Perception of Dentists about Drug Information Resources in Saudi Arabia

Yousef Ahmed Alomi*, BSc. Pharm, MSc. Clin Pharm, BCPS, BCNSP, DiBA, CDE Critical Care Clinical Pharmacists, TPN Clinical Pharmacist, Freelancer Business Planner, Content Editor, and Data Analyst, Riyadh, SAUDI ARABIA.
Anwar Mouslim Alshammari, B.D.S College of Destiney, Hail University, SAUDI ARABIA.
Khaznah Saad Alshammari, Lecturer Assistant, Faculty of Pharmacy, University of Tabuk
Tabuk, SAUDI ARABIA.

Correspondence:
Dr. Yousef Ahmed Alomi, BSc. Pharm, MSc. Clin Pharm, BCPS, BCNSP, DiBA, CDE Critical Care Clinical Pharmacists, TPN Clinical Pharmacist, Freelancer Business Planner, Content Editor, and Data Analyst, Riyadh, SAUDI ARABIA.

Phone no: +966504417712
E-mail: yalomi@gmail.com

Received: 16-10-2020;
Accepted: 27-12-2020.

Access this article online
www.ptbreports.org
DOI: 10.5530/PTB.2021.7.7

ABSTRACT

Objectives: Previous studies have shown that overprescription of antibiotics and other drugs is still existing in dentistry. Fortunately, dental drug information resources can be used to help dentists choose the proper medication. In this study, we aimed to study dentists' perceptions of dentists concerning the use of dental drug information resources in Saudi Arabia. **Methods:** This is a 4-month descriptive cross-sectional study. This self-reported electronic survey included dentists from all specialties of dentistry in Saudi Arabia. All nondentists and students were excluded from this study. The survey collected demographic information, dentists' perceptions about dental drug information resources, and the barriers preventing them from implementing dental drug information resources. The survey was distributed through social media, and the data were validated and revised by expert reviewers and pilot testing. The reliability was assessed based on Cronbach's alpha value. The data were collected through the Survey Monkey system and analyzed using SPSS and JASP software. **Results:** A total of 260 dentists responded to this survey, with 28.85% responding from the north and 24.62% responding from the central region. Of them, 59.30% were male, and 40.7% were female responders. The majority of the dentists (98.85%) were in 24–35 years. Almost 51.92% of the dentists were interns, followed by residents (24.23%) and general practitioners (23.85%). The score of dentists' perceptions of dental drug information resources was (3.6); the highest for the element "acknowledging that drug information resources can prevent medication errors and lead to positive outcomes." The lowest score was recorded for the aspect (2.33) "dental drug information resources are new for the dentist," and they change the dentist's initial prescribing habits. The average score for the perception of barriers to implementing dental drug information resources was (3.5); the pharmacists were not aware of their responsibility, and dental drug information resources were not appropriately taught in dental school. **Conclusion:** Dentists need to be encouraged to learn about drugs. Dental schools should implement medication-focused courses to help students better understand the drug information resources. Further studies are warranted to measure the knowledge of undergraduate students of dentistry regarding the practice of dental drug information resources.
Key words: Perception, Dentists, Drug Information, Resources, Saudi Arabia.

