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General Awareness Study About the Knowledge, Causes and Seriousness of Anti-Microbial Resistance

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Abstract

Background: Antimicrobial resistance (AMR)- as it is called when changes in bacteria cause drugs used to treat infections to become ineffective/less effective- has emerged as one of the major public health warnings. Each time antimicrobials drugs are used; they are going to become less effective for all users because their use increases the possibility that bacteria will become resistant. Material and Methods: A self-prepared 17 manual questionnaire was developed and used to collect responses manually by interacting with people regarding knowledge about AMR. The individual gave the answers to all the questions in 'Yes and No' format and then analyzed and interpret. Results: It was found that people had less knowledge regarding the AMR though they were educated, even some of them were belongs to the pharmacy profession. In this study, it was found that mostly of them have very least knowledge about the AMR, cause of AMR and seriousness of AMR etc. Conclusion: Healthcare administrators should take an integrated approach by main concern the cause of AMR awareness and asserting that individual responsibility could be a possible mechanism to bring about changes in AMR awareness. An increase in public education through a national television, radio and social campaign can be expected to solve the problems. This should focus on educating the public through more comprehensive public education campaigns regarding AMR, its origins, and effects.

Keywords: Antimicrobial drugs, Antimicrobial resistance, Antibiotic, Drug resistance.

INTRODUCTION

Antimicrobial resistance (AMR)- as it is called when changes in bacteria cause drugs used to treat infections to become ineffective/less effective- has emerged as one of the major public health warnings. Each time antimicrobials drugs are used, they become less effective for all users because their use increases the possibility that bacteria will become resistant.

Antimicrobial or antibiotic resistance is one of the major public health problems, especially in developing countries, where the relatively easy availability and higher consumption of drugs has led to a disproportionately higher incidence of inappropriate antibiotic use and higher levels of resistance compared to developed countries [1]. When bacteria adapt and learn to withstand the effects of antimicrobial medications, AMR occurs. Pathogens with resistance persist, proliferate, and disseminate. Pathogens are under increased pressure to become resistant to antimicrobials the more of them are utilized. AMR results from this process of adaptation [2, 3].

What is the current situation?

Drug resistance in bacteria

The global increase in antibiotic resistance poses a significant threat, reducing the effectiveness of common antibiotics against widespread bacterial infections. The 2022 Global Antimicrobial Resistance and Use Surveillance System (GLASS) report highlights the alarming rate of resistance among prevalent bacterial pathogens. The median reported rates in 76 countries of 42% for third-generation cephalosporin-resistant *E. coli* and 35% for Methicillin-resistant Staphylococcus aureus represent a major concern. For urinary tract infections caused by *E. coli*, 1 in 5 cases in 2020 showed reduced sensitivity to standard antibiotics such as ampicillin, co-trimoxazole and fluoroquinolones. This makes it difficult to effectively treat common infections. Klebsiella pneumoniae, a common gut bacterium, has also shown increased levels of

resistance to critical antibiotics. Organization for Economic Co-operation and Development (OECD) projections indicate an expected two-fold increase in resistance to last-resort antibiotics by 2035 compared to 2005 levels, underscoring the urgent need for robust antimicrobial stewardship practices and expanded surveillance coverage worldwide. Tuberculosis (TB) is a major contributor to antimicrobial resistance. Multidrug-resistant tuberculosis (MDR-TB) is a form of TB caused by bacteria that do not respond to Isoniazid and Rifampicin, the two most effective first-line TB drugs. MDR-TB is treatable and curable with second-line drugs, but these drugs are expensive and toxic, and in some cases more extensive drug resistance can develop. TB caused by bacteria that do not respond to the most effective second-line TB drugs can leave patients with very limited treatment options. MDR-TB is therefore a public health crisis and a threat to health security. Only about 2 in 5 people with drug-resistant tuberculosis will have received treatment in 2022 [4].

