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Review on Epidemiological Study of Antibiotic Consumption In Various Countries

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ABSTRACT

Antimicrobial resistance is an increasingly serious problem recognized as one of the greatest global threats to human health. Despite the successful effects to control infection disease, the continuous decline of therapeutic effectiveness of antimicrobials due to among others increasing antimicrobial resistance has become a worldwide problem. Although globally antimicrobial resistance is an emerging threats to public health, the problem is more severe in developing countries like Ethiopia where the burden of infectious diseases is relatively grater and healthcare spending is low. Drug resistance can be a natural phenomenon. Its proliferation, however, is attributed to multifaceted factor such as overuse and misuse of antibiotics. Nonprescription sale of antibiotic is one of the major reasons to increase antibiotic consumption which facilitates emergence of drug resistance.

Keywords: antimicrobial resistance, effectiveness of antibiotic consumption, drug resistance, proliferation, infection, therapeutic effectiveness.

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INTRODUCTION

Antibiotics use is the most important factor responsible for antibiotic resistance. over use or misuse of antibiotics can increase selective pressure, which is an important determinant of the emergence and dissemination of resistance or organisms[1].

Therefore, the measurement of antibiotic consumption is important to enhance under standings of the epidemiology of antimicrobial resistance and to implement appropriate policies[2].

In 2012, world health organization (WHO) established a worldwide en comparing the 5 most important fields for the containment of antibiotic resistance surveillance, rational use in humans, rational use in animals, infection prevention control, and innovation[3].

The current world wide increase in antimicrobial resistance (AMR) and, simultaneously, the downward trend in the development of new antibiotics have serious public health and economic implications. The increased resistance is a result of many factors, but the foremost cause is the overall volume of antibiotic consumption. About 80% antibiotics are used in the community and the rest are used in hospitals[4-5].

Reasons for over the counter sale of antibiotics[6]:

- Customers demand
- The behavior of prescriber
- Owners expectation
- Professionals can built of interest
- Weak regulatory mechanism

Epidemiology:

The present review study reveals that usage of antibiotics and their resistance in various countries

A: self medicated antibiotics in Bangladesh: [7]

A cross-sectional survey was conducted to the patient's (n = 1300) at eight locations of Rajshahi city in Bangladesh from March to April, 2014.

It was found that 347 (26.69%) out of 1300 participants experienced self medication with antibiotics. Over fifty percent of the patients studied were between the ages of 21–30 years with 83.57% of them being males and 16.43% females. The highest percentage of self medicated antibiotics was metronidazole (50.43%) followed by azithromycin (20.75%), ciprofloxacin (11.53%), amoxicillin (10.37%) and tetracycline (7.49%) respectively. The key reasons for the self medication of antibiotics was the pre-experience (45.82%) , suggestions from others

(28.24%) and knowledgeable of the antibiotics (16.14%). The perceived symptoms to purchase the antibiotics independently was dysentery, diarrhea and food poisoning (36.02%), cold, cough and fever (28.24%), infection (12.97%), dental carries and toothache (9.22%), irritable bowel syndrome (3.46%), acne (4.32%), ear and throat pain (2.31%). The duration of maximum antibiotics usage was ranges between 0–10 years. Only 4.32% patient's used self medicated antibiotics longer than 10 years. The patient's compliance for self medication of antibiotics varies from excellent to no comments whereas only 6.92% patients reported side effects for the self medication of antibiotics.

B: **Non prescribed sale of antibiotics in Riyadh, Saudi Arabia: A cross sectional study:**[8]

A cross sectional study of a quasi-random sample of pharmacies stratified by the five regions of Riyadh. Each pharmacy was visited once by two investigators who simulated having a relative with a specific clinical illness (sore throat, acute bronchitis, otitis media, acute sinusitis, diarrhea, and urinary tract infection (UTI) in childbearing aged women).

A total of 327 pharmacies were visited. Antibiotics were dispensed without a medical prescription in 244 (77.6%) of 327, of which 231 (95%) were dispensed without a patient request. Simulated cases of sore throat and diarrhea resulted in an antibiotic being dispensed in (90%) of encounters, followed by UTI (75%), acute bronchitis (73%), otitis media (51%) and acute sinusitis (40%). Metronidazole (89%) and ciprofloxacin (86%) were commonly given for diarrhea and UTI, respectively, whereas amoxicillin/clavulanate was dispensed (51%) for the other simulated cases. None of the pharmacists asked about antibiotic allergy history or provided information about drug interactions. Only 23% asked about pregnancy status when dispensing antibiotics for UTI-simulated cases.

