

# Dental Drug Information Websites Resources: New Initiative Project in Saudi Arabia

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## ABSTRACT

**Objectives:** All healthcare professionals necessity to improve and update their medical and pharmaceutical knowledge, including dentists. There are numerous types of dental medications, including drug information website resources. The current review is to reconnoiter references websites of medications in the dental care. **Methods:** It is a literature review of a drug information website for dentists. Probing was done in PubMed and Medline about this field. The search encompassed all study designs but was not limited to the observation study, clinical trial, meta-analysis and systemic, and review articles. The current topic debated the market assessment demand, team and cost management of the project, quality and risk management of the project. It was rationalized on selected dental drug websites designed with medications coverage, frequency updated, and responsible publisher. **Results:** More than 13 drug information websites for dental practice had been intended. The websites consisted of free governmental or healthcare organizations websites highlighting international medications regulation or local drug regulatory affairs with mobile applications format. Free non-governmental drug information website entailed of drug therapy as part of disease management and other medication patient education websites. All websites of dental drug information resources should be measured undergraduate and postgraduate dental practitioners. **Conclusion:** Dental drug information resources website is real-world and more accessible than other resources. Therefore, implementation of the current project is highly recommended for dental colleges and healthcare organizations.

**Key words:** Dental, Drug, Information, Websites, Resources, Saudi Arabia.

## INTRODUCTION

The term “drug information center” denoted to a facility dedicated to and specialized in distributing drug information and related issues. The goal of the drug information center is to deliver authentically individualized, reliable, appropriate, and impartial drug information to consumers and healthcare professionals around the country for health care and drug safety concerns by answering to their calls on all critical issues relating to drug information, uses, and side effects.<sup>1</sup> The term “drug information center” mentioned to a facility dedicated to and specialized in distributing drug information and related issues. The goal of the drug information center is to offer authentically individualized, reliable, appropriate, and impartial drug information to consumers and healthcare professionals around the country for health care and drug safety concerns by responding to their calls on all critical issues relating to drug information, uses, and side effects.<sup>1</sup> Drug information resources were part of the drug information services of pharmacy practice.<sup>2</sup> They are numerous types of drug information resources to meet the healthcare provider’s requirements. Some demand to find simple drug information about trade name or dosage form and others need more deep knowledge and comprehensive information about drug therapy.<sup>3</sup> The dentists among healthcare professionals demand drug information references. There are tertiary resources, which are very easy to read with short and summary information. Those

tertiary resources might be as regular paper books, and newly as a website. Some publishers currently composed all their tertiary textbooks and organized them at website collection with low prices and more accessible, reachable, and searchable for each information.<sup>4</sup> Other websites are accomplished by governmental or private, or professional scientific or medical societies.<sup>5</sup> Various investigations deliberated the dentist’s knowledge or website drug information resources.<sup>5</sup> The answer among preceding studies was not fortified. As a result, the review of literature about website drug information references is wanted. Based on the best of the author’s knowledge, there is no textbook or literature review the dental website drug information resources. The aim of the current review is to assert a collection of the drug information website in the dental practice.

## METHODS

It is a literature review of drug information references website for dentist or drug information resources websites employed during dental care. The PubMed search includes drug information resources website and the dentist or drug information resources website and dentistry or drug information references website. The word is used as a general term, not a subject term. The search comprised all types of studies Clinical Study, Clinical Trial, Clinical Trial, Phase I, Clinical Trial, Phase II, Clinical Trial, Phase III, Clinical



("inform"[All Fields] OR "informal"[All Fields] OR "informality"[All Fields] OR "informally"[All Fields] OR "informant"[All Fields] OR "informant s"[All Fields] OR "informants"[All Fields] OR "information"[All Fields] OR "information"[All Fields] OR "informational"[All Fields] OR "information"[All Fields] OR "informative"[All Fields] OR "informatively"[All Fields] OR "informativeness"[All Fields] OR "informativity"[All Fields] OR "informed"[All Fields] OR "informer"[All Fields] OR "informers"[All Fields] OR "informing"[All Fields] OR "informs"[All Fields]) AND ("internet"[MeSH Terms] OR "internet"[All Fields] OR "internet s"[All Fields] OR "internets"[All Fields])) AND ((ft[Filter]) AND (humans[Filter]) AND (english[Filter]))

