ISSN: 2640-1223

MEDDOCS Open Access Publisher

Journal of Veterinary Medicine and Animal Sciences

Open Access | Research Article

Assessment of Knowledge, Attitude and Perception of Drug Resistance in Rural Communities of Ada'a District, Central Ethiopia

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Received: Feb 20 2026

Accepted: Apr 13, 2026

Published Online: Apr 20, 2026

Journal: Journal of Veterinary Medicine and Animal Sciences

Publisher: MedDocs Publishers LLC

Online edition: http://meddocsonline.org/

Keywords: Antibiotics; Antimicrobial resistance; Knowledge; Attitudes; Practices; Ethiopia.

Abstract

Antibiotic resistance is a growing global threat, and improving public knowledge and attitudes toward antibiotic use is a crucial early strategy for containment. This study was conducted in the rural part of Ada'a district, Oromia regional state, to assess community knowledge, attitudes, and practices related to antibiotic use. A cross-sectional survey using a pretested questionnaire was administered to 392 randomly selected residents (330 males and 62 females) aged 18 years and above. Data were analyzed using descriptive statistics, Chi-square tests, and one-way ANOVA. Most participants (81%) were farmers. A large proportion (61%) did not know what antibiotics are or their intended uses. Additionally, 34% could not name the antibiotics they had used for themselves or their animals, and 68% lacked knowledge about the diseases for which they were treated. Encouragingly, 73.5% reported completing the full course of antibiotic treatment even when symptoms improved, and 72.5% disagreed that antibiotics can be safely used without prescription. Most respondents (95%) sought treatment for their animals after diagnosis, and over 80% refrained from purchasing veterinary drugs from local traders. A strong positive correlation was observed between knowledge and attitudes toward antibiotic use ($p<0.001$), indicating that greater knowledge was associated with more favorable attitudes. However, the correlation between knowledge and practice was weak and not statistically significant ($p>0.05$), suggesting that better knowledge did not consistently translate into improved practices. Occupation had no significant effect on knowledge ($p>0.05$), while education level showed a significant positive correlation with antibiotic knowledge ($p<0.05$). In conclusion, the study highlights substantial knowledge gaps and misconceptions regarding antibiotic use among rural residents. Targeted educational interventions are recommended to enhance community awareness and promote rational antibiotic use in both humans and animals.

Cite this article: Arata AA, Fuffa A, Andy S. Assessment of Knowledge, Attitude and Perception of Drug Resistance in Rural Communities of Ada'a District, Central Ethiopia. J Vet Med Animal Sci. 2026; 10(1): 1155.

Introduction

Antimicrobials are one of the most successful forms of chemotherapy in the history of medicine and have significantly contributed to the control of infectious diseases that were leading causes of human and animal morbidity and mortality. They are used to treat infections caused by a wide range of infectious agents including viruses, fungi, and parasites, whereas, antibacterial or antibiotic drugs are a subset of antimicrobial drugs used to treat bacterial infections [19]. Antimicrobial Resistance (AMR) is defined as "the resistance of a microorganism to an antimicrobial medicine to which it was originally sensitive" [14]. It is a major global public health concern and a food safety issue. Resistant organisms (including bacteria, fungi, viruses and some parasites) are able to withstand attack by antimicrobial medicines (such as antibiotics, antifungals, antivirals and antimalarials), resulting in treatments becoming ineffective, which lead to persistent infections, increasing the risk of spread to others [14]. The emergence of AMR is a consequence of the use, overuse and misuse of antibiotics both in humans and animals [5]. Paradoxically, underuse through inappropriate choice, inadequate dosing, poor adherence to treatment, and substandard antimicrobials, also plays an important role in the emergence and spread of AMR. The risk appears to be particularly high in countries where national policies, and regulatory, surveillance and monitoring systems for AMR and antimicrobial drug usage are weak or inadequate [7]. When antimicrobials are administered to food animals for disease prevention or growth promotion, they are commonly administered at lower doses and for longer durations than when these drugs are used for disease treatment and control; administration of low doses for extended periods can increase selective pressure for AMR [11]. Use of antibiotics in animals (which includes fish, birds, bees and reptiles) is an important factor contributing to the wider pool of resistance, which may have long-term consequences [6].