Throughout the world, bacterial infections are a leading cause of illness and mortality. In addition to improvements in clean water, nutrition, hygiene, and the availability of vaccinations, antibiotics have been shown to be highly effective in improving health outcomes. Over the same period, the world's under-5 mortality rate has decreased from 216 deaths per 1,000 live births in 1950 to 39 deaths per 1,000 live births in 2017, and the average male life expectancy has increased from 48 to 71 years [5,6]. Antimicrobial resistance (AMR) has the potential to affect people at any stage of life, as well as healthcare and veterinary medicine. This makes it one of the world's most pressing public health problems. We can also use some alternative to address antimicrobial resistance. AMR is a critical problem because antibiotics are the foundation of modern medicine and most human and animal health treatments depend on the effect of antibiotics. Antimicrobial resistance is mainly caused by inappropriate use. Global human consumption of antibiotics increased by 36% between 2000 and 2010 [7]. The collective term for all creatures too tiny for the human sight is the "microbial world," which is rich, varied, and ubiquitous. It includes a vast variety of multicellular creatures of various kinds in addition to bacteria and viruses [8,9].

We thus set out to undertake a small-scale study to evaluate the educated public's present knowledge and opinions on antimicrobials as a first step towards increasing awareness of AMR and reducing the possibility that situations might deteriorate in the future.

MATERIAL AND METHOD

A self-prepared manual questionnaire was developed and used to collect responses manually by interacting with them. Only those who agreed for the informed consent with the policy were allowed to answer the questionnaire.

Theoretical Reference Framework

We have examined AMR in educated individuals. The study's goal is to determine the number of people and pupils who are aware of AMR. Thus, using this, we want to ascertain the students' level of understanding on AMR, regardless of whether they are studying it or not.

Place of study

The recent study involved, the educated person whether they belong to Pharmacy and Non-pharmacy students or faculty staff from a teaching institution located in the Jahangirabad Institute of technology Jahangirabad, Barabanki Lucknow.

Study Population

The respondent populations were of 200 who belong to the Pharmacy and Non-pharmacy department in 2024.

Data Collection

The data were collected through a self-administered questionnaire that consisted of 15th questions, regarding knowledge about AMR. The individual gave the answers to all the questions. The 15 questions are as follows:

1. Do you know about antibiotic?
2. Do you have knowledge of AMR?
3. Which antibiotic you have taken?
4. Which category of antibiotic you have taken?
5. For which disease you have taken that antibiotic?
6. Which route of administration you have taken antibiotic?
7. Storage and usage of remaining antibiotic (remaining antibiotic)?
8. Have you complete the course of antibiotic as prescribed by physician?
9. Have you ever use antibiotic in common cold or flu?
10. Do you know about animals which we are eating may be part of AMR?
11. Do antibiotic kill virus?
12. Does unnecessary use of antibiotic (AB) make them ineffective?
13. Do you know about ADR of antibiotic?
14. Which antibiotic you have taken when whether in fasting… before meal or after meal.
15. DO you know about “superbugs“?

Data Analysis

For appropriate analysis, the questions posed in the questionnaire were divided into groups of responses, containing two possible alternatives (Yes or No). The results are reported as the sum of the number of correct answers; incorrect answers for the domains studied were calculated. The data collected was percentage wise analyzed.

RESULTS

In this study total number of 200 participant were involved among them 158 male and 42 female were there and they were belonging to different age group but most of the participants lie in the 10-20 and 20-30 age group as shown in table 1.

Table 1: Pattern of participants involved in the study

S. No.	Age	No. of person	Male	Female
1	10-20	80	54	24
2	20-30	86	70	18
3	30-40	12	12	0
4	40-50	18	18	
5	50-60	4	4	0
	Total	200	158	42

As this study was conducted in JIT Jahangirabad, we selected participants based on their disciplines/education mainly pharmacy students/teachers (M/F= 110/18) and nonpharmacy participants (M/F=48/24) were divided as shown in table 2.

The recent study revealed, 90 percent person known about the antibiotic (AB) only 6% did not know what is AB, 70% people did not know about the AMR as shown in table 3.

