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Knowledge, Attitudes and Practices of Veterinary Professionals on Antimicrobial Resistance: A baseline survey in Copperbelt and Lusaka Provinces, Zambia

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Background

For over a decade, AMR has been a recognized global health threat, with recent estimates showing that sub-Saharan Africa has the highest mortality rate, at 24 deaths per 100,000 population directly linked to AMR (1). Veterinary professionals play a crucial role in antimicrobial stewardship, yet limited data exists on their knowledge, attitudes and practices (KAP) regarding AMR in Zambia. This study aimed to assess the level of awareness, attitudes and behaviours of veterinary professionals towards AMR, identifying gaps and opportunities for targeted interventions.

Methods and Materials

A baseline survey was conducted among veterinary professionals in Lusaka and Copperbelt provinces of Zambia. Participants were selected through a census kind of sampling, and data was collected using a structured questionnaire.

Descriptive statistics were used to analyze factors associated with knowledge, attitudes, and practices related to AMR. The findings were further examined for their potential applicability in shaping national policies and interventions. Fisher's exact test was applied to all variables except gender (Pearson's Chi-squared test).

A scoring system was developed to evaluate KAP levels, assigning scores to each question based on the correctness of responses.

Results

The study found that 68% (34/50) of surveyed professionals were from Copperbelt province. Among them, 67% (28/34) demonstrated good knowledge of AMR, compared to 33% (5/16) in Lusaka, with 54% of all professionals obtaining a good knowledge score.

Similarly, 63% (21/34) of Copperbelt respondents exhibited a positive attitude toward AMR stewardship, compared to 37% (6/16) in Lusaka. Sixty percent of all the respondents obtained good attitude score in relation to AMR, with the vast majority strongly agreeing to the importance of correct disposal of antimicrobials, biosecurity and withdraw period in poultry farming.

In terms of practice, 58% (20/34) of veterinary professionals from Copperbelt followed appropriate AMR practices, compared to 42% (8/16) in Lusaka. Out of all the professionals 52% obtained a good score in relation to practices. The more the years in practice was associated with a better score in relation to practice.

While most respondents had a basic understanding of AMR, knowledge gaps and misconceptions persisted. Many professionals expressed willingness to support antimicrobial stewardship but faced barriers such as resource limitations and a lack of clear guidelines.

These findings highlight the need for national strategies to enhance AMR awareness and responsible antimicrobial use in the veterinary sector.

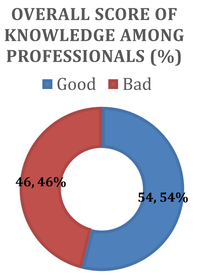
Table 1. Demographic Characteristics of Respondents

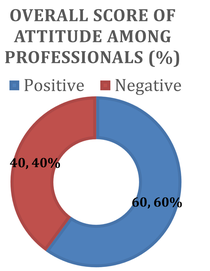
Characteristic	n	%
Province		
Copperbelt	34	68
Lusaka	16	32
Age group		
<30	14	28
30-34	9	18
35-39	7	14
40-44	4	8
45-49	6	12
50+	10	20
Total	50	100

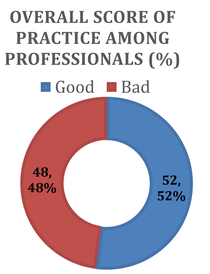
Characteristic	n	%
Gender		
Male	21	42
Female	29	58
Profession		
Vet Paraprofessional	28	56
Veterinary Officer	22	44
Years of practice		
<5	13	26
5-9	16	32
9-15	5	10
15-19	4	8
20+	12	24
Total	50	100

Table 2. KAP of selected aspects of AMR and AMU

Knowledge - AMR	n	percent
No	2	4.0%
Yes	48	96.0%
Total	50	100.0%
Knowledge - Safe antibiotic disposal		
No	11	22.0%
Yes	39	78.0%
Total	50	100.0%
Knowledge - Residues		
No	20	40.0%
Yes	30	60.0%
Total	50	100.0%
Knowledge – Withdrawal Period		
No	0	0.0%
Yes	50	100.0%
Total	50	100.0%
AMR crossing between animals and humans		
Strongly agree	35	70.0%
Agree	12	24.0%
Disagree	2	4.0%
Strongly disagree	1	2.0%
Total	50	100.0%
Prescribe antibiotics for prevention		
Yes, often	5	10.0%
Yes, sometimes	6	12.0%
Never	39	78.0%
Total	50	100.0%
Take and send samples for bacterial identification?		
Never	9	18%)
Rarely	20	40%
Sometimes	19	38%
Almost always	2	4.0%







Discussion

Knowing the KAP of professionals is important in order to design an impactful intervention to improve the KAP to successfully reduce AMU and AMR. The study demonstrated that only slightly over half the responded had good knowledge on antibiotics and AMR amongst veterinary professionals, with those in the Copperbelt performing better than the Lusaka based professionals. It should be noted that even though they indicated they knew the basic terms, many were not able to give a correct definition, and this affected the knowledge score. The difference in the provinces could also be attributed to the positions held by the professionals where those on the Copperbelt dealt with farmers on a daily basis or worked in the pharmaceutical industry, those interviewed in Lusaka had less of such experiences in their daily work.

It was noted that the majority gave empirical treatment and did not send samples to for AST or just bacterial culture. This was because there were very few labs capable of AST and they were mostly too far away.

The veterinary profession in Low Income countries like Zambia is accustomed to facing challenges in the prescriptions and use of antibiotics (2). These results are consistent with countries like Kenya and Tanzania and Ethopia (2). This has been attributed to the large farmer to vet ratio and the limited number of private veterinarians in rural areas.

Another challenge faced by the veterinary professionals is the limited diagnostic facilities which leads most veterinary professionals to rely primarily on signs and clinical experience to diagnose and treat animals (3). This practice unfortunately accelerates the rate of AMR development. Inorder, to counter the effects caused by the limited diagnostic facilities there is a need for the country to develop treatment guidelines that are aimed at assisting the professionals (4).

Lastly it is worth noting that many respondents were not