### Dental Drug Information Internet Filters: Full text, Humans, English

((("dental health services"[MeSH Terms] OR ("dental"[All Fields] AND "health"[All Fields] AND "services"[All Fields])) OR "dental health services"[All Fields] OR "dental"[All Fields] OR "dentally"[All Fields] OR "dentals"[All Fields]) AND "drug"[All Fields] AND ("inform"[All Fields] OR "informal"[All Fields] OR "informality"[All Fields] OR "informally"[All Fields] OR "informant"[All Fields] OR "informant s"[All Fields] OR "informants"[All Fields] OR "information"[All Fields] OR "informational"[All Fields] OR "information"[All Fields] OR "informative"[All Fields] OR "informatively"[All Fields] OR "informativeness"[All Fields] OR "informativity"[All Fields] OR "informed"[All Fields] OR "informer"[All Fields] OR "informers"[All Fields] OR "informing"[All Fields] OR "informs"[All Fields]) AND ("internet"[MeSH Terms] OR "internet"[All Fields] OR "internet s"[All Fields] OR "internets"[All Fields])) AND ((ft[Filter]) AND (humans[Filter]) AND (english[Filter]))

As a result, no studies came up with it. Another search had been done if pharmacy textbooks of drug information and some google searching engine. The authors were used drug information resources as websites or drug information resources websites for dental medication inquiries and secondary or tertiary drug information resources. The author intended some parameters to recap the drug information references suitable for dental care. Each resource summary entailed of name of resource, content, inquiries answered, type of resources, number of medications or journal covered, frequently update, last edition, price and subscription. Further, it also includes publisher, manual book, online version, website address, application type, usage of dental student recommendations, usage of the general dental practitioner, usage of specialized or consultant dentist and dentistry specialties.

## RESULTS

### Assessment of Needs

Corresponding to the augmented acceptance of drug use in dental treatment is the need for dentists to be warned to potential problems resulting from drug therapy. Drug information resources deliver clinicians with safer medications and play a vigorous role in improving drug safety. The drug information resources should be well equipped with all the essential resources for providing full, recent, and up-to-date information on medication queries.<sup>6</sup> Most literature resources might be retrieved through the publisher's website or medical/pharmacy journal with the snowballing internet user. Often, access to the abstract is free of charge through an indexing searching engine. With the limited information and inherent bias delivered in an abstract, the full text should be employed to regulate the valuable article, while making a therapeutic decision. The efficient use of a drug information website is an essential skill for all healthcare providers, irrespective of their practice site, in all dentist settings. The dentist must know how to offer accurate and complete

responses following their case. One of the conventional methods of new project assessment is the SWOT analysis. It means strengths, weaknesses, opportunities, and threats of the project.<sup>7</sup> Evaluating each resource as obtainable earlier may be time-consuming, and the responses are wanted quickly for drug information inquiries. As a result, it might force only the top results clarified, leading to decisions based only on a snapshot of information. Familiar with reputable sources was available on the net and it will decrease search time and enhance practice. The weaknesses of this project are disregarding this service, no education or guidance in the usage of the drug information center, difficulties in supporting and funding for these services. The threats to this project includes no dentist is interested in this field and the plan.

### Scope of the Project

The scope of the current project is to refuge dental drug information website references. The vision of the project is to select the best high-quality, updated, trusted dental drug information resources, with a mission to deliver an appropriate, cost-effective website of dental drug information resources. The goals of the project is to rationalized dental medications websites references list, educate and train the dental students and practitioner about drug information resources utilization, and evaluate the clinical and economic impact of dental drug information websites. Website utilization goals to dispense health information. Therefore, the source of the content should be provided based on referenced as wanted.

Additionally, the documentation of the review process reinforces the credibility of the information provided. Provision of the date of the last update confirms that the data is current. The practitioners and patients should apply the most recent and well-established information available. The data obtained from the Web must be judgmentally evaluated before its use in making treatment decisions. Implementation of this tactic will ensure that the treatment decisions are based on high-quality information. Thus, it is refining the patient care. Moreover, applying this modality will confirm that the treatment decisions are based on high-quality information, thus improving patient care.