The inappropriate and excessive uses of antibiotics are among the key factors for the increase and spread of resistance [4]. The use of antimicrobial drugs, no matter how well controlled, can still lead to the selection of drug resistance pathogen [21]. The improper use of antibiotics may arise from a complex interaction between numerous factors, such as prescribers' knowledge and experiences, diagnostic uncertainty, perceptions of patients in relation to the patient-prescriber interaction, and insufficient patient education by physicians [13]. In addition, other factors include patients' knowledge, beliefs and attitudes towards antibiotic use, self-medication, patients' expectations, and patients' experience with antibiotics [8]. Therefore, the control of AMR needs multifaceted interventions involving knowledgeable and engaged healthcare practitioners and the public. Infections caused by resistant microbes fail to respond to treatment resulting in prolonged illness and greater risk of death, longer periods of hospitalization and infections which increase the number of infected people within communities. When an infection becomes resistant to first line antibiotic, treatment has to be switched to second- or third-line options, which are potentially more expensive and more toxic (WHO, 2002). One of the main AMR containment strategies is therefore to increase the appropriate use, and to reduce misuse, of antibiotics [23].

Antimicrobial resistance is a very real threat. Patients with AMR have 2-3 times higher mortality and risk of complications [13]. If we have no suitable antibiotics to treat infection, minor surgery and routine operations could become high-risk procedures, being accompanied by a much greater risk of developing a difficult-to-treat or untreatable infection [14]. The achievements of modern medicine are put at risk by AMR. Without effective antimicrobials for care and prevention of infections, the success of treatments such as organ transplantation, cancer chemotherapy and major surgery would be compromised [22]. As more strains of bacteria become resistant to an ever-larger number of antibiotics, our drug choices will become increasingly limited and expensive and, in some cases, non-existent. The safety of many modern medical procedures is dependent on the ability to treat bacterial infections that can arise as post treatment complications [12]. When infections become resistant to first-line medicines, more expensive therapies must be used. The longer duration of illness and treatment, often in hospitals, increases health-care costs and the financial burden to families and societies [22].

Antimicrobial resistance is a global problem in general, but it might be more severe in Ethiopia where there is lack of AMR assessments and lack of rigorous regulations, but there is easy access of antimicrobials for purchase of people without prescription and incomplete treatment courses as the result of patient non-compliance [2]. The threat of AMR is rapidly progressing and intensifying [23]. Various approaches have been taken worldwide to meet the challenges which are posed by its spread [3]. An awareness of its seriousness and significance is the first step towards tackling this challenge. Without adequate surveillance, the majority of efforts to contain emerging AMR will be difficult (Stuart et.al, 2004). Thus, it is important to assess the knowledge and attitude of the public in order to reduce antibiotic resistance. Improving the public knowledge and changing their attitudes towards antibiotic use will be a crucial early strategy to maintain antibiotic effectiveness. In general, information on knowledge and beliefs regarding antibiotic relating to developing world, including Ethiopia, is scarce Therefore; the present study is aimed at describing the knowledge, attitudes and behavioral practices about antibiotic use and resistance among people in rural communities of eastern Shewa zone of Ada'a district, Ethiopia.

Materials and methods

Description of the study area

The study was carried out in the rural part of Ada'a district, located in the Oromia Regional State, approximately 45 km southeast of Addis Ababa, the capital city of Ethiopia. The district lies at approximately 9° N latitude and 40° E longitude, with an average elevation of about 1,850 m above sea level in the central highlands of Ethiopia. The area experiences a bimodal rainfall pattern with an average annual precipitation of 866 mm, of which about 84% occurs during the main rainy season (June to September). The dry season extends from October to February. The mean annual maximum and minimum temperatures are 26 °C and 14 °C, respectively, and the mean relative humidity is 61.3% [1].

Study population and sample size

The study population comprised rural residents of Ada'a district aged 18 years and above. Nine Peasant Associations (PAs) were randomly selected from the district list provided by the district Agricultural Office. From each PA, at least 43 households were selected using a simple random sampling method. Eligible participants included mentally healthy adults of both genders who were willing to participate in the study.

