

A Study on Knowledge, Attitudes, and Practices of Livestock Farmers Regarding Antimicrobial Use in Mirsharai, Chattogram



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By:

Shariful Islam

Roll No: 17/01

Reg No: 01818

Intern ID: 01

Session: 2016-17

Faculty of Veterinary Medicine

**Chattogram Veterinary and Animal Sciences University
Khulshi, Chattogram – 4225, Bangladesh**

A Study on Knowledge, Attitudes, and Practices of Livestock Farmers Regarding Antimicrobial Use in Mirsharai, Chattogram



Approved by:

(Mokaddes Ahmed Dipu)

Assistant Professor

Department of Agricultural Economics and Social Sciences

Faculty of Veterinary Medicine

Chattogram Veterinary and Animal Sciences University

Khulshi, Chattogram – 4225, Bangladesh

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Statement of Author

I, Shariful Islam, certify unequivocally that I have performed all the tasks detailed in this report. The data was gathered from books, national and international periodicals, and other sources. All citations have been properly acknowledged. Consequently, I am solely responsible for collecting, manipulating, preserving, and publishing all data compiled in this report.

The Author

List of Acronyms Symbols Used

Abbreviation	Elaboration
%	Percentage
Freq.	Frequency
Cum.	Cumulative
Obs	Observations
Std. Dev.	Standard Deviation
No, N	Number
*	Expected Answer
>	Greater than
e.g.,	Example
etc.	Et cetera
et. al	And his associate
AMR	Antimicrobial Resistance
AMU	Antimicrobial Use
UVH	Upazila Veterinary Hospital
CVASU	Chattogram Veterinary and Animal Sciences University

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Knowledge, Attitudes, and Practices of Livestock Farmers Regarding Antimicrobial Use

Abstract

Background: A 3-month long study was conducted about knowledge, attitude, and practice regarding antimicrobial use among small-scale local livestock farmers of Mirsharai, Chattogram - Bangladesh.

Objectives: The objective of the study design was to determine the livestock farmer's perspective on antimicrobial use and the conscious level to prevent antimicrobial resistance.

Materials and Methods: A cross-sectional study among the small-scale local livestock farmers was conducted from 17th February to April 2022. 82 farmers were selected for the study where everyone at least has 3 animals. Those who got more than the mean score were considered to have good knowledge, a favorable attitude, and practice towards antimicrobial use.

Results: A total of 82 farmers participated in this study. The mean knowledge score was 68.8% which was not bad considering their educational background and level. But in the attitude section, they only got about 54% scores which was not expected. Similarly, they made about 70% score in the practice section which was better than expected in other sections.

Conclusion: Most small-scale farmers in Mirsharai, Bangladesh, had little knowledge of antimicrobial use, according to our research. To avoid inappropriate antibiotic use, farmers in the area should receive regular antimicrobial and AMR awareness education in the form of refresher courses/training.

Keywords: Antimicrobial, Livestock, Mirsharai, Knowledge, Attitude, Practice.

1. Introduction

Antimicrobials play an important role in the livestock sector by treating the diseased animal with a direct contribution to the national economy of Bangladesh. Antimicrobials are generally used to kill bacteria. In 1910, the first antibiotic, salvarsan, was introduced. Antibiotics have dramatically altered modern medicine and increased the average lifespan in just over a century. In the mid-1950s, the golden age of natural product antibiotic discovery began with the discovery of penicillin in 1928 (Bennett & Chung, 2001). Many bacteria have developed resistance to antimicrobials because of their incorrect and inappropriate use. At some point in the early 1970s, medical professionals ultimately had to give up their long-held assumption that penicillin can heal bacterial sickness and that the vast majority of bacterial infections can be cured (Lowy, 2003). Antimicrobials such as beta-lactam, cephalosporin, and ceftriaxone have been created as a reaction to the threat posed by antibiotic-resistant bacteria. Regrettably, resistance has finally been observed to almost all the antibiotics that have been produced (Abraham, 1963). Since then, the current antimicrobial resistance crisis has been caused by a progressive reduction in antibiotic discovery and development as well as the emergence of drug resistance in numerous human infections (Hutchings et al., 2019).

The use of proper antimicrobial in proper disease can show results dramatically. Research shows, that farmers are responsible for 53% of antimicrobial resistance in the Livestock Sector in the UK (Higham et al., 2018). Due to a lack of knowledge, attitude, and practice among the farmer, they are using antibiotics without prescription (Rather et al., 2017). That is creating the misuse of appropriate antimicrobial, overdose, and inappropriate medication period, leading to antimicrobial resistance. Antimicrobial overdose can create several side effects in an animal including production loss, loss of appetite, depression, and even sometimes

killing the animal by working as toxins (Manten, 1981). The wrong antimicrobial in another disease can cause antimicrobial resistance. Thus, they can cause infection against other antimicrobials (Klompas & Rhee, 2016). An inappropriate medication period means administering antimicrobial for a short period or long period compared to recommended. A short period of drug administration cannot kill all the bacteria in the body, and they can cause further infection by multiplying within the body. Due to the lack of knowledge, sometimes farmers use antimicrobial as a preventive measure that also leads to AMR decreasing an animal's immunity (Prestinaci et al., 2015). Antimicrobial resistance (AMR) has emerged as one of the major worldwide public health problems in recent decades, endangering our ability to control infectious diseases and crucial medical progress. Many farmers dispose of unused medications that become contaminated with soil, water, food ingredients, plants, and other sources due to improper practices (Farley et al., 2018). Certain bacteria develop resistance to the antimicrobial, necessitating a higher dose of a newer, broad-spectrum antibacterial to eradicate them (Richter & Hergenrother, 2019).

