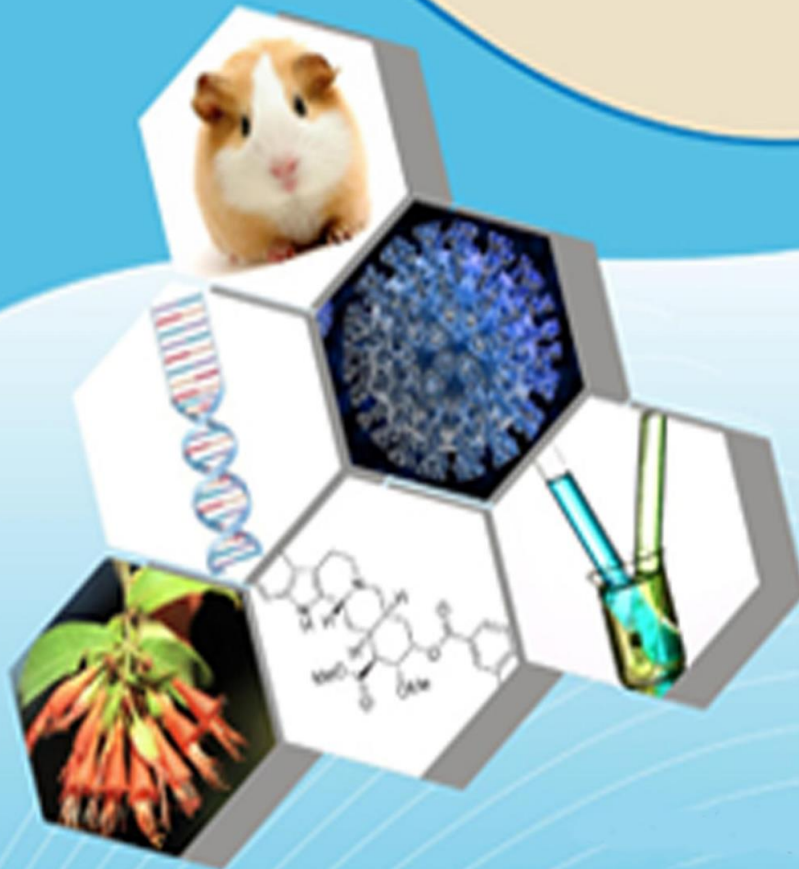




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A Survey To Assess Knowledge Attitude Practice Of Participants Towards Antibiotics Use and Resistance.

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Abstract:-

Antibiotic resistance is a global health crisis affecting millions of people worldwide. Antibiotic abuse (overuse, underuse, and/or inappropriate use) is the main risk factor for the emergence of ABR. Over the course of three months, from June 2022 to September 2022, a survey of the general population was carried out using a validated questionnaire. The survey, which included demographic information and KAP assessments made up of 10 knowledge-related questions, 5 attitude-related questions, and 4 practice-related questions, was distributed via Google Form. Participants had 74.78% knowledge, 59.24% attitude, 68.12% practice. This will be utilized as a resource to help local government officials and medical experts educate the public on the safe use of antibiotics and devise measures to combat AMR, which will be to the community's benefit.

Keywords:- Antibiotics, Antibiotic Resistance, Knowledge, Attitude, Practice.

Introduction

Antibiotics also known as antibacterial are the substances that either kills or inhibit the growth of bacteria and are used for treating several bacterial infections. One of the most important discoveries of the 20th century was the antibiotic. Prior to this, infectious diseases were a major cause of the high death and morbidity rates experienced worldwide. (1) A major challenge to public health in the twenty-first century, particularly in developing nations, is the rise of harmful bacteria that are resistant

to antibiotics and their spread in the human population. (2) Numerous factors, including unregulated drug availability, lax health policies regarding restrictions on antibiotic use, the purchase of antibiotics over-the-counter (OTC), patient knowledge and attitude toward antibiotic use, self-medication, physician knowledge and experience, and interactions between patients and prescribers, may influence antibiotic use. (3)

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Antimicrobial resistance is defined by the World Health Organization (WHO) as a bacterium's resistance to an antimicrobial treatment that could once be used to treat an infection caused by that bacteria.(4)In 2050, the World Health Organization (WHO) projects that AMR would be the cause of 10 million deaths worldwide.AMR is a pressing public health issue since it is thought to contribute to at least 700,000 fatalities annually worldwide and more than 35,000 deaths annually in the United States.(5)Due to the high burden of communicable diseases brought on by a variety of complex factors, such as limited access to clean water, inadequate sewage systems, poor sanitation, inadequate healthcare infection control procedures, excessive and inappropriate use of antibiotics by humans, availability and distribution of subpar (counterfeit) medications, and a lack of regulations on the use of antibiotics in agriculture, the problem of AMR is prevalent in low- and middle-income countries and is mainly caused by common bacterial pathogens, including *Escherichia coli*, *Salmonella* spp., or *Streptococcus pneumoniae*, *Mycobacterium tuberculosis*.(7) Although ABR develops naturally, the main issue is that human activity hastens the process.(8)The mechanisms of ABR are well understood and include bacterial protein modification that is an antibacterial target, changes in bacterial membrane permeability to antibacterial agents, and enzymatic degradation of antibacterial medicines. (9)Another factor in the

emergence and spread of AMR is the consumption of foods made from animals that have been given antibiotic treatments.(11) .The largest risk factor for the development of ABR is antibiotic misuse (overuse, underuse, and/or inappropriate use).Misuse of antibiotics also results in treatment failure, prolonged hospital stays, financial strain, and higher second-line medicine expenses.(12) A super infection brought on by multi-resistant bacteria can be induced by using an excessive amount of antibiotics, which can weaken the oral flora's ability to resist the colonization of hazardous microorganisms.Antibiotic self-medication has grown to be a significant issue and a major contributor to antibiotic resistance. (13)Antibiotic self-medication can be caused by a variety of things, including a general lack of understanding of and attitude toward antibiotics, widespread accessibility to medicines, and a lack of awareness of guidelines for proper antibiotic treatment.(14)The lack of clinical pharmacists and infectious disease specialists may be a major contributor to the current emergence of resistance.WHO endorsed a global action plan at the sixty-eight world health assembly in May 2015 to combat the issue of AMR. This action plan is composed of five key objectives. The top of its five strategic objectives is to improve awareness and understanding of antimicrobial resistance through effective communication, education, and training.

