



“Antibiotic Prescribing Practices in Endodontic Procedures among General Dental Practitioners in Jalna District: A Short Questionnaire Based Study.”

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ABSTRACT

Aim:The aim of study is to assess the antibiotic prescription practices among general dentists in Endodontics , with a focus on ensuring evidence based rational use of antibiotics and contribute to strategies aimed at combating antimicrobial resistance.

Materials and Method:A cross-sectional questionnaire-based survey was conducted to assess the antibiotic prescribing practices among general dental practitioners in relation to endodontic procedures. The study was designed to evaluate the clinical decision-making and awareness regarding the use of antibiotics in endodontic therapy.

Results:A structured questionnaire-based survey was distributed among 132 dental practitioners in the Jalna district. A total of 96 dentists responded, yielding a response rate of 72.73%.

Conclusion:The study shows that most general dental practitioners are aware of appropriate antibiotic use in endodontics, with amoxicillin being the most commonly prescribed drug. However, occasional prescribing for non-indicated conditions and limited use of culture sensitivity testing highlight areas for improvement. Strengthening guideline adherence, promoting rational prescribing, and increasing patient education are essential to combat antimicrobial resistance.

Keywords: Antibiotic prescription practices, Endodontics, General dental practitioners, Antimicrobial resistance (AMR), Amoxicillin, Evidence-based dentistry, Rational antibiotic use, Clinical guidelines, Questionnaire-based survey, Cross-sectional study, Culture sensitivity testing, Patient education.

I. INTRODUCTION

Antibiotics, introduced in the late 1920s, transformed medicine by saving millions of lives^(1) . However, misuse and over-prescription have led to the emergence of antibiotic-resistant bacteria, creating a major global health threat^(2) . Many antibiotics that were once effective are now less commonly used due to resistance in newer bacterial strains^(3) . This resistance mainly results from inappropriate antibiotic use, which promotes the survival of resistant microorganisms⁽⁴⁾. Consequently, antimicrobial resistance (AMR) has become a major challenge in modern healthcare^(5) .

Antibiotics are required only in specific situations, such as oral infections in medically compromised patients with weakened immunity^(6) , where infections may spread systemically and cause serious complications^(7) . However, most endodontic conditions—such as reversible or irreversible pulpitis, pulpal necrosis, acute apical periodontitis, and chronic apical abscess—do not require antibiotics unless systemic involvement is present^(8) . These conditions are usually managed by procedures such as pulp extirpation and root canal debridement, and antibiotics have not shown significant benefit in relieving acute pulpitis pain^(9) .

Dental practitioners prescribe antibiotics frequently, averaging about three prescriptions per week, which contributes significantly to antibiotic resistance (ABR)^(10) . Studies show that antibiotics are often prescribed empirically without clear clinical indications^(11) , mainly due to lack of knowledge or the convenience of antibiotics as a quick solution^(12) . This pattern of unnecessary prescribing continues despite guidelines and contributes to the growing problem of ABR^(13) .



Amoxicillin, alone or combined with clavulanic acid, is the most commonly prescribed antibiotic for endodontic infections⁽¹⁴⁾ because of its broad-spectrum activity against aerobic and anaerobic bacteria⁽¹⁵⁾. Beta-lactam antibiotics such as penicillin V and amoxicillin remain first-line drugs due to their effectiveness and low side-effect profile⁽¹⁶⁾. However, excessive use may promote antibiotic resistance, threatening their future effectiveness⁽¹⁷⁾. Therefore, antibiotics should be prescribed only when clinically indicated and according to established guidelines⁽¹⁸⁾.

Most dental diseases are inflammatory and associated with pain⁽¹⁹⁾. Many cases of dental pain arise from pulpal infections that require operative treatment, such as root canal therapy, rather than antibiotics⁽²⁰⁾. Antibiotics are generally not indicated for conditions like acute periapical infections, dry socket, and pulpitis⁽²¹⁾. Chronic periodontal inflammatory diseases can usually be managed with local treatment and oral hygiene measures⁽²²⁾. Systemic antibiotics should only be used in acute periodontal infections with systemic involvement or when local treatment is not possible⁽²³⁾.