In addition, the available studies have all been conducted in the UK, South Africa, New York, Malaysia, Bhutan, Colombia, Saudi Arabia, and other countries but no studies were done in Bangladesh (Al-Shibani et al., 2017; Chapot et al., 2021; Dyar et al., 2018; Farley et al., 2018; Higueta-Gutiérrez et al., 2020; Wangmoi et al., 2021). It is critical to assess the current situation in Bangladesh to develop and implement effective control measures against unprotected AMU. Antimicrobials for livestock are used primarily by veterinarians and farmers. Enforcing the applicable regulations for farmers is a critical step toward resolving Bangladesh's AMU problem. The knowledge and behavior of farmers can significantly influence their decision to AMU. However, the current antimicrobial stewardship training, curriculums, and guidelines limit the value of selecting antimicrobials and the

transmission of AMR (Al Amin et al., 2020). Thus, a survey was carried out in Mirsharai, Bangladesh, to determine farmers' levels of knowledge, attitudes, and practices regarding the use of antimicrobials in livestock. Another objective of the study was to inform current policy initiatives to control AMR and build awareness among the farmers.

2. Materials and Method

2.1. Study area and period: The study was conducted at Mirsharai, Chattogram during the period from 17th February to 28th April. Mirsharai is an Upazila of Chittagong District in the division of Chittagong, Bangladesh. It consists of 2 Thana and 2 Pauroshava. Two thanas are Jorargonj and Mirsharai; two Pauroshavas are Baraiyarhat and Mirsharai (Uddin & Hossain, 2013). It has a population of 55771 and a total area of 482.88 square miles. There are a total of 120 villages and 16 Unions in this Upazila (District statistics, 2011). There are a total of 79545 families in this area, with 187323 men and 211393 women making up the male and female population. 77415 families are somehow connected to agriculture, either directly or indirectly. Average literacy 52%; male 56.3%%, female 47.9%. Several dairy farms in this area are 120 (Commercial) 1139 (Family), 27 Goat farms, 32 Layer farms, 517 Broiler farms, 17 Duck farms, 6 breeder farms, 32 Sonali bird farms, 12 Turkey farms, 41 Pigeon farms situated in this area – according to information of Upazila Livestock Office and Veterinary Hospital, Mirsharai. The data was collected over a total of 48 working days when the working period was 9 am to 5 pm in the Veterinary Hospital.

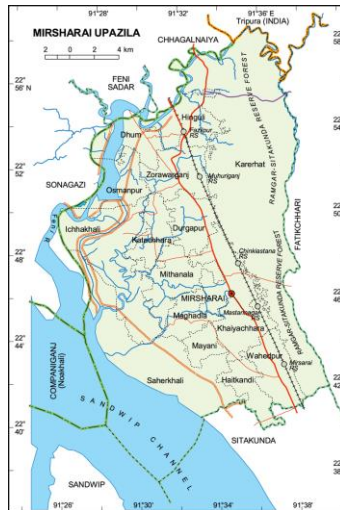


Figure 1: Map of Mirsharai (Study area)

2.2. Selection of participants: The participants were all small-scale farmers from the Mirsharai Upazila. Participants were divided into four groups: cattle, goat, sheep, and poultry farmers, with each farmer required to have a minimum of three animals (cattle, sheep, goat) or 10 birds (chicken, duck, pigeon). Participants were selected randomly who came to the Upazila Livestock Office and Veterinary Hospital for treatment of their animals. The farmer was categorized as small-scale by at least having 3 animals (Cattle, Goat, Sheep) or 10 birds (Chicken, Duck, Pigeon).

2.3. Questionnaire design and data collection: The study was conducted based on a cross-sectional study. The data for this cross-sectional study were collected using a standardized questionnaire that the participants completed on their own. In the first section of the survey, demographic and socioeconomic information was gathered; in the second section, there were 16 questions about antibiotic knowledge; in the third section, there were 15 questions about attitudes; and in the fourth section, there were 16 questions about practice with case scenarios about antimicrobial use. The questionnaire was conducted based on some similar research in other countries and collected through google (Dyar et al., 2018; Farley et al., 2018). Then the final copy was examined by two expert supervisors and two veterinary students who pre-tested

the questionnaire. The questionnaire was modified depending on the problem faced during this testing and by the advice of supervisors. This group was later omitted from the primary survey. The questionnaire was then printed and was carried in UVH for self-data collection. The farmers filled up the form independently, but the survey conductor explained and translated every question into the native language. About 40 questionnaires were filled by the participants attending a Farmer training at Upazila Livestock Office. People who took the survey did so voluntarily and had the option to opt-out at any moment.