### Project Implementation

The experts in the team should establish the dentist drug information websites. The team entails of clinical pharmacists, expert pharmacists and pharmacy technicians expert in drug information, dentists, dentists assistant, nursing and IT Member. The team should educate and train the dentist and dentist's assistant in websites of drug information-related issues. The team should set up new policies and procedures linked to the drug information services, monitor the program's implementation, and evaluate the outcome with the economic impact of the new services. As a result, the management wants to cost management plan is one of the vital things to implement a drug information center (i.e. the financial budget). The budget should reflect cost-related issues, counting education and training. Besides, the cost of equipment is wanted for the preparation and the management team meetings. The defined budget should be observed throughout the project period implementation. Besides, the dentist staff desires to attend several courses on drug information research and how to deal with it, with rationalized information on drug therapy for some diseases and basic pharmacology. Besides that, the education on drug information websites includes stability research. This education is critical for dentist staff and healthcare providers, including physicians and nurses. Another educational course for administrative officers contains the team's management and higher administration and coverage of the research agency. The projected demand to emphasis on the quality management aspect called Balance Scored Card as project performance indicators of evidence-based dentistry highlights the dental drug information with numerous elements. For instance, the customer,

**Table 1: Dental Drug information websites** <sup>5,11-14</sup>

|                    |  |                         |  |   |   |  |   |                          |                       |                               |                                    |                                    |                            |  |
|--------------------|--|-------------------------|--|---|---|--|---|--------------------------|-----------------------|-------------------------------|------------------------------------|------------------------------------|----------------------------|--|
| Scope and coverage | U.S Food & Drug Administration <sup>(15)</sup> | More than 24,000 drugs. | Centre of disease control and prevention <sup>(17)</sup> | Saudi Food & Drug Authority <sup>(18)</sup> | WHO <sup>(19)</sup>                         | National institute of health <sup>(20)</sup>           | Ministry of health MOH <sup>(21)</sup>          | Medscape <sup>(22)</sup> | WebMD <sup>(24)</sup> | Medpage Today <sup>(25)</sup> | DailyMed <sup>(26)</sup>           | MedlinePlus <sup>(27)</sup>        | Global Rph <sup>(28)</sup> | Compounding today <sup>(29)</sup>                          |
| Frequently Update  | daily  | Quarterly               | 6-12 months  | Automatic                                   | Weekly                                      | Daily or Monthly                                       | Daily   | Automatic                | Daily                 | Automatic                     | Automatic                          | Automatic                          | Automatic                  | Weekly   |
| Last edition       |  |                         |  |   |   |  |   |                          |                       |                               |                                    |                                    |                            |  |
| Price              | Free   | Free                    | Free   | Free  | Free  | Free   | Free  | Free                     | Free                  | Free                          | Free                               | Free                               | Free                       | Paid   |
| Subscription       | Individual                                     | Individual              | Individual   | Individual                                  | Individual                                  | Individual   | Individual                                      | Individual               | Individual            | Individual                    | Individual                         | Individual                         | Individual                 | Individual Institution                                     |
| Manual book        | No (it provides electronics books and reports) | No                      | No (it gives electronics books and information)          | No (it gives electronics books and reports) | No (it gives electronics books and reports) | No (it gives electronics books and reports)            | No (it gives electronics books and information) | No                       | No                    | No                            | No                                 | No                                 | No                         | Yes  |
| Mobile Application | Yes  | Yes                     | Yes  | Yes   | Yes   | No   | Yes   | Yes                      | Yes                   | No                            | No                                 | No                                 | No                         | No   |
| Publisher          | U.S.A (FDA)                                    | Lexis Nexis             | CDC  | SFDA  | WHO   | the Office of Communications and Public Liaison (OCPL) | MOH   | Medscape, LLC            | WebMD, LLC            | MedPage Today, LLC            | National Library of Medicine (NLM) | National Library of Medicine (NLM) | GlobalRPh                  | International Journal of Pharmaceutical Compounding (IJPC) |

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finance, internal process, education, and innovation.<sup>8</sup> There are risks in the current project: budget, scope, personnel, scheduled, technical, and quality risks. This project might be unprotected to personnel risk due to the shortage of expert dentists. It might also be exposed to budget risk due to the deficiency of budget for education and training of the dentist staff with multiple experiences. Further, this project might also be exposed to technical risks such as material was not being available. Quality risks are met due to the untrained dentist being available.<sup>9,10</sup> Selected fourteen drug information websites for dental practice had been planned (Table 1 and 2).

