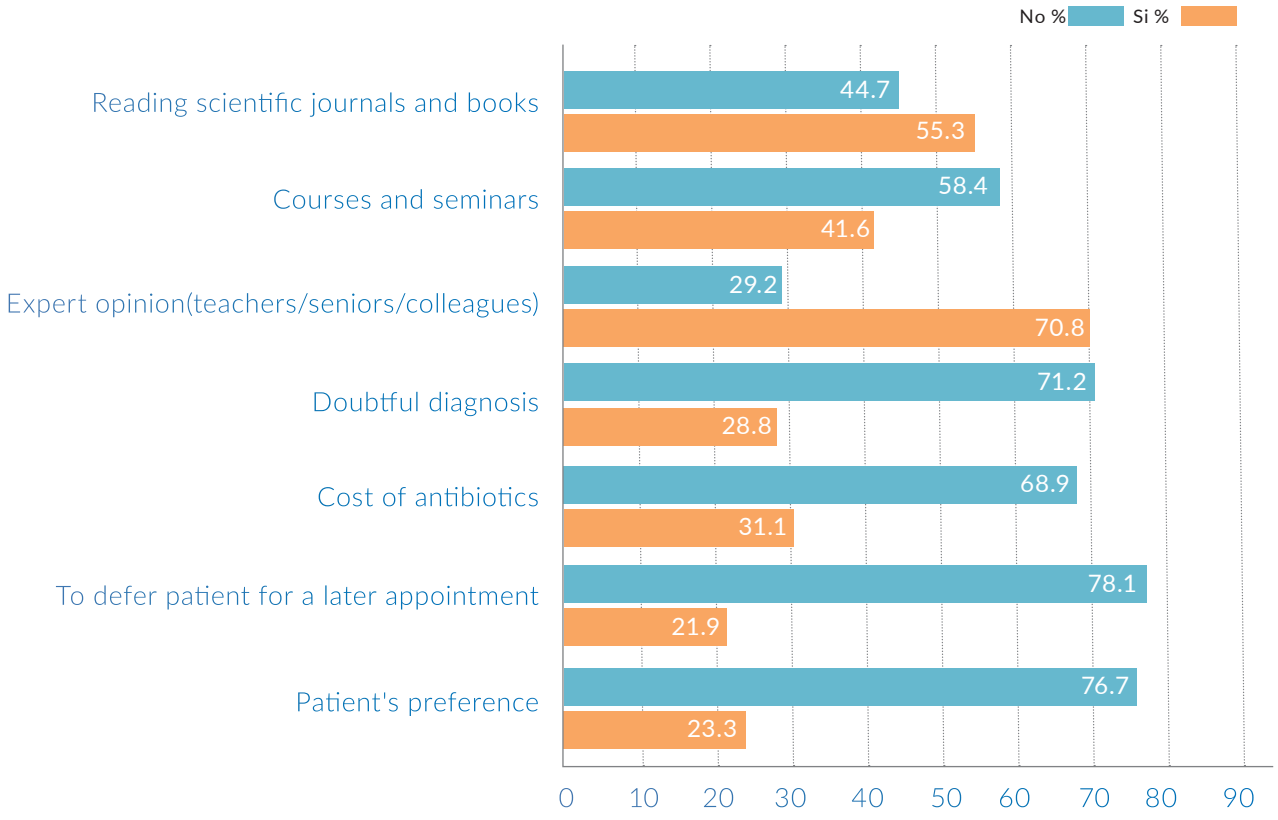

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Figure 2. Dental practitioners' knowledge on calculating the dose of the selected antibiotic based on a patient's height and weight.