2.4. Data Analysis: The collected data were sorted and imported into Microsoft Excel (Microsoft 365 Apps for Enterprise). Descriptive statistics were adopted with StataCorp Stata MP 16.0_SS_2019, mainly to demonstrate the results per the objective of the study.

3. Results and Discussions

A total of 100 questionnaires were prepared and 85 questionnaires were supplied in the study area. Among them, 82 participants completed their questionnaire successfully. The recorded response rate was 96.47%.

3.1. Demographic characteristics of respondents: Participants were from 32 villages of Mirsharai. The participants were >20(2), 20-39(33), 40-59(31), and ≥60(16) years old where their main occupations were 13types and their education level were Primary (43 – Primary indicates class 1 to 5), Secondary (19 – Secondary indicates class 6 to 10), Higher Secondary (8 – Higher Secondary indicates class 11 to 12), Graduation (12 – Graduation indicates Hons 1st year to MSc). Type of livestock they have Cattle (38 persons), Goats (17 persons), Sheep (3 persons), Chicken (29 persons), Duck (16 persons), and Pigeon (9 persons). In the income section, some of the farmers (38 persons) didn't have any income from livestock as they use animals for their own consumption and by their family.

Table 1: Tabulation of Age

Age (year)	Freq.	Percent	Cum.
>20	2	2.44	2.44
20-39	33	40.24	42.68
40-59	31	37.80	80.49
≥60	16	19.51	100.00
Total	82	100.00	

Table 2: Tabulation of Education

Education	Freq.	Percent	Cum.
Primary	43	52.44	52.44
Secondary	19	23.17	75.61
Higher Secondary	8	9.76	85.37
Graduation	12	14.63	100.00
Total	82	100.00	

Table 3: Tabulation of Income/month

Variable	Obs	Mean	Std. Dev.	Min	Max
Incomemonthtaka	82	9573.171	13051.683	0	50000

Table 4: Tabulation of Job besides farming

Main Occupation	Freq.	Percent	Cum.
Businessman	12	14.63	14.63
Driver	5	6.10	20.73
Farmer	36	43.90	64.63
Fisherman	1	1.22	65.85
Housewife	8	9.76	75.61
Imam	1	1.22	76.83
Mason	3	3.66	80.49
Painter	1	1.22	81.71
Plumber	2	2.44	84.15
Private Employee	4	4.88	89.02
Retired Army Officer	1	1.22	90.24
Student	7	8.54	98.78
Tailor	1	1.22	100.00
Total	82	100.00	

Table 5: Farming Experience

Variable	Obs	Mean	Std. Dev.	Min	Max
Farming Experience (Year)	82	15.537	16.538	1	60

