

ORIGINAL ARTICLE

Antibiotic Abuse among Population of Southern Ethiopia Due to Self-Medication for Treating Dental Problems and Its Potential for Developing Super Bugs

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Abstract

Discovery of Antibiotics has drastically decreased deaths resulting from various bacterial infections. At the same time, lack of proper education regarding potential dangers of over use or abuse of these drugs have led to rise of drug resistant bacteria all over the developing world. Ethiopia, which is among the forefront of developing nations in Africa, has been the victim of this trend. The current study focuses on the prevalence of antibiotic abuse among the southern population of Ethiopia with a special emphasis on type of drugs which are most commonly abused when patients are suffering from dental diseases. This study was done to obtain a clear understanding of prevalence of antibiotic abuse and type of antibiotics which are being abused most commonly for dental diseases.

Keywords: Antibiotic abuse, Self-medication, Super bugs

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Introduction

Ethiopia is a developing nation in east Africa in health sector with a population of 99.3 million as per 2015 statistics. With a total expenditure on health being 4.9% of GDP, with a per capita expenditure of 73 USD.^[1,2,3] Dental health in Ethiopia on the other hand is in a comparatively underdeveloped state. Prevalence of dental caries in relatively developed areas like Addis Ababa is about 47.4%, periodontal diseases in about 35.4% and halitosis in about 4.4%.^[4] Lack of clinical infrastructure needed to treat dental diseases have lead the population to mistaken belief that pain occurring due to dental caries or periodontal disease can be treated by antibiotics and analgesics. The belief is also prevalent that dental caries can be cured by antibiotics rather than restorations. These false beliefs have led to intake of antibiotics far in excess of prescribed limits. This inherent tendency of medical

practitioners to prescribe antibiotics and antimicrobials without pathological testing for specific microbes, has resulted in a catastrophic scenario ripe for development of drug resistant microbes not only in Ethiopia but throughout the world^[5-10].

This study was done to obtain a clear understanding of prevalence of antibiotic abuse and type of antibiotics which are being abused most commonly for dental diseases.

Materials and Methods

A retrospective cross sectional study was carried out in the dental clinical wing of Mizan Aman Teaching Hospital, Southern Ethiopia from November 1st 2016 to March 31st 2017. This hospital serves an estimated half a million people from rural, urban and semi urban areas. The required sample size was calculated using Open Epi software using single population proportion calculation formula based on

following assumptions: 45% prevalence rate of antibiotic abuse, 90% confidence level, 4% margin of error. The total calculated sample of records yielded 236 patients out of 568 patients. Detailed case history and drug history was taken to rule out patients who were under medication by an authorized medical practitioner. Only those patients who never visited a dentist but were taking self-medication were considered for the study. List of antibiotics being abused by the patients for dental diseases was made. Variables included sex, age, rural or urban parameters.

Results

Demographic and clinical characteristics of study participants: 236 patients were screened out of a total of 568 OPD in the 5 months of study. Proportion of females (158) was lot higher than proportion of males (78) [Table 1]. Children who were being administered self-medication by parents were comparatively smaller in number (21 children) among which 15 were girls and 7 were boys. Urban population (174) registered more number of patients taking self-medication compared to rural population (62) [Table 1].

Table 1: Demographic and clinical characteristics of study participants

Variables	Levels	Frequency (238)
Sex	Male	78
	Female	158
Age	Adults (above 18yrs)	215
	Children (below 18yrs)	21
Residence	Urban	174
	Rural	62

Pattern of antibiotic abuse: Most commonly abused antibiotics are Amoxicillin and Doxycycline with Amoxycillin far more commonly used (198 patients) than doxycycline (38 patients) [Table 2]. These two antibiotics are the most commonly prescribed antibiotics by dentists or medical practitioners for oral infections. But patients have been regularly taking these antibiotics without prescription.

Table 2: Pattern of antibiotic abuse

Type of antibiotics	Number of prescriptions (n=236)
Amoxicillin	198
Doxycycline	38

Discussion

The current study provides important information regarding the patterns of antibiotic abuse among population of southern region of Ethiopia. It analyzed the antibiotic abuse variations among males and females, urban and rural populations as well as different age groups. The possible justification for these variations and antibiotic abuse itself, could be, socioeconomic factors, poor prescribing policies of practitioners, lack of dental equipment for treating dental diseases at referral hospitals, lack of awareness among people about antibiotic resistance. However no amount of justification would enable health sector of Ethiopia cope with the development of antibiotic resistant strains of microbial. The skewed ratio of skilled medical and dental practitioners among rural and urban set up has been another contributing factor for this situation. This may indicate that there is a need to build capacity for healthcare provision and to develop strict policies for sale of antibiotics. Also standard treatment guidelines and appropriate prescribing habits need to be developed. Almost all the antibiotics being abused are orally administered. In case of children, syrup form of drug is administered. Not only were the drugs taken without prescription but also were taken in far excess than the recommended duration. This calls for evolution of health care policy in Ethiopia to educate people to visit doctors and hospitals rather than taking self-medication. Even though study was conducted with strict adherence to parameters, following limitations could be considered as unintended. First among them is small sample size. But since the study is spread over a period of 5 months, the overall patient flow to hospital decided the sample size. Second limitation would be the retrospective nature of study which cannot establish cause effect relationship of antibiotic abuse.

Conclusion

Antibiotic abuse has been a persistent problem among developing nations. Lack of awareness among health workers regarding antibiotic prescriptions, lack of awareness among people regarding principles of antibiotic use and socioeconomic conditions, drive the phenomenon of abuse of drugs. Strong healthcare policies have to be evolved along with strict prescribing policies to prevent this menace. If care is not taken to eliminate drug abuse, Ethiopia shall well be on its way to become drug resistant capital of the world.

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