Perception of Final Year Dental Students on Pattern of Medication for Pulpitis

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Abstract

Background: Numerous studies have examined the pattern of various analgesics and antibiotics prescribed by primary dental health care practitioners to manage irreversible pulpitis.

Aim: To determine the pattern of medicines for irreversible pulpitis in undergraduate dental students.

Methodology: A cross sectional survey of open ended questionnaires based on dental scenarios of irreversible pulpitis for child, pregnant woman and apical periodontitis for man was carried out at department of operative dentistry. The questionnaire sought mock medications by the 5th year undergraduate dental students. Responses (n=111) were collected and analysed by frequency for drug prescribed. Data included the name of medicines, dose and presentation of the drugs.

Results: Of the 57 distributed questionnaires, 37 (63%) respondents returned completed forms. A total of 24 (64.8%) of the respondents were female. Majority of mock prescriptions (97.4%) had a combination of antibiotics and analgesics to male patients having apical periodontitis. Almost 25% suggested antibiotics to the pregnant women of 1st trimester, while 81.9% suggested antibiotic and analgesic in tablet form to a child patient. In analgesics and antibiotics groups, acetaminophen (75.5%) and amoxicillin (56.7%) were highest respectively. Abbreviated drug name (11.7% analgesic and 0.9% antibiotic), and incorrect strengths (7.3% antibiotics and 14 % analgesics) were found.

Conclusion: Amoxicillin and acetaminophen were primary medication for irreversible pulpitis. More clinical training on medication is suggested.

Keywords: Analgesics; Antibiotics; Dental students; Irreversible pulpitis; Medication

Introduction

Dental medications, as complementary component of treatment of various dental procedures to get relief of dental pain, comprise of analgesics and antibiotics [1,2]. Prescribing medication varies from 74 - 97 % in dental practice during a week [3]. In the UK, 40% dentists prescribe antibiotics in a week [4]. More than 50% dental prescriptions have antibiotic, analgesic and mouthwash [5]. In Brazil, the most commonly prescribed medications by dental practitioners were amoxicillin (26%) and diclofenac (35 %) [6]. Dar-Odeh et al. [7] found amoxicillin (60%) and metronidazole (39.4%) as higher prescribed antibiotics by dentists in Jorden. Chate et al. [8] observed the pattern of prescribing antibiotics and found 21.4 % prescriptions with error associated with abbreviation of drug name, dose and strength.

Most studies on medication pattern involve the qualified dental graduates. Limited data is available on undergraduate dental students in this aspect. Dental training aims to acquire prescribing skill by dental students. Thus clinical instructors of dental schools take technical skills as the primary component of a ‘good’ dentist [9]. Undergraduate dental students, though, are not allowed to prescribe medicines; they are trained to prescribe medicines under supervision of clinical teachers.

This study aimed to find the pattern of medicines suggested by final year undergraduate students for irreversible pulpitis and apical periodontitis. An ethical approval was obtained from the Research Committee of Faculty of Medicine, Universiti Kebangsaan Malaysia.

Methodology

A cross sectional survey having open ended questionnaires was used. The questionnaire comprised of three scenarios based on dental problems of a child, pregnant woman and man. The provided mock scenarios had diagnosis such as irreversible pulpitis for child and pregnant woman and apical periodontitis for man. Thus each surveyor prescribed mock medications for three multiple patients. Thirty seven out of 57 students completed the survey of mock prescriptions. Responses (n=111) were analysed by frequency and percentage. Data included the name and type of medicines, dose and presentation of the drugs.

Results

Of the distributed 57 questionnaires, 37 (63%) students returned completed mock prescriptions. A total of 24 (64.8 %) of the respondents were female. The acetaminophen (75.5%) and amoxicillin (56.7%) were the primary medications (Table 1).

Majority of students (97.4%) prescribed a combination of antibiotics and analgesics to a man with apical periodontitis. Almost 25% suggested antibiotics and analgesic to the pregnant women of 1st trimester with irreversible pulpitis. A large number

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erythromycin (26.65%) [17]. This study primarily focused on the pattern of VK as the first choice of antibiotic followed by 57% clindamycin and dental practice. In US, more than 60% endodontists prescribe penicillin for irreversible pulpitis but prescribing medication is still part of practical procedures. In summary, acetaminophen (75.7 %), amoxicillin (56.7 %) and metronidazole (40.4%) were the most highly prescribed medicines for irreversible and apical periodontitis. However some prescribing errors were found in mock prescriptions of dental students.