## DISCUSSION

There are several websites location employed as dental drug information resources. The government website was mainly established for drug registration in each country. For illustration, FDA for drug and food regulatory affairs. There are any dental medications to know about country registration or permitted indication in the USA. Another website is called SFDA drug and food registration office in Saudi Arabia. Further, another type of governmental site was the Ministry of Health

in Saudi Arabia to keep reorganized about any healthcare affair in Saudi Arabia, which dentists commonly use.<sup>5</sup> Besides, drug therapy guidelines and healthcare statistics lead to the all medical or dental-related issues. World health organization was accountable for health around the world and it is more frequently used by dentists<sup>5</sup> and the site of health status and statistics around the world.

Moreover, for any dental emergency or any pandemic, or emergency of public health, the organizations will declare rationalized information regularly. Some websites are free of charge for health information, counting dental medication-related issues like WebMD, MedPage, and Medscape, which are less commonly used by dentists.<sup>5</sup> All common medications and dental disease management are obtainable on those websites as acknowledged in Table 1 and 2.

Some websites were articulated only drug information like drug.com. It contained of the leaflet of medications registered in the USA. The drug.com checked medications names, indications, adults or pediatrics doses, precautions, and adverse drug reactions. Additional website includes patients education about dental and regular medications for daily used and MedlinePlus.<sup>13,14</sup> It guides the patients about the medicines and

**Table 2: Practice of the Dental drug information website.**

| Name of resource                               | Content  | Inquiries answered  | Usage of dental student  | Use of general dental practitioner | Usage of specialized or consultant dentist | Reference |
|--|--|---|--|------------------------------------|--|-----------|
| U.S Food and Drug administration               | a resource database for FDA approved drug information, evaluation of the drugs by the FDA staff, and drug's regulations and safety | Its resources of the brand and generic names of the medicines, withdrawn drugs, package insert of medications, and biologic therapeutics in the USA.  | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 15        |
| Drugs.com                                      | It is a collection of package insert of medications approved and marketed in the USA   | It offers the dental and non-dental drugs use, doses protocols, interaction, side effects, the possible interaction between medications or drugs-food, their management.  | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 16        |
| Centre of disease control and prevention (CDC) | An organization dedicated to protecting from any health threats using scientific-based information in the USA                      | It sources for disease and medical topics or healthy lifestyles for health specialists and the public, ways to control the disease, centers that work on it, travelers' travel advice, nearby clinics, precautions, and notes.<br>It organizes the guideline and protocols for the management of the particular condition, infection control on the workspaces protocols safety and protection against pandemic or biological hazards | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 17        |
| Saudi Food and Drug Authority                  | It is an organization that regulate approved medication, and regulation related issues in Saudi Arabia                             | Its resources of dental and non-dental Drug, food, equipment related registration information. Approved status, prices in Saudi Arabia  | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 18        |

**Table 2: Cont'd.**

| Name of resource                   | Content   | Inquiries answered  | Usage of dental student  | Use of general dental practitioner | Usage of specialized or consultant dentist | Reference |
|------------------------------------|---|---|--|------------------------------------|--|-----------|
| WHO                                | It provides statistics of healthcare conditions, disease information, medication information latest news around the globe | It provides Healthcare system-related publications that are including medications. Moreover, the current health crisis in countries, research, and development sector work to help researchers and scientists to develop new vaccine and solution for epidemics or pandemics travel precaution and notes  | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 19        |
| National Institute of Health (NIH) | It is a national medical information agency obtained from researches and trails in the USA                                | It provides health information to answer the public concerns and questions, the health topic and search about studies or data are available related to it   | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 20        |
| Ministry of Health (MOH)           | It provides the public's knowledge and the specialist with the latest health news and facts around the country            | It provides an update of healthcare system information, MOH formulary medications, patient's rights, educational content on varying health topics including the sign and symptoms, treatments and information about the condition, and health tools include measuring the ideal body weight. and<br>It had a calendar for world health days, available services and information provided by the ministry to the resident and Pilgrims, premarital requires and precaution to be taken<br>It had open database statistics that offers access to the public or anyone who can use the data for educational, academic, or knowledge purposes | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 21        |
| Medscape                           | It is a resource of medical and dental specialties for medical news, clinical reference, and education.                   | It had a drug update, medical protocols, and guidelines, information about the disease and condition: the anatomy, laboratory, and presentation collections. Moreover, the tools include a drug interaction checker, check identification, interactive diagnostics, and MEDLINE database, giving access to works not protected by U.S. law.   | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 22        |

Continued...