INTRODUCTION

Dentists play a significant role in our society, especially with the growing population and people's desire to treat cavities and teeth problems and dentistry's cosmetic aspect. More people who visit dental clinics suffer from various chronic diseases such as hypertension and diabetes, which affects the prescribing criteria for medications. A recent study conducted in Saudi Arabia showed that dentists' lack of knowledge about managing patients with hypertension could cause prescribing errors.[1] Besides, over-prescription of antibiotics is a significant issue worldwide, and the majority of the studies report that dentists tend to overprescribe, which may lead to antibiotic resistance in patients.[2-5] Another challenge concerning the prescription of dental medicines is related to pregnant and breastfeeding mothers, which might alter the way dentists prescribe analgesics. Such a sensitive population requires more care when prescribing medications to prevent medication errors and serious adverse events.[6] Furthermore, opioid analgesics are prescribed for many dental procedures, and any prescription errors might cause serious consequences.[7] All these difficulties might lead to problems in prescribing medications. Therefore, healthcare providers must be frequently updated about changing medication prescription trends using dental drug information resources.[8] Medication Guidelines for each disease are changing rapidly, especially with the growing number of new drugs and studies supporting medications' effectiveness. Fortunately, due to the shifting to electronic-based data, many drug information resources such as Cochrane Oral Health Group offer online information.[9,10] They can be used anywhere and anytime to assist in choosing the best medication for their patients. Various studies have been conducted to analyze dentist's knowledge and practice of utilizing drug information resources. However, local and international studies on the perception of dentists about dental information references have been rarely conducted.[10-14] Therefore, in this study, we aimed to analyze dentists' perceptions concerning drug information resources in Saudi Arabia.

METHODS

This is a 4-month descriptive cross-sectional study conducted to study dentists' perceptions about drug information resources in Saudi Arabia. This

is a self-reported electronic survey of dentists, including dentists from all dentistry specialties, from interns to consultants and those located in Saudi Arabia. All nondentists or students and non-completed surveys were excluded from this study. The survey collected demographic information about dentists, their perceptions of dental drug information resources, and the barriers that prevent the implementation of dental drug information resources at healthcare intuitions. We used 5-point Likert response scale system to obtain responses for the survey questions. The population size was calculated based on the available literature. For the current cross-sectional study, the population percentage was set at 50%. The confidence level was set at 95%, with *a z score of 1.96,* a margin of error of 5–6.5%, and a drop-out rate of 10%. With these parameters, we calculated the sample size from 251 to 432 with a power of study of 80%.[15-17] The response rate required for the calculated sample size was at least 60–70%.[17,18] The survey was distributed through social media such as WhatsApp and Telegram to all dentists in Saudi Arabia. A reminder message was sent once every two weeks. Expert reviewers and pilot testing validated the survey. Moreover, the data's reliability was tested by calculating McDonald's, Cronbach's α, Gultman 2, and Gultman 6 values. The data were collected through the Survey Monkey system and analyzed using Statistical Package of Social Sciences (SPSS), Jeffery's Amazing Statistics Program (JASP), and Microsoft Excel sheet version 16 software. The STROBE (Strengthening the reporting of observational studies in epidemiology statement: guidelines for reporting observational studies) guided the reporting of this study.[19,20]

RESULTS

A total of 260 dentists responded to the survey, with most of them coming from the north (75 (28.85%)) and central region (64 (24.62%)) with statistically significant differences between the areas (p<0.001). Of the total, 153 (59.30%) responders were male, and 105 (40.7%) responders were female, with statistically significant differences between them (p<0.003). The majority of the responders (257 (98.85%)) were in the age group of 24–35 years, with statistically significant differences between all age groups (p<0.001). Almost half of the responders were interns (135 (51.92%)) followed by residents (63 (24.23%)) and general practitioners (62 (23.85%)), with statistically significant differences between them (p<0.001). The majority of the responders were dental staff (222 (85.38%)), with a statistically significant difference between different positions (p<0.001). The majority of the responders had three years of experience (230 (88.46%)), with more than half of them being non-specialized dentists (217 (84.44%)), with statistically significant differences between all periods of experiences (p<0.001) (Tables 1 and 2). The average score of dentists' perceptions concerning dental drug information resources was 3.04, with the highest score obtained for the element "usage of drug information resources to prevent medication errors" (3.6). Drug information resources lead to positive outcomes (3.37). In contrast, the lowest score was obtained for the element "dental drug information resources was new for the dentist" (2.33) and "drug information resources change the dentist's initial prescribing habits" (2.63), with statistically significant differences between all answers in each aspect (p<0.001) (Table 3). The average score was obtained for all elements of perception of barriers prevent you from implementing dental drug information resources (3.5). The highest score was obtained for the aspect "The dentists Consider it the pharmacist s' responsibility" (4.57) and "Dental drug information resources were not taught properly in dental School" (4.07). In contrast, low scores were obtained for the element "The dental drug information resources are a trivial thing" (2.18) and "Don't feel the need to read dental drug information resources" (3.11), with statistically significant differences between all answers in each element (p<0.001) (Table 4). In regular Biostatistics, the reliability score for McDonald's ω was 0.803, Cronbach's α was 0.801, Gultman 2 was 0.877, and Gultman 6 was 0.929. In contrast, in Bayesian Biostatistics, the score for reliability tests using McDonald's ω was 0.795, Cronbach's α was 0.799, Gultman 2 was 0.822, and Gultman 6 was 0.887.

