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RESEARCH ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICE OF ANTIBIOTICS RESISTANCE: A QUESTIONNAIRE STUDY AMONG UG AND PG MEDICAL STUDENTS

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Abstract

Antibiotic resistance is a global public health issue because it affects treatment outcomes, lengthens hospital stays, raises morbidity, heightens mortality risk, and raises medical costs. To that goal, researchers from Indore's M.G.M. Medical College and M.Y. Hospital polled undergraduate and graduate medical students on their knowledge of the connection between the use of antibiotics and resistance. This research set intended to determine the KAP of undergraduate and graduate medical students about antibiotics and antibiotic resistance. Research was conducted using a single-center cross-sectional questionnaire at the M.Y. Hospital and M.G.M. Medical College in Indore. All levels of medical education were represented in the sample. Forms (both online and paper) were used to gather data, which was then analysed using descriptive statistics. The research included the input of 280 medical students. Eighty-five percent of the participants were already familiar with the concept of antibiotic resistance, and almost half (47.1%) knew that empiric antibiotic treatment leads to antibiotic resistance. 43.5 percent of respondents agreed that antibiotic treatment should be stopped after symptoms improved. Eighty percent said that their medical school should provide a class on the prudent use of antibiotics. Our findings suggest that efforts should be made to educate medical students on the proper use of antibiotics, alter their perceptions of them, and improve their actual use of them in patients. Antibiotic resistance mechanisms and appropriate use of antibiotics are crucial tools in the fight against public health crises.

Introduction:-

Misuse of these potentially lifesaving medications may eventually lead to the development of resistance and therefore their ineffectiveness. The negative effects of antibiotic resistance on treatment outcomes, length of hospital stay, risk of death, and expense of healthcare are raising concerns on a worldwide scale. [1] In the battle against antibiotic resistance, it is crucial to provide antibiotics during routine clinical practise and to promote health education, particularly by enticing patients to follow routines and refrain from self-medication. Antibiotic misuse

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and abuse provide a selective pressure that encourages the emergence and spread of resistant microorganisms. Because medical professionals misuse drugs, the possibility of antibiotic resistance persists.

When 317 medical students in the US were polled on their beliefs, attitudes, and practises related to the usage of antibiotics, the results of the survey revealed that 90% of the students sought more information on the subject. Less than one-fifth had taken part in a clinical rotation in infectious illnesses when they were in medical school, but those who had said they were more happier with their antimicrobial training. There were no statistically significant connections between knowledge scores and past involvement in an optional clinical course in infectious disease.Only about a third of those polled felt they were adequately equipped to use antimicrobials in accordance with some of the basic principles.

Medelln is the second biggest city in Colombia and is home to more than 15 tertiary institutions. Due to widespread overuse of extended-spectrum -lactamase and carbapenemase, Gram-negative bacilli are now able to spread endemically across the city and its hospitals [8,9]. This issue has been associated with carbapenem misuse (in 2011, meropenem usage peaked at 30.1 DDD/100 beds/day [10]).The need for cross-sectoral intervention to address this problem has grown. Prescription drug monitoring programmes, infection control practises, and preventative education are all cornerstones of a solution to this issue. Improvements in antibiotic administration are the focus of a number of governmental efforts. [11]. Although the goal of these interventions is usually to prompt people to alter their behaviour, it is well acknowledged that the success of such efforts is moderated by the unique set of values and goals held by each community studied. Therefore, it is important to know the starting point before launching a programme in order to make appropriate adjustments to the knowledge, attitudes, and behaviours of all stakeholders, which are crucial to the effectiveness of interventions and the maintenance of gains over time [12].

Therefore, this research was devised to investigate UG and PG medical students' KAP about antibiotic usage and resistance.

