The Frequent Use of Antibiotics and their Impact on Human Health

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Abstract

The current study aims the impact of frequent use of antibiotics on human health. What are the reasons for frequent use of antibiotics in humans? Are antibiotics used according to the directions of the treating physician? A questionnaire was prepared via Google Drive and distributed to the population aged 25-55 years, men and women in city of mecca and Jeddah. As for the questionnaire, it was distributed via the social networking program (WhatsApp). 400 questionnaires were distributed, 385 responses were obtained via email to the principal researcher. Finally, it concluded that people have an awareness and culture that excessive or repeated use of antibiotics poses a great and real danger to their health and their lives according to the opinions of participants in a questionnaire.

Keywords: The frequent, use, of antibiotics, and their impact, on human health.

The frequent, use of antibiotics, and their impact, on human health. An antibiotic (1)(2)(3)(4) is a substance or compound that kills or inhibits the growth of bacteria (5). Antibiotics belong to a broader group of antimicrobial compounds, and are used to treat infections caused by microorganisms, including These include bacteria, fungi and parasites (6)(7)(8). With the advancement of medicinal chemistry, antibiotics have become semi-synthetic or chemically modified from original compounds found in nature (9). Such as beta-lactam antibiotics (which include penicillin, produced by fungi of the genus Penicillium, cephalosporins, and carbapenems). Some antibiotics are still isolated from other organisms, such as aminoglycosides, and others have been created through purely synthetic means, such as sulfonamides and fluoroquinolones. Thus, antibiotics are classified

according to their origin into natural, synthetic, and synthetic antibiotics. In addition to this classification, antibiotics can be classified into two broad groups according to their effect on microorganisms. They are classified into antibiotics that kill bacteria (bactericidal) and antibiotics that inhibit bacterial growth (bacteriostatic). The World Health Organization has classified antibiotic resistance as a global threat that has the potential to affect anyone, at any age, and in any country. (10) The number of global deaths attributed to bacterial resistance to antibiotics reached approximately 1.27 million in 2019 (11). Antibiotics are used to treat or prevent bacterial infections (12). When a bacterial infection is suspected but the responsible pathogen has not been identified, a broad-spectrum antibiotic is prescribed based on signs and symptoms while laboratory results are produced, which may take several days (13). In serious cases, especially systemic infections, antibiotics can be given intravenously (13) as it is easier to reach the site of infection faster. Antibiotics can be given topically as eye drops on the conjunctiva in cases of conjunctivitis or ear drops for ear infections. Topical use is also a treatment option for some skin conditions including acne and cellulitis (14). Advantages of topical use include achieving a sustained high concentration of antibiotics at the site of infection. Reducing the potential for systemic absorption and toxicity, reducing the total volumes of antibiotics required, thus reducing the risk of antibiotic misuse (15). The first rule of antibiotics is to try not to use them and the second rule is to try not to use too many of them (16). Inappropriate antibiotic treatment and overuse are factors that contribute to the emergence of bacterial resistance. The problem is exacerbated by individuals taking antibiotics themselves without a doctor's guidance, and the non-therapeutic use of antibiotics to accelerate the growth process in the agricultural sector (17). Many concerned organizations are campaigning to improve the regulatory climate with antimicrobial resistance (17). An approach to addressing the issues of misuse and overuse of antibiotics is by establishing the US Interagency Task Force on Antimicrobial Resistance which aims to actively address the problem of antimicrobial resistance, and is organized and coordinated by the US Centers for Disease Control and Prevention, Food and Drug Administration (FDA). The agency, the National Institutes of Health), also includes several federal agencies (18). The overuse of antibiotics such as penicillin and erythromycin, which used to be one of the miracle cures, has been linked to emerging resistance since the 1950s (19)(20). The therapeutic use of antibiotics in hospitals may be seen as being associated with increased bacterial resistance to multiple antibiotics (20). Common types of antibiotic misuse include failure to consider a patient's weight and prior history of antibiotic use, both of which can severely affect the effectiveness of antibiotic prescribing, not taking the prescribed antibiotic completely, and failing to adjust correct daily use (e.g. 8 hours" instead of three daily), or no rest to recover. These practices may facilitate the growth of bacteria with antibiotic resistance. Inappropriate treatment with common antibiotics is another form of antibiotic misuse. Overuse of prophylactic antibiotics in travelers may also be classified as misuse.