DISCUSSION

The American Dentists Association defines "evidence-based dentistry" as "an approach to oral health care that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the patient's oral and medical condition and history, with the dentist's clinical expertise and the patient's treatment needs and preferences."[21] Hence, the use of updated drug information resources to determine the appropriate drugs for each patient case is required for optimal patient care.[8] In this study, the sample size might represent the entire dental population with high power of the research and high scores of validating a survey. There is no statistically significant difference in the whole sample among gender males and females, reflecting almost equal representative sampling from each gender in the Saudi population.[22] Most dentists were young and interns or residents, with their early life as dentistry professionals reflecting the high demand for drug information resources during practice. As a result, it was demographic data characters of participants with an emphasis on gender types; that reflects the reality of drug information resources perception. According to our results, drug information resources' perception was inadequate despite the high scores of some elements perception. It was the optimal perception among dentists using the drug information resources to prevent dental medication errors and improve dental medications safety, which was perceptions of three-quarters of the responders. Two-thirds

Table 1: Demographic, social information.

Nationality	Response Count	Response Percent	p-value
Central area	64	24.62%	< 0.001
North area	75	28.85%	
South area	31	11.92%	
East area	36	13.85%	
West area	54	20.77%	
Answered question	260		
Skipped question	0		
Gender	Response Count	Response Percent	
Male	153	59.30%	< 0.003
Female	105	40.70%	
Answered question	258		
Skipped question	2		
Age	Response Count	Response Percent	
24–35	257	98.85%	< 0.001
36–45	3	1.15%	
46–55	0	0.00%	
> 55	0	0.00%	
Answered question	260		
Skipped question	0		

Table 2: Demographic, social information.

Dentist Qualifications	Response Count	Response Percent	*p*-value (chi X2)
Intern	135	51.92%	< 0.001
Resident	63	24.23%	
General Practitioner	62	23.85%	
Specialist	0	0.00%	
Consultant	0	0.00%	
Answered question	**260**		
Skipped question	**0**		
Position Held	**Response Count**	**Response Percent**	
Director of dental unit	5	1.92%	< 0.001
Assistant director of dental unit	2	0.77%	
Dental Director	31	11.92%	
Dental staff	222	85.38%	
Answered question	**260**		
Skipped question	**0**		
Years of experiences at Dentists career	Response Count	Response Percent	
< 1	149	57.31%	< 0.001
1 – 3	81	31.15%	
4 – 6	28	10.77%	
7 - 9	2	0.77%	
> 9	0	0.00%	
Answered question	**260**		
Skipped question	**0**		
Dentist Specialties	**Response Count**	**Response Percent**	
Dental Public Health	6	2.33%	< 0.001
Endodontics	8	3.11%	
Oral and Maxillofacial Surgery	1	0.39%	
Oral Medicine and Pathology	0	0.00%	
Oral and Maxillofacial Radiology	0	0.00%	
Orthodontics and Dentofacial Orthopedics	1	0.39%	
Pediatric Dentistry	1	0.39%	
Periodontics	0	0.00%	
Prosthodontics	5	1.95%	
Restorative dentistry	18	7.00%	
Special needs dentistry	0	0.00%	
Non-applicable	93	36.19%	
General practitioner	124	48.25%	
Other (please specify)	**257**		
Answered question	**3**		
Skipped question	6		