Table 2: Pharmacy and nonpharmacy participants involving in the study

S. No.	Pharma Male/Female	Non-Pharma Male/Female
Total	110/18	48/24

Table 3: Related to the knowledge of antibiotic/antimicrobial resistance?

S. No.	Antibiotic		AMR	
	Yes (%)	No (%)	Yes (%)	No (%)
1	90	6	30	70

In this study, 28% people have taken cephalosporin, 25% azithromycin and 30% amoxiciline for the treatment of Fever, cold, throat infection, injury, cough, typhoid and otitis etc. Only 17 % people have taken the AB, but they did not know why they have taken AB as shown in table 4.

Table 4: Antibiotic taken by people for the diseases

S. No.	Name of Antibiotic	People (%)	Name of Disease
1	Azithromycin	25	Fever, cough, cold, throat infection, chest infection
2	Cefexime	28	Fever, cold, injury, throat pain, body pain typhoid, otitis
3	Amoxycillin	30	Fever, injury, infection, cold, cough
4	Not Known	17	Not known

In the recent study 79% of people have taken AB by oral route and 21% by parental.

Table 5: Related to the route by which antibiotic has taken

S. No.	Route of Administration	
	Oral	Parenteral
1	79	21

In this study, it was observed that most of the people left the remaining AB at room temperature (42%), some of them thrown away, some put in fridge and some of them forgotten what they did with that AB as shown in table 6.

Table 6: Related to the knowledge of storage of remaining antibiotic

S. No.	Thrown Away (%)	Kept at Room Temperature (%)	Refrigerator (%)	Not Known (%)
1	22	42	20	27

This study reflected that 40% of the people amongst the 200, completed the course prescribed by the doctors, most of the people have been used the AB in Common Cold/ flu (73%), very less nor (37%) of them does not know that AB will not kill the Virus.

Table 7: Related to the knowledge of course completion, use of antibiotic (AB) in common cold or flu and antibiotic kill virus

S. No	AB Course Completion (%)		Antibiotic in Common Cold or Flu (%)		Antibiotic Kills Virus (%)	
	Yes	No	Yes	No	Yes	No
1.	**40**	**60**	**73**	**27**	**63**	**37**

The recent study showed that people did not know the ADR of AB and most of them (79%) also did not know the animals may also be a part of AMR.

Table 8: Related to the knowledge of ADR of AB and AMR is a part of animals

S. No.	Knowledge of ADR (%)		Knowledge of AMR is a part animal (%)	
	Yes	No	Yes	No
1	15	75	21	79

Recent study showed that more people are not aware of the timing of taking the AB because some of them taken before breakfast some have taken before meal and also some have taken after meal as shown in table 9.

Table 9: Related to the knowledge of time taking antibiotic

S. No.	Fasting (%)	Before Meal (%)	With Meal (%)	After Meal (%)	Don't know when to take (%)
1	5	17	10	20	38

This study reflected that most of the people (89%) did not aware about the superbug.

Table 10: Related to the knowledge of "SUPERBUG"

S. No.	Knowledge of "SUPERBUG' (%)	
	Yes	No
1	11	89

DISCUSSION

In this study total number of 200 participant were involved among them 158 male and 42 female were there and they belong to the different age group but most of the participants lie in the 10-20 followed by 20-30 age group.

We selected participants based on their disciplines/education mainly pharmacy students/teachers (M/F= 110/18) and non-pharmacy participants (M/F=48/24) from JIT Jahangirabad campus.

The results showed that people's awareness of AMR was lower. The underlying causes of low levels of awareness of antimicrobial resistance (AMR) may include socioeconomic conditions, a lack of public education campaigns, a lack of knowledge of the risk factors and repercussions of AMR, and a lack of engagement from the larger health workforce [10, 11]. Healthcare administrators should take an integrated approach by main concern the cause of AMR awareness and asserting that individual responsibility could be a possible mechanism to bring about changes in AMR awareness. An increase in public education through a national television, radio and social campaign can be expected to solve the problems. This should target the people to educate them about AMR, its origins and effects through more comprehensive public education initiatives [12].

