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# Assessment of students' knowledge and perception of pain and anti-inflammatory drug therapy in dental schools in Saudi Arabia



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## ARTICLE INFO

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## ABSTRACT

**Objective:** Comprehensive knowledge in medication therapy and safety is an important skill for healthcare providers to master. Effective and safe use of pain and anti-inflammatory medications in teaching dental clinics requires a comprehensive knowledge base of the various drug agents. The purpose of this study is to assess the knowledge and perception of student dentists in various dental schools in Saudi Arabia in the use of pain and anti-inflammatory drug therapies. This study could help identify common areas for collaboration and improvement in healthcare delivery between pharmacy and dental medicine in Saudi Arabia.

**Methods:** 328 student dentists enrolled in traditional six-year dental program in Saudi Arabia were invited to participate in a voluntary online survey. The brief survey consisted of 21 multiple choice questions and was delivered as a secure link through email and private social media messaging services. The survey permitted only 1 attempt per user. In order to reach out and capture non-respondents, 2 follow-up reminders - 10 days apart - were sent through the same channels of communication. The data collection and statistical analysis of this study is conducted using the online survey platform, Qualtrics.

**Results:** The response rate was 22.6% (74 out of 328). Approximately 77% (n = 58) of participants were third, fourth, fifth and sixth year students. Nearly 50% (n = 38) of respondents indicated that they have treated patients with pain and inflammation before, and nearly 94% (n = 70) of respondents indicated that they counsel patients to take medications as prescribed. However, 66% (n = 49) reported not knowing how non-steroidal anti-inflammatory drug therapy is discontinued. Approximately 70% (n = 51) of respondents prefer to approach a pharmacist with drug therapy questions. Nearly 31% (n = 18) of third, fourth, fifth and sixth year students indicated that they use paracetamol as an anti-inflammatory agent.

**Conclusion:** Among data reported in this survey, evidence of gaps in knowledge in pain and anti-inflammatory pharmacotherapy is shown. There is need for inter-professional collaboration between pharmacy and dental medicine in Saudi Arabia to help close gaps in knowledge for students. More research is needed among a larger sample of student dentists to develop a better understanding of the type of collaboration effort required.

## 1. Background

Healthcare providers in many disciplines are educated on the proper use of pharmacotherapy at different levels. Prescribers, such as dentists, are expected to demonstrate comprehensive knowledge of medication therapy used within their scope of practice. Although the skills, knowledge and expertise develop with time and practice, schools are expected to produce providers who possess the bare minimum knowledge required to be a competent health care provider [1]. Standardized exams and procedures, such as board exams, are tools implemented by regulatory bodies in various countries to control the quality of providers entering the workforce. The WHO-6-step method is also another tool that has been proven to support pharmaceutical knowledge for

students in the medical field [3]. In Saudi Arabia, dentists as well as many other healthcare providers, need to pass a board examination for licensure to practice dental medicine. Dental practice in Saudi Arabia, as in many other countries, entails full prescribing authority of medications that fall within the scope of practice of dentists such as pain medications and antibiotic agents. The purpose of this study is to assess the level of knowledge and capture the perception of student dentists towards pain and anti-inflammatory drug therapy in Saudi Arabia. This study provides an estimate of the level of competency of student dentists in regards to pain and anti-inflammatory medications. This study can serve as preliminary data to help dental schools learn about potential deficiencies and areas for improvement within their curriculum. Collaborative learning has been called for in the past by many

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researchers in different medical disciplines [2]. This study can help schools identify areas of potential collaboration between dental medicine and pharmacy for the sole purpose of improving academic outcomes.

## 2. Methods

The study protocol was granted Institutional Review Board “IRB” approval from Ohio Northern University located in Ada, OH United States. Surveys were sent to 328 Saudi student dentists enrolled in various dental schools across the Kingdom of Saudi Arabia. An electronic survey platform, Qualtrics by © 2017 Qualtrics LLC. was used to build and administer the survey. The survey included 21 multiple choice questions asking students about their opinion regarding pain and anti-inflammatory pharmacotherapy. The survey was administered as a URL link and was tested for compatibility with mobile phone, computer and tablet use for the convenience of participants. The survey only permitted 1 attempt per user and the user had the option to opt-out of the survey at any time. Participation in the survey was voluntary and participants were requested to sign a consent before starting the survey. The survey takes less than 3 min to complete. Participants were sent 2 reminders to complete the survey 10 days apart. Validity of the survey was confirmed by read out test by two dental experts and test retest confirmed reliability. Data analysis was performed using descriptive statistics (mean, standard deviation, percent and median) and by utilizing the statistical analysis package within the survey platform software, Qualtrics by © 2017 Qualtrics LLC.

## 3. Results

The survey response rate was 22.6% (74 responded out of 328). All participants are enrolled in the traditional 6-year program offered across the kingdom of Saudi Arabia (Table 1). 78.4% (n = 58) of participants were third, fourth, fifth and sixth year students. 51.4% (n = 38) of students indicated that they have treated patients with pain and inflammation before in the clinic (Table 2). Of those who have treated patients with inflammation before, 75% (n = 29) indicated that patients mostly presented with oral cavity associated pain and 25% (n = 10) indicated that their preferred anti-inflammatory agent for treatment is paracetamol. Additionally, 74% (n = 28) indicated that they prefer ibuprofen while 1% preferred diclofenac and aspirin. Of students who reported that they prefer to use Non-Steroidal Anti-inflammatory Drugs “NSAIDs” to treat inflammation (n = 49), only 35% (n = 17) reported that NSAIDs are generally a safe therapy option, while 88% (n = 43) indicated they were comfortable prescribing NSAIDs at their practice site. Approximately 94% (n = 70) of respondents indicated that they counsel patients to take medications as prescribed, but 11% (n = 8) reported that they question whether patients follow directions and take medications as prescribed. 66% (n = 49) reported not knowing how NSAIDs are discontinued and 17.6% (n = 13) recommended gradual discontinuation of anti-inflammatory therapy (Table 3). Approximately 70% (n = 51) of respondents preferred to approach pharmacists with drug therapy questions, and 31% (n = 18) of third, fourth, fifth and sixth year students

considered paracetamol an anti-inflammatory agent (Fig. 1).

## 4. Discussion

This study serves as an initial evaluation of the perception of Saudi student dentists about pain and anti-inflammatory pharmacotherapy. This data could help dental programs and curriculum committees to identify areas of potential improvement. The aim of this study is to also find opportunities for collaboration between pharmacy and dental schools and assess the need for mutual efforts for improved dental comprehensive training in the future. From the data reported in this survey, misunderstanding of pain and anti-inflammatory pharmacotherapy is evident. The data represented in this study shows that students generally have a better understanding of NSAIDs place in therapy compared to paracetamol. The data also shows that the level of confidence in prescribing NSAIDs is high, which might reflect how commonly this medication class is prescribed at dental teaching clinical settings.

Students at many dental schools in Saudi Arabia are often taught pharmacology courses at very early stages of their academic career. In fact, most schools we observed incorporate pharmacology courses into their curriculum in the first two years of the program. Students mostly get one academic semester of basic pharmacology that includes pain, anti-inflammatory, antimicrobial and other miscellaneous pharmacotherapy subjects. Many of the observed dental schools utilize adjunct pharmacy faculty to teach pharmacy therapeutics courses. This indicates that the initial bridge of collaboration is often established between pharmacy and dental medicine at many schools in Saudi Arabia.

## 5. Conclusion

The data reported in this study indicates the need for more inter-professional collaboration between pharmacy and dental medicine in Saudi Arabia to help close gaps in knowledge. Exposure to pharmacology during the academic career of the student is beneficial, but more clinical training in pharmacotherapy might help solidify students' knowledge of various pharmacotherapy agents commonly used in the dental setting. Keijsers et al. highlighted that pharmaceutical knowledge of various practitioners was found to be comparable at baseline with pharmacy trainees, but vastly improved with experience [6]. More research is needed among a larger sample of student dentists to develop a better understanding of the type of collaboration effort required. We recommend establishing a multidisciplinary teaching approach on a student level to leverage better outcomes of dental education. This might include collaborative interdisciplinary workshops that involves pharmacy students and dental students. The model known as Problem Based Learning “PBL” and has been utilized at many Saudi universities with various degrees of success, and it would be one of many venues those collaborative workshops could take [7]. Regardless of the model of collaboration utilized, collaborative interdisciplinary training has been shown to foster innovative, high quality interdisciplinary outcomes [4,5]. From the data reported in this survey, pharmacists are highly trusted healthcare professionals by student dentists in providing drug information. This might help increase chances of successful collaboration efforts in the clinical setting between pharmacy and dental medicine.

6. Study limitations This study examined a limited number of student dentists, therefore, it does not represent the whole body of student dentists in Saudi Arabia. This study included students from the majority of schools in Saudi Arabia, but may have not represented some students enrolled in other dental schools. Also, this study did not account for the differences that might exist in school curriculums.

## Acknowledgment

None.