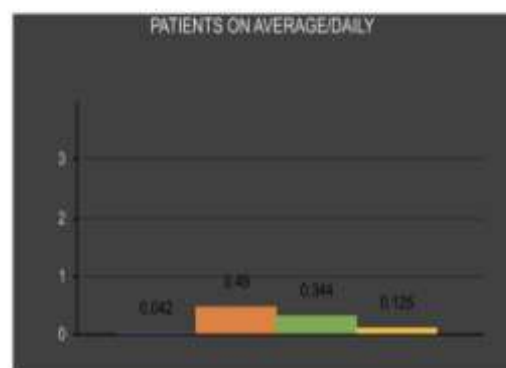
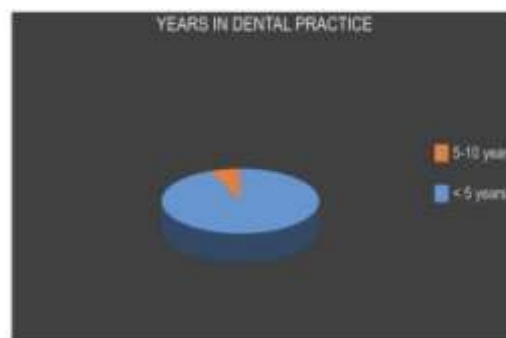
II. METHODS

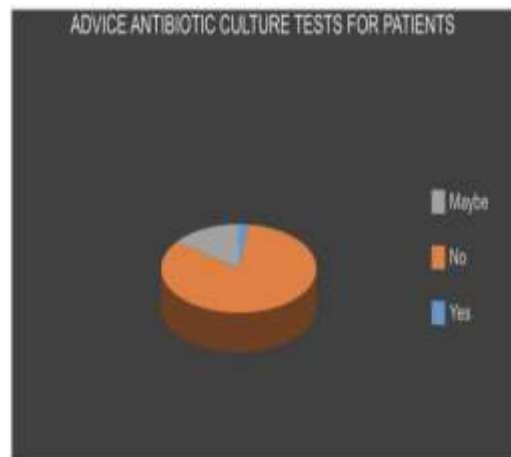
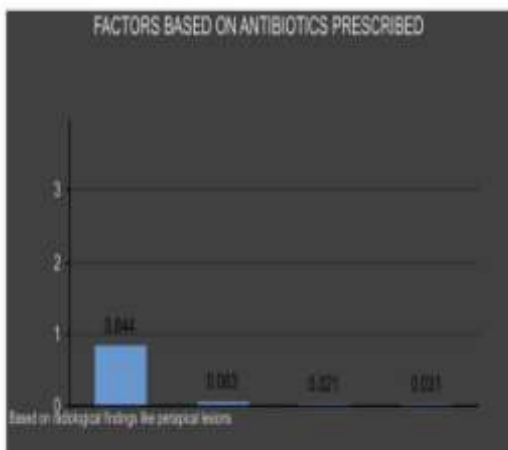
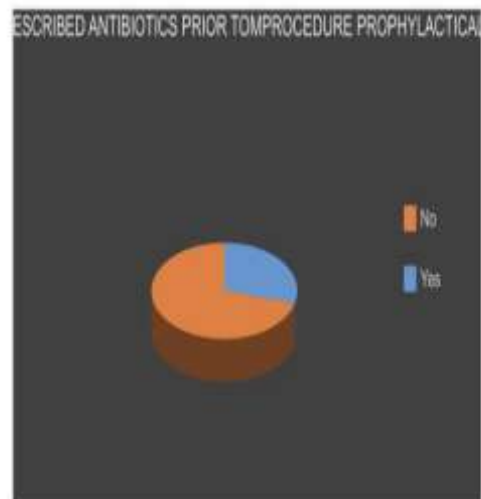
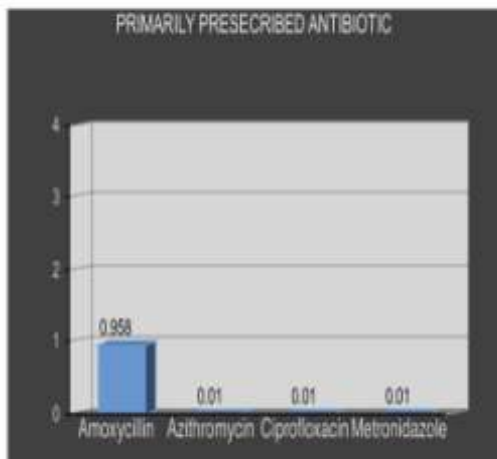
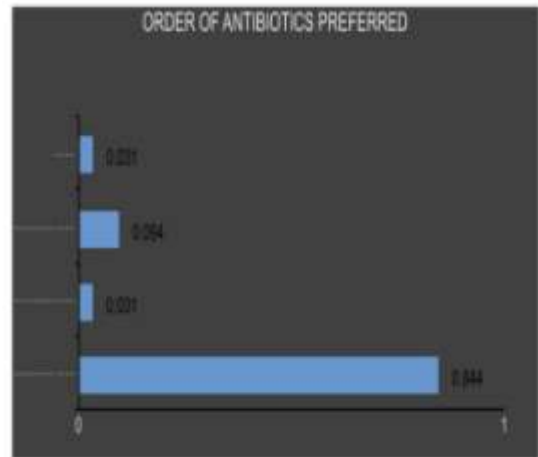
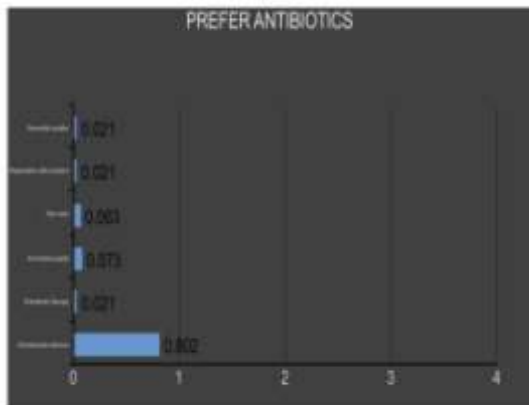
A cross-sectional questionnaire-based survey was conducted to assess antibiotic prescribing practices among dental practitioners in relation to endodontic procedures and to evaluate their clinical decision-making and awareness regarding antibiotic use. Data were collected using a self-administered questionnaire distributed through online platforms such as Google Forms and email to ensure wider participation and convenience. The study population included licensed general dental practitioners, postgraduate dental students, and dental interns practicing in the Jalna district. Participants were informed about the purpose of the study and voluntarily completed the questionnaire. The survey consisted of 14 close-ended questions related to antibiotic prescribing behavior, preferred drugs, duration of therapy, and awareness of prescribing guidelines. The questionnaire was sent to 133 dentists. The questions were simple and clear to minimize response bias. Participation was anonymous, and no personal or identifiable information was collected. Ethical approval was obtained from the Institutional Ethics Committee, and the study followed the principles of the Declaration of Helsinki (2013). Responses were automatically recorded through Google Forms, compiled into a master sheet, and analyzed using descriptive statistics, with results presented as frequencies and