In this study, 28% people used cephalosporin, 25% azithromycin and 30% amoxicillin to treat fever, cold, throat infection, injury, cough, typhoid and otitis, etc., as shown in Table 4. These three Antibiotics (ABs) are more commonly used in number of infectious diseases such as sore throat/pharyngitis, toxoplasmosis, typhoid fever, upper respiratory tract infection, etc. These ABs would be appropriate if a bacterial infection is confirmed.

In a recent study, 79% of people used AB orally, 21% by parentrally. The route of drug administration is often classified by the site where the drug is administered, such as oral or intravenous. The choice of routes by which drugs are administered depends not only on convenience, but also on drug properties and pharmacokinetics. Therefore, it is essential to understand the characteristics of the various routs and the techniques involved. Many members of the inter-professional healthcare team are

involved in administering medications to patients. Each route of drug administration has unique contraindications and must be recognized by members of the healthcare team. This activity describes medication administration pathways and explains the role of the inter-professional team in improving the care of patients undergoing medication administration [13]. In general, oral therapy is used if it is well tolerated and provides an adequate therapeutic effect, with the parenteral route usually reserved for patients who have difficulty taking oral medications. Antibiotics can be given orally, intravenously, or by intramuscular injection. Intravenous administration provides the fastest route to achieve therapeutic plasma levels and has an onset of action in 15 to 30 seconds. Oral antibiotics prevent the adverse effects of intravenous administration. They are also usually cheaper. If intravenous antibiotics are indicated, it is possible to change to oral treatment after a short course. There are guidelines to help the doctor with the timing of the change so that there is no loss of effectiveness. In this study, most of the people did well by taking AB orally [14].

In the recent work, it was observed that most of the people left the remaining AB at room temperature (42%), some of them threw it away, some put it in the refrigerator, and some forgot what they did with the AB. In pharmacy, it should be orally marketed antibiotics stored at ambient temperature below 25°C and relative humidity below 60%, unless otherwise specified [15]. At higher temperatures, the ingredients can decompose and the medicine can become ineffective or even toxic and even microbiologically contaminated [16]. Inadequate storage conditions of medicines would therefore probably contribute to a decrease in the effectiveness of antibiotics on bacterial strains [17].

This study showed that storage of antibiotics for future use is quite common among households (HH) living. Households identified antibiotics among stored medications based on packaging and several common brands, but were unable to explain why the remaining antibiotics should be kept for future use as antibiotic storage was observed. Most HHs did not know about AMR and did not explain how antibiotics cause resistance. In addition, AMR results from the irrational use of antibiotics and antimicrobial/antibiotic control measures. More research studies are needed to raise awareness of the problem of AMR and to teach HHs to use antibiotics correctly when needed[18]. It was experienced that if doctors prescribed AB to one patient in the family, if someone them often fallen sick, used to give one or two doses of AB to him, would be the leading cause of AMR as two doses ABs were cut from the course prescribed by the Doctors and that person who took two dose without prescribed by the doctors both the type of people are involving in spreading of AMR.

Further, it was shown that 40% of people out of 200 completed the course prescribed by their doctor; most people used AB for common cold/flu (73%), and very less (37%) did not know that AB does not kill the virus. Discontinuing antibiotics if you feel better before completing the regimen may not mean that infection is gone. If the treatment is not completely eradicated, the treated bacteria can become resistant to the antibiotic used. The same is true for missing doses of medication if the bacteria are exposed to a less consistent dose of medication, this will often reduce the effectiveness of the medication as well. If you experience any side effects from the medication that make it difficult to complete the regimen, talk to your doctor about your options instead of simply stopping the medication. Since 60% of people in the study did not take a course of AB, they are going to become resistant [19]. Most of the people took AB for the common cold/flu (73%).