The sample size was determined using the Raosoft sample size calculator [15], assuming a 5% margin of error, a 95% confidence level, a population size exceeding 20,000 adults, and an expected response rate of 50%. Based on these parameters, a minimum of 377 participants was required; however, 392 individuals were included to increase precision.

Study design and data collection

A cross-sectional study design was employed. Data were collected using a pretested, structured, self-administered questionnaire that included both closed- and open-ended questions. The questionnaire was initially developed in English, translated into Afan Oromo (the local language), and back-translated to English to ensure accuracy and consistency. Prior to the main survey, a pilot test was conducted to validate the questionnaire for clarity and reliability.

Verbal informed consent was obtained from each participant after explaining the objectives and procedures of the study. The questionnaire covered five major components:

a) Demographic characteristics (age, gender, educational level, occupation, and marital status),

b) Attitudes toward antibiotic use in humans and animals,

c) Practices related to antibiotic use,

d) Knowledge about antibiotics and resistance, and

e) Sources of antibiotics for both humans and animals.

Participants' scores in knowledge, attitude, and practice domains were classified as poor (≤50%), fair (51–69%), and good (≥70%), following the criteria of Khan et al. [9].

Data management and statistical analysis

Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS), version 18. Descriptive statistics were used to summarize respondents' socio-demographic characteristics, as well as their knowledge, attitudes, and practices regarding antibiotic use and resistance. For presentation simplicity, responses of "strongly agree" and "agree" were grouped as "agree", and those of "strongly disagree" and "disagree" as "disagree."

Associations between variables were tested using the Chi-square test. Spearman's rank correlation was applied to assess relationships among knowledge, attitude, and practice scores. Statistical significance was considered at $p<0.05$.

Ethical approval and consent to participate

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki (2013 revision). Ethical clearance for the study was reviewed and approved by the Oromia Health Bureau Institutional Review Board (IRB). All participants were fully informed about the objectives, procedures, potential benefits, and voluntary nature of their participation. Verbal informed consent was obtained from each participant prior to data collection. Participants were assured that they could withdraw from the study at any time without any negative consequences, and that all information provided would be kept strictly confidential and used solely for research purposes.

Table 1: Socio-demographic characteristics of respondents (n=392).

Variable	Category	Frequency	Percent	Valid Percent	Cumulative Percent
Respondents sex	Male	330	84.2	84.2	84.2
	Female	62	15.8	15.8	100.0
	Total	392	100.0	100.0	
Respondents' age in years	18-30	162	41.3	41.3	41.3
	31-43	126	32.1	32.1	73.5
	44-56	68	17.3	17.3	90.8
	Greater than 57	36	9.2	9.2	100.0
	Total	392	100.0	100.0	
Respondents' Marital status	single	66	16.8	16.8	16.8
	married	322	82.1	82.1	99.0
	Divorced	4	1.0	1.0	100.0
	Total	392	100.0	100.0	
Educational background	Elementary	126	32.1	32.1	32.1
	Secondary	125	31.9	31.9	64.0
	TEVET(Vocational)	6	1.5	1.5	65.6
	University/College level	28	7.1	7.1	72.7
	With no formal education	74	18.9	18.9	91.6
	With Formal education	33	8.4	8.4	100.0
	Total	392	100.0	100.0	
Respondents occupation	Farmer	318	81.1	81.1	81.1
	Trader	26	6.6	6.6	87.8
	Employee	27	6.9	6.9	94.6
	Daily Laborer	21	5.4	5.4	100
	Total	**392**	**100**	**100**	

Results

Socio-demographic characteristics of respondents

A total of 392 individuals participated in the study, comprising 330 males (84.2%) and 62 females (15.8%) "Table 1". The majority of respondents (41.3%) were between 18 and 30 years of age, followed by those aged 31–43 years (32.1%). Participants aged 44–56 years accounted for 17.3%, while 9.2% were older than 57 years. Most of the respondents (82.1%) were married, whereas 16.8% were single and 1.0% divorced. In terms of education, 32.1% had completed elementary school, 31.9% secondary school, and 7.1% attended college or university. A considerable proportion (18.9%) had no formal education, while only 8.4% reported possessing informal or religious education. Regarding occupation, a large majority (81.1%) of participants were farmers, reflecting the rural nature of the study area. Government or private employees accounted 6.9%, traders 6.6%, and daily laborers 5.4%. These findings indicate that the study population predominantly consisted of married, male farmers with elementary or secondary-level education.