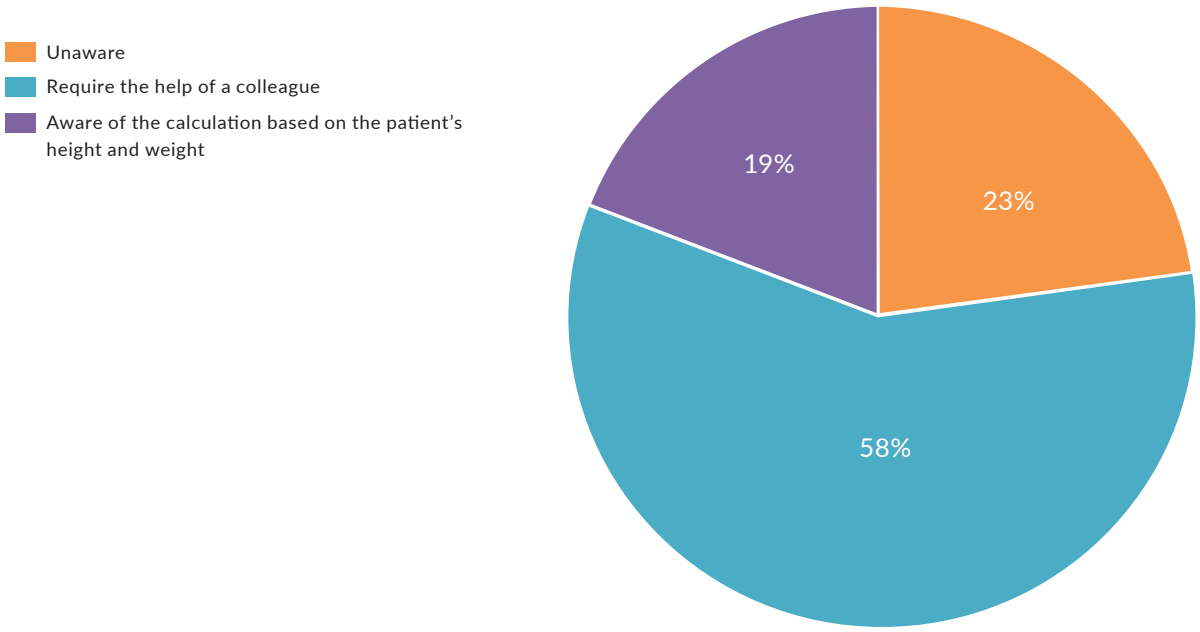


Figure 3. Dental practitioners' knowledge of and compliance towards antibiotic prophylaxis guidelines.

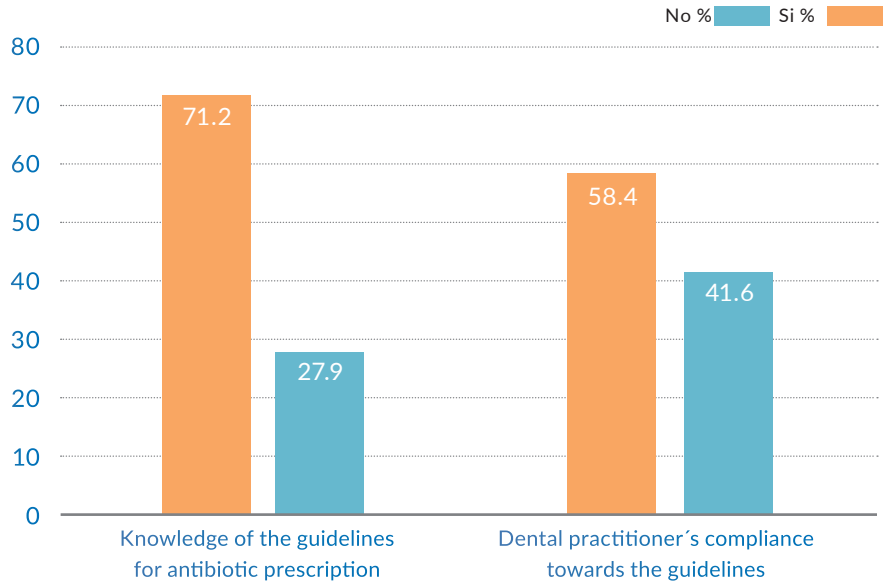


Figure 4. Dental practitioners' knowledge of and compliance towards antibiotic prophylaxis guidelines.

