

Dental Students and House Officers Knowledge and Attitude Towards Antibiotic Prescription at Tertiary Care Hospital

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ABSTRACT

Objectives: To assess the knowledge and attitude of students and house surgeons towards antibiotic prescription.

Study design: A cross sectional study (survey).

Setting and duration: Oral and Maxillofacial Surgery department, PMC Dental Institute, Faisalabad Medical University/Allied Hospital Faisalabad October-November 2020.

Subjects and methods: An integrated question sheet comprised of 19 open and close ended questionnaire dispersed between hundred students and fifty house surgeons. The goal of questionnaire was to evaluate understanding and view point towards antibiotic prescription. The questionnaire was split into three individual segments; segment A: General information, segment B: Attitude for the antibiotic prescription and segment C: knowledge of antibiotic prescription.

Results: From 150 issued questionnaires 120 (80%) were gathered and examined. The majority of the partaker were female 83 (69.2%) whereas male was just 37

(30.8%) with proportion of male to female of 1:2.2. The age of the partakers extends from 20-26 years (average age: 23.4 years). Among 150 partakers 34 (28.3%) belong to third year class, 38 (31.7%) were from final year class whereas 48 (40.0%) were house surgeons. The major part of partakers 76% had sufficient knowledge towards antibiotic prescription. Although, results disclosed that there are quiet misknowledge with regard to attitudes of partakers regarding antibiotic prescription and only 58% partakers have ample idea regarding this. This requires some well-defined seminars on health education highlighting on such misinterpretations.

Conclusion: Dental practitioners should advice antibiotics in congruence with the guidelines to restrain antibiotic resistance, an emerging public health issue.

Keywords: *PPAR- γ* , *NRF2*, *PPREs*, *KEAP1*, *ARES*, Oxidative stress, Tumor genes

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INTRODUCTION

Most of the infections which originates from head and neck region are mostly of odontogenic cause and prescribing antibiotics has become an omnipresent happening (AboAlSamh A, *et al.*, 2018). Unprofessional, indiscriminate and misuse use of antibiotics allowed bacteria to armor themselves leading to antibiotic resistance (Abu-Mostafa NA, *et al.*, 2017; Salvadori M, *et al.*, 2019). The prescription of antibiotic could be related to adverse effects, which range from gastrointestinal upset to lethal anaphylactic shock (Salvadori M, *et al.*, 2019; Doshi A, *et al.*, 2017). It has been delineated that the over-recommendation of antibiotics especially in children is the main cause of lethal diarrheal cases and a dive alteration in the sensitiveness of floral gut (Goel D, *et al.*, 2020). These consequential complications related with antibiotics use have motivated research studies probing antibiotic prescribing practices of dental surgeons (Salvadori M, *et al.*, 2019; Goel D, *et al.*, 2020).

Antibiotic resistance has become an emerging menace globally recurring all fields of the medicinal fraternity (AboAlSamh A, *et al.*, 2018). This growing dilemma has come up with the morbidity and mortality due to contagious diseases with death tariff for contagious diseases rising rapidly (AboAlSamh A, *et al.*, 2018; Struzycka I, *et al.*, 2019).

National Institute of Clinical Excellence (NICE), UK has circulated guidelines for the use of antibiotics acknowledging the increasing prevalence of microorganism resistance to antibiotics (AboAlSamh A, *et al.*, 2018; Doshi A, *et al.*, 2017; Guzmán-Álvarez R, *et al.*, 2012). These guidelines are intended to provide path for the proper and judicious use of antibiotic therapy in the treatment of

oral pathologies (Abu-Mostafa NA, *et al.*, 2017; Mandal NK, *et al.*, 2020).

A number of methods have been formulated to determine the best and accurate dosage for the patients and the most commonly used method is stated as mg/kg of body weight (Goel D, *et al.*, 2020).

Investigation of scientific literature has divulged a scarcity of literature with over prescription of antibiotics in patients, which provided a boost to perform this questionnaire based research, the purpose of which was to compare the knowledge and attitude towards antibiotic prescription among students and house surgeons at a tertiary care hospital (Salvadori M, *et al.*, 2019; Goel D, *et al.*, 2020; Hu Y, *et al.*, 2018).

METHODOLOGY

This was a cross-sectional study carried out using a self-structured questionnaire based on knowledge and attitude of dental students and house officers towards antibiotics prescription. The study was conducted at Pakistan Medical Commission (PMC) Dental Institute, Faisalabad Medical University/Allied Hospital, Faisalabad over the period of two months from October to November 2020. The research was accepted by Faisalabad Medical University, Faisalabad ethical review committee. Students from the 3rd year and 4th year class and House surgeons from batch 2019-2020 were incorporated in the research voluntarily.

Prior to attempt the questionnaire the motive of research was illustrated to the partakers and was motivated to respond to questionnaire so that we can collect data successfully. Study participants consisted of hundred dental students and fifty house officers.