**Table 2: Cont'd.**

| Name of resource  | Content   | Inquiries answered  | Usage of dental student  | Use of general dental practitioner | Usage of specialized or consultant dentist | Reference |
|-------------------|---|---|--|------------------------------------|--|-----------|
| WebMD             | It is an organization that provides health information with its reference to the professional and public on the internet  | It provides the latest news in the health field, medical info sources, media and graphics, live events, and interactive tools. Besides, it includes drug's uses, side effects, precautions, interactions, and doses with a helpful tool that's pill identification. Also, the desirable price of medications  | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 24        |
| Medpage Today     | It is extensive sources that cover important news for health care professionals   | It had medical information and news with various specialties. Besides, health policy and career in the medical and dental care  | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 25        |
| DailyMed          | a reliable source for drug information obtained from FDA approved drug database   | FDA guidelines and resources for drugs ( doses, indication for use, adverse events, precautions, warnings, contraindications, ingredients, product guide ), drug labeling, indices and mapping files, articles, and application information   | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 26        |
| MedlinePlus       | A principled source of health information for the public  | It provides a source of articles, clinical trials, and treatment options for disease and conditions by age grouped or systemic location, health, and wellness.<br>Moreover, the drug instruction on usage, why its prescribed, special notes, dietary education, side effects, storage and overdoses management, brand and generic names of the drug and herbals, as well video educational library | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 27        |
| Global RPH        | It provides health data in most majors, diseases and management, tools of calculating tools, Drug pharmacokinetics, and medication concentration-related preparation and administration.        | It had intravenous and sterilization guidelines, infectious disease resources, laboratory values, cancer agents, renal doses. Moreover, IV medication dilution and dosage calculations. Also, health economic calculations.   | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 28        |
| Compounding today | It provides the detailed information needed to grow and maintain a compounding practice. Besides, it offers professional compounder the tools and resources required in their daily activities. | It provides information on dental and non-dental compounding formulas and either sterile or non-sterile procedure. It had stability and concentration of compounding medication. Besides skills required of clinical and distributive compounding of medication   | Needs to be available for universities and academic institutions | Recommended                        | Recommended                                | 29        |

instructions about medications uses, indication, administration, and storage procedures. The other website was a suitable website about dental compounding, or extemporaneous preparation of dental preparation, called [compoundingtoday.com](http://compoundingtoday.com), and this website is paid yearly. Other websites deliberated medication preparation related issues, pharmacokinetics calculations, and drug stability guidelines like Global Rph.<sup>28</sup> All the earlier websites can be used by dental students and postgraduate dental specialties as free websites. Moreover, dental college can educate their students and dental faculties about those websites as drug information resources.

## CONCLUSION

There are numerous dental medications information website references accessible for all dentist specialties. The majority of those references are free of deviations and more reachable than other resources. Reconnoitering the collection of dental drug websites can measure the dentist professionals to apply it in the dental field. The current project desires the dental team to apprise the website regularly and deliver education and training for dental providers. Moreover, the team can support the dental staff's logistics and financially the new project operation. Further studies is required to update the newest drug information references website and keep the dentists reorganized about the latest dental drug websites.

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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None


## Consent for Publications

Informed consent was obtained from all the participants

## Ethical Approval

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## ABBREVIATIONS

**MOH:** Ministry of Health; **KSA:** Kingdom of Saudi Arabia; **SWOT:** Strengths, Weaknesses, Opportunities, and Threats; **WHO:** World Health Organization; **SFDA:** Saudi Food and Drug Authority; **BSC:** Balanced Scored Card; **IT:** Information Technology; **NIH:** National Institute of Health.

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