Knowledge about antibiotic use and resistance

Among the participants, only 39% ($p<0.001$) were able to define what antibiotics are and 61% were not able to define correctly. Among the participants, 62% disagreed with the statement that a single antibiotic can treat different diseases. In contrast, 18% agreed that a given antibiotic could be used to treat more than one disease, while the remaining 20% were uncertain. Only 3% of the participants disagreed that antibiotics are effective in treating bacterial diseases, while 47% agreed with this statement, and 50% were uncertain. The majority of participants (58%) were uncertain whether antibiotics can kill normal bacterial flora, while 34% agreed that antibiotics can do so, and 8% disagreed. Among the participants, 33% stated that antibiotics are effective in curing the common cold, 29% were uncertain, and 38% believed that antibiotics are not effective for treating the common cold. Only 33% of participants agreed that miss utilization of antibiotics leads to antibiotic resistance and 60% disagree on the issue. Of the participants, 32% of them agree that miss utilization of antibiotics in animals leads to antibiotic resistance in human, whereas 36% of them disagree. The other aspects of the knowledge questionnaire are presented in "Table2". Mean score of knowledge is 41.3±16.1%, so the knowledge level of the community is below 50% indicates that the knowledge level of community towards antibiotic usage and resistance is poor.

Table 2: Knowledge of respondents about antibiotic use and resistance (n=392).

Knowledge question	Correct response	Number of correct (%)
Do you know the definition of antibiotics?	Yes	153(39.0)
A given antibiotic can heal different diseases	Disagree	242(62.0)
Antibiotics are effective to treat bacterial diseases	Agree	186(47.0)
Antibiotics kill normal flora of the skin and gut	Agree	136(34.0)
Antibiotics are effective to cure common colds	Disagree	147(37.5)
You stop taking antibiotics whenever there are adverse effects	Agree	53(13.5)
Misuse of antibiotics leads to antibiotic resistance	Agree	130(33.0)
Misuse of antibiotics in animals leads to antibiotic resistance in humans	Agree	129(33.0)
New or expensive drugs are more effective than usual ones	Disagree	167(43.0)
Antibiotics are safe and can be used without prescription to treat various diseases	Disagree	277(71.0)

Correlation between educational level and knowledge of antibiotic use

To evaluate the relationship between participants' educational level and overall knowledge of antibiotic use, a Pearson correlation analysis was conducted (Table 3). The analysis revealed a statistically significant, though weak, positive correlation between educational attainment and knowledge score ($r(390)=0.12$, $p=0.018$). This indicates that respondents with higher levels of education tended to have slightly higher knowledge about antibiotic use and resistance.

Table 3: Correlation between educational background and overall knowledge score of respondents (n=392).

Variable	Educational background	Knowledge score
Educational background	1	0.120*
Sig. (2-tailed)	–	0.018
N	392	392
Knowledge score	0.120*	1
Sig. (2-tailed)	0.018	–
N	392	392

*Correlation is significant at the 0.05 level (2-tailed).

Attitudes toward antibiotic use

The assessment of participants' attitudes toward antibiotic use revealed generally positive practices in the rural community of Ada'a district (Table 4). A majority of respondents (71%) reported that they complete their full course of antibiotics even if they feel better, while 20% indicated they would stop treatment early. Most participants (92%) disagreed with taking antibiotics obtained from friends or relatives, with only 8% indicating they might do so when feeling sick. Similarly, 88% disagreed with purchasing antibiotics from a pharmacy without a prescription, whereas 9% reported they might purchase them without consultation (Table 4).