The partakers present at research day and inclined to take part

were incorporated in the research and partakers reluctant to take part were barred from the research. Following research of previous studies and initial argument with board of specialists, a survey was finalized comprising of total 19 questions with the goal of assessing knowledge and attitude of partakers towards antibiotic prescription, prophylaxis, and resistance. The data were collected by using hardcopy of questionnaire as a medium to frame 19 questions and the secrecy of data was maintained.

The questionnaire was splitted into three different segments; segment A: General information, segment B: Attitude for the antibiotic prescription and segment C: knowledge of antibiotic prescription. The survey valuation took only 15-20 minutes to finish.

To abolish any flaw in the data accretion procedure it was overseen/looked after by one and the same specialist who analyzed and compiled research questionnaires. Using SPSS version 2.0, the statistics were entered and presented in percentages% and frequencies (AboALSamh A, *et al.*, 2018; Goel D, *et al.*, 2020; Guzmán-Álvarez R, *et al.*, 2012).

RESULTS

Overall 150 questionnaires were issued. Among these 120 partakers submitted the feedback form with general feedback rate of 80%. The females hold larger part of partakers 83 (69.2%) and the amount of male partakers was 37 (30.8%) only with male to female ratio was found to be 1:2.2. The partakers' age scaled from 20-26 years (average age: 23.4). Among 120 partakers 34 (28.3%) students belong to third year class 38 students (31.7%) from forth year class and 48 (40%) from House Job batch (*Table 1*).

Greater number of study partakers (76%) had adequate knowledge towards antibiotic prescription and its proper use in dental surgery. Amongst the study partakers the acquaintance level concerning antibiotic prescription was superior in house surgeons following by last year BDS (Bachelors of Dental Sciences) students contrary to third year BDS students (*Table 2*).

On the query concerning the approach of study partakers towards antibiotic prescription, only 58% total partakers have sufficient idea in regard to this. These misunderstandings were also more usual between the third year students in comparison to students in forth year and house surgeons as recorded in *Table 3*.

Table 1: General characteristics of the study participants

Variables	Number of subjects (%)
Gender	
Male	37 (30.8%)
Female	83 (69.2%)
Age (Years)	
20-23	87 (72.5%)
24-26	33 (27.5%)
Year of study	
Third Year	34 (28.3%)
Final Year	38 (31.7%)
House Officer	48 (40.0%)

Table 2: Attitude for antibiotic prescription among the study population

S. No	Questions	Answers	3 rd Year	4 th Year	House officers
1	Do you think oral route is the most preferred route of antibiotic administration after dental surgeries?	Yes	30	36	43
		No	4	2	5
2	Do you take the decision of prescribing antibiotics based on the symptoms?	Yes	14	18	27
		No	20	20	21
3	Do you prescribe antibiotic course for 3 to 5 days for oral infections?	Yes	26	31	35
		No	8	7	13
4	Do you prescribe antibiotics for swellings?	Yes	25	16	35
		No	13	22	13
5	Penicillin is the most common antibiotic you prescribe in dental surgeries?	Yes	26	36	43
		No	8	2	5
6	Are you aware of the cost of the antibiotic you prescribe?	Yes	16	28	27
		No	18	10	21

7	Do you think more expensive the antibiotic is the more effective it will be?	Yes	12	30	15
		No	22	8	33
8	Are you aware of antibiotic prescription guidelines by National Institute of Clinical Excellence (NICE) UK?	Yes	10	23	19
		No	24	15	29
9	Do you take history of any previous antibiotic course before prescribing any antibiotic?	Yes	22	31	45
		No	12	7	3
10	Do you take the history of any drug allergy before prescribing the antibiotics?	Yes	28	35	46
		No	6	3	2
11	After prescribing the antibiotics do you keep the patients on follow up?	Yes	18	24	34
		No	16	14	14

Table 3: Knowledge of antibiotic prescription among the study population

S. No	Questions	Answers	3 rd Year	4 th Year	House officers
1	Do you consider antibiotic prophylaxis prior to dental extractions in healthy patients?	Yes	14	17	18
		No	20	21	30
2	Do you consider antibiotic prophylaxis prior to dental extraction in immuno-compromised patients?	Yes	25	29	46
		No	9	9	2
3	Do you double the dose of antibiotic when it will be used as prophylaxis?	Yes	10	17	31
		No	24	21	17
4	Do you think that half hour to 1 hour before the procedure is the best time to prescribe antibiotic prophylaxis?	Yes	29	30	42
		No	5	8	6
5	Do you change the drug or modify the dose in patients with certain co-morbidities?	Yes	27	37	48
		No	7	1	0
6	Do you ever heard about the term antibiotic resistance?	Yes	29	34	48
		No	5	4	0
7	Do you think antibiotic resistance is prompted by self-medication?	Yes	28	25	47
		No	6	3	1
8	Do you think indiscriminate use of antibiotics leads to antibiotic resistance?	Yes	26	25	46
		No	8	3	2

DISCUSSION

Majority of oral cavity diseases presented to dentists are frequently inflammatory states (Sakr S, *et al.*, 2020). The appreciable proportion of tooth pain appears from infections of acute and chronic origin from pulpal tissues, which requires operative conciliation preferably than antibiotics (Doshi A, *et al.*, 2017). Non indicated clinical cases for antibiotic use embrace acute periapical infection, alveolar osteitis, and pulpitis (Doshi A, *et al.*, 2017; Sakeena MH, *et al.*, 2019). Long standing inflammatory conditions of periodontal origin are also not designated for antibiotics; systemic use of antibiotics should only be used in acute periodontal states where drainage or debridement is unachievable, where there is endemic spread of the infection, or where systemic upset has developed (Wong YC, *et al.*, 2016; Al-Kubaisi KA, *et al.*, 2018).