The Indian government has taken a

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number of actions to combat the spread of antimicrobial resistance, including the creation of a National Task Force on AMR Containment in 2010, which resulted in the creation of a National policy on AMR containment in 2011. The priorities and actions expected to be undertaken between 2017 and 2021 to address the public health issue of AMR in India are outlined in the National Action Plan on Antimicrobial Resistance (NAP-AMR). The global action plan on AMR and the NAP - AMR (6 strategic) are in line with one another.

The primary goal of the sixth strategic priority of the NAP, AMR, is to increase public awareness and understanding of AMR through effective communication, education, training, and surveillance while strengthening knowledge and evidence and lowering the incidence of infection. (15) In the fight against ABR, prescribers have a crucial role to play. In addition to providing patients with safe and sensible medication, they also play a crucial role in raising patient awareness and disseminating knowledge about safe medication practices to the community. The future of medicine lies with medical students. In order to do this, they must be focused on sensible antibiotic prescribing practices. For the purpose of reducing antibiotic resistance, it has been suggested that undergraduate medical students receive proper instruction on prescribing and resistance to microorganisms. The general population can play a significant role by taking steps to prevent infections in order to reduce the need for antibiotics. Using

antibiotics only when prescribed by a licensed healthcare provider and properly disposing of any unused medication are also essential to preventing the spread of ABR bacterial strains. (16) By evaluating the community's perceptions of its knowledge, attitudes, and practices about the use of antimicrobial agents, this study will contribute to the analysis of the prevention of AMR. This will be used as a resource to assist local authorities and healthcare professionals in enlightening the populace on the responsible use of antibiotics and in developing strategies to combat AMR, which will be to the community's advantage.

Methodology

A survey study was carried out June 2023 to September 2023, both males and females were included in study with age greater than 18 years. The online version of the questionnaire was used to reach a larger number of people to assess their fundamental knowledge, attitudes, and actions toward antibiotics use and resistance. The necessary information was gathered over the course of three months, utilizing a Google Docs-created questionnaire that was distributed among pharmacy students and digitally disseminated over Twitter, Telegram, and WhatsApp. There were close-ended multiple-choice questions in each of the four sections of the questionnaires. The participants' age, gender, educational attainment were all discussed in Section A. Questions in Section B evaluated knowledge about antibiotics use and

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resistance which included 10 questions [such as According to you what is an antibiotic? , Does indiscriminate use of antibiotics leads to resistance?]. Section C was created to assess the attitude of people towards antibiotics use and included 5 question such as [Do you give antibiotics if any of your family member is not feeling well?] section D evaluated practice of people towards antibiotics use and included 4 questions such as [when do you use antibiotics?, Do you complete the course of prescribed antibiotics?]. The data was entered in excel sheet and analyzed through descriptive statistics .

Results

Socio-demographic details

In this study 72.3% of the individual were female and 27.7% were males.majority I.e, 70.5% of individual were in the age 18-39 years ,23.5% were in the range 40-59 years, 2.9% were in the range >60 years. 50% of individuals were postgraduate , 40% were graduates,6% being intermediate and 4% being illiterate.

Knowledge based

72.5% of participants know that antibiotic's are the Substance which kill bacteria ,2.9% people believe antibiotic are substances which kills virus, 24.5% people believe antibiotic are substances which kills both bacteria and virus.58.8% participants identified amoxicillin and cotrimoxazole as antibiotics, 33.3%

identified only amoxicillin as antibiotic,5.8% people identified only cotrimoxazole as antibiotic ,1.9% identified ibuprofen as antibiotic.83.3% of the individual heard about antibiotic resistance and 16.7% did not hear .85.3% agreed that indiscriminate use of antibiotics leads to resistance and 14.7% did not agree .68.6% participants know that missing a dose of antibiotic can lead to resistance and 31.4% did not know.63.7% of participants know that antibiotic does not differentiate between beneficial and harmful bacteria and 36.3% did not know .48% of people answered as when antibiotic are newer and priced high work better and 52% did not agree.85.3% of participants knows that antibiotic resistance can be caused by overuse of antibiotic and 14.7% did not know.90.2% of people wants more education on antibiotic resistance and 9.8% did not .85.3% of people knows that antibiotic should only be used when prescribed and 14.7% did not know.

Attitude based

52% of participants give antibiotics if any of the family member is not feeling well and 48% of participants do not give.56.9% of participants consult a doctor before taking any antibiotic and 43.1% participants do not consult .51% of people stop taking antibiotic when symptoms subside and 49% do not stop taking anything when symptoms subside .53.9% of participants buy same antibiotics when experience similar type of symptoms as before and 46.1% of



participants do not buy. 82.4% of participants believe that frequent use of antibiotic decreases the efficacy of antibiotic when used again and 17.6% do not believe.

Practices based

57.8% of participants use antibiotic only on doctors prescription 14.7% on pharmacist advice 12.7% on past experience and 14.7% without doctor prescription.

86.3% of participants complete the course of antibiotic and 13.7% do not complete.

90.2% of participants check for expiry date before using antibiotics and 9.8% do not check. 35.3% of participants use antibiotic 1-2 days after onset of symptoms, 11.8% more than 4 days after onset of symptoms, 14.7% use immediately, 38.2% only after receiving doctors prescription.

Discussion

Knowledge based

72.5% of participants are aware that antibiotic's are the substance which kill bacteria which is contrary to the study conducted by Elena Narcisa Pogurschi et al where only 22.23% agreed that antibiotics kill bacteria (17). 83.3% of the individual heard about antibiotic resistance which is almost similar to the study conducted by Daniel Montoya-urrego et al where 78% of

individual agreed that they heard about antibiotic resistance (18). 85.3% agreed that indiscriminate use of antibiotics leads to resistance which is almost similar to the study conducted by Samer Sakr et al where 89.2% in non health & 94.4% in health related agreed that inappropriate use of antibiotics leads to resistance. 68.6% participants know that missing a dose of antibiotic can lead to resistance which is almost similar to the study conducted by Samer Sakr et al where 70.6% in non health & 82.3% in health related agreed about that (19). 63.7% of participants know that antibiotic does not differentiate between beneficial and harmful bacteria which is in contrast with the study conducted by Megha Mariyam Varghese et al where only 45% could respond that antibiotics does not differentiate between beneficial and harmful bacteria. 48% of participants answered as when antibiotics are newer and priced high work better which is contrary to the study conducted by Megha Mariyam Varghese et al where 12.1% agreed that expensive antibiotics work better (20). 85.3% of people agree that antibiotic resistance can be caused by overuse of antibiotic which is similar to the study conducted by Mokhtar Shatla et al where 94.2% of participants agreed that overuse of antibiotics could lead to resistance (21).

