

KNOWLEDGE, ATTITUDES, AND PRACTICES AMONG DENTISTS IN SAUDI ARABIA REGARDING ANTIBIOTIC USE: A CROSS-SECTIONAL DESCRIPTIVE STUDY

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Abstract

Background: Antibiotic resistance is a global health concern exacerbated by the indiscriminate use of antibiotics in healthcare settings, including dental care. This study aims to assess the Knowledge, Attitudes, and Practices (KAP) of dentists in Saudi Arabia regarding antibiotic utilization to inform strategies for optimizing prescribing practices and combating antimicrobial resistance.

Methods: A cross-sectional descriptive study design was employed to survey registered dentists practicing in Saudi Arabia. A structured questionnaire was developed based on existing literature and distributed electronically to participants. Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS), employing descriptive and inferential statistics to summarize participant characteristics and explore associations between variables.

Results: A total of 208 dentists completed the questionnaire, yielding insights into their KAP regarding antibiotic use. The findings revealed a nuanced understanding of antibiotic indications and safety among dentists, although misconceptions persisted regarding antibiotic efficacy and resistance. Dentists exhibited cautious attitudes towards antibiotic use, recognizing the risks associated with overprescribing and the global impact of resistance.

Discussion: The study provides valuable insights into the KAP of dentists regarding antibiotic utilization in Saudi Arabia. Addressing knowledge gaps, promoting evidence-based practices, and enhancing awareness of antibiotic resistance are crucial for optimizing prescribing practices

among dentists. Targeted interventions tailored to the specific needs of dentists can contribute to combating Antibiotic resistance and safeguarding patient health in dental care settings.

Keywords: Dentists, antibiotic, knowledge, attitudes, practices, Saudi Arabia, dental care.

1. Introduction

Antibiotic utilization stands as a cornerstone in managing diverse infectious conditions, encompassing dental infections. Nonetheless, the escalating emergence of resistance among pathogens against antibiotics has emerged as a pressing concern in recent years (Offner et al., 2020; Aljohani et al., 2021; Hakim et al., 2020; Al-Haroni et al., 2018; Alzahrani et al., 2019). This phenomenon primarily stems from the indiscriminate and inappropriate utilization of antibiotics, prevalent in both medical and dental domains (Donga et al., 2017).

Within the spectrum of healthcare providers, dentists hold a pivotal position in antibiotic stewardship due to their frequent encounters with patients afflicted by dental infections. While antibiotics are indispensable in dentistry for both preventive and therapeutic purposes, their excessive and improper utilization can engender antibiotic resistance, posing a substantial hazard to public health (Almalki et al., 2022; Durkin et al., 2022). Therefore, comprehending the Knowledge, Attitudes, and Practices (KAP) of dentists concerning antibiotic use is imperative for fostering prudent prescribing behaviors and mitigating antimicrobial resistance (Al-Haroni et al., 2018; Marra et al., 2023).

The evaluation of dentists' knowledge pertaining to antibiotic use encompasses an assessment of their comprehension regarding antibiotic indications, appropriate selection, dosages, durations, and awareness of antibiotic resistance (Marra et al., 2023). A thorough grasp of these aspects ensures that dentists prescribe antibiotics judiciously and opt for the most efficacious agents, thereby curtailing the risk of resistance emergence (Gajdács & Albericio, 2021; Al-Haroni et al., 2018). The attitudes of dentists towards antibiotic employment exert a profound influence on their prescribing practices and adherence to guidelines. Gaining insights into these attitudes elucidates the underlying motivators guiding their antibiotic prescribing behaviors, facilitating the development of strategies geared towards promoting evidence-based and judicious antibiotic use (Gajdács et al., 2020; Alzahrani et al., 2019).

Scrutinizing the antibiotic prescribing practices of dentists unveils the extent to which their knowledge and attitudes translate into clinical decision-making (Offner et al., 2020). This entails an examination of prescription patterns, antibiotic selection, treatment durations, and adherence to guidelines (Aljohani et al., 2021; Durkin et al., 2018). Additionally, assessing the frequency of non-prescription interventions, such as patient education on oral hygiene or the utilization of analgesics, offers a holistic understanding of dentists' management strategies for dental infections (Palmer et al., 2022).