Regarding perceptions of drug efficacy, 42% disagreed with the notion that new or more expensive antibiotics are more effective than older, less costly alternatives, while 44% agreed. A majority (88%) recognized that antibiotics are unsafe when taken without a prescription and should only be used for specific diseases, whereas 12.7% assumed that antibiotics are safe for any illness without prescription. Furthermore, 95% of participants disagreed with keeping leftover antibiotics for future use, and 81% disagreed with purchasing antibiotics whenever they become sick without medical advice. Most participants

(86.2%) disagreed that missing one or two doses would not affect treatment efficacy, while 12% believed occasional missed doses were acceptable.

The mean attitude score, calculated from nine questions, was 79.6±16%, indicating a generally good attitude toward appropriate antibiotic use and resistance in the community.

Table 4: Responses to questions regarding attitudes toward antibiotic use among respondents (n=392).

Question	Appropriateness	Number of Agree (%)
I always complete my course of treatment even if I feel better	Appropriate	277(71)
It is better to get drugs from friends/relatives rather than consulting doctors	Inappropriate	360(92)
I prefer to purchase drugs from pharmacy without prescription	Inappropriate	348(88)
Do you consult a doctor/physician before taking antibiotics	Appropriate	332(84.6)
New brand and expensive drugs are more effective than usual ones	Inappropriate	171(42)
Antibiotics are safe and can be used to treat different diseases without side effects	Inappropriate	284(72.4)
I prefer to keep remaining antibiotics after treatment for future need	Inappropriate	372(95)
Whenever I feel sick, I use antibiotics and feel better	Inappropriate	334(85.2)
Discarding one or two doses from the course of treatment has no effect on efficacy	Inappropriate	338(86.2)

Correlation between knowledge and attitude scores

A Pearson correlation analysis was conducted to assess the relationship between respondents' knowledge of antibiotics and their attitudes toward antibiotic use (Table 5). A strong positive correlation was observed (r(390)=0.29, p<0.001), indicating that participants with higher knowledge about antibiotics tended to have more positive attitudes toward their appropriate use.

Table 5: Pearson Correlation between Respondents' Knowledge of Antibiotics and Their Attitudes toward antibiotic Use.

Variable	Knowledge score	Attitude score
Knowledge score	1	0.290**
Sig. (2-tailed)	–	0
N	392	392
Attitude score	0.290**	1
Sig. (2-tailed)	0	–
N	392	392

**Correlation is significant at the 0.01 level (2-tailed).

Practices toward antibiotic use

The majority of respondents (85%, p<0.01) reported that they consult a doctor or physician before using antibiotics, while 15% indicated that they do not seek medical consultation (Table 6). Regarding drug safety, 60% of participants check the expiry date of antibiotics when purchasing from a pharmacy, whereas 40% do not (Table 6). A very high proportion (98.7%, p<0.01) of respondents reported completing the full course of prescribed antibiotics, while only 2% admitted stopping treatment when feeling better.

The mean practice score was 80±1.6%, indicating generally good practices toward antibiotic use among participants.

Table 6: Responses to questions regarding practices toward antibiotic use among respondents (n=392).

Question	Number	No. of Agree (%)
Do you consult your doctor before taking antibiotics?	392	332(85)
Do you check the expiry date of drugs when you purchase?	392	235(60)
When you feel better after taking 2–3 doses, do you discard remaining doses?	392	300(76.5)
Do you complete your course of antibiotics?	392	387(98.7)

A Pearson correlation between knowledge and practice scores indicated a weak, non-significant relationship (*r*(390)=0.076, *p*=0.136), suggesting that higher knowledge about antibiotics did not reliably predict better self-reported practices in this sample (Table 7).

Table 7: Correlation between knowledge and practice scores among respondents (n=392).