Methods:-

The Department of Pharmacology at M.G.M. Medical College in Indore and the M.Y. hospital conducted the study. First-year M.B.B.S. and B.D.S. students through fourth-year M.D.s, master's degree M.S. students, and doctorate M.D. and M.D.S. students were all represented. Using Google Forms, we sent a KAP-based questionnaire to medical students at both the undergraduate and graduate levels to collect data on their understanding of antibiotic resistance. A preliminary research using the original text to ask fundamental questions regarding antibiotics and their use was carried out before the major survey. Experts in statistics and epidemiology were consulted after the pilot research to refine and perfect the questionnaire.

There were a total of 19 items on the final questionnaire, broken down as follows: antibiotic knowledge, antibiotic attitude, and antibiotic practise. Participants' understanding of seven themes, including the normal microbial flora, concepts of drug sensitivity and susceptibility, the relationship between disease, drug resistance, and side effects of antibiotics, as well as opinions on the effectiveness of antibiotics, was examined. The student's opinion on the seriousness of antibiotic abuse, as well as its effects on him or her and their families and the underlying reasons of such usage, were the subject of five questions. There were a total of seven questions in the application section, and they included topics such as how often antibiotics are used for fever, sickness, and other symptoms, as well as general familiarity with prescription medications and following doctors' instructions.

All data collected in e-forms was analyzed in MS-excel by using appropriate statistical tests includingdescriptive statistics.

Results And Discussion:-

Medical care for the general public relies on constant improvement and expansion, and research is a crucial part of this process. In order to do research, one has to possess appropriate and up-to-date information, a constructive mindset, and sufficient abilities. The assessment of medical students' and residents' knowledge, attitudes, and behaviours regarding antibiotics at M.G.M. Medical College and M.Y. Hospital was the main objective of this study.Nearly all of the undergraduate and graduate students who were contacted opportunity to accomplish in taking part in the study. It's no surprise that more undergraduates than graduates took part in the survey, given their replies carry more weight and their total knowledge scores are higher.

In the **knowledge index**, there were seven questions related to the knowledge of antibiotics (Table 2). 6.47% of students strongly disagreed, and 11.63% of students disagreed. 14.33% of students were neutral, 40.71% were agreed and 26.83% strongly agreed with our statements. The statistics show that maximum (40.71) participants were agreed with our statements . A few participants strongly disagreed (6.47%). Strongly agreed is also a remarkable number 26.83% among them.

In the **attitude index**, there were five questions related to attitude towards antibiotics (Table 2). The table shows that 8.07% of students strongly disagreed, 17.5% of students disagreed, 23.57% of students were neutral, 36.86% of students agreed and 14% students strongly agreed with our statements. The statistics shows that maximum (36.86%) agreed with our statements. A minimum score was in favour of strongly disagreed (8.07%). 23.57 participants were neutral.

In the **practice index**, there were seven questions asked related to the practice of antibiotics , in this index the above table (Table 2) shows that 7.55% of participants were strongly disagreed, 17.8% were disagreed, 15.97 were neutral, 38.37% were agreed and 20.31% participants were strongly agreed. The statistics shows that a maximum number of participants agreed (38.37%) with our statements, a few students (7.55%) strongly disagreed and 15.97% were neutral.

According to the research, 47.1% of participants knew that empiric antibiotic treatment causes antibiotic resistance, and 85.0% of participants were aware of antibiotic resistance. About half of the people surveyed (43.5%) agreed that antibiotic treatment should be stopped after symptoms improved. Eighty percent of respondents said a lesson on using antibiotics wisely should be part of the curriculum and address the problem of practise.

In this study, 74% of the participants agreed that the widespread use of antibiotics to treat minor illnesses is mostly to blame for the rise in antibiotic resistance, and 75% said that many diseases are increasingly becoming resistant to antibiotic treatment.Sixty-six percent of those who were polled agreed that antibiotics should not be used to treat minor, self-limiting infections. Sixty-eight percent of respondents felt that antibiotic resistance is exacerbated when patients don't finish their full course of medication. Only twenty-five percent of those polled thought antibiotics helped with viral illnesses. Antibiotics used for longer than recommended (66.1% agreement) leads to the development of antibiotic resistance.30.7% agreed that antibiotics use are safe, so they are commonly used. 39% agreed that when they have a fever, antibiotics help them to get better faster. 71.4% agreed that non-prescribed antibiotics sales should be prohibited.