This study aims to elucidate the knowledge, attitudes, and practices of dentists in Saudi Arabia regarding antibiotic use. This study seeks to contribute to efforts aimed at optimizing antibiotic prescribing practices and combating antimicrobial resistance in dental care settings. Targeted educational initiatives and interventions addressing knowledge gaps and attitudinal barriers hold

promise in promoting prudent antibiotic utilization among dentists, thereby ensuring the efficacy of these vital medications for future generations.

2. Materials and Methods

2.1. Study Design:

This research adopts a cross-sectional study design to assess the Knowledge, Attitudes, and Practices (KAP) of dentists in Saudi Arabia regarding antibiotic utilization. Cross-sectional studies are suitable for examining the prevalence of certain characteristics or behaviors within a specific population at a given point in time.

2.2. Study participants:

The study population comprises registered dentists practicing in various regions of Saudi Arabia. A stratified random sampling technique will be employed to ensure representation from different geographic areas and practice settings.

2.3. Data Collection:

Data will be collected through structured questionnaires distributed electronically to participants. The questionnaire will be designed based on established frameworks and previous literature on antibiotic use and resistance among dentists, with sections focusing on knowledge, attitudes, and prescribing practices.

2.4. Data Analysis:

The quantitative data collected will undergo analysis using the Statistical Package for the Social Sciences (SPSS), employing a range of statistical methods. Descriptive statistics will be utilized to summarize participant characteristics, providing a comprehensive overview of the sample demographics. This will include measures such as means, standard deviations, frequencies, and percentages to describe key variables related to dentists' knowledge, attitudes, and practices regarding antibiotic utilization.

Inferential statistics will then be employed to investigate associations between different variables. This analytical approach will help elucidate the factors that influence dentists' decision-making processes regarding antibiotic use, thereby informing strategies to promote evidence-based prescribing practices.

3. Results

3.1. Socio-demographics of the participants

A total of 208 of 245 questionnaires were completed and returned, yielding a response rate of 84.9%. The demographic and baseline characteristics of the participants are presented in Table 1.

Table 1. Sociodemographic traits of participants (n=208)

Variable		n	%
Your gender	male	145	69.7%
	Female	63	30.3%
Your age	20-29 year	79	38.0%
	30-39 year	63	30.3%
	40-49 year	37	17.8%
	more than 50 years	29	13.9%
Type of Specialty	Oral Medicine	33	15.9%
	Endodontics	24	11.5%
	Oral Pathology	25	12.0%
	Oral Surgery	29	13.9%
	Prosthodontics	22	10.6%
	Periodontics	24	11.5%
	Pedodontics	16	7.7%
	Public Health Dentistry	35	16.8%
Years of experience	1-10 years.	61	29.3%
	10-20 years.	72	34.6%
	20-30 years.	44	21.2%
	More than 30 years.	31	14.9%
Do you Pharmacology courses?	Yes	140	67.3%
	No	68	32.7%

Our study highlights key demographic trends among dentists in Saudi Arabia. Male dentists dominate the sample at 69.7%, while females represent 30.3%. Dentists aged 20-29 years constitute 38.0%, followed by those aged 30-39 years at 30.3%. Oral Medicine, Public Health Dentistry, and Oral Surgery are the predominant specialties, each comprising approximately 15-16% of the sample. Experience-wise, dentists with 10-20 years (34.6%) and 1-10 years (29.3%) are most prevalent. Notably, 67.3% of dentists have undergone pharmacology training. These insights underscore the need for tailored interventions to optimize antibiotic prescribing practices.