Variable	Knowledge score	Practice score
Knowledge score	1	0.076
Sig. (2-tailed)	–	0.136
N	392	392
Practice score	0.076	1
Sig. (2-tailed)	0.136	–
N	392	392

Association between occupational status and knowledge of antibiotic use

Descriptive statistics (Table. 7.) & Figure 1. Showed that mean knowledge scores were highest among employees (M=27.22, SD=2.45) and lowest among traders (M=25.23, SD=3.40), with daily laborers (M=26.76, SD=2.34) and farmers (M=26.48, SD=3.19) scoring in between (Table 8. However, a one-way ANOVA found that these differences across groups were not statistically significant (p>.05). This was confirmed by a Tukey HSD post-hoc test, which revealed no significant pairwise differences between any occupational groups (all p>.05) and placed all groups into a single homogeneous subset (p=0.055). Therefore, occupation was not a significant factor influencing antibiotic knowledge.

Table 8: Summary of the knowledge score for each occupational group.

Occupation	N	Mean Score	Std. Deviation	Minimum	Maximum
Employee	27	**27.22**	2.45	22	30
Daily Laborer	21	**26.76**	2.34	22	31
Farmer	318	**26.48**	3.19	20	35
Trader	26	**25.23**	3.40	19	31

Trend of antibiotic use in animals

Most respondents (97%) reported taking their animals to veterinary clinics for diagnosis when they become sick. Of these, 80% preferred district veterinary services, whereas 20%

relied on private veterinarians due to limited access to government veterinary facilities in some kebeles.

A majority (82%) stated that they do not purchase medicines from the market to treat their animals without veterinary consultation, while 18% admitted self-medicating their animals. Only 14% of respondents reported purchasing drugs from local traders, whereas 85% avoided such sources. Regarding traditional remedies, 40.8% indicated that they sometimes use traditional medicines for certain animal diseases, while 59.2% do not consult traditional healers for animal treatment.

These findings suggest that rural livestock owners in Ada'a District generally follow proper veterinary guidance but that a minority still relies on self-treatment or traditional remedies.

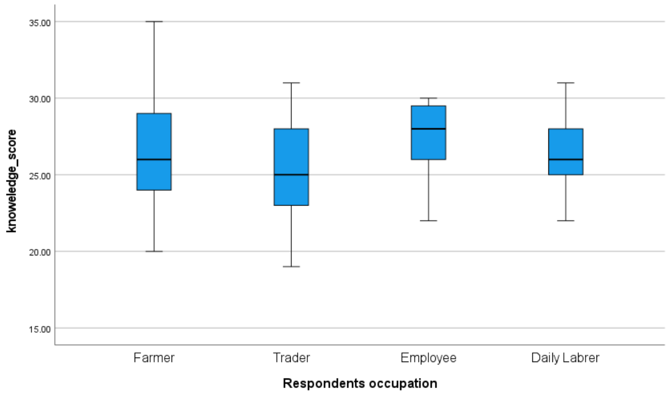

Figure 1: A boxplot illustrating the distribution of knowledge scores across occupational groups.

Discussion

The present study assessed the knowledge, attitude, and practices of respondents toward antibiotic use in the rural areas of Ada'a District. Overall, the findings indicate that participants possess moderate knowledge and attitude regarding antibiotic use, with mean scores of 1.89±0.224 for knowledge and 2.10±0.51 for attitude. A significant positive correlation ($p<0.01$) between knowledge and attitude was observed, suggesting that respondents with better understanding of antibiotics also tend to have more favorable attitudes toward their appropriate use. The weak yet significant association between education and knowledge ($r=0.12$) indicates that formal education alone has limited influence, highlighting the importance of targeted public health education beyond schooling. Antibiotic knowledge was significantly associated with education level but not with occupation, likely because formal education enhances health literacy, while most occupations offer limited/no exposure to antibiotic-related information. Despite strong knowledge–attitude alignment, translation into practice remained limited, likely because of prevailing structural, economic, and cultural barriers in the community.

Approximately 46.1% of respondents correctly recognized that antibiotics are effective against bacterial infections. This finding aligns with the 47% reported in Korea by Kim [10]. Similarly, 33% of respondents mistakenly believed that antibiotics could cure the common cold, comparable to the 30% reported by Kim [10]. Only 7% of participants disagreed that antibiotics are effective against bacteria, which is much lower than the 42.8% reported in Kim's study, reflecting relatively better understanding in the present population.