Attitude based

52% of people give antibiotics if any of the family member is not feeling well which is in contrast with the study conducted by Elena Narcisa Pogurschi et



al where only 8.42% agree that they give antibiotic if any of the family member is not feeling well.(17). 43.1% do not consult a doctor before using antibiotics which is almost similar to study conducted by Ammar jairoun et al where 55.6% participants do not consult a doctor before taking antibiotic (22).49% do not stop antibiotics when symptoms subside which is almost similar to the study conducted by Mokhtar shatla et al where 40% participants correctly answered the question.(21)53.9% of people buy same antibiotics when experience similar type of symptoms as before which is less than the study conducted by Samer Sakr et al where 68.2%in non health & 84% in Health related buy antibiotic when they experience similar type of symptoms.(19).

Practice based

57.8%of participants use antibiotic only on doctors prescription which is in

Table No 1.1displays response to Age of the participants

S.no	Age	%
1	18-39years	70.5
2	40-59	23.5
3	>60years	2.9

Graph No 1.1displays response to Age of the participants

contrast with the study conducted by Elena narcisa pogurschi et al where only 78.86% individual use antibiotics only on doctors prescription. (17).86.3% participants complete the course of antibiotic which is in contrast with the study conducted by Ngoc V. Nguyen et al where 13% comply to the prescribed course of antibiotic.(23). 90.2 % people check for expiry date before using which is almost similar to the study conducted by Samer Sakr et al where majority of the participants checked for expiry date before using it (84.4% in health related and 74.5% in non health related) (19).when participants were asked how long after onset of disease they use antibiotics 38.2% of people responded that they use antibiotics only after receiving doctors prescription which is contrast with study conducted by Elena narcisa pogurschi et al where 71.79% use antibiotics only after receiving prescription from doctor.(17) .

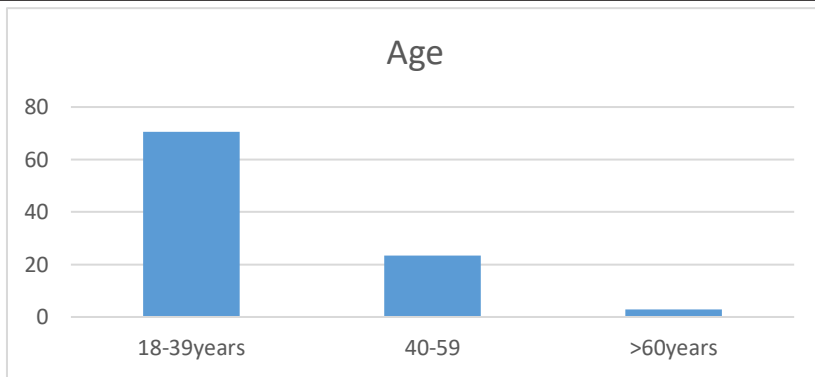


Table No 1.2 displays response to Gender of participants

S.no	Gender	%
1	male	27.7
2	female	72.3

Graph No 1.2 1displays response to Gender of participants

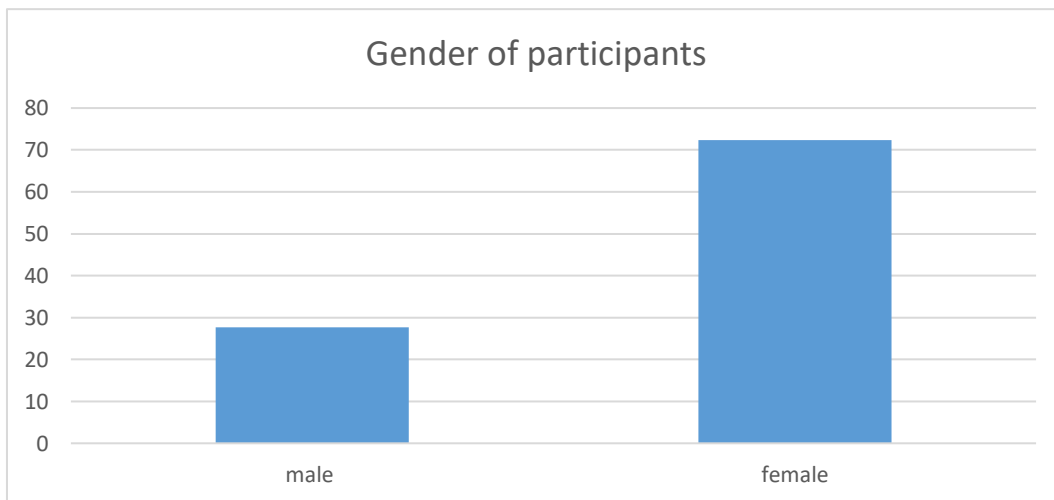


Table No 1.3 1displays response to Education of participants

S.no	education	%
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1	Graduate	40
2	Postgraduate	50
3	intermediate	6
4	illiterate	4

Graph No 1.3 displays response to Education of participants

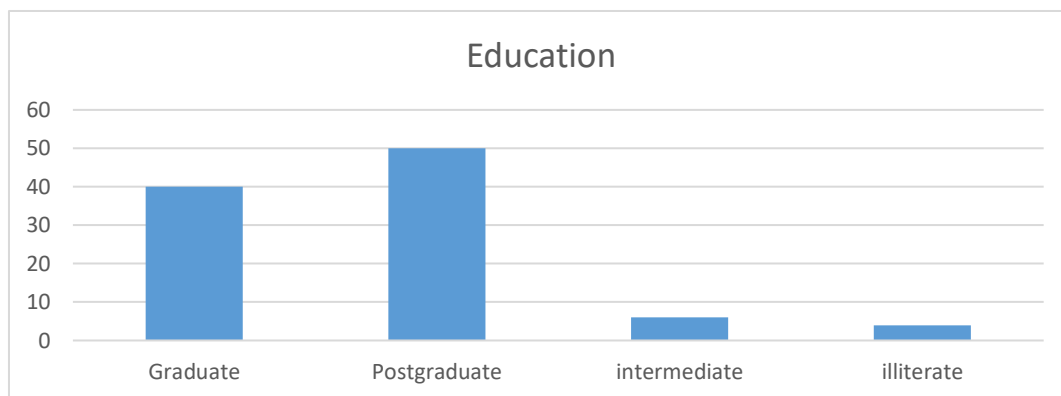


Table No 1.4 Displays response to what is an antibiotic

S.no	what is an antibiotic	%
1	substance which kill bacteria	72.3
2	substance which kill virus	2.9
3	both a&b	24.8
4	substance whuich reduces pain	0