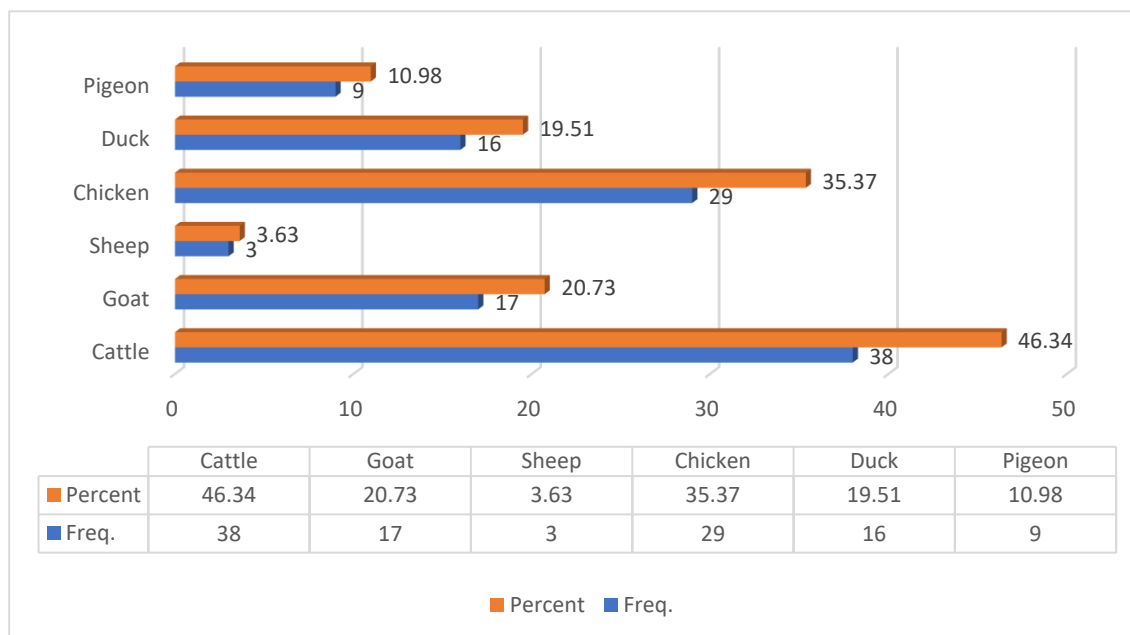


Figure 2: Tabulation of Livestock

3.2. Knowledge: This section of the questionnaire was designed with 15 questions to know the knowledge status of livestock farmers regarding antimicrobial use. Among the questions eleven expected answers were No and four expected answers were Yes. In general, the farmers' self-reported responses revealed that most of them (n = 80, 55) were familiar with the term's antimicrobial and antimicrobial resistance (Q1 and Q2). Additionally, we asked farmers if they were familiar with how antibiotic works and the results shows 58 knew the mechanism and 24 were unknown and the expected answer was negative as this type of information should be familiar to doctors or pharmacist rather than livestock farmers. The responses to the question “Can antibiotics be used to cure infections caused by bacteria?” showed reasonably good knowledge (81.7% of the total respondents said “Yes”). On the other hand, 18.29% of the total respondents said “No” which was not expected. Despite the adverse items, overall, the respondents provided not favorable reactions. Especially 43% of total farmers said Yes to the question like “Can antibiotics be used to cure infections caused by viruses?” where the expected answer was No, which responded by 39% of farmers. Many of the farmers (45% of the total respondents) answered “Yes” to the statement “Do you think the use of antibiotics will speed up the recovery of a cold, or cough?” which is an incorrect response. The responses to the question “Antibiotics can be obtained without a prescription at pharmacies.” showed reasonably good knowledge (68% of the total respondents said “No”).

Table 6: Responses to the questionnaire on antibiotic knowledge (N = 82).

	Freq.	Percent	Cum.
Q1. Have you ever heard the term "Antibiotics"?			
No	2	2.44	2.44
Yes *	80	97.56	100.00
Q2. Do you know how antibiotic works?			
No *	24	29.27	29.27
Yes	58	70.73	100.00
Q3. Do you know about antibiotic resistance?			
No	27	32.93	32.93
Yes *	55	67.07	100.00
Q4. Can antibiotics be used to cure infections caused by bacteria?			
No	15	18.29	18.29

Yes *	67	81.71	100.00
Q5. Can antibiotics be used to cure infections caused by viruses?			
No *	39	47.56	47.56
Yes	43	52.44	100.00
Q6. Do you think the use of antibiotics will speed up the recovery of a cold, or cough?			
No *	37	45.12	45.12
Yes	45	54.88	100.00
Q7. Antibiotics can be obtained without a prescription at pharmacies.			
No *	68	82.93	82.93
Yes	14	17.07	100.00
Q8. Antibiotics can be used without maintaining a withdrawal period.			
No *	72	87.80	87.80
Yes	10	12.20	100.00
Q9. Antibiotics can be used in any dose and duration.			
No *	64	78.05	78.05
Yes	18	21.95	100.00
Q10. Do you think the excessive use of antibiotics will decrease the drug's efficiency?			
No	11	13.41	13.41
Yes *	71	86.59	100.00
Q11. The commercial feed contains antibiotics.			
No *	21	25.61	25.61
Yes	61	74.39	100.00
Q12. Any disease can be treated by using antibiotics.			
No *	62	75.61	75.61
Yes	20	24.39	100.00
Q13. Do you think antibiotics work as painkillers?			
No *	47	57.32	57.32
Yes	35	42.68	100.00
Q14. Is "Paracetamol" an antibiotic?			
No *	61	74.39	74.39
Yes	21	25.61	100.00
Q15. Antibiotics and Vaccines are the same.			
No *	78	95.12	95.12
Yes	4	4.88	100.00

Regarding the negative items, overall, the desirable responses were not good among the respondents. In Questions like “Antibiotics can be used without maintaining a withdrawal period” and “Antibiotics can be used in any dose and duration” 72 and 64 participants answered No, the expected answer. Again, of the total participants, 86.59% answered Yes to the question “Do you think the excessive use of antibiotics will decrease the drug's efficiency?”. There was an interesting statement – “The commercial feed contains antibiotics” which was wrong (Smith, 2019). But 61 farmers responded positively to the statement. For the rest of the

questions where negative responses were expected like “Any disease can be treated by using antibiotics”, “Do you think antibiotics work as painkillers?”, Is "Paracetamol" an antibiotic?”, “Antibiotics and Vaccines are the same” participants showed favorable responses (75.61%, 57.32%, 74.39%, 95.12% participants answered “No” to the questions.