In general, respondents in rural parts of Ada'a District demonstrated appropriate practices concerning the use of antibiotics, both for humans and animals. The majority reported purchasing antibiotics only with a valid prescription following proper diagnosis. However, a notable proportion of participants could not recall the specific names of antibiotics they had used or the diseases for which they were prescribed, suggesting gaps in drug literacy and record-keeping.

Encouragingly, most participants reported completing the full course of prescribed antibiotics and refraining from storing leftover drugs for future use. This positive behavior may help reduce the risk of developing Antimicrobial Resistance (AMR). Likewise, a large majority expressed the correct practice of consulting physicians or veterinarians before initiating antibiotic therapy.

A small number of respondents mentioned the use of traditional medicines, primarily for treating diseases such as blackleg in livestock and occasionally for minor ailments in humans. Nevertheless, the overall dependence on modern drugs following clinical diagnosis remains high, which is a positive indicator for rational drug use.

An interesting finding was that some respondents believed brand-new or more expensive drugs are more effective, revealing a misconception linking drug price to efficacy and quality. This misconception undermines antimicrobial stewardship efforts, which emphasize 'using the right antibiotic, at the right dose, for the right duration'. Overreliance on newer antibiotics reduces their effective lifespan, as resistance develops more rapidly when these drugs are used indiscriminately. Once resistance emerges, treatment options become limited, more expensive, and less effective. Additionally, although most participants avoided purchasing antibiotics from local traders, anthelmintic were commonly obtained from informal sources without prescription, often based on the perception that they improve animal productivity or fattening practices that may contribute to misuse and AMR risks.

The finding that one-third of respondents believe antibiotics can cure the common cold highlights a critical public health concern, as such misconceptions drive inappropriate use, contribute to antimicrobial resistance, increase healthcare costs, and expose individuals to unnecessary risks.

Most participants were aware of drug expiry dates, while those with limited formal education reported relying on the expertise of prescribers to ensure drug safety. However, a significant proportion of respondents could not differentiate between antibiotics and antimicrobials, recognizing antibiotics but lack awareness of other antimicrobial classes, resulting in the widespread misconception that antibiotics are curative for all human and animal diseases, underscoring the need for continuous public education on these concepts.

While antibiotic use practices in the study area were generally encouraging, substantial knowledge gaps persist. Addressing these gaps through targeted community education, strengthened professional guidance, and tighter regulation of antimicrobial distribution particularly in the veterinary sector is essential to reduce misuse and limit antimicrobial resistance. Favorable attitudes and practices, despite low knowledge levels, likely reflect health system influence and experience-based behaviors rather than informed understanding.

Conclusion and recommendations

This study revealed that the majority of participants demonstrated a positive attitude toward the appropriate use of antibiotics and Antimicrobial Resistance (AMR). Most respondents reported consulting physicians or health centers whenever they became ill and refrained from purchasing drugs without a prescription, both for themselves and for their animals. Furthermore, nearly all participants indicated that they do not use traditional medicines for family members, and most adhered to completing their prescribed course of treatment an encourage sign of responsible antibiotic use.

However, despite the positive attitudes observed, the study also found that participants' overall knowledge regarding antibiotic usage and AMR remains low. Many respondents were unable to name the antibiotics they had previously used or to identify common bacterial diseases prevalent in their area. This knowledge gap highlights the need for continuous education and awareness creation about antimicrobial use and resistance.

Recommendations

Enhance public awareness: Physicians and veterinarians should educate patients and livestock owners about antibiotics, bacterial diseases, and antimicrobial resistance whenever they prescribe or dispense drugs.

Institutional awareness programs: Health posts and veterinary clinics should implement regular community awareness sessions focusing on common local diseases and appropriate antibiotic use.

Capacity building: Targeted training should be provided for both human and animal health professionals on proper prescription and dispensing practices to minimize misuse and prevent AMR.

Community education: Although most participants exhibited good attitudes, some reported stopping medication prematurely or purchasing antibiotics without prescriptions. Ongoing community-level education and behavioral change communication should therefore be strengthened to promote responsible antibiotic utilization.

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