Graph No 1.4 Displays response to what is an antibiotic

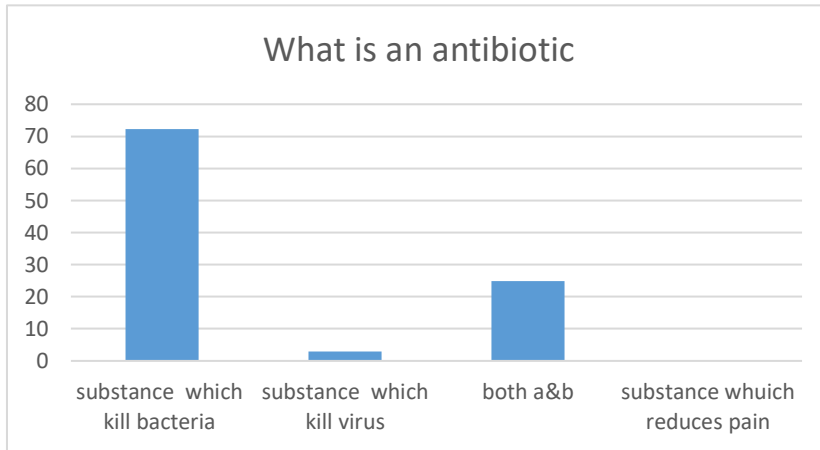


Table No 1.5 displays response to identification of antibiotic

S.no	identification of antibiotic	%
1	Amoxicillin	33.3
2	cotrimoxazole	5.8
3	Both A&B	58.8
4	ibuprofen	1.9

Graph No 1.5 displays response to identification of antibiotic

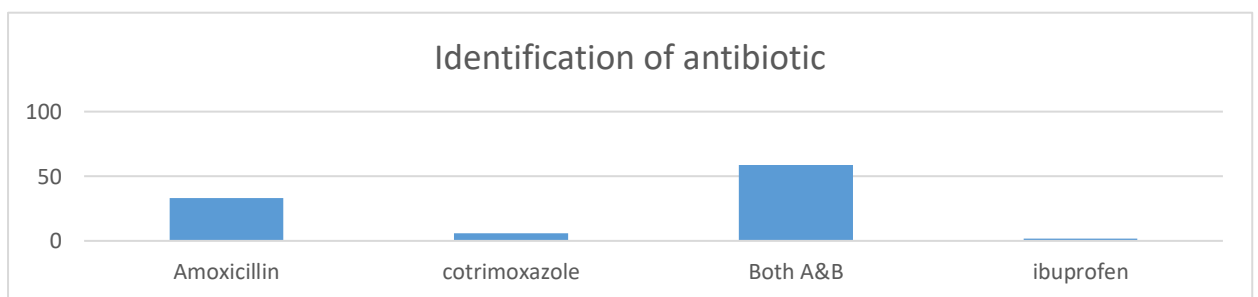


Table No 1.6 displays response to did you hear about antibiotic Resistance

S.no	did you hear about antibiotic Resistance	%
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1	yes	83.3
2	no	16.7

Graph No 1.6 displays response to did you hear about antibiotic Resistance

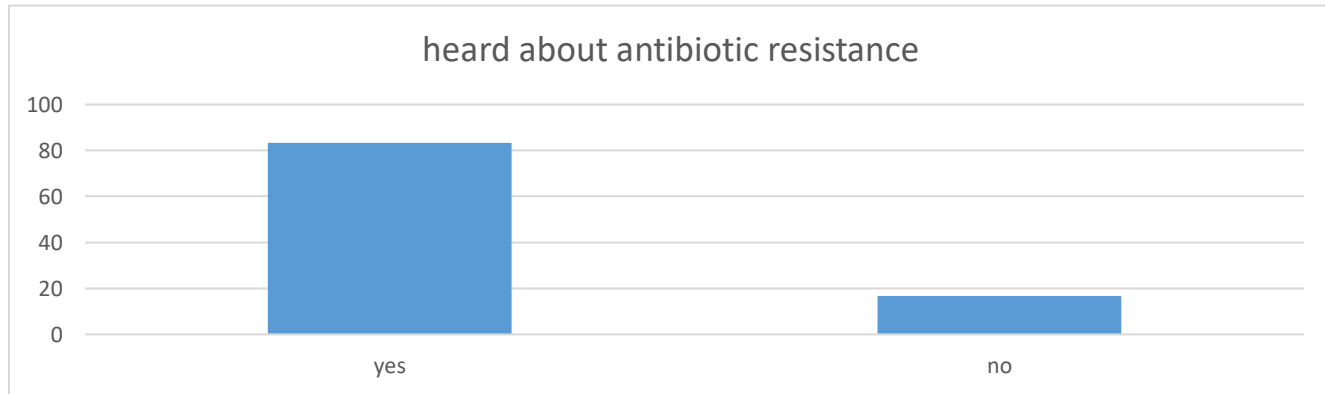
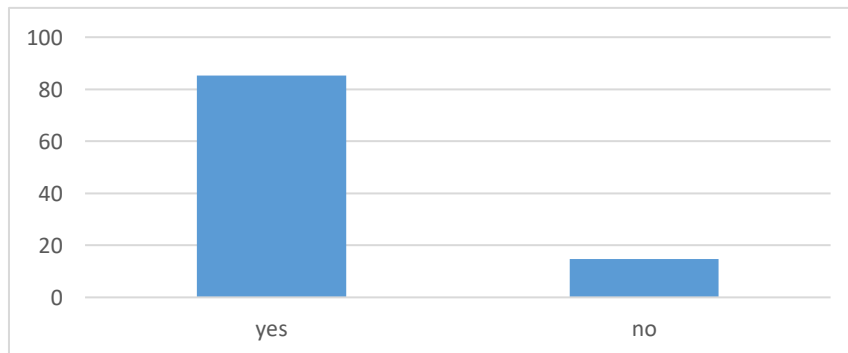