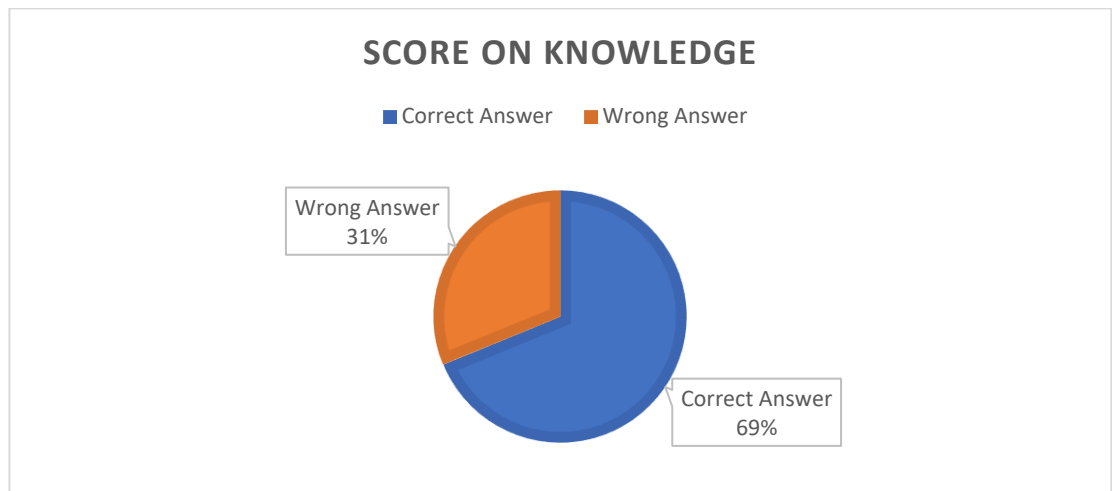


Figure 3: Mean Score of Knowledge section

The mean score of knowledge was 68.8%. The analysis shows that they had a lack of knowledge on the working mechanism of antimicrobial which is alright regarding their field of profession. But they should have some information like viral disease cannot be treated with antibiotics, it can only be used to prevent secondary bacterial infection in viral disease conditions (Manohar et al., 2020). There were many questions that they should know the answer to.

3.3. Attitude: The proportions of desirable answers to questions exploring attitudes are presented in Fig – 3. The results show that mean of 53.745% of participants gave the expected answer in the attitude section.

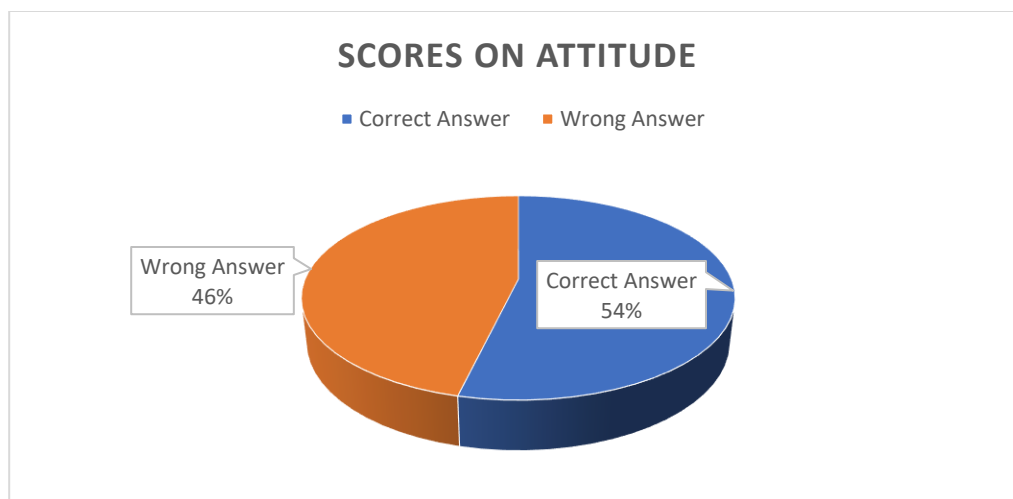


Figure 4: Mean score of Attitude section

Participants gave excellent answers in few questions like “Antibiotic Resistant is a problem in Bangladesh”, Antibiotic resistance can affect the health of your animal”, “It is necessary to know information on the proper use of antibiotics before applying them”, “It is not necessary to consult a veterinarian before using antibiotics”, “It is required to use an antibiotic until complete disease recovery”, “Antibiotics should be used in the animal because it protects both human and animal” where they gave expected answer respectively as 88.02%, 90.24%, 89.02%, 79.27%, 91.46, 92.68%, 78.05%. But in questions number 2, 6, 8, 9, 11, 12 and 14 most of the participants gave wrong answer. Participants disagreed with “At present, there is no abuse of antibiotic”, “Antibiotics are better than vaccine”, “It is better to invest more in biosecurity to reduce the widespread use of antibiotics” and other statements which were not expected (Buckley et al., 2019; Shao et al., 2021). Results show that farmers are more willing to use antimicrobial in their livestock other than using protective measures to prevent the disease. This type of attitude could be dangerous for animal health sector and can create antimicrobial resistance in both animal and humans.