The CDC (Center for Disease Control) estimates that about 47 million courses of antibiotics are prescribed each year in doctors' offices and emergency departments in the US for infections that do not require antibiotics, such as colds and flu. This is about 28% of all antibiotics prescribed for these conditions. Everyone has a role to play in improving antibiotic use. Appropriate use of antibiotics helps combat antimicrobial resistance and ensures that these life-saving drugs are available for future generations [20]. Viruses are typically to blame for a common cold, which manifests as a cough, stuffy nose, and perhaps a little fever. Within two weeks, they usually go away on their own and frequently begin to get better in a matter of days.

Antibiotics are often useless against colds because they only combat bacteria, not viruses. Nonetheless, a bacterial infection can occasionally result from a cold. If antibiotics could stop that type of illness, then that would be a good thing. However, since medicines sometimes have adverse effects and colds nearly typically clear up on their own without any major side effects.

Researchers from the Cochrane Collaboration, an international study network, have demonstrated that antibiotics are ineffective in treating common colds that are uncomplicated in order to provide a better understanding of the benefits and drawbacks of treating ordinary colds with antibiotics. The duration of the individuals' colds was identical whether or not they took antibiotics. However, adverse effects with antibiotics affect around 1 in 10 patients; they include nausea, diarrhea, and other stomach or intestinal issues. Women who use antibiotics may also have skin rashes and vaginal thrush as adverse effects. The researchers came to the conclusion that there is no justification for the usual practice of treating common colds with antibiotics. Antibiotics ought to be contemplated as a therapeutic measure just in cases where a bacterial infection has arisen due to a cold. However, this is quite uncommon. Antibiotic resistance (the inability of germs to respond to antibiotics) is a further reason to employ caution when using them excessively for mild illnesses. More severe infections may no longer respond well to antibiotic therapy [21]. Research indicates that antibiotics are not particularly effective in treating pain. They cure bacterial infections and eliminate the infection's cause rather than relieving discomfort. These are excellent medications. The ADA aims to prevent reactions, but excessive usage will cause them. According to a different research, 10 million people might die by 2050 if antibiotic resistance is not addressed. Long-term health will be maintained if we only use antibiotics as directed. [22].

Most infections are caused by a virus. Antibiotics do not help. Viruses cause: 100% cold. (Note: unless it turns into an ear or sinus infection. This happens in 5-10% of colds.)• 95% new cough. (Note: asthma can also start with a cough.)

• 95% of fevers

• 80% of sore throats

• 90% of pneumonia. (Note: most cases in children are caused by a virus.)

• 99% diarrhea and vomiting

• Note: There are several antiviral medications that can treat viral infections.

An example is Tamiflu used in severe flu [23].

According to a recent survey, individuals were not aware of AB's ADR. Due to disruption of intestinal flora, all of the antibiotics under evaluation have the potential to produce gastrointestinal side effects, such as nausea, vomiting, diarrhea, stomach discomfort, lack of appetite, and flatulence. Particularly in diabetic individuals, broad-spectrum antibiotics may potentially lead to a secondary overgrowth of Candida species. Amoxicillin or ampicillin, clindamycin, third-generation cephalosporins (including cefotaxime and ceftazidime), and fluoroquinolones are the main culprits behind Clostridium difficile infections. While certain side effects start when hospitalized patients are given antibiotics, approximately 50% of side effects start when antimicrobials are recommended in a community context, often by doctors other than family doctors for complicated medical issues. Teng et al. determined the relative risk of C difficile infections using the FDA adverse event reporting system. Their findings are in line with earlier estimates, with the exception that quinolones have been shown to increase the likelihood of producing a broad maculopapular rash in individuals with aberrant monocytes (such as many HIV-positive patients, leukemia patients, or infectious mononucleosis patients). On their website, the European Medicines Agency specifically warns about the possibility of moxifloxacin causing deadly hepatitis. [24].