Table No 1.7 displays response to does indiscriminate use of antibiotics leads to antibiotics resistance

S.no	indiscriminate use of antibiotics leads to antibiotic Resistance	%
1	yes	85.3
2	no	14.7

Graph No 1.7 displays response does indiscriminate use of antibiotics leads to antibiotics resistance



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Graph no 1.8 displays response to missing a dose of antibiotic causes resistance

S.no	missing a dose of antibiotic causes resistance	%
1	yes	68.6
2	no	31.4

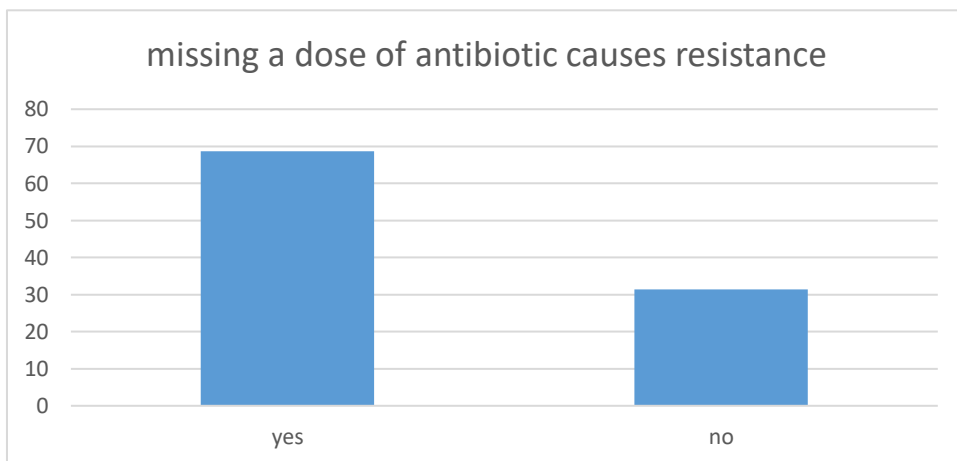


Table no 1.9 displays response to does antibiotic differentiate between beneficial and harmful bacteria.

S.no	antibiotic differentiate between beneficial and harmful bacteria	%
1	yes	36.3
2	no	63.7

Graph no 1.9 displays response to does antibiotic differentiate between beneficial and harmful bacteria.

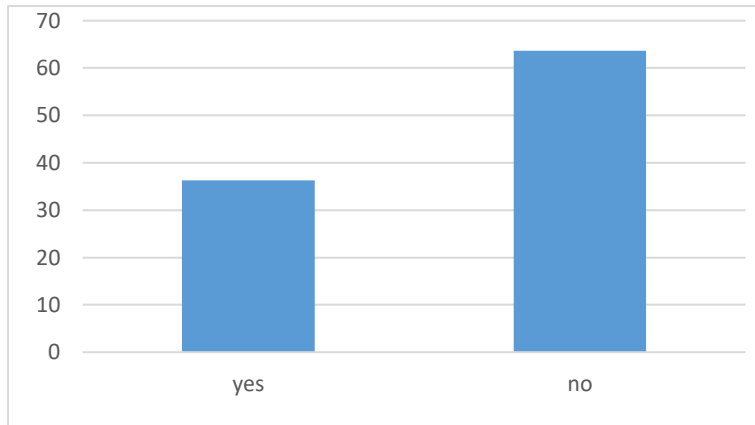
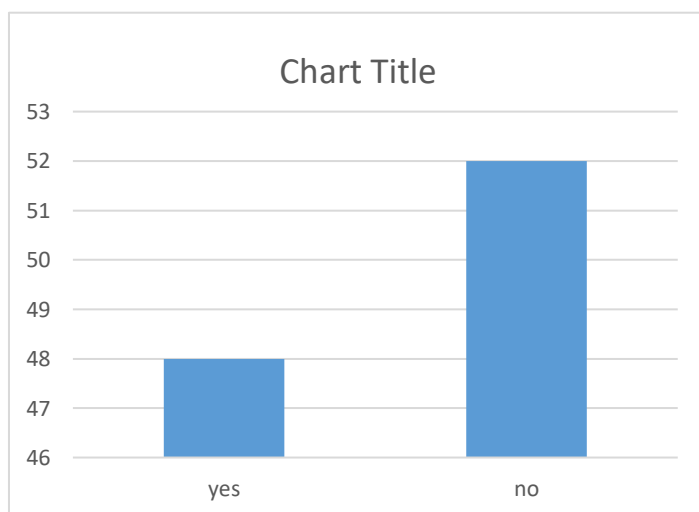


Table no 1.10 displays response to do you think when antibiotics are newer and priced high work better.

S.no	do you think when antibiotics are newer and priced higher work better	%
1	yes	48
2	no	52

Graph no 1.10 displays response to do you think when antibiotics are newer and priced high work better.



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Table no 1.11 displays response to do you think when antibiotics resistance can be caused by overuse of antibiotics.

S.no	do you think antibiotic resistance can be caused by overuse of antibiotic	%
1	yes	85.3
2	no	14.7

Graph no 1.11 displays response to do you think when antibiotics resistance can be caused by overuse of antibiotics.