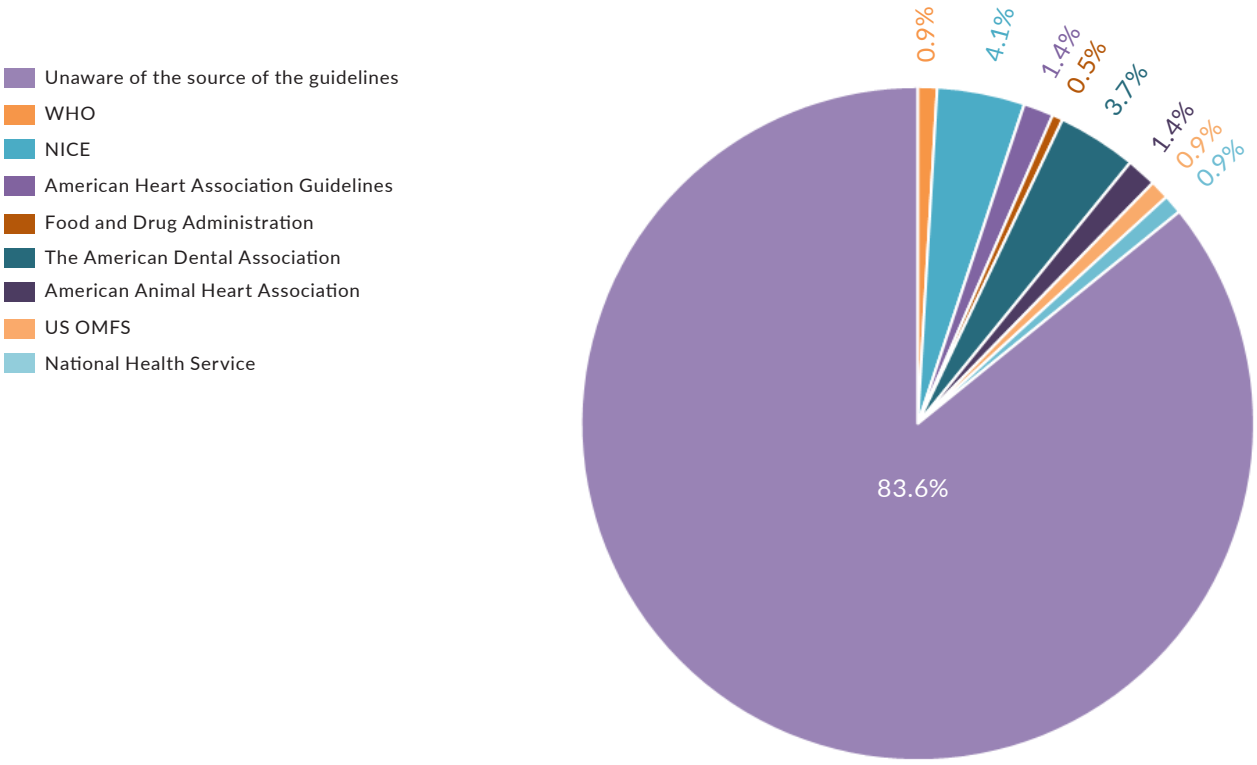
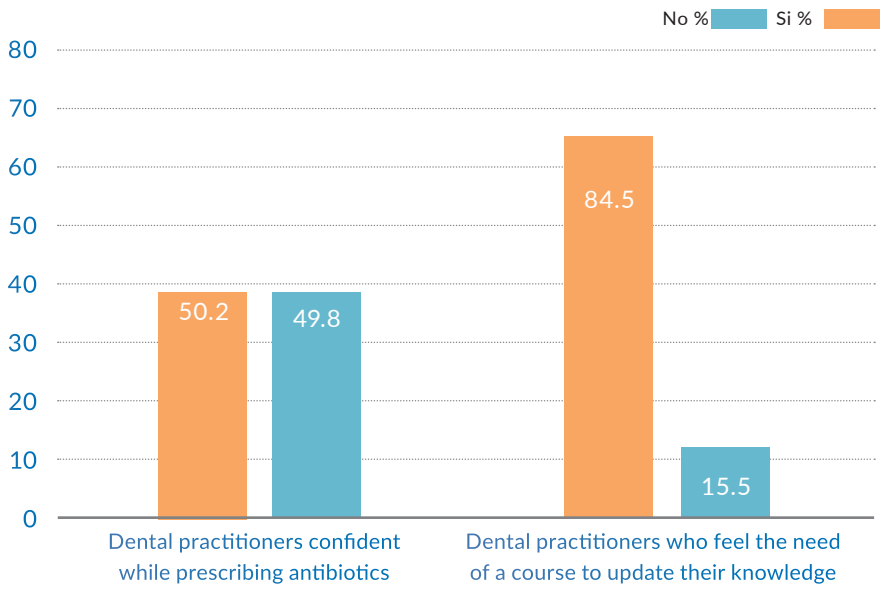