It was observed that most of them (79%) also did not know that animals can also be part of AMR. According to reports, environmental contaminants include drug residues, antibiotic-resistant bacteria, and antibiotic-resistant genes are to blame for the ongoing global public health catastrophe. Antibiotic-resistant bacteria are linked to health issues since most poor nations lack access to excellent treatment due to a lack of therapeutic resources, which highlights infections as a major cause of morbidity and mortality. However, since they are impacted by agriculture, soil and aquatic habitats have come to be recognized as essential reservoirs and sources of antibiotic resistance. Antibiotic resistance is not the only thing that can result from giving antibiotics to animals raised for food; it can also cause antibiotic residues to appear in animal products that are suitable for human consumption, such as milk, eggs, liver, muscle, and fat. However, it has been noted that these antibiotic residues have a significant and detrimental effect on food safety, public health, immunopathological illnesses, drug toxicity, carcinogenicity, allergic responses, and drug sensitization. [25].

A recent study showed that more people are not aware of the timing of taking AB because some of them took it before breakfast, some took it before meal and some also took it after meal as shown in Table 9. It is reported that antibiotics are often recommended to be taken in certain times. Antibiotics taken at the wrong time increase the patient's risk of nausea, diarrhea and vomiting. Taking antibiotics at the wrong time can also increase your chance of developing antibiotic resistance.

Should you take antibiotics before or after a meal? In some cases, taking antibiotics with food can help reduce stomach problems from certain antibiotics, such as amoxicillin and doxycycline. However, this approach will not work for all antibiotics. Some antibiotics, such as tetracycline, should be taken on an empty stomach. Talk to your doctor to make sure you know how to take your medicine and if there are other ways to reduce stomach side effects. See below which category your medicine falls into.

• Antibiotics to be taken before meals: Penicillin, Flucloxacillin.

• Antibiotics to be taken after meals: metronidazole, trimethoprim, doxycycline, nitrofurantoin.

• Antibiotics that can be taken either before or after meals: Amoxicillin, Ciprofloxacin.

It should be noted that although the table above shown which antibiotics should be taken with food, some foods may interfere with the administration of the medication. A key example is grapefruit. Enzymes in the intestines break down many types of drugs (e.g. macrolide antibiotics) and the chemicals in grapefruit block these enzymes and disrupt their function. Because the breaking down enzymes doesn’t work properly, the antibiotics stay in your body longer and the level in your bloodstream can get too high. This increases the likelihood of side effects of the drug. Eating grapefruit or drinking grapefruit juice can affect the metabolism of antibiotics for up to 72 hours [26]. Take a cephalosporin by mouth. Take it as directed on the prescription label at the same time each day. You can take it with or without food. If you have an upset stomach, take it with food [27]. Azithromycin should be taken at least 1 hour before a meal or 2 hours after a meal at the same time every day [28].

Superbugs are strains of bacteria, viruses, parasites, and fungi that are resistant to most antibiotics and other drugs commonly used to treat the infections they cause. A few examples of superbugs include resistant bacteria that can cause pneumonia, urinary tract infections, and skin infections. This study showed that most people (89%) did not know about the superbug. Superbugs are microbial (bacteria, viruses, parasites, and fungi) strains that are resistant to most antibiotics and other drugs commonly used to treat the infections they cause. They represent major obstacles to effective treatment of common diseases and have led to several well-publicized diseases in recent years. According to the CDC, these strains infect more than 2.8 million people in the U.S. each year and kill more than 35,000. And it's not just medical facilities—strains have been found circulating in communities that pose a major health risk Several strains of bacterial superbugs exist and are circulating in the population.

Major strains include [29].: (https://www.news-medical.net/health/What-are-Superbugs.aspx)

• Methicillin-resistant Staphylococcus aureus (MRSA)

• Carbapenem-resistant Enterobacteriaceae (CRE)

• Vancomycin-resistant Enterococcus (VRE)

• Multi-resistant Acinetobacter

• E. coli H30-RX

Use antibiotics correctly to prevent the development of resistant bacteria [30]. For example:

•Use antibiotics only for bacterial infections. Antibiotics will not treat viral infections such as colds, flu and bronchitis.

• Do not take antibiotics unless you need them.

• Do not pressure your doctor to prescribe antibiotics for you or your child.

• Take all antibiotics exactly as prescribed.

• Finish the full dose of antibiotics even if you feel better.

• Do not use expired antibiotics.