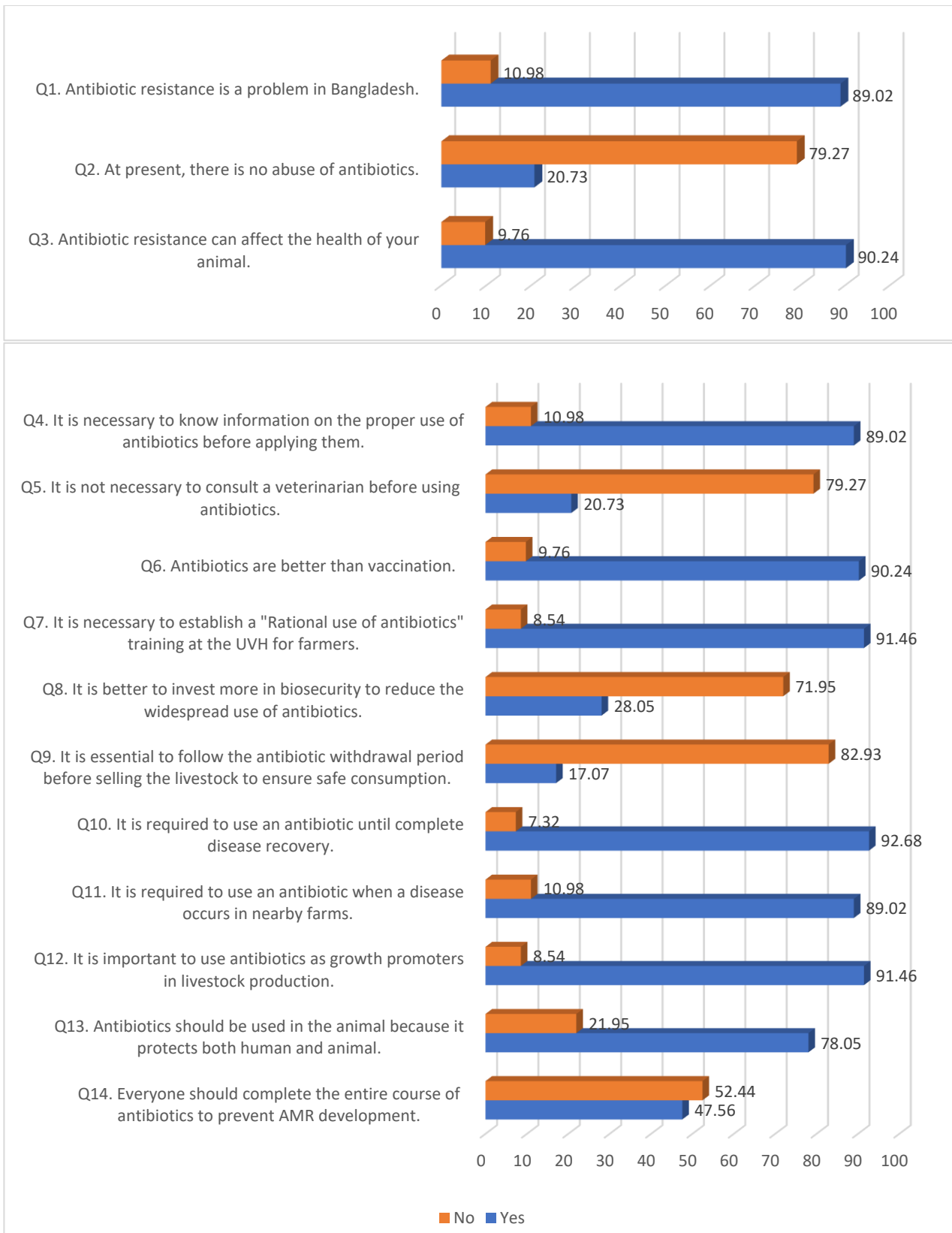


Figure 5: Results of "Attitude" section

3.4. Practice:

Table 7: Responses to the questionnaire on antibiotic Practice (N = 82).

	Freq.	Percent	Cum.
Q1. Do you stop the use of antibiotics as soon as your animal recovers?			
No*	45	54.88	54.88
Yes	37	45.12	100.00
Q2. Do you use antibiotics without the veterinarian's instruction?			
No*	71	86.59	86.59
Yes	11	13.41	100.00
Q3. Do you use antibiotics on livestock based on your prior experience?			
No*	52	63.41	63.41
Yes	30	36.59	100.00
Q4. Do you ask the veterinarian to prescribe antibiotics for a common disease?			
No*	38	46.34	46.34
Yes	44	53.66	100.00
Q5. Do you check the expired date of antibiotics before using them?			
No	8	9.76	9.76
Yes*	74	90.24	100.00
Q6. Do you use antibiotics as the prescribed dose and duration?			
No	9	10.98	10.98
Yes*	73	89.02	100.00
Q7. Do you throw the expired and unused antibiotics on the ground?			
No*	44	53.66	53.66
Yes	38	46.34	100.00
Q8. Do you vaccinate your animal to reduce the use of antibiotics?			
No	9	10.98	10.98
Yes*	73	89.02	100.00
Q9. Do you maintain regular antibiotic therapy as a prevention measure?			
No*	48	58.54	58.54
Yes	34	41.46	100.00
Q10. Do you use antibiotics other than the prescribed one?			
No*	60	73.17	73.17
Yes	22	26.83	100.00
Q11. Do you use multiple antibiotics together?			
No*	69	84.15	84.15
Yes	13	15.85	100.00
Q12. Do you maintain basic hygiene at the farm to prevent diseases?			
No	5	6.10	6.10
Yes*	77	93.90	100.00
Q13. Do you use a double dose of antibiotics for quick healing?			
No*	69	84.15	84.15
Yes	13	15.85	100.00
Q14. Do you use antibiotics in feed products to prevent microbial spoilage?			
No*	42	51.22	51.22
Yes	40	48.78	100.00
Q15. Did you ever use ruminant antibiotics for birds or vice-versa?			
No*	60	73.17	73.17
Yes	22	26.83	100.00
Q16. Do you buy antibiotics from field-level drug representatives?			
No*	63	76.83	76.83
Yes	19	23.17	100.00