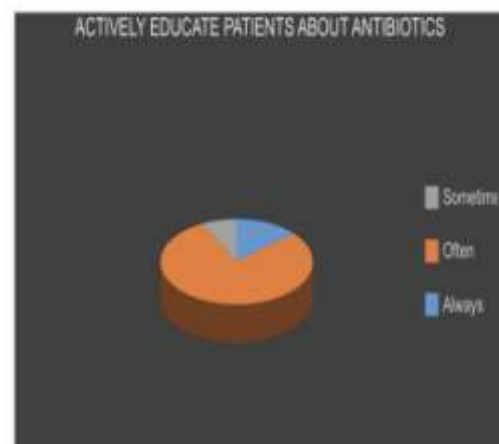
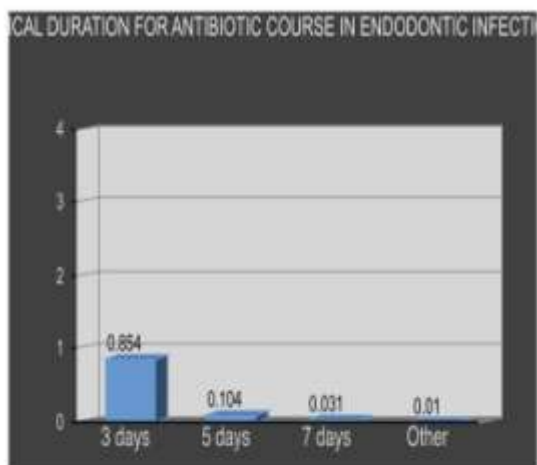
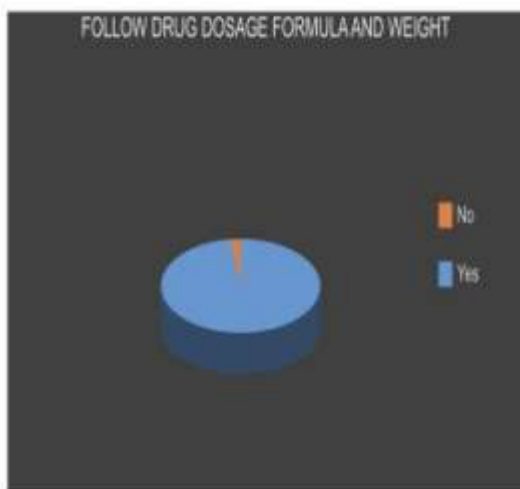
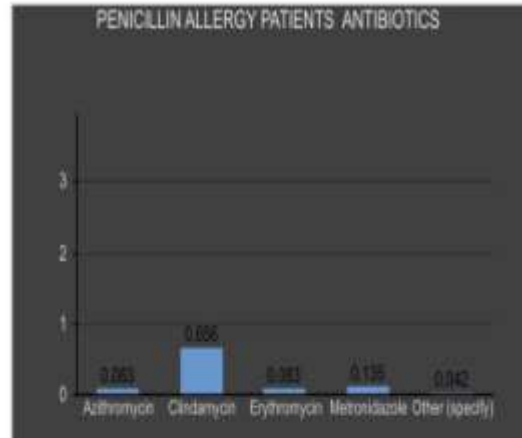
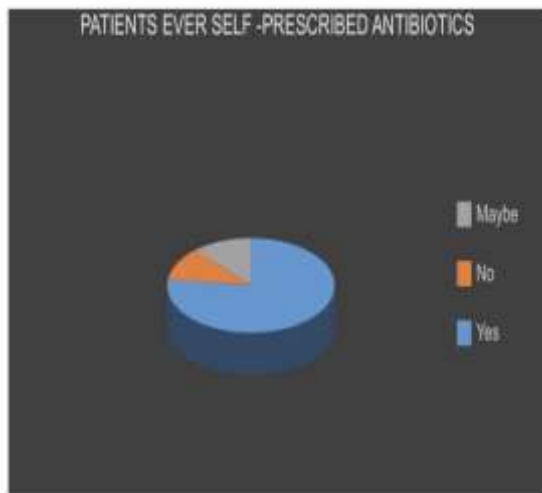
percentages in tables and graphs for clear interpretation.