of the responders responded that the drug information resources lead to positive outcomes. One-third of the responders did not use the drug information resources in their practice. Moreover, more than two-thirds of the responders had not changed their prescribing habits, reflecting poor knowledge of drug information resources. Our results showed that dentists strongly believe that drug information is the pharmacist's responsibility. However, nowadays, because of the ease of accessing information, especially with multiple electronic drug information resources such as Lexicomp, the data are not restricted to pharmacists. Moreover, almost half of the responders stated that drug information resources were not appropriately taught in dental school, which indicates the need for more attention to practice the skill of drug information at the undergraduate level. The lack of drug knowledge may be a factor in overprescribing antibiotics by dentists in Saudi Arabia.[23] The misconception of drug information resources responsibility and poor education in dental school leads to under-utilizing drug information resources. However, most responders thought that the drug information resources were critical in practice.[24] The results of this study showed that two-thirds of the responders felt that they do not need drug information resources due to misconceptions of drug information resources responsibility and inadequate knowledge of drug information resources.

Limitations

The study had various strength points, including good validation, high reliability of the survey, and almost reflected reality in the distribution of males and females. The study did not reach the optimal sample size, and many responders were young and internists. Moreover, most of the responders were dental practitioners, and less than one year of experience was not equal in those characters.

CONCLUSION

The use of drug information resources by dentists can make it easier for them to prescribe. Dentists need to be encouraged to gain more knowledge and perception to a good perception about dental drugs information resources. Implementation of medication-focused courses in dental schools can be a huge step in understanding drug information resources better. More studies are needed to measure the perception of undergraduate dentists regarding medications periodically.

ACKNOWLEDGEMENT

None.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

Funding

None.

CONSENT FOR PUBLICATIONS

Informed consent was obtained from all the participants.

ETHICAL APPROVAL

This research is exempted from research and ethical committee or an institutional review board (IRB) approval.
https://www.hhs.gov/ohrp/regulations-and-policy/decision-charts-2018/index.html

ABBREVIATIONS

MOH: Ministry of Health; **KSA:** Kingdom of Saudi Arabia; **SPSS:** Statistical package of social sciences; **JASP:** Jeffery's Amazing Statistics Program; **STROBE:** Strengthening the reporting of observational studies

Table 3: The Perception of dental drug information resources.

	Strongly agree		Agree		Uncertain		Disagree		Strongly Disagree		Total	Weighted Average	p-value (chi X2)
The system in my institutions including utilized dental drug information resources policy and procedure is good to minimize the occurrence of Medication Errors (MEs)	2.69%	7	55.77%	145	40.77%	106	0.38%	1	0.38%	1	260	3.6	< 0.001
Using of dental drug information resources has led to positive changes	1.16%	3	38.22%	99	57.14%	148	3.47%	9	0.00%	0	259	3.37	< 0.001
Our institution promotes itself as an organization that use drug information resources to resolve patient-safety related issues	1.15%	3	21.15%	55	68.46%	178	8.08%	21	1.15%	3	260	3.13	< 0.001
I think there is under-utilization of dental drug information resources in the practice	0.78%	2	11.28%	29	87.16%	224	0.78%	2	0.00%	0	257	3.12	< 0.001
I feel comfortable to ask help or support my colleagues or peers discussed for utilization dental drug information resources	2.32%	6	29.73%	77	63.32%	164	4.63%	12	0.00%	0	259	3.3	< 0.001
I have the opportunity with drug information resources to discuss and receive feedback about our cases with other dental staff	0.38%	1	7.69%	20	91.15%	237	0.77%	2	0.00%	0	260	3.08	< 0.001
Dental staff feel like correct their mistakes when they referred to dental drug information resources	0.78%	2	13.57%	35	82.17%	212	3.10%	8	0.39%	1	258	3.11	< 0.001
I think the dental drug information resources is new to me	1.92%	5	1.92%	5	26.92%	70	65.38%	170	3.85%	10	260	2.33	< 0.001
I feel the dental drug information resources sufficient for you to manage the drug related problems	1.55%	4	6.59%	17	62.79%	162	27.91%	72	1.16%	3	258	2.79	< 0.001
The drug information resources change my initial prescribing decisions	0.77%	2	7.72%	20	46.72%	121	43.24%	112	1.54%	4	259	2.63	< 0.001
It is always referring to the dental drug information resources relevant to the patient	0.77%	2	4.62%	12	83.08%	216	11.15%	29	0.38%	1	260	2.94	< 0.001
I think definitely the utilization of dental drug information resources very useful in future prescribing	1.54%	4	8.85%	23	85.38%	222	4.23%	11	0.00%	0	260	3.08	< 0.001
Answered											260		
Skipped											0		