There is no time to wait and observe, thus 28.2% agreed that they would administer antibiotics even if they were not required. After learning about antibiotic resistance, 31.8% of people said they now take more care while taking antibiotics. The majority (75.4%) of people have warned their friends and relatives about taking antibiotics that aren't prescribed to them. In agreement with the statement made by 77.5% of respondents, people attempt to talk someone off of using antibiotics as self-medication. When their symptoms have improved or completely vanished, 43.5% of people stop taking antibiotics. A total of 29.6% of respondents agreed that newer, more expensive antibiotics tend to be more effective. Therefore, the purpose of this research was to explore what participants knew, felt, and did to combat antibiotic resistance. Since learning about research technique is a continual process for undergraduate and graduate students, they should be exposed to it on a frequent basis. Graduate students should be encouraged to submit their work for publication and to discuss their findings at undergraduate and graduate conferences.

Table 01:- Demographic Profile Of Participants (n = 280).

Characteristics	**Values (n%)**
AGE	20-30 years (avg)
UG	n = 162 (57.9%)
PG	n = 118 (42.1%)
GENDER (n = %)	

Male	150 (53.6%)
Female	130 (46.4%)

Table 1 provides the demographic data. The response rate in this study was 100% (280/280). Number of undergraduates participated were 162 (57.9%). Number of postgraduates participated were 118 (42.1%). Number of male participants were 150 (53.6%).

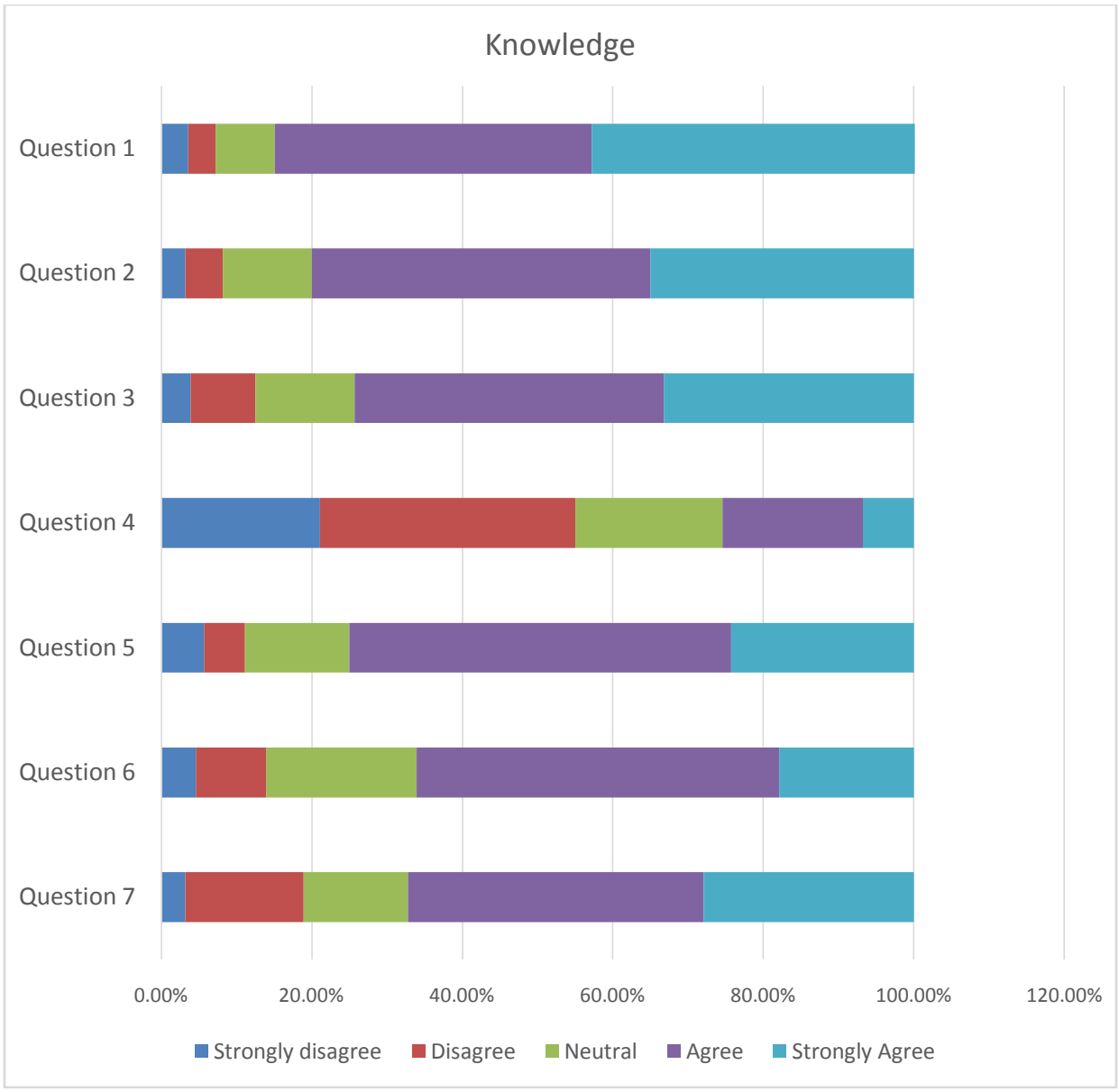
Table 2:- Student's Knowledge Attitude And Practice Of Antibiotics