Figure 5. Dental practitioners' confidence while prescribing antibiotics.



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A considerable percentage of the respondents (71%) relied on an expert opinion from their seniors or professors for prescribing the correct antibiotics. Around 41% of the dentists had attended courses and seminars while 55% admitted acquiring all their knowledge about antimicrobial drugs and their prescriptions from standard textbooks and scientific journals alone.

Due to the unavailability of antibiotic culture and sensitivity testing to provide a definitive diagnosis, 30% of the respondents were found to prescribe antibiotics empirically, prescribing antibiotics based on observing others and not following any guidelines.

The survey further explored the dental practitioners' knowledge on calculating the dose of the selected antibiotic based on a patient's height and weight. Only 19% of the respondents were found to have some factual knowledge while a significant 58% would simply resort to taking help from a colleague (Figure 2).

The questionnaire also reviewed the dental practitioners' awareness regarding antibiotic prophylaxis guidelines. Almost 72% were aware of the existence of guidelines, but 42% admitted to not using guidelines in their routine clinical practice, while 84% of the respondents were unaware of the source of antibiotic prophylaxis guidelines (Figure 3 and Figure 4).

Around 50% of the participants were not confident in prescribing antibiotics while 84.5% responded positively regarding the idea of taking a course to update their knowledge regarding the use of prescription of antibiotics (Figure 5).

The numbers and percentages given in the tables and figures are representative of the number of the dental professionals who actually responded to the questions.

DISCUSSION.

This questionnaire-based cross-sectional study aimed to assess the attitudes of dentists towards the prescription of antibiotics, to quantify factors that exert a strong influence on their decision to prescribe the antibiotics as well as their knowledge of and compliance towards existential antibiotic prophylaxis guidelines. The survey targeted dental clinicians practicing in Peshawar, Pakistan. An 88% response rate is considered excellent where the majority of the surveyed candidates were house officers forming the main dental workforce in the community.

The prescription of antimicrobial drugs is a complex process involving multiple factors. Any health-care physician can prescribe antibiotics which is not the case with other clinically relevant drugs. Incorrect and inappropriate use of antibiotics in the field of medicine can be avoided by simply following the standard guidelines provided by reputed health-care organizations.

However, it has been commonly observed that decisions influencing the prescription of these medications are rarely based on an accurate clinical diagnosis but are more often centered on the nature and severity of the patient's presenting signs and symptoms and hence rely strongly on the clinician's judgment. Antimicrobial prescription is subjected to a certain degree of diagnostic uncertainty and may be prejudiced by many factors related to the physician, the patient and the environment.[8] In order to promote the appropriate prescription and use of antibiotics, it becomes essential to analyze the entire process and the attitudes of the prescribing dentists along with other influencing factors.