3.2. Knowledge of dentists about antibiotic use.

Table 2. Dentist's Knowledge about antibiotic use (n=208)

Item		n	%
Some antibiotics may cause allergy.	Yes	172	82.7
	No	36	17.3
Some antibiotics are not suitable to be used by children.	Yes	190	91.3
	No	18	8.7

Unit dosage form affects its efficacy	Yes	177	85.1
	No	31	14.9
Tablet size affects its efficacy.	Yes	130	62.5
	No	78	37.5
The same antibiotics may be used to treat different illnesses	Yes	156	75.0
	No	52	25.0
Some antibiotics should be taken before or after food	Yes	202	97.1
	No	6	2.9
Heat and direct sunlight damage antibiotics medicine	Yes	184	88.5
	No	24	11.5
More dosage of drug should be prescribed in more pain.	Yes	122	58.7
	No	86	41.3
Efficacy is better if the antibiotics are newer and more costly.	Yes	170	81.7
	No	38	18.3
Antibiotic resistance is the ability of microbes to resist the effect of drugs	Yes	192	92.3
	No	16	7.7
No antibiotics can be prescribed during pregnancy	Yes	180	86.5
	No	28	13.5

Table 2 summarizes the participants' Knowledge of dentists about antibiotic use. The study assessed dentists' knowledge of antibiotic use, revealing several key findings. Most dentists recognized the potential for antibiotic allergies (82.7%) and the unsuitability of certain antibiotics for children (91.3%). A majority acknowledged the impact of dosage form (85.1%) and the broad spectrum of antibiotic indications (75.0%). However, misconceptions were noted, such as prescribing higher doses for more pain (58.7%) and the belief that newer, costlier antibiotics are more effective (81.7%). Despite these, the majority correctly identified antibiotic resistance (92.3%) and acknowledged antibiotics' safety during pregnancy (86.5%). Addressing these misconceptions through targeted educational interventions could further enhance dentists' antibiotic prescribing practices and combat antibiotic resistance.

3.3. Attitudes of dentists about antibiotic use.

Table 3. Dentist's attitudes about antibiotic use (n=208)

Item		n	%
Antibiotics are safe drugs and, hence, can be commonly used	Yes	42	20.2
	No	166	79.8
Skipping one or two doses does not contribute to antibiotic resistance	Yes	92	44.2
	No	116	55.8
	Yes	45	21.6

Irrational antibiotic practice locally will not matter for global resistance	No	163	78.4
Antibiotic resistance can be reduced using higher antibiotics in spite of lower antibiotics being sensitive	Yes	96	46.2
	No	112	53.8
Antibiotic resistance is one of the biggest problems the world faces	Yes	199	95.7
	No	9	4.3

Table 3 summarizes the participants' attitudes of dentists about antibiotic use. The study assessed dentists' attitudes towards antibiotic use. The majority (79.8%) disagreed that antibiotics are safe drugs for common use, indicating awareness of associated risks. Additionally, 55.8% disagreed that skipping doses doesn't contribute to resistance, recognizing the importance of adherence. Most dentists (78.4%) disagreed that local irrational antibiotic practices have no global impact, acknowledging the interconnectedness of resistance. Furthermore, 53.8% disagreed that higher antibiotics reduce resistance, reflecting cautious antibiotic selection. Almost all dentists (95.7%) agreed that antibiotic resistance is a significant global issue, emphasizing its seriousness among dental professionals. Overall, dentists exhibited cautious attitudes towards antibiotic use, acknowledging the risks of overuse and recognizing the global impact of resistance.

3.4. Practice of dentists about antibiotic use.

Table 4. Dentist's Practice about antibiotic use (n=208)

Item		n	%
I prescribe medicines by their generic name.	Yes	98	47.1
	No	110	52.9
I often prescribe antibiotics because the patient expects it	Yes	62	29.8
	No	146	70.2
I consider general factors (like past drug history, systemic disease, pregnancy etc) before prescribing any drug.	Yes	205	98.6
	No	3	1.4
I follow the rational prescription process.	Yes	172	82.7
	No	36	17.3
While prescribing medicines, I take care of appropriate drug dosages	Yes	206	99.0
	No	2	1.0
I inform the patients about possible side effects of drugs.	Yes	162	77.9
	No	46	22.1
I take history regarding drug allergy before prescribing medicines.	Yes	192	92.3
	No	16	7.7