		RESPONSES									
		strongly disagree		**disagree**		**Neutral**		**Agree**		**Strongly Agree**	
S.No.	**KNOWLEDGE STATEMENTS**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
1	There is a major and growing issue with antibiotic resistance in the world today.	10	3.6	10	3.6	22	7.9	118	42.1	120	42.9
2	Antibiotic resistance is a serious global danger to public health.	9	3.2	14	5	33	11.8	126	45	98	35
3	A big contributor to antibiotic resistance is the practise of care - free oneself.	11	3.9	24	8.6	37	13.2	115	41.1	93	33.2
4	Viral infections may be successfully treated with antibiotics.	59	21.1	95	33.9	55	19.6	52	18.6	19	6.8
5	Antibiotic resistance is a growing problem, making it more difficult to treat many infections.	16	5.7	15	5.4	39	13.9	142	50.7	68	24.3
6	Antibiotics use in self-limiting infections contributes to antibiotic resistance	13	4.6	26	9.3	56	20	135	48.2	50	17.9
7	Not completing the course of an antibiotic treatment contributes to antibiotic resistance	9	3.2	44	15.7	39	13.9	110	39.3	78	27.9
	AVERAGE	**18.14**	**6.47**	**32.57**	**11.63**	**40.14**	**14.33**	**114**	**40.71**	**75.14**	**26.83**
	ATTITUDE STATEMENTS										
8	Using antibiotics for longer than recommended raises the risk of drug resistance. .	10	3.6	32	11.4	53	18.9	131	46.8	54	19.3
9	Antibiotics are safe so they could be commonly used	51	18.2	84	30	59	21.1	68	24.3	18	6.4
10	When I have a fever antibiotics help me get better faster.	33	11.8	68	24.3	70	25	92	32.9	17	6.1
11	empiric antibiotic therapy contributes to antibiotic resistance	13	4.6	25	8.9	110	39.3	102	36.4	30	10.7
12	Non - prescribed antibiotics	6	2.8	36	12.9	38	13.6	123	43.9	77	27.5