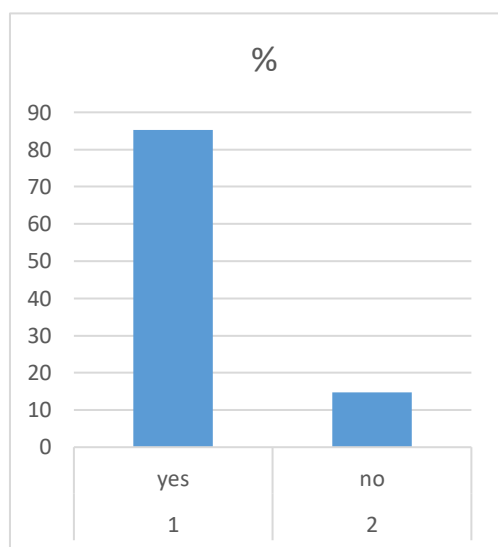


Table no 1.12 displays responses to do you want more education on antibiotic use and Resistance

S.no	do you want more education on antibiotic use and Resistance	%
1	yes	90.2
2	no	9.8

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Graph no 1.12 displays responses to do you want more education on antibiotic use and

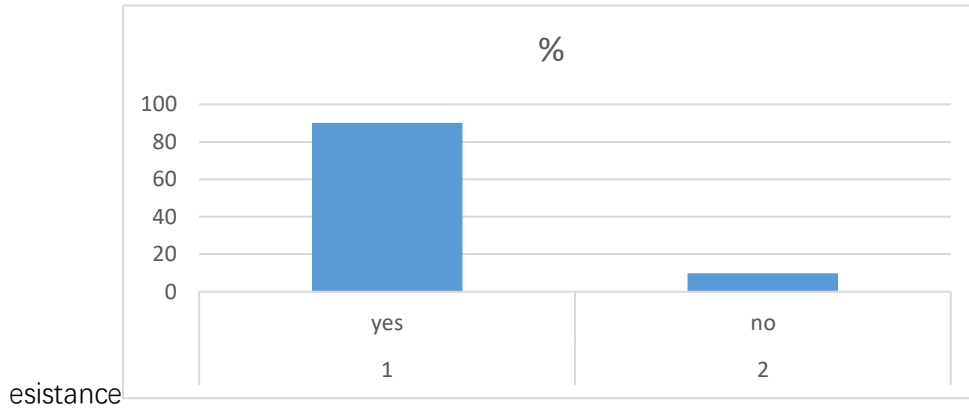


Table No 1.13 displays response do you think antibiotic should only be used when prescribed

S.no	do you think antibiotic should only be used when prescribed	%
1	yes	85.3
2	no	14.7

Graph No 1.13 displays response do you think antibiotic should only be used when prescribed

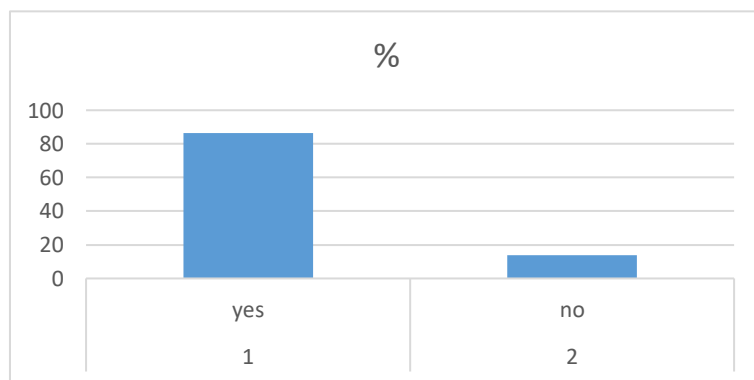


Table no 1.14 display response to do you give antibiotic if any of your family member is not feeling well

S.no	do you give antibiotic if any of your family member is	%
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	not feeling well	
1	yes	52
2	no	48

Graph no 1.14 display response to do you give antibiotic if any of your family member is not feeling well

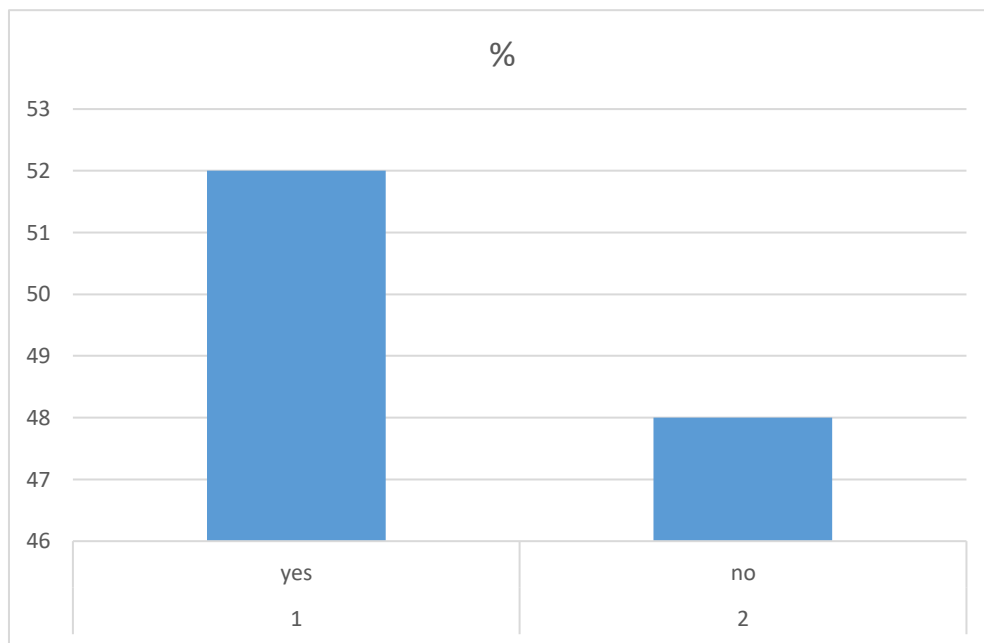


Table no 1.15 displays response to Do you consult a doctor before taking antibiotic

S.no	Do you consult a doctor before taking antibiotic	%
1	yes	56.9
2	no	43.1

Graph no 1.15 displays response to Do you consult a doctor before taking antibiotic