In our study, 23% of the dentists were found to prescribe antibiotics to their patients upon their insistence. Experienced dental practitioners skillful in communicating prescribing decisions, coupled with a thorough clinical consultation are more likely to be able to defuse what could be an emotionally and professionally awkward situation. Intentional engagement and involvement of the practitioner with the patient while explaining treatment options and risks taking into account the patient's values may help enhance the patient's confidence in the dentist's decision.[9,10] An effective communication skills training provided to health care professionals has been found to significantly reduce the incidence

of prescribing antibiotics inaptly without having an effect on treatment outcomes.[11]

Twenty-two percent of the dentists in Peshawar's dental schools would prescribe antibiotics to their patients in order to defer them for a later appointment when busy and overbooked. This outlook is highly unjustified as the basic praxis behind the prescription of any drug has been cited in literature as one of the factors shaping prescribing culture.[12,13]

Antibiotic selection based on the patient's socio-economic status, as 31% of the dentists from Peshawar preferred to do, could be detrimental, resulting in selection of resistant bacterial strains. A similar percentage (70%) of dentists from India were found to have the same pratice.[14]

Around 41% of the dentists from Peshawar had attended courses and seminars while 55% admitted acquiring all their knowledge about antimicrobial drugs and their prescription from standard textbooks and scientific journals alone. A staggering 71% relied on an expert opinion from their seniors or professors for correct guidance regarding the prescription of antibiotics while only 35% of the practitioners from China were found to do the same, according to a study conducted by Yang *et al*.,[15] Expert opinion has been found to mark a significant influence on the duration of a particular course of antibiotics.[16]

Prior studies evaluating the average duration of antibiotic course found dentists in Canada to prescribe antibiotics for an average of 6.92 days.[17] Endodontists in the United States of America were found to prescribe antibiotics for 7.58 days.[18]

Discerning gaps between possessing knowledge and its application in clinical practice cannot be ignored. Of the 72% of the practitioners from Peshawar aware of antibiotic prophylaxis guidelines, only 58.4% ensured their compliance. The same pattern was found in studies conducted in Saudi Arabia.[2,3]

Several reports have shown a significant improvement in a patient's health following two to three days of antibiotic therapy, proving that prolonged courses may not confer additional benefits.[19-22]

In our present survey, only 13.1% of dental practitioners from Peshawar would prescribe antibiotics for the duration of two to three days while a great majority of the dentists (86.8%) would place their patients on a course of more than three days. Scientific knowledge is neither limited nor stagnant, as numerous breakthroughs are consis-tently appearing, forcing us to reevaluate our entire basis and keep questioning dentists' confidence in treating patients.

About 50% of the dental practitioners from Peshawar admitted to not being very confident while prescribing antibiotics and almost 85% agreed that they need a refresher course to update their knowledge on antimicrobial drugs and their current prescription modalities.It should be clear that the current survey looked at the knowledge and attitudes of both the therapeutic and the prophylactic aspects of prescribing antibiotics among the dental practitioners.

CONCLUSION.

This study concluded that awareness and attitude of dentists towards antibiotics need major improvement, as nearly half of them reported to be not confident in prescribing antibiotics. The majority of dentists in teaching dental institutes were unaware about antibiotic prescription guidelines and hence relied on expert opinions or peers.

More than two thirds of the study participants reported the need of refreshing and updating the knowledge of antibiotics. Further studies are needed to truly elucidate the effect of a guideline-focused education on the prescription patterns of dental practitioners.

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Conflict of interests:

The authors deny any conflicts of interest.

Ethics approval:

The research has been approved by the research and ethics committee of Sardar Begum Dental College, Gandhara University, Peshawar, Pakistan).

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Authors' contributions:

Zaman S: Investigation, Writing – original draft; S. Gilani I: Conceptualization, Supervision, Writing – review & editing;

Yousufi S: Investigation, Data curation; Y. Israr: Formal Analysis;

Afridi S: Data curation.

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