Based on the questions about the practices of respondents in obtaining antibiotics, more than 50% of participants answered “No” to the question “Do you stop the use of antibiotics as soon as your animal recovers?” which was expected. Nevertheless, 11 participants said they use antimicrobial without Veterinarians instruction and 71 followed the instructions. 63.41% participants do not use antimicrobial in their livestock based on their prior experience which was an ideal practice. However, 44 participants among 82 said they asked to provide antimicrobial for simple illness as they don’t want to take risk and use medicine for early recovery. Furthermore, as many as 90.24% of respondents checks the expiry date of drugs before using them which indicated a positive practice. Although, 46.34% farmers throw leftover drugs on ground that could lead to AMR on ground microbes. Results shows that 89.02% participants use antimicrobial as prescribed dose and duration where 10.98% don’t. In questions like “Do you vaccinate your animal to reduce the use of antibiotics?”, “Do you maintain regular antibiotic therapy as a prevention measure?”, “Do you use antibiotics other than the prescribed one?” 73, 48, and 60 participants gave expected answer respectively. However, 84.15% participants use multiple antimicrobial together for better results which can show several side effects in livestock and leads to production loss (Hardy, 2006). Only 5 farmers didn’t maintain the hygiene at the farm to prevent disease where remaining 77 participants were correct. But the result found a terrible practice that 84.15% participants use double dose of antimicrobial for quick recovery. 51.22% farmers use antibiotic in feed to prevent microbial spoilage of feed that is a miss practice among the local farmers of Mirsharai. About 73.17% had an experience to use birds’ medication in other animal and vice versa where only 22 participants gave expected answers. We found a major finding behind their malpractice in medication that about 23.17% farmers buy antibiotic from field level drug representatives and follow their advice which is gutsful work for both the drug company member and farmers.

In overall section of the study, participants acquired about 69%, 54% and 70% respectively in knowledge, attitude, and practice. Results shows farmer had moderate level of knowledge about antimicrobial use which is alright regarding their level of education (all participants were not well educated). But in attitude section the result is not satisfied, and it reveals misuse of antimicrobial in field level. The author found a significant reason behind the lower level of attitude score, most of the farmers use antimicrobial in their farms by the recommendation of other farmers nearby and by field level drug representative. It could show a drastic downfall in antimicrobial efficacy and AMR could be miserable in recent days. In the practice section, farmers got the highest score which was surprising compared to the attitude score. It is a good thing that farmers did not follow their attitude in terms of using antimicrobial. But the findings are not similar with the study conducted in other countries (Farley et al., 2018; Higham et al., 2018; Wangmoi et al., 2021).

4. Strength and Limitations of this study

Respondents in this study included people from both urban and rural areas, as well as people of various ages, income levels, and levels of education so that the study's findings could be interpreted as representing the entire population. Furthermore, the respondents were interviewed face-to-face for this study's sampling. As an outcome, the response rate derived was high (100%). Face-to-face questionnaire collection allows researchers to double-check if respondents completed the questionnaire and cross-check questionnaire answers to reduce random errors.

There were some limitations in this study. Farmers with at least 3 animals were considered in this study and thus the sample size is small. There was no budget allocation, the survey conductor faced all the costing by himself. The study period was limited, and the study area was restricted to a particular area. For this reason, the findings may not reflect the whole country.

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5. Conclusion

Antimicrobials are being used for a long period of time to treat livestock animal, but day by day increasing misuse is leading to AMR. Our research shows, most farmers in Mirsharai, Bangladesh had little knowledge of antimicrobial use and their attitude level was slightly lower than other sections, but they didn't practice as expected regarding their attitude. Regular farmer awareness program and training from the Livestock department in field level can make improvement among farmers and will help to decrease misuse, and AMR.

6. Data availability statement: The data was collected through questionnaire by the author himself and recorded in a excel file which was stored in authors computer. Other than the author himself, no one has the access to the data (both soft and hard copy). So, the data is completely secure and completely bias free.