**Table 1**  
Academic demographics of participants.

| Academic year     | Number of participants |
|-------------------|------------------------|
| 1st year          | 9                      |
| 2nd year          | 9                      |
| 3rd year          | 15                     |
| 4th year          | 21                     |
| 5th year          | 7                      |
| Intern (6th year) | 13                     |
| Total             | 74                     |

**Table 2**  
Classroom & clinical knowledge about inflammation by academic year.

|                              |                   | I have a general understanding of the inflammation process in the human body |       |                           |          |                   | Total | I have treated a patient complaining of inflammation in the oral cavity before |    |                  |   | Total |
|------------------------------|-------------------|--|-------|---------------------------|----------|-------------------|-------|--|----|------------------|---|-------|
|                              |                   | Strongly agree   | Agree | Neither agree or disagree | Disagree | Strongly disagree |       | Yes  | No | I can't remember | I haven't started clinical practice yet |       |
| Which academic year are you? | 1st year          | 1  | 6     | 2                         | 0        | 0                 | 9     | 1  | 0  | 0                | 8                                       | 9     |
|                              | 2nd year          | 0  | 6     | 2                         | 0        | 0                 | 9     | 0  | 2  | 0                | 6                                       | 8     |
|                              | 3rd year          | 4  | 10    | 1                         | 0        | 0                 | 15    | 4  | 3  | 0                | 8                                       | 15    |
|                              | 4th year          | 5  | 12    | 2                         | 3        | 0                 | 21    | 11   | 6  | 1                | 4                                       | 22    |
|                              | 5th year          | 0  | 5     | 2                         | 0        | 0                 | 7     | 5  | 0  | 2                | 0                                       | 7     |
|                              | Intern (6th year) | 1  | 7     | 5                         | 0        | 0                 | 13    | 10   | 0  | 3                | 0                                       | 13    |
|                              | Total             | 11   | 46    | 14                        | 3        | 0                 | 74    | 31   | 11 | 6                | 26                                      | 74    |

**Table 3**  
Frequency of answers to NSAIDs therapy discontinuation method.

|   |   | I have learned about the different medication classes used in treating inflammation in school |       |                           |          |                   | Total | p-value     |
|---|---|---|-------|---------------------------|----------|-------------------|-------|-------------|
|   |   | Strongly agree  | Agree | Neither agree or disagree | Disagree | Strongly disagree |       |             |
| I tell patients who want to stop non-steroidal anti-inflammatory therapy to | Lower the dose gradually then stop            | 2   | 8     | 1                         | 1        | 2                 | 1     | <b>0.28</b> |
|   | Immediate stopping is okay                    | 8   | 4     | 9                         | 1        | 0                 | 22    |             |
|   | Patient cannot stop once therapy is initiated | 0   | 3     | 1                         | 1        | 0                 | 5     |             |
|   | I don't know                                  | 3   | 13    | 11                        | 6        | 0                 | 33    |             |
|   | Total   | 13  | 28    | 22                        | 10       | 1                 | 74    |             |

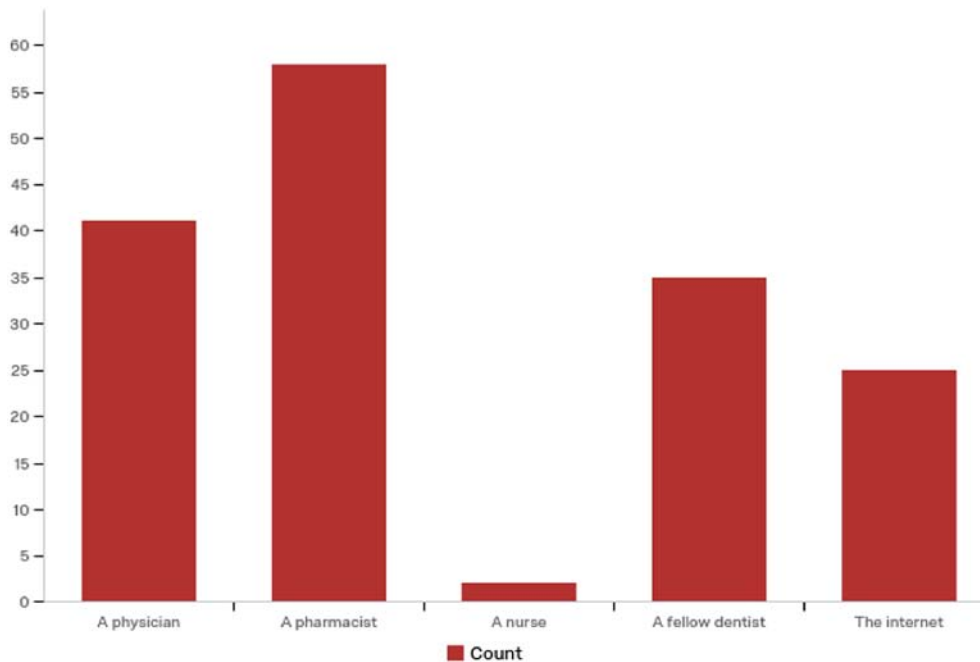


Fig. 1. Frequency of answer to trusted source of drug information.

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