• Throw away expired or unused antibiotics.

Here's how it can happen. When used correctly, antibiotics can help kill disease-causing bacteria. But if you take an antibiotic when you have a viral infection, such as the flu, the medicine won't affect the viruses that are making you sick. Instead, it destroys a wide variety of bacteria in your body, including some of the "good" bacteria that help you digest food, fight infection, and stay healthy. Bacteria that are resistant enough to survive the drug will have a chance to grow and multiply quickly. These drug-resistant strains can even spread to other people.

Over time, if more and more people take antibiotics when they don't have to, drug-resistant bacteria can continue to thrive and spread. They may even share their drug-resistant properties with other bacteria. Medicines may be less effective or not work at all against some disease-causing bacteria.

"Bacterial infections that were treatable for decades no longer respond to antibiotics, even newer ones," says Dr. Dennis Dixon, an NIH expert on bacterial and fungal diseases. Scientists have been trying to stay ahead of emerging drug-resistant bacteria by developing new drugs, but it's a difficult task.

"We have to make the best use of the drugs we have because there aren't many in the antibiotic development process," says Dr. Jane Knisely, who oversees studies of drug-resistant bacteria at the NIH. "It is important to understand the best way to use these drugs to increase their effectiveness and reduce the likelihood of developing resistance."

You can help slow the spread of drug-resistant bacteria by taking antibiotics correctly and only when needed. Do not insist on an antibiotic unless your healthcare provider advises otherwise. For example, many parents expect doctors to prescribe antibiotics for a child's ear infection. But experts recommend holding off for a while in certain situations, as many ear infections will get better without antibiotics.

NIH scientists were primarily concerned with whether antibiotics are effective in treating certain conditions. One recent study showed that antibiotics may be less effective than previously thought for treating a common type of sinus infection. This kind of research can help prevent the misuse and overuse of antibiotics.

"Treating infections with antibiotics is something we want to preserve for future generations, so we shouldn't misuse them," says Dr. Julie Segre, NIH principal investigator.

When antibiotics are needed, doctors should usually prescribe mild ones before trying something more aggressive like vancomycin. Such newer antibiotics can be more toxic and more expensive than older ones. Eventually, bacteria develop resistance to new drugs as well. In recent years, some superbugs, such as vancomycin-resistant Enterococci, remain unaffected even by this antibiotic of last resort [31].

In this study pharmacy people are involved, whatever the positive response we got, would be due to the pharmacy profession but other people those are nonpharmacy respondent, they don't know the AMR and its seriousness. Its small-scale study, what would happen in village, city, big city or even in the world wide, just imagine what is going to be happened? They would have not been known about the AMR.

By following instruction and taking the precaution given above, then only we would be able to survive in world, if not, then we are waiting to becoming condition of human health worst. If we have not taken step to control this, then we have to wait either for newer Antibiotics that are going to be very difficult to exist or the "Super Bugs" that would be major cause of death in future.

CONCLUSION

Antimicrobial resistance (AMR), especially bacterial AMR, contain a global warning to public health and has become a huge obstruction to the effective control of related infectious diseases. Following the golden age of antimicrobials discovery between the 1940s and 1960s, antimicrobial violence resulted in the rapid emergence of AMR. Nowadays, the problem of AMR has become increasingly severe, and some bacteria have reached the threshold of no suitable antimicrobials available. Rapid detection of AMR and level quantification are the prerequisites to control the spread of AMR. This study was based on the awareness of people regarding the AMR though they were educated even they were belonging to the pharmacy profession. Mostly they were found to be having very least knowledge about the AMR, Cause of AMR and seriousness of AMR etc. Healthcare administrators should take an integrated approach by main concern the cause of AMR awareness and asserting that individual responsibility could be a possible mechanism to bring about changes in AMR awareness. An increase in public education through a national television, radio and social campaign can be expected to solve the problems. This should focus on educating the public through more comprehensive public education campaigns regarding AMR, its origins, and effects.

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Conflict of Interest

There is no conflict of interest amongst the authors.

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