Table 4 summarizes the participants' 3.4.Practice of dentists about antibiotic use. The analysis of dentists' antibiotic prescribing practices revealed several significant findings. About half of the

dentists (47.1%) prefer generic names for prescribing, possibly indicating a cost-conscious approach. However, a notable minority (29.8%) reported patient expectations influencing their antibiotic prescriptions. The vast majority (98.6%) consider patient-specific factors before prescribing, indicating a comprehensive assessment approach. Additionally, most dentists (82.7%) follow rational prescription processes, emphasizing evidence-based guidelines. Nearly all dentists (99.0%) ensure appropriate drug dosages, highlighting a commitment to patient safety. A significant proportion (77.9%) inform patients about potential drug side effects, emphasizing patient education. Moreover, the majority (92.3%) obtain a drug allergy history before prescribing, underlining a proactive approach to patient safety. Overall, dentists exhibit conscientious prescribing practices, focusing on patient-centered care, evidence-based guidelines, and safety considerations.

4. Discussion

The study provides valuable insights into the Knowledge, Attitudes, and Practices (KAP) of dentists regarding antibiotic utilization in Saudi Arabia. The findings underscore the significance of addressing knowledge gaps, promoting evidence-based practices, and tailoring interventions to optimize antibiotic prescribing practices among dentists. Our study revealed notable insights into the Knowledge, Attitudes, and Practices (KAP) of dentists regarding antibiotic utilization in Saudi Arabia. These insights are consistent with previous research, providing valuable context for developing targeted interventions (Gajdác & Albericio, 2019).

Our findings regarding dentists' knowledge of antibiotic use align with studies demonstrating a nuanced understanding of antibiotic indications, dosage forms, and the impact of antibiotic resistance (Offner et al., 2020; Donga et al., 2017). While the majority of dentists demonstrated adequate knowledge in certain areas, misconceptions persisted, such as the belief in prescribing higher doses for more pain or the perception that newer, costlier antibiotics are more effective (Durkin et al., 2018; Marra et al., 2016). Addressing these misconceptions through evidence-based educational initiatives is essential to promote prudent antibiotic use among dentists.

Regarding attitudes towards antibiotic use, our study revealed a cautious approach among dentists, with a significant proportion recognizing the risks associated with antibiotic overuse and the global impact of resistance (Maor et al., 2019; Gajdác et al., 2020). Dentists exhibited a commitment to patient safety and evidenced a willingness to consider patient-specific factors before prescribing antibiotics. These findings are consistent with studies highlighting the importance of rational prescribing practices and the need for increased awareness of antibiotic resistance (Offner et al., 2020; Durkin et al., 2018). However, some dentists still held misconceptions, such as believing that higher-cost antibiotics are more effective, indicating the need for targeted interventions to dispel such myths (Durkin et al., 2018).

In terms of practice, our study identified conscientious behaviors among dentists, including the preference for generic names, consideration of patient expectations, and adherence to rational prescription processes (Palmer et al., 2000; Durkin et al., 2018). Dentists demonstrated a commitment to patient-centered care and safety, evidenced by their consideration of patient-

specific factors before prescribing and their efforts to educate patients about potential side effects (Durkin et al., 2018; Marra et al., 2016). However, the influence of patient expectations on antibiotic prescribing practices highlights the importance of patient education and shared decision-making in antibiotic stewardship efforts (Durkin et al., 2018). Opportunities for improvement exist, particularly in ensuring patient education about antibiotic side effects and obtaining comprehensive drug allergy histories (Offner et al., 2020).

In conclusion, our study contributes valuable insights into the KAP of dentists regarding antibiotic use in Saudi Arabia. By addressing knowledge gaps, promoting evidence-based practices, and enhancing awareness of antibiotic resistance, targeted interventions can be developed to optimize antibiotic prescribing practices among dentists, thereby safeguarding patient health and combating antibiotic resistance.

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