KNOWLEDGE OF MEDICAL STUDENTS ABOUT ANTIBIOTICS RESISTANCE

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ABSTRACT:
Antimicrobial resistance (AMR or AR) occurs when microbes evolve mechanisms that protect them from the effects of antimicrobials. The term antibiotic resistance (AR or ABR) is a subset of AMR, as it applies to bacteria that become resistant to antibiotics. Resistant microbes are more difficult to treat, requiring higher doses, or alternative medications which may prove more toxic. This cross-sectional study was conducted among medical students at different medical colleges. All the students were given a predefined questionnaire. There were 100 medical students included in this study. The mean age of the students was 21.43±1.23 years. There were 50 (50%) males and 50 (50%) females in this study. All the students belonged to fourth and final year. Out of 100 medical students 83 knew about the antimicrobial / antibiotics resistance. According to them it occurs because of excessive and inappropriate use of antibiotics or antimicrobials. Most of them also had knowledge about culture and sensitivity and that it can be used for treating resistant cases.

KEYWORDS: ANTIBIOTICS RESISTANCE
INTRODUCTION:
Antimicrobial resistance (AMR or AR) occurs when microbes evolve mechanisms that protect them from the effects of antimicrobials. The term antibiotic resistance (AR or ABR) is a subset of AMR, as it applies to bacteria that become resistant to antibiotics. Resistant microbes are more difficult to treat, requiring higher doses, or alternative medications which may prove more toxic. These approaches may also be more expensive. Microbes resistant to multiple antimicrobials are called multidrug resistant (MDR). All classes of microbes can evolve resistance. Fungi evolve antifungal resistance. Viruses evolve antiviral resistance. Protozoa evolve antiprotozoal resistance, and bacteria evolve antibiotic resistance. Those bacteria that are considered extensively drug resistant (XDR) or totally drug-resistant (TDR) are sometimes called "superbugs". Resistance in bacteria can arise naturally, by genetic mutation, or by one species acquiring resistance from another. Resistance can appear spontaneously because of random mutations. However, extended use of antimicrobials appears to encourage selection for mutations which can render antimicrobials ineffective.

The prevention of antibiotic misuse which can lead to antibiotic resistance, includes prescribing or using antibiotics only when they are needed. Narrow-spectrum antibiotics are preferred over broad-spectrum antibiotics when possible, as effectively and accurately targeting specific organisms is less likely to cause resistance, as well as side effects. For people who take these medications at home, education about proper use is essential. Health care providers can minimize spread of resistant infections by use of proper sanitation and hygiene, including handwashing and disinfecting between patients, and should encourage the same of the patient, visitors, and family members.
Rising drug resistance is caused mainly by use of antimicrobials in humans and other animals, and spread of resistant strains between the two. Growing resistance has also been linked to dumping of inadequately treated effluents from the pharmaceutical industry, especially in countries where bulk drugs are manufactured. Antibiotics increase selective pressure in bacterial populations, causing vulnerable bacteria to die; this increases the percentage of resistant bacteria which continue growing. Even at very low levels of antibiotic, resistant bacteria can have a growth advantage and grow faster than vulnerable bacteria. With resistance to antibiotics becoming more common there is greater need for alternative treatments. Calls for new antibiotic therapies have been issued, but new drug development is becoming rarer.

There are public calls for global collective action to address the threat that include proposals for international treaties on antimicrobial resistance. Worldwide antibiotic resistance is not completely identified, but poorer countries with weaker healthcare systems are more affected (1-3). The objective of this study is to see the knowledge of medical students about antibiotics resistance.

MATERIAL OF METHODS:
This cross-sectional study was conducted among medical students at different medical colleges. All the students were given a predefined questionnaire. All the data was entered and analyzed with SPSS Ver. 23.0. The quantitative variables were presented as mean and standard deviation. The qualitative variables were presented as frequency and percentages.

RESULTS:
There were 100 medical students included in this study. The mean age of the students was 21.43±1.23 years. There were 50 (50%) males and 50 (50%) females in this study.
All the students belonged to fourth and final year. Out of 100 medical students, 83 knew about the antimicrobial / antibiotics resistance. According to them, it occurs because of excessive and inappropriate use of antibiotics or antimicrobials. Most of them also had knowledge about culture and sensitivity and that it can be used for treating resistant cases.

**DISCUSSION:**
Antimicrobial resistance can evolve naturally due to continued exposure to antimicrobials. Natural selection means that organisms that are able to adapt to their environment survive and continue to produce offspring. As a result, the types of microorganisms that are able to survive over time with continued attack by certain antimicrobial agents will naturally become more prevalent in the environment, and those without this resistance will become obsolete. Over time most of the strains of bacteria and infections present will be the type resistant to the antimicrobial agent being used to treat them, making this agent now ineffective to defeat most microbes. With the increased use of antimicrobial agents, there is a speeding up of this natural process. Clinical misuse by healthcare professionals is another cause leading to increased antimicrobial resistance. Studies done by the CDC show that the indication for treatment of antibiotics, choice of the agent used, and the duration of therapy was incorrect in up to 50% of the cases studied. In another study done in an intensive care unit in a major hospital in France, it was shown that 30% to 60% of prescribed antibiotics were unnecessary. These inappropriate uses of antimicrobial agents promote the evolution of antimicrobial resistance by supporting the bacteria in developing genetic alterations that lead to resistance. In a study done by the American Journal of Infection Control aimed to evaluate physicians’
attitudes and knowledge on antimicrobial resistance in ambulatory settings, only 63% of those surveyed reported antibiotic resistance as a problem in their local practices, while 23% reported the aggressive prescription of antibiotics as necessary to avoid failing to provide adequate care. This demonstrates how a majority of doctors underestimate the impact that their own prescribing habits have on antimicrobial resistance as a whole. It also confirms that some physicians may be overly cautious when it comes to prescribing antibiotics for both medical or legal reasons, even when indication for use for these medications is not always confirmed. This can lead to unnecessary antimicrobial use (4-6).

REFERENCES: