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Trends of Final Year Dental Students on Medication for Pulpitis & Apical Periodontitis

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Abstract: *Many studies have examined the pattern of various analgesics and antibiotics prescribed by primary care dental practitioners to treat irreversible pulpitis. To determine the pattern of medicines for irreversible pulpitis among undergraduate dental students, a cross sectional survey seeking mock medications based on dental scenarios of irreversible pulpitis for child, pregnant woman and apical periodontitis for man was carried out on final year 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. Majority of mock prescriptions (97.4%) had a combination of antibiotics and analgesics to male patients having apical periodontitis. Almost 25% prescribed antibiotics to the pregnant women of 1st trimester, while 81.9% suggested antibiotic and analgesic in tablet form to a child patient. In analgesic 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. Amoxicillin and acetaminophen were primary medication for irreversible pulpitis. More clinical training especially on prescribing medication was suggested.*

Key words: *Analgesics, Antibiotics, Dental students, Irreversible pulpitis, Medication.*

I. 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 amoxilcillin (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 errors associated with abbreviations of drug name, dose and strength.

Most studies on medication pattern involve the qualified dentists. Limited data is available on dental students. Students need to acquire correct prescribing skills. Thus clinical instructors of dental schools take technical skills as the primary component of a 'good' dentist [9]. Dental students are not allowed to prescribe medicines on their own, but only under supervision of clinical teachers. This study aimed to find the pattern of medicines prescribed 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.

II. Methodology

A cross sectional survey using open ended questionnaires, comprising of three scenarios based on dental problems of a child, pregnant woman and man was given to each student. Each student prescribed mock medications for three mock patients. Thirty seven out of 57 students completed the survey. Thus a total of mock prescriptions obtained (n=111). The provided mock scenarios had diagnosis such as irreversible pulpitis for child and pregnant woman and apical periodontitis for man. All prescriptions contained an analgesic group (n=111) and antibiotic group (n=52) which were analysed by frequency and percentage. Data included the name and type of medicines, dose and presentation of the drugs.

III. Results

Of the distributed 57 questionnaires, 37 (63%) students returned completed mock prescriptions. Most of the students prescribed 'Acetaminophen' (75.5%) and 'Amoxicillin' (56.7%) as the primary medications (Table 1).

The majority of students (97.4%) prescribed a combination of antibiotics and analgesics to a man with apical periodontitis. Almost 25% students suggested antibiotics and analgesic to the pregnant woman of 1st trimester

with irreversible pulpitis. A large number (75.5%) of mock medications had analgesic primarily acetaminophen while one had sole antibiotic (2.7%) for the 1st trimester pregnant woman. To an eight year child with irreversible pulpitis, more than two third (81.9%) suggested antibiotic and analgesic in tablet form (Table 2). Abbreviated drug name (11.7% analgesic and 0.9% antibiotic), the incorrect strengths (7.3% antibiotics and 14 % analgesics) and incorrect dose upto 20 percent were found (Table 3).

In summary, acetamionphen (75.7 %), amoxicillin (56.7 %) and metronidazole (40.4%) were the common suggested medicines for irreversible and apical periodontitis. However some prescribing errors were found in mock prescriptions of dental students.

IV. 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 [10,15]. Though performing pelpectomy 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%) [16] . 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 (76.7%) prescribed medicines for irreversible and periapical pulpitis (Table 1). Donaldson & Goodchild [17] found that acetaminophen and NSAIDs were the most appropriate choices for the treatment of acute dental pain such as Pulpitis.

Many studies have shown that amoxicillin is the first choice of antibiotic and commonly prescribed (40- 60 percents) for irreversible pulpitis [18-21]. From Table 1, it is evident that the most commonly prescribed antibiotic was amoxicillin (57.7%) 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 in terms of variety, antibiotics, amoxicillin 57.7 % and metronidazole 40.4 %. All other antibiotics were 1.9 %. 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 [22]. 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 acetaphinomen and ibuprofen are effective therapy for dental pain taken after dental procedure especially extraction or even before procedure [23, 24]. In this study, students suggested almost three quarters (75-80 percent) analgesic mainly acetaphinomen especially for child and pregnant woman. This shows a similar pattern on analgesics; however, students prescribed a limited analgesics and antibiotics 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 [24]. The results show 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 [25]. 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 [26]. 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.

V. Conclusion

Dental students in mock prescriptions prescribed acetaminophen and amoxicillin as the analgesic and antibiotic agents for irreversible pulpitis and apical periodontitis. However, there were less variety of multiple medications and some prescription errors were found which indicated a need of improvement in prescription writing skill during clinical attachment of dental students.

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Table 1**:** Mock Medicines by Dental Students for Irreversible Pulpitis & Apical Periodontitis

Table 1: Mock Medicines by Dental Students for Irreversible Pulpitis & Apical Periodontitis

Analgesic (n=111)				Antibiotic (n= 52)			
Medicine	No. students	Frequency	Percentage	Medicine	No. Students	Frequency	Percentage
Acetaminophen	28	84	75.7	Amoxicillin	21	30	56.7
Mefnemic acid	08	24	21.6	Metronidazole	15	21	40.4
Others	01	3	2.7	Others	01	1	2.7
Total	37	111	100	Total	37	52	100

Table 2: Pattern of mock medicines by dental students for Irreversible Pulpitis & Apical Periodontitis

Type of patient	Medicine group	Students N=37	
		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	-	-

Child* (n) =37