	sale should be prohibited										
	AVERAGE	**22.6**	**8.07**	**49**	**17.5**	**66**	**23.57**	**103.2**	**36.86**	**39.2**	**14.0**
	PRACTICE STATEMENTS										
13	I would prescribe antibiotic even when they are not indicated because there is no time to wait and watch	48	17.1	95	33.9	58	20.7	58	20.7	21	7.5
14	After learning about antibiotic resistance, I have been more careful while utilising these medicines.	11	3.9	19	6.8	36	12.9	136	48.6	78	27.9
15	I have warned my relatives and friends about the dangers of using unprescribed antibiotics.	9	3.2	24	8.6	36	12.9	150	53.6	61	21.8
16	When I think that someone is going to take antibiotics for themselves, I make every effort to discourage him.	8	2.9	15	5.4	40	14.3	140	50	77	27.5
17	I suspend antibiotics when I feel better or symtoms disappear.	32	11.4	90	32.1	36	12.9	88	31.4	34	12.1
18	Efficacy is better when the antibiotics are newer and more costly	34	12.1	89	31.8	74	26.4	58	20.7	25	8.9
19	Is there a need to establish course on rational use of antibiotics in your medical college	6	2.1	17	6.1	33	11.8	122	43.6	102	36.4
	AVERAGE	**21.14**	**7.55**	**49.86**	**17.8**	**44.72**	**15.97**	**107.42**	**38.37**	**46.86**	**20.31**

Graph 1: Questionnaire regarding knowledge of Antibiotic resistance

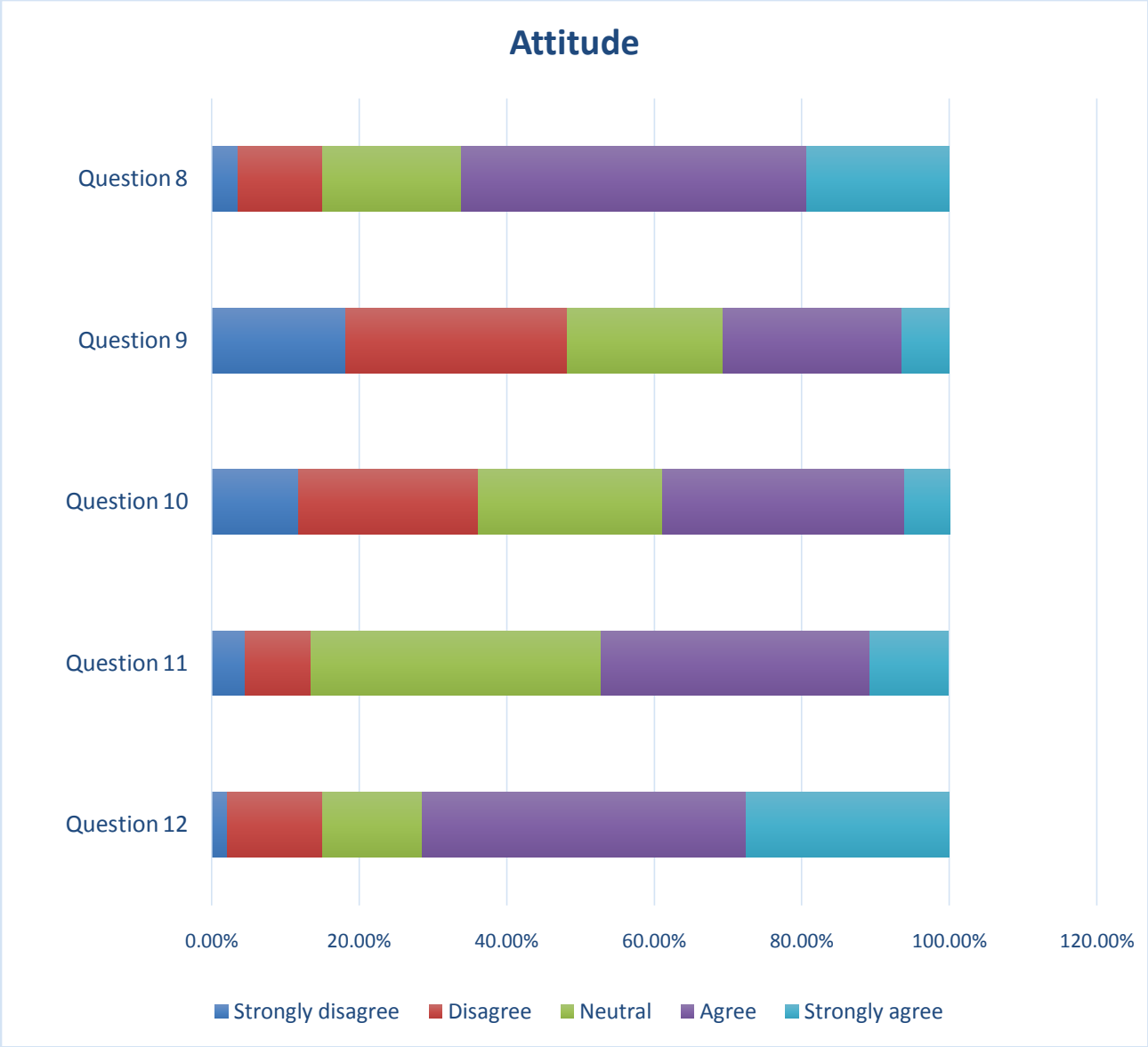
1. Is there any doubt that antibiotic resistance is a serious and growing issue in the modern world?
2. Is antibiotic resistance a significant public health issue in the US?
3. Did you know that self-medication plays a big part in the severe issue of antibiotic resistance?
4. Te treatment of viral infections with antibiotics is viable?
5. Antibiotic resistance is a growing problem, making treatment for many illnesses increasingly futile.
6. Antibiotics used for mild diseases that will clear up on their own cause antibiotic resistance?
7. Does not completing the course of an antibiotic treatment contribute to antibiotic resistance?