C: **Trends in antibiotic use among out patients in New Delhi, India:**[9]

This study surveyed antibiotic use in the community (December 2007-November 2008) using the established methodology of patient exit interviews at three types of facilities: 20 private retail pharmacies, 10 public sector facilities, and 20 private clinics to obtain a complete picture of community antibiotic use over a year. The Anatomical Therapeutic Chemical (ATC) classification and the Defined Daily Dose (DDD) measurement units were assigned to the data. Antibiotic use was measured as DDD/1000 patients visiting the facility and also as percent of patients receiving an antibiotic.

During the data collection period, 17995, 9205, and 5922 patients visiting private retail pharmacies, public facilities and private clinics, respectively, were included in our study. 39% of the patients attending private retail pharmacies and public facilities and 43% of patients visiting

private clinics were prescribed at least one antibiotic. Consumption patterns of antibiotics were similar at private retail pharmacies and private clinics where fluoroquinolones, cephalosporin's, and extended spectrum penicillin's were the three most commonly prescribed groups of antibiotics. At public facilities, there was a more even use of all the major antibiotic groups including penicillin's, fluoroquinolones, macrolides, cephalosporin's, tetracycline's, and cotrimoxazole. Newer members from each class of antibiotics were prescribed. Not much seasonal variation was seen although slightly higher consumption of some antibiotics in winter and slightly higher consumption of fluoroquinolones during the rainy season were observed.

D: Exploration of over the counter sales of antibiotics in community pharmacies of Addis Ababa, Ethiopia: pharmacy professionals' perspective.[6]

A phenomenological qualitative study was conducted in five randomly selected community pharmacies of Addis Ababa. One pharmacy professional from each pharmacy were interviewed at the spot using semi-structured, open-ended interview checklist. Besides, observation of professionals' dispensing practice was made for at least one hour in the same community pharmacies using an observation checklist. Findings were categorized into specific themes that were developed following the objectives. This was facilitated by use of Open Code 3.6 software.

All participants pointed out that antibiotics were frequently dispensed without prescription and contend that the trend of such dispensing has been increasing. The findings indicated that the nonprescription sales of antibiotics were common for Amoxicillin, Ciprofloxacin and Cotrimoxazole. The poor, less educated and younger groups of the population were reported to frequently request antibiotics without prescription. The main reasons for nonprescription sale of antibiotics by pharmacy professionals were found to be related to pharmacy owner's influence to maximize revenue, customer's pressure, weak regulatory mechanism and professional conflicts of interest.

CONCLUSION:

Antibiotic use is the key driver of antimicrobial resistance. Antibiotics are overused, particularly for minor infections misused for self-limiting viral infections and underused due to financial concerns. There is a need for strict enforcement and adherence to existing regulations regarding antibiotic sale. Educating the public about the worldwide existing problems of antibiotic resistance, drug adverse effects and unnecessary cost associated with antibiotic sales without medical prescription is urgently needed.

REFERENCES:

1. Angebault c, Andremont A. Antimicrobial agent exposure and the emergence and spread of resistant microorganisms: issue associated with study design. Eru j clinmicrobiol infect Dis.2013:32:581-595.
2. Gravatt LA, Pakyz AL. Challenges in measuring antibiotic consumption. Curr Infect Dis Rep. 2013;15:559–563.
3. World Health Organization (WHO): What encourages counterfeiting of drugs? [http://www.who.int/medicines/services/counterfeit/faqs/15/en/ index.html].
4. Wise R, Hart T, Cars O, et al: Antimicrobial resistance. Is a major threat to public health. BMJ 1998, 317:609-610.
5. Cars O, Mosltad S, Melander A: Variation in antibiotic use in the European Union. Lancet 2001, 357:1851-1853.
6. Gebretekle and Serbessa Antimicrobial resistance and infection control (2016) 5:2.
7. Biswas *et al.* Access to antibiotics in New Delhi, India: implications for antibiotic policy BMC public health 2014, 14:847. http://www.biomedcentral.com/1471-2458/14/847.
8. Bin Abdulhak *et al*. Non prescribed sale of antibiotics in Riyadh, Saudi Arabia: A Cross Sectional Study BMC public health 2011, 11:538. http://www.biomedcentral.com/1471-2458/11/538.
9. Kotwani and Holloway Access to antibiotics in New Delhi, India: implications for antibiotic policy Journal of Pharmaceutical Policy and Practice 2013,6:6.