Prescribing medicine is a challenging skill that requires a physician to understand the principle of clinical pharmacology to make the clinical decision to prescribe drug safely and effectively (Mandal NK, *et al.*, 2020; Ajibola O, *et al.*, 2018). Antibiotics are common drugs used by the dental practitioners to treat infections that affect orofacial region (Sakeena MH, *et al.*, 2019). Nevertheless, there is an increased evidence in the dental literature regarding their inappropriate or sometimes unnecessary use of these medications that may lead to antibiotic resistance, adverse body reactions, and an increase in health care cost (Wong YC, *et al.*, 2016; Peng D, *et al.*, 2018).

In this research out of 150 questionnaires issued among the partakers 120 questionnaires were given back and investigated. Large number of partakers were female 83 (69.2%). Other research studies also described this female primacy like Abu-Mostafa NA, *et al.* (Abu-Mostafa NA, *et al.*, 2017) and Mandal NK, *et al.* (Mandal NK, *et al.*, 2020) who described 67.8% and 59.1% females in their particular research (Abu-Mostafa NA, *et al.*, 2017; Salvadori M, *et al.*, 2019; Al-Kubaisi KA, *et al.*, 2018). The participants age in present research scaled between 20-26 years with the average age of 23.4 years. Average age of the partakers in other research were as shown: 23.6 years in the research of Goel D, *et al.* (Goel D, *et al.*, 2020) and 22.2 years in the research of Sakr S, *et al.* (Sakr S, *et al.*, 2020).

The outcomes of present research are generally admissible in spite of few discouraging facts on prime attitude of antibiotic prescription for example regarding the question do you take the decision of prescribing antibiotics based on the symptoms? 58.8% students from third year, 43.7% students from final year and 43.7% house officers does not prescribe antibiotics based on symptoms whereas 40.8% of total participants were not aware of the cost of the antibiotic they prescribe. This is in dissimilarity to the research done by Jain A, *et al.*, 2015 who reported that 74% study partakers were well informed about the antibiotic prescription based on symptoms. Studies like Abu-Mostafa NA, *et al.*, 2017 also showed that 66% of first year and 74% students of final year class consider antibiotic prescription based on symptoms as well as they were also well aware of the cost of antibiotics they prescribe (AboAlSamh A, *et al.*, 2018; Struzicka I, *et al.*, 2019).

Regarding the results of present research, it was also not motivating to find that 52.5% of study participants think that more expensive the antibiotic is, the more effective it will be. It was also noted that in a question regarding are you aware of antibiotic prescription guidelines by National Institute of Clinical Excellence (NICE) UK, 70.6% students from third year, 39.4% students from fourth year and 60.4% of house surgeons were unaware of these guidelines.

On the flip side, it was inspiring to discover that the broad majority of the partakers 90.8% carefully thought about the history of drug allergy before prescribing the antibiotics and in response to the question that after prescribing the antibiotics do you keep the patients on follow up? 52.9% from third year, 63.1% from final year and 70.8% house surgeons keep the follow up of the patients. These outcomes are comparable with the results (Wong YC, *et al.*, 2016; Bolstad AI, *et al.*, 2020).

The results regarding knowledge of antibiotic prescription among the study participants were also encouraging except few misconceptions like regarding the question Do you double the dose of antibiotic when it will be used as prophylaxis? 70.5% from third year, 55.3% from final year and 35.4% house officers answered the question in No. These results are in contrary with the results (Sakeena MH, *et al.*, 2019) who reported that only 14% of total dental surgeons were unaware of the antibiotic prophylaxis (Peng D, *et al.*, 2018) reported that 18% of study participants were confused regarding answering the questions of antibiotic prophylaxis.

CONCLUSION AND RECOMMENDATIONS

According to results of present research the general amount of knowledge and attitude towards antibiotic prescription among study participants was quite satisfactory. However, there were few misapprehensions which certainly been owing to scant understanding of the illness, less skill, and less proficiency in executing operative intervention procedures. It has to be recognize that oral diseases are largely because of local elements; the bare removal of the native causative components shortens the need for prescribing antibiotics markedly. Antibiotics should be used only as adjuncts even when there is a real need and never as first-line treatment modality.

In interpretation, the prescribing application of dental surgeons can be enhanced by escalating recognition of the suggested recommendations between students and house surgeons. Moreover, the importance of beginning awareness programs between the common citizens should not be missed. Also, emphasis should be laid on forming guidelines for the prescription of antibiotics.

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