Graph 1

Graph 2:Questionnaire regarding Attitude of Antibiotic resistance.

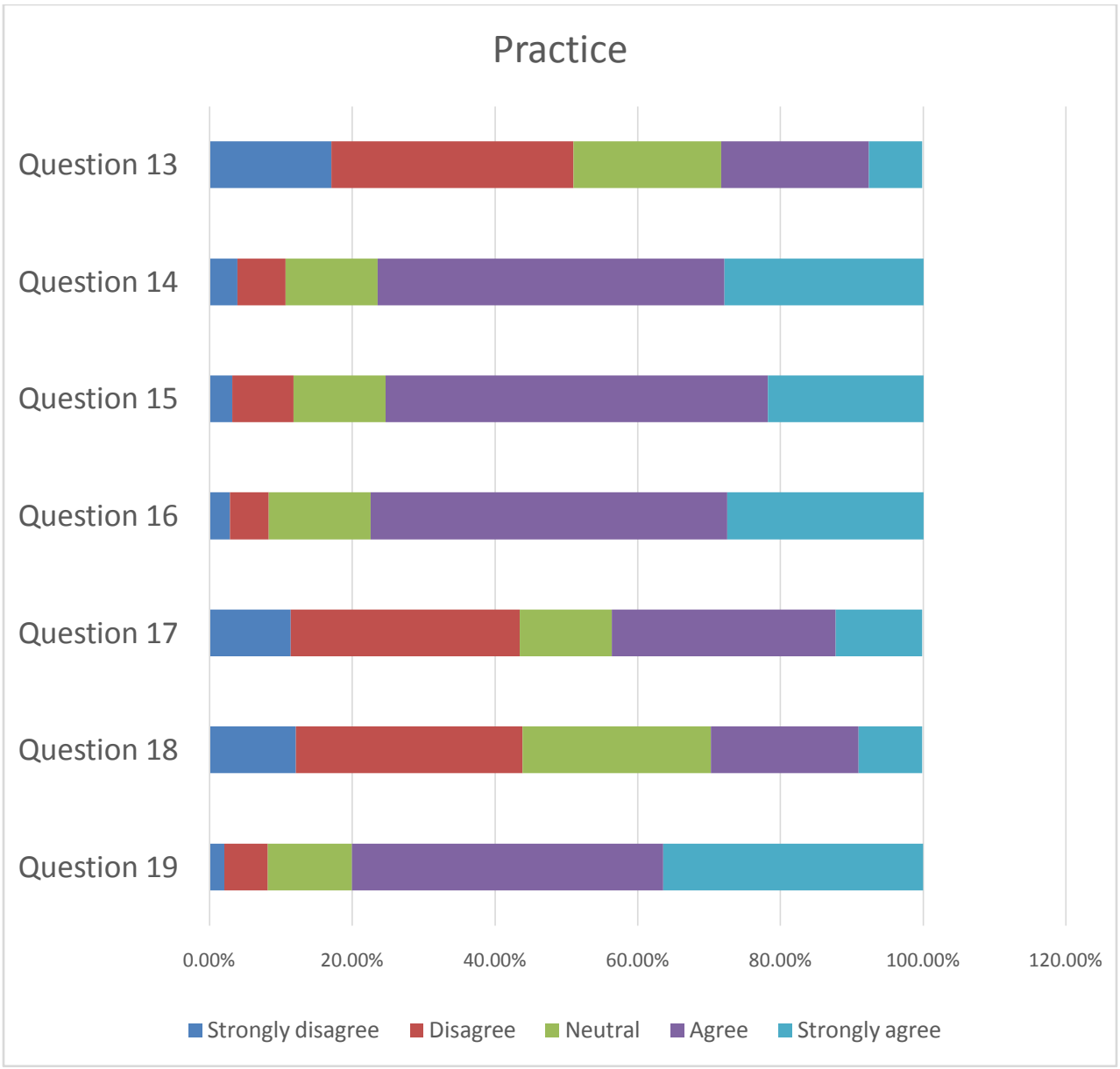
8. Using antibiotics for longer than advised can cause drug resistance.
9. Since antibiotics are safe, they might be used frequently.
10. Taking antibiotics while I have a fever would speed up my recovery, right?
11. Antibiotic resistance is exacerbated by the use of antibiotics initially.
12. Antibiotics should not be sold unless a doctor prescribes them.