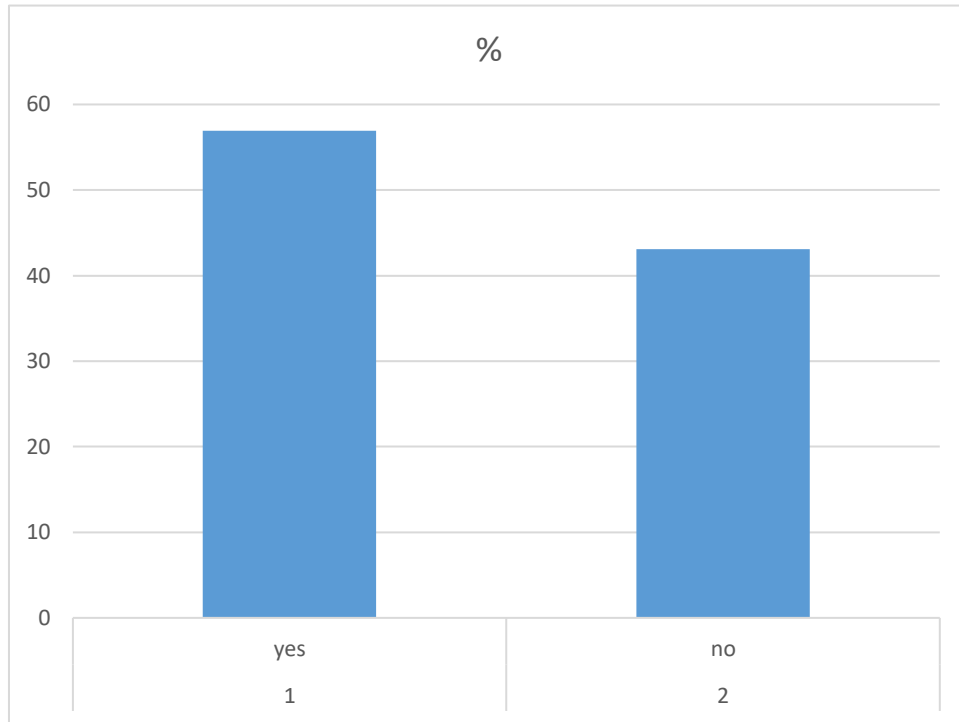
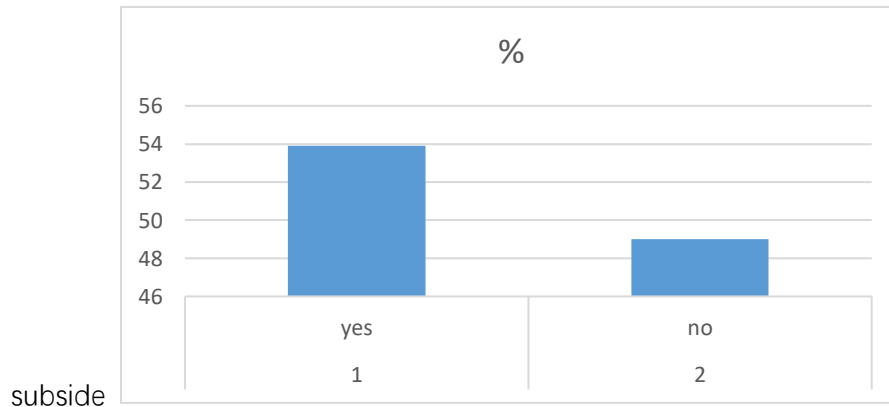


Table no 1.16 displays response to do you stop taking antibiotic when symptoms subside

S.no	do you stop taking antibiotic when symptoms subside	%
1	yes	51
2	no	49

Graph no 1.16 displays response to do you stop taking antibiotic when symptoms



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Table no no 1.17 do you buy same antibiotic when experience similar type of symptoms

S.no	do you buy same antibiotic when experience similar type of symptoms	%
1	yes	53.9
2	no	46.1

Graph no no 1.17 do you buy same antibiotic when experience similar type of symptoms

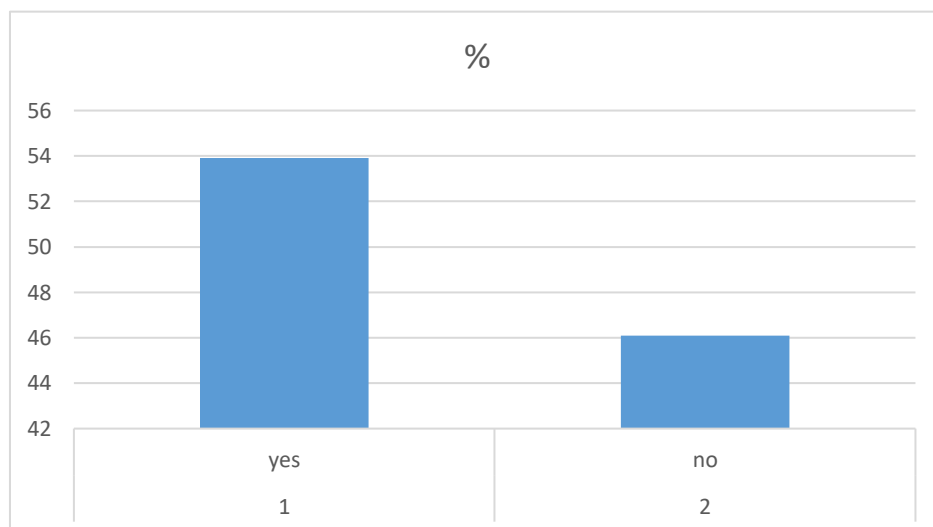


Table no 1.18 do you believe frequent use of antibiotic decreases the efficacy when used again

S.no	do you believe frequent use of antibiotic decreases the efficacy when used again	%
1	yes	82.4
2	no	17.6

Graph no 1.18 do you believe frequent use of antibiotic decreases the efficacy when used again

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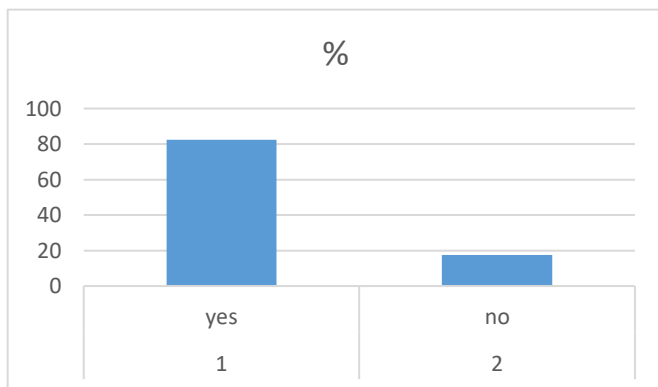


Table no 1.19 displays response to how do you use antibiotics

S.no	How do you use antibiotic	%
1	only on doctors prescription	57.8
2	on pharmacist advice	14.7
3	past experiences	12.7
4	without doctors prescription	14.7