7. Acknowledgments: The author wishes to acknowledge the immeasurable mercy of Almighty ‘God’, the foremost authority and supreme ruler of the universe, who permits the author to complete this work successfully. The author expresses his deepest perception of gratitude, respect, and immense gratefulness to his honorable teacher and supervisor, Mokaddes Ahmed Dipu, Assistant Professor, Department of Agricultural Economics and Social Science, and Tasneem Imam, Associate Professor, Department of Agricultural Economics and Social Science, Chattogram Veterinary and Animal Sciences University for his academic guidance, generous supervision, precious advice, constant inspiration, radical investigation and effective judgment in all steps of the study. The author expresses his genuine gratitude and respect to the honorable teacher Prof. Dr. Md. Alamgir Hossain, Dean, Faculty of Veterinary Medicine, and Prof. Dr. A. K. M. Saifuddin, Director of External Affairs, Chattogram Veterinary and Animal Sciences University for proceeding with this internship program.

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8. Competing interests: As the study was conducted by the author himself, so there is no competing interest.

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10. Appendix

Questionnaire

Demographic & socio-economic information of farmers:

Name		Cell no.	
Age		Education	
Village		Occupation	
Farming Experience		Income/month	
Upazila & District		Livestock	Cattle, Goat, Chicken (layer/broiler), Duck, others (.....)

Knowledge about Antibiotics

Q No.	Questions	Answers	
		Yes	No
1	Have you ever heard the term "Antibiotics"?		
2	Do you know how antibiotic works?		
3	Do you know about antibiotic resistance?		
4	Any antibiotic can be used in livestock as a preventive measure.		
5	Can antibiotics be used to cure infections caused by bacteria?		
6	Can antibiotics be used to cure infections caused by viruses?		
7	Do you think the use of antibiotics will speed up the recovery of cold, cough, and other diseases caused by the common flu virus?		
8	Antibiotics can be obtained without a prescription at pharmacies.		
9	Antibiotics can be used without maintaining a withdrawal period.		
10	Antibiotics can be used in any dose and duration.		
11	Do you think the excessive use of antibiotics will decrease the drug's efficacy?		
12	The commercial feed contains antibiotics.		
13	Any disease can be treated by using antibiotics.		
14	Do you think antibiotics work as painkillers?		
15	Is "Paracetamol" an antibiotic?		
16	Antibiotics and Vaccines are the same.		

Attitudes regarding Antibiotics:

Q No.	Questions	Answers	
		Yes	No
1	Antibiotic resistance is a problem in Bangladesh.		
2	At present, there is no abuse of antibiotics.		

3	Antibiotic resistance can affect the health of your animal.		
4	It is necessary to know information on the proper use of antibiotics before applying them.		
5	It is not necessary to consult a veterinarian before using antibiotics.		
6	Antibiotics are better than vaccination.		
7	It is necessary to establish a "Rational use of antibiotics" training at the UVH for farmers.		
8	It is better to invest more in biosecurity to reduce the widespread use of antibiotics.		
9	It is essential to follow the antibiotic withdrawal period before selling the livestock to ensure safe consumption.		
10	It is required to use an antibiotic until complete disease recovery.		
11	It is required to use an antibiotic when a disease occurs in nearby farms.		
12	It is important to use antibiotics as growth promoters in livestock production.		
13	Antibiotics should be used in the animal because it protects both human and animal.		
14	Everyone should complete the entire course of antibiotics to prevent AMR development.		

Practice Regarding Antibiotic Use:

Q No.	Questions	Answers	
		Yes	No
1	Do you stop the use of antibiotics as soon as your animal recovers?		
2	Do you use antibiotics without the veterinarian's instruction?		
3	Do you use antibiotics on livestock based on your prior experience?		
4	Do you ask the veterinarian to prescribe antibiotics for a common disease?		
5	Do you check the expired date of antibiotics before using them?		
6	Do you use antibiotics as the prescribed dose and duration?		
7	Do you throw the expired and unused antibiotics on the ground?		
8	Do you vaccinate your animal to reduce the use of antibiotics?		
9	Do you maintain regular antibiotic therapy as a prevention measure?		
10	Do you use antibiotics other than the prescribed one?		
11	Do you use multiple antibiotics together?		
12	Do you maintain basic hygiene at the farm to prevent diseases?		
13	Do you use a double dose of antibiotics for quick healing?		
14	Do you use antibiotics in feed products to prevent microbial spoilage?		
15	Did you ever use ruminant antibiotics for birds or vice-versa?		
16	Do you buy antibiotics from field-level drug representatives?		

12. Biography of Author

This is Shariful Islam, the elder child of Shafiqule Islam and Nurjahan Khandokar, doing his graduation on Doctor of Veterinary Medicine (DVM) at Chattogram Veterinary and Animal Sciences University under Faculty of Veterinary Medicine. He passed the Secondary School Certificate Examination (SSC) in 2014 from KUP School, Kaligonj - Lalmonirhat and got GPA 5.00 and then Higher Secondary Certificate Examination (HSC) in 2016 from Police Lines School and College, Rangpur and got GPA 5.00 out of 5.00. Currently he is doing his yearlong internship. He has a great enthusiasm in his study area to develop day one skills and gain more practical knowledge to be prepared for the modern era of science.