in epidemiology.

ORCID ID

Yousef Ahmed Alomi https://orcid.org/0000-0003-1381-628X

REFERENCES

1. Bogari D. Dentists' knowledge and behavior toward managing hypertensive patients. Niger J Clin Pract. 2019;22(2):154-61.
2. Konde S, Jairam LS, Peethambar P, Noojady SR, Kumar NC. Antibiotic overusage and resistance: A cross-sectional survey among pediatric dentists. J Indian Soc Pedod Prev Dent. 2016;34(2):145-51.
3. Al-Huwayrini L, Al-Furiji S, Al-Dhurgham R, Al-Shawaf M, Al-Muhaiza M. Knowledge of antibiotics among dentists in Riyadh private clinics. Saudi Dent J. 2013;25(3):119-24.
4. Teoh L, Marino RJ, Stewart K, McCullough MJ. A survey of prescribing practices by general dentists in Australia. BMC Oral Health. 2019;19(93):1-8.
5. Baskaradoss JK, Alrumaih A, Alshebel A, Alfaqih A, Aleesa M, Alkhashan S, *et al.* Pattern of antibiotic prescription among dentists in Riyadh, Saudi Arabia. J Investig Clin Dent. 2018;9(3):e12339.
6. Donaldson M, Goodchild JH. Pregnancy, breast-feeding, and drugs used in dentistry. J Am Dent Assoc. 2012;143(8):858-71.
7. Dana R, Azarpazhooh A, Laghapour N, Suda KJ, Okunseri C. Role of Dentists in Prescribing Opioid Analgesics and Antibiotics: An Overview. Dental Clinics of North America. 2018;62(2):279-94.
8. Moses G. Drug information for the dental Profession: A whole new world. J Pharm Pract Res. 2017;47(3):236-40.
9. Frantsve-Hawley J. Evidence Locator: Sources of Evidence-Based Dentistry Information. J Evid Based Dent Pract. 2008;8(3):133-8.
10. Straub-Morarend CL, Marshall TA, Holmes DC, Finkelstein MW. Informational Resources Utilized in Clinical Decision Making: Common Practices in Dentistry. J Dent Educ. 2011;75(4):441-52.
11. Murray BP. Dentists' preferred sources of new drug information and their attitudes toward the use of drugs by patients. Soc Sci Med Part A Med Psychol Med. 1981;15(6):781-8.
12. Parker WA, Reid LW. Dentist attitudes toward drug information resources. Ther Innov Regul Sci. 1978;12(2):81-4.

Table 4: Dentist perception of the barriers of implementation dental drug information resources services at institutions.