Graph no 1.19 displays response to how do you use antibiotics

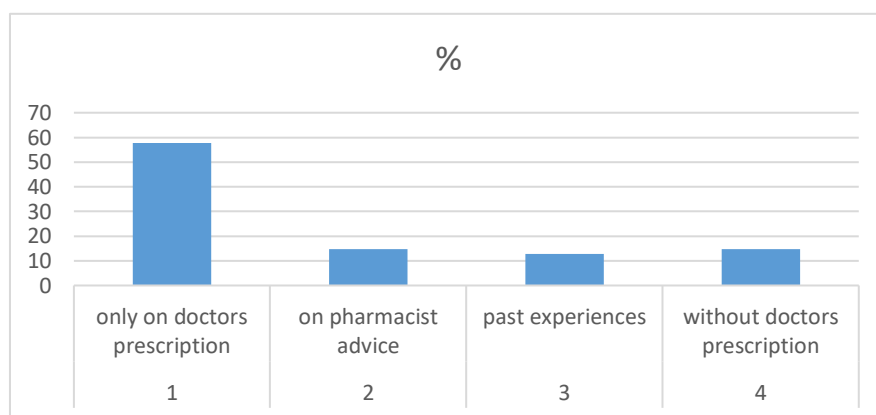


Table no 1.20 displays response to do you complete the course of antibiotic

S.no	do you complete the course of antibiotic	%
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1	yes	86.3
2	no	13.7

Graph no 1.20 displays response to do you complete the course of antibiotic

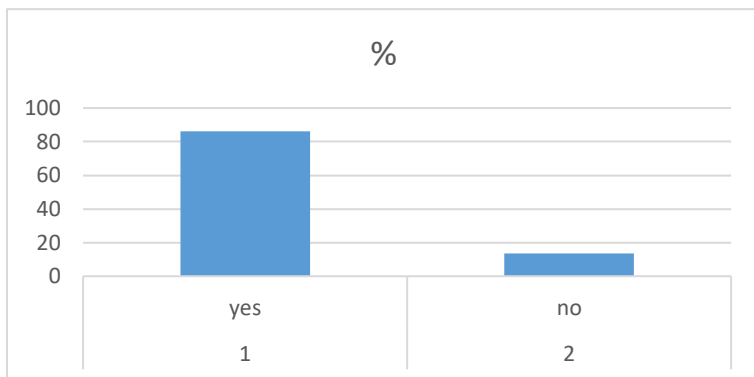


Table no 1.21 displays response to Do you check for expiry date before using antibiotic

S.no	Do you check for expiry date before using antibiotic	%
1	yes	90.2
2	no	9.8

Graph no 1.21 displays response to Do you check for expiry date before using antibiotic

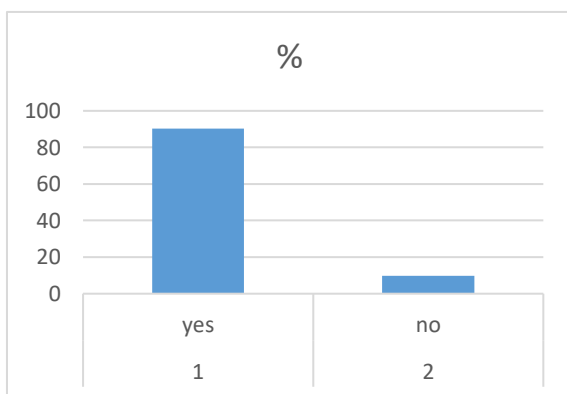


Table no 1.22 displays response to when do you use antibiotic

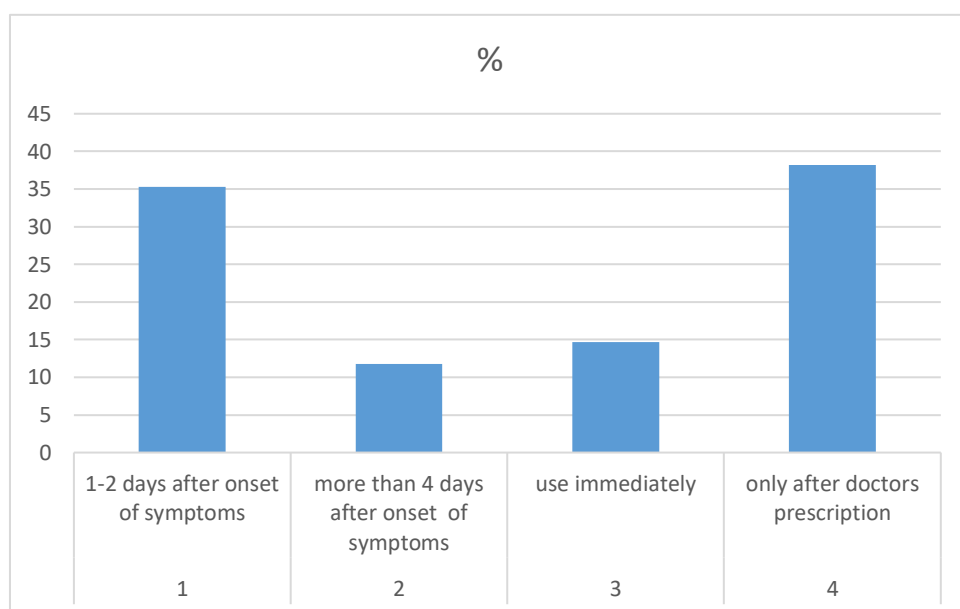
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S.no	when do you use antibiotic	%
1	1-2 days after onset of symptoms	35.3
2	more than 4 days after onset of symptoms	11.8
3	use immediately	14.7
4	only after doctors prescription	38.2

Graph no 1.22 displays response to when do you use antibiotic



Conclusion

In our study participants had good knowledge, moderate attitude and moderate practice towards antibiotics use and resistance. when developing interventions aimed at increasing knowledge and awareness of antibiotic resistance, its ramifications, and ways to reduce it, these findings will be helpful in providing crucial insights into the level of understanding of antibiotic resistance among students. Effective and fruitful collaboration is needed from all the

stakeholders, including clinicians, universities, governments, drug companies, and the general public, in order to successfully integrate lessons related to antibiotic resistance and other public health issues into the higher-education curriculum of non-health disciplines. In addition, health officials need to increase their monitoring of antibiotic availability. All of these organizations should develop programs to dispel myths about how

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individuals contribute to antibiotic resistance.

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