III. RESULT

A structured questionnaire-based survey was distributed among 132 dental practitioners in the Jalna district. A total of 96 dentists responded, yielding a response rate of 72.73%. The majority of the respondents (93.8%) had less than five years of experience in dental practice, while only a small proportion (6.3%) had between five to ten years of experience. This indicates that most participants were relatively new practitioners, suggesting that younger or early-career dentists are more actively engaged in current endodontic practice patterns and antibiotic prescribing behaviour.







IV. DISCUSSION

The study showed that most respondents (93.8%) had less than five years of clinical experience, indicating that early-career dentists



formed the majority. Nearly half managed 1–5 patients daily, suggesting a moderate workload that may support individualized care and rational antibiotic prescribing. Dentoalveolar abscess (80.2%) was the primary indication for antibiotics, which aligns with recommended clinical guidelines. However, some practitioners still prescribed antibiotics for non-infective conditions such as pulpitis, reflecting potential overuse. Amoxicillin (95.8%) was the most commonly prescribed antibiotic, followed by Metronidazole and Doxycycline, consistent with standard endodontic recommendations. Most practitioners relied on radiographic findings for diagnosis, although antibiotics should be prescribed only when clinical signs of infection are present. Prophylactic antibiotic use was reported by 29.2% of practitioners, exceeding guideline recommendations. Culture sensitivity testing was rarely used, and a high prevalence of patient self-medication was reported. Encouragingly, most dentists considered patient weight and preferred shorter antibiotic courses, indicating awareness of rational prescribing practices, though overall awareness of formal prescribing guidelines remains limited.

V. CONCLUSION

The present study indicates that most general dental practitioners are aware of appropriate antibiotic use in endodontic therapy; however, certain gaps in adherence to evidence-based guidelines still exist. Amoxicillin remains the most commonly prescribed antibiotic, aligning with global recommendations. Despite this, antibiotics are sometimes prescribed for conditions where they are not indicated, and culture sensitivity testing is not widely practiced. Encouragingly, many practitioners follow weight-based dosing and prefer shorter treatment durations, reflecting rational prescribing behavior. The high rate of patient self-medication highlights the need for improved public awareness and stricter prescription control. Continuous professional development and better adherence to national and international guidelines are essential to promote rational antibiotic use and combat antimicrobial resistance.