**Discussion**

In dental practice, along procedures, antibiotics and analgesics are prescribed. The most used antibiotics like amoxicillin, penicillin, metronidazole and amoxicillin and clavunate are prescribed by dentists [10-16]. Though performing pulpectomy is the best management of irreversible pulpitis, but prescribing medication is still part of practical dental practice. In US, more than 60% endodontists prescribe penicillin VK as the first choice of antibiotic followed by 57% clindamycin and erythromycin (26.65%) [17]. This study primarily focused on the pattern of medicines, suggested by undergraduate dental students for pulpitis either irreversible or periapical. Acetaminophen was the most highly prescribed medicine for irreversible pulpitis as well as apical periodontitis. The pattern of suggesting medicines by undergraduate dental students was similar to graduate dentists. In this study, students suggested, though limited, antibiotics, amoxicillin 57.7 percent and metronidazole 40.4 percent. All other antibiotics were 1.9 percent. The reason could be the less clinical experience.

The administration of penicillin requires analgesics to be added in the regime to reduce dental pain significantly [23]. Majority of dental students suggested amoxicillin in combination of acetaminophen (Table 2). This shows a similar pattern of dental medication of students and it is hoped that dental students would follow the same pattern in their real practice upon graduation.

Many studies indicate acetaminophen and ibuprofen are effective therapy for dental pain taken after dental procedure especially extraction or even before procedure [24, 25]. In this study, students suggested almost three quarters (75-80 percent) analgesic mainly acetaminophen especially for child and pregnant woman. This shows a similar pattern on analgesics; however, students prescribed a limited variety. It could be due to less ward training and less interaction with patients.

Children’s dosage is based on a single dose of 10 mg acetaminophen per kilogram bodyweight which can be repeated 4-6 hourly per 24 hours. Acetaminophen in syrup form or oral suspension is recommended for a child up to 12 year of age [25]. The results show

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**Table 1:** Mock Medicines by Dental Students for Irreversible Pulpitis.

| Medicine          | No. students | Frequency | Percentage |
|-------------------|--------------|-----------|------------|
| Acetaminophen     | 28           | 84        | 75.7       |
| Mefenamic acid    | 08           | 24        | 21.6       |
| Others            | 01           | 3         | 2.7        |
| Total             | 37           | 111       | 100        |

**Table 2:** Pattern of mock medicines by dental students for irreversible pulpitis.

| Type of patient | Medicine group | Students | Frequency | % |
|-----------------|----------------|----------|-----------|---|
| Child           | Analgesic      | 30       | 81.1      |
|                 | Antibiotic & Analgesic | 7 | 18.9 |
| Pregnant women  | Analgesic      | 28       | 75.7      |
|                 | Antibiotic     | 1        | 2.7       |
|                 | Antibiotic & Analgesic | 8 | 21.6 |
| Adult men       | Analgesic      | -        | -         |
|                 | Antibiotic     | 1        | 2.7       |
|                 | Antibiotic & Analgesic | 36 | 97.3 |

**Table 3:** Commission Errors of Mock Prescription of Dental Students.

| Drug related Errors | Analgesic (n=111) | Percent | Antibiotic (n = 52) | Percent |
|---------------------|-------------------|---------|---------------------|---------|
| Incorrect dose      | 7                 | 6.3     | 8                   | 15.3    |
| Incorrect strength  | 15                | 13.5    | 4                   | 7.6     |
| Abbreviated name    | 13                | 11.7    | 1                   | 1.9     |
| Drug form (syrup) child* | 7 | 18.9 | -                   | -       |
| Drug form (tablet) child* | 30 | 81.9 | -                   | -       |

(n = 37)
almost 81.9% mentioned tablet form medicine for 8 year child (Table 2). From guideline of pharmacology, a child of eight year old should be given medicine in syrup form [26]. Syrup (liquid) form is easy to take as compared to tablet form. However, in clinical practice, patient (child) consent is taken before prescribing any form of medicine. Due to absence of real child patient, students might not have taken this aspect. They concentrated on choice of drug rather than form of drug.

Table 2 illustrates the drug description for pregnant woman of 1st trimester. Almost one fifth students (21.6 percent) suggested antibiotic and analgesics. Medication of amoxicillin is in safe zone while metronidazole is contraindicated in 1st trimester [27]. Almost 40 percent responses contained antibiotics for pregnant woman. In practice, doctors prefer to avoid prescribing antibiotics in 1st trimester of pregnancy. The students were under clinical training and they followed the guidelines of books. This could be the reason of suggesting antibiotics in 1st trimester of pregnancy. The facts indicated of more clinical training on medication process of patient management. Bottom of Form

Conclusion

Dental students in mock prescriptions prescribed acetaminophen and amoxicillin as the analgesic and antibiotic agents for irreversible pulpititis. However, for multiple choices and selection of drugs, less variety of multiple medicated was found which suggested more clinical training of dental students.

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