	Strongly agree		Agree		Uncertain		Disagree		Strongly Disagree		Total	Weighted Average	*p*-value (chi X2)
Level of clinical knowledge makes it difficult to utilize dental drug information resources	9.27%	24	61.00%	158	28.96%	75	0.77%	2	0.00%	0	259	3.79	< 0.001
Uncertain association between the dental drug information resources and the dental practice	1.93%	5	22.01%	57	67.57%	175	8.49%	22	0.00%	0	259	3.17	< 0.001
The dental drug information resources is trivial thing	1.15%	3	2.69%	7	18.46%	48	68.85%	179	8.85%	23	260	2.18	< 0.001
Concern that a report will generate extra work.	24.42%	63	49.22%	127	24.42%	63	1.94%	5	0.00%	0	258	3.96	< 0.001
A Clinical dental pharmacist is not available when needed.	11.15%	29	28.46%	74	55.38%	144	5.00%	13	0.00%	0	260	3.46	< 0.001
Lack of confidence in dental drug information resources for prescribing.	7.31%	19	20.38%	53	68.46%	178	3.46%	9	0.38%	1	260	3.31	< 0.001
No enough information from the patient	27.31%	71	31.15%	81	34.23%	89	7.31%	19	0.00%	0	260	3.78	< 0.001
Lack of time to use dental drug information resources	13.85%	36	32.69%	85	52.69%	137	0.77%	2	0.00%	0	260	3.60	< 0.001
Unaware of the existence of a national dental drug resources system.	10.00%	26	38.08%	99	50.77%	132	0.77%	2	0.38%	1	260	3.57	< 0.001
Did not know how to use dental drug information resources	7.75%	20	26.74%	69	64.34%	166	1.16%	3	0.00%	0	258	3.41	< 0.001
Fear of legal liability.	6.54%	17	53.46%	139	38.08%	99	1.15%	3	0.77%	2	260	3.64	< 0.001
Unaware of the need for dental drug information resources.	6.92%	18	34.23%	89	57.31%	149	1.15%	3	0.38%	1	260	3.46	< 0.001
Lack of financial reimbursement.	5.02%	13	26.64%	69	66.41%	172	1.16%	3	0.77%	2	259	3.34	< 0.001
Don't feel the need to read dental drug information resources	2.31%	6	11.15%	29	81.54%	212	5.00%	13	0.00%	0	260	3.11	< 0.001
Consider it the pharmacist s' responsibility	73.08%	190	11.54%	30	14.62%	38	0.38%	1	0.38%	1	260	4.57	< 0.001
The negative consequences associated with dental drug information resources	2.32%	6	13.13%	34	81.85%	212	2.32%	6	0.39%	1	259	3.15	< 0.001
The dental drug information resources was Not taught properly in dental School	41.15%	107	25.77%	67	32.31%	84	0.77%	2	0.00%	0	260	4.07	< 0.001
Answered											260		
Skipped											0		

13. McEntee JE, Henderson SL, Rutter PM, Rutter J, Davis HJ, Randall CJ. A survey of UK dental health professionals using a medicines information service: What questions do they ask and do they get useful answers?. Br Dent J. 2011;211(1):17-21.
14. Hanrahan CT, Cole SW. Assessment of drug information resource preferences of pharmacy students and faculty. J Med Libr Assoc. 2014;102(2):117-21.
15. Charan J, Biswas T. How to calculate sample size for different study designs in medical research?. Indian Journal of Psychological Medicine. 2013;35(2)121-6.
16. Pourhoseingholi MA, Vahedi M, Rahimzadeh M. Sample size calculation in medical studies. Gastroenterol Hepatol from Bed to Bench. 2013;6(1):14-7.
17. Ezhumalai G. How big a sample do I need require. Ann SBV. 2017;6(1):39-41.
18. Johnson TP, Wislar JS. Response rates and nonresponse errors in surveys. JAMA. 2012;307(17):1805-6.
19. Elm FV, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: Guidelines for Reporting Observational Studies. PLoS Med. 2007;4(10):1623-7.
20. Elm FV, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. Lancet. 2007;370:1453-7.
21. Forrest JL, Miller SA. Evidence-Based Decision Making in Action: Part 1-Finding the Best Clinical Evidence. J Contemp Dent Pr. 2002;3(3):10-26.
22. Population in Saudi Arabia by nationality and gender. Statista. 2018. [cited 2021 Mar 20]. Available from: https://www.statista.com/statistics/616737/saudi-arabia-population-by-gender-and-nationality/
23. Fouad F, Doughan A, Alomi YA, Iflaifel MH. Pharmacist's Practice of Reporting of Adverse Drug Reactions. Int J Pharmacol Clin Sci. 2019;8(1):86-93.
24. Lambert DM. The need for drug information education in dentistry. Anesth Prog. 1987;34(1):21.