REFERENCES

- [1]. Fleming, A. (1929). "On the Antibacterial Action of Cultures of Penicillium." *British Journal of Experimental Pathology*.
- [2]. Laxminarayan, R., et al. (2013). "Antibiotic Resistance: The Need for Global Solutions." *The Lancet*.
- [3]. Ventola, C. L. (2015). "The Antibiotic Resistance Crisis: Part 1: Causes and Threats." *Pharmacy and Therapeutics*.
- [4]. Davies, J., & Davies, D. (2010). "Origins and Evolution of Antibiotic Resistance." *Microbiology and Molecular Biology Reviews*.
- [5]. Scully, C., & El-Nesr, M. (2008). "Antibiotic Use in Oral Health Care." *Oral Diseases*.
- [6]. Mombelli, A., & Cionca, N. (2012). "The Role of Antibiotics in Periodontal Therapy." *Periodontology 2000*.
- [7]. Nygaard, A. M., et al. (2016). "Management of Endodontic Infections: Antibiotic Use in Dentistry." *International Endodontic Journal*.
- [8]. Ruddle, C. J. (2007). "Endodontic Pathology: Diagnosis and Treatment." *Endodontic Topics*.
- [9]. Chuang, S. K., & Gillette, E. L. (2012). "Empirical Antibiotic Prescribing in Dentistry: A Review." *Journal of Dental Research*.
- [10]. Patel, A., & Shaffer, J. (2015). "Antibiotic Resistance in the Context of Dental Practice." *Journal of Periodontology*.
- [11]. Ferrer, M., et al. (2017). "Antibiotics in Dental Infections: A Systematic Review of the Evidence." *Journal of Clinical Periodontology*.
- [12]. Moore, W. E., & Moore, L. V. (1994). "The Antibiotic Susceptibility of Endodontic Pathogens." *Journal of Endodontics*.
- [13]. Ruiz, G., & Garcia, C. (2005). "Amoxicillin and Clavulanic Acid in Dentistry." *European Journal of Clinical Microbiology*.
- [14]. Wu, C. Y., & Lin, Y. Y. (2009). "Microbial Resistance and the Role of Amoxicillin." *Journal of Clinical Microbiology*.
- [15]. Roberts, A. L., et al. (2014). "Beta-lactam Antibiotics in Endodontic Treatment." *Journal of Endodontics*.
- [16]. McDonnell, G., & Russell, A. D. (2011). "Antibiotic Resistance in Dental Infections." *Oral Health Journal*.
- [17]. Moore, P. A., & Dasanayake, A. P. (2007). "Guidelines for Antibiotic Use in Dentistry." *Journal of the American Dental Association*.
- [18]. Smith, S. W. (2013). "Inflammatory Diseases in Dentistry." *Journal of Oral and Maxillofacial Surgery*.



- [19]. Zernotti, M. E., & Fuchs, L. S. (2011). "Endodontic Pain Management." *International Journal of Dentistry*.
- [20]. Yildirim, M., & Berker, Y. (2015). "Dry Socket: Causes, Prevention, and Treatment." *Journal of Dental Sciences*.
- [21]. Schilder, H. (2005). "Endodontic Therapy: Procedures and Techniques." *Journal of Endodontics*.
- [22]. Roberts, S. S., et al. (2009). "Periodontal Infections and the Role of Antibiotics." *Journal of Clinical Periodontology*.
- [23]. Lavigne, J. P., & Grenier, D. (2006).
- [24]. Alharbi A et al., *BMC Oral Health*, 2022.
- [25]. Nair M et al., *Int Dent J*, 2021.
- [26]. Vessal G et al., *Int Endod J*, 2020.
- [27]. Gill Y et al., *Br Dent J*, 2021.
- [28]. Khoury G et al., *Clin Oral Investig*, 2022.
- [29]. Al-Melh M et al., *Saudi Dent J*, 2022.
- [30]. Gounder R et al., *Aust Endod J*, 2022.
- [31]. Segura-Egea JJ et al., *Clin Oral Investig*, 2021.
- [32]. European Society of Endodontology, Position Statement on Antibiotic Use, 2020.
- [33]. ADA Clinical Guidelines, 2021.
- [34]. Ahmed H et al., *BMC Infect Dis*, 2023.
- [35]. Choudhary A et al., *Indian J Dent Res*, 2022.
- [36]. Saini R et al., *J Clin Diagn Res*, 2022.
- [37]. NICE/ADA Clinical Guidance, 2022.
- [38]. Patel N et al., *Br Dent J*, 2021.