Graph 2:-

Graph 3:Questionnaire regarding the practice of Antibiotic resistance.

13. Since there isn't time to wait and see, I am prepared to provide antibiotics even if they aren't needed.
14. In view of everything I have learned about antibiotic resistance, I am more careful than ever before while utilising these drugs.
15. I have advised my loved ones about taking antibiotics unless they have been prescribed to them.
16. I make an attempt to dissuade people from taking antibiotics for themselves when I know they are about to.
17. When my symptoms improve or go away, do I stop taking the antibiotics?
18. Newer, more expensive antibiotics have a stronger impact?
19. Should your medical school provide a class on the responsible use of antibiotics?



Graph 3:-

The development and expansion of a healthcare system that is available to the general public relies heavily on research. Research requires a suitable skill set, an optimistic outlook, and adequate and up-to-date knowledge.

This study's main goal was to assess the knowledge, attitudes, and behaviours of medical students and residents at M.G.M. Medical College and M.Y. Hospital about antibiotics.Nearly all of the graduate and undergraduate students who were contacted expressed enthusiasm in taking part in the study.

Broadly speaking, guys performed better on the knowledge assessments, and since more undergraduates participated in the research, their replies had greater weight.

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In order to combat antibiotic resistance, participants' knowledge, attitudes, and behaviours were examined in this research.Since learning about research technique is a continual process for undergraduate and graduate students, they should be exposed to it on a frequent basis. Graduate students should be encouraged to submit their work for publication and to discuss their findings at undergraduate and graduate conferences.

Conclusion:-

Our findings suggest that medical students need to be educated more thoroughly about antibiotics and have their attitudes and practises around them improved. This study also reveals that there is a need to improve medical education by include more instruction on the proper use of antibiotics to prevent the widespread misuse of these drugs among medical students. Understanding the antibiotic resistance mechanism and how to effectively employ antibiotics is crucial in the fight against the public health crisis that is antibiotic resistance. To prevent the spread of antibiotic abuse and its consequences, we suggest developing a specialised course on the rational prescription of antibiotics. This course would concentrate more on medical students' attitudes and behaviours toward antibiotic usage than it would on learning new information.

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Conflicts Of Interest:
None Declared.

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