Material and Methods:

The study began in (the city of Mecca and Jeddah in the Kingdom of Saudi Arabia), and the study ended with writing the data collection in August 2024. The researcher used descriptive analysis, an approach that uses quantitative or qualitative description of the social phenomenon (The frequent use of antibiotics and their impact on human health) and the variable. The independent variable (The impact of the use of antibiotics on human health globally) and the dependent variable (Partially the impact of the use of antibiotics on human health). This type of study is characterized by analysis, reason, objectivity, and reality. It is also concerned with

individuals and societies, as it studies the variables and their impact on the health of the individual, society, and the consumer, and the spread of diseases and their relationship. For demographic variables such as age, gender, nationality, and marital status. Status and occupation (21), and use the Excel 2010 Office suite pie chart to sort the results (22). The questionnaire is a wonderful and useful tool for collecting a huge amount of data, but the researchers were not able to conduct personal interviews with the participants in the online survey, due to social distancing rules at the time to prevent infection between participants and researchers, and the questionnaire was only answered electronically, the questionnaire consists of thirteen questions, all of which are closed-ended.

Results and discussion:

The percentage of approval to participate in the questionnaire was 100%, as the percentage of participants' ages was as follows: from the ages of 25-34 years it was 35%, from the ages of 35-44 years it was 40%, and finally from the ages of 45-55 years it was 25%. The gender ratio of the participants was 28% male and 72% female. The nationality of the participants, Saudi men and women, was 95%, while for non-Saudi men and women it was 5%. As for their professions, they were as follows: student 0%, government employee 75%, private sector employee 15%, self-employed 10%, worker (does not work) 0%. As for the questions related to the scientific paper, their responses were as follows: The first question: Do you think that the frequent use of antibiotics poses a threat to human life? Yes, 84.2%, No, 9.2%, and I don't know, 6.6%. The second question: Do you think that the effects of the frequent use of antibiotics lead to higher costs of treatment and examinations? Yes 69.3%, No 14.7%, and I don't know 16%. Question Three: Is there a legal violation when antibiotics are dispensed without a prescription at a medical facility (pharmacy)? Yes, 77.6%, No, 10.5%, and I don't know, 11.8%. Question Four: Does the Ministry of Health conduct awareness-raising or awareness-raising activities about the frequent use of antibiotics? Yes 60% I don't know 40%. Question five: Does excessive use of antibiotics lead to an increase in the number of drug-resistant microbes and thus their ineffectiveness? Yes 81.3% and no 2.7% I don't know 16%.

Question Six: Do you take antibiotics as necessary? Yes 51.3%, No 43.4%, and I don't know 5.3%. Question Seven: Do you take the antibiotics you have based on the advice of your physician? Yes 92.1% and No 6.9% I don't know 1%. Question eight: Do you take antibiotics for viral diseases? Yes 44% and No 46.7% I don't know 9.3%. Question 9: Do you stop taking antibiotics completely as soon as you feel better? Yes 48.7% and No 50% I don't know 1.3%. Question 10: Do you consult your physician on how to treat the symptoms of the disease? Yes 86.8% and No 11.8% I don't know 1.4%. Question Eleven: Do you continue taking the antibiotic when the previous illness is over and any subsequent illness is over? Yes 7.9% and No 89.5% I don't know 2.6%. Does vaccination affect your health (immunity) when you take any antibiotics? Yes 45.3% and No 14.7% I don't know 40%. Last question: Are you taking antibiotics that were prescribed for someone else? Yes 13.3% and No 84% I don't know 2.7%.

Table.1: The frequent use of antibiotics and their impact on human health according to the opinions of participants in a questionnaire

The frequent use of antibiotics and their impact on human health	Yes	No	I don't know
Does excessive use of antibiotics lead to an increase in the number of drug-resistant microbes and thus their ineffectiveness?	81.3%	2.7%	16%
Does the Ministry of Health conduct awareness-raising or awareness-raising activities about the frequent use of antibiotics?	60%	0%	40%
Do you think that the effects of the frequent use of antibiotics lead to higher costs	69.3%	14.7%	16%

of treatment and examinations?			
Do you think that the frequent use of antibiotics poses a threat to human life?	84.2%	9.2%	6.6%

Conclusion:

This study shows people's opinions and attitudes and their responses to the following questions: does excessive use of antibiotics lead to an increase in the number of drug-resistant microbes and thus their ineffectiveness? Yes81.3%. Does the Ministry of Health conduct awareness-raising or awareness-raising activities about the frequent use of antibiotics? Yes60%. Do you think that the effects of the frequent use of antibiotics lead to higher costs of treatment and examinations? Yes 69.3%. Do you think that the frequent use of antibiotics poses a threat to human life? Yes 84.2%. it concluded that People have an awareness and culture that excessive or repeated use of antibiotics poses a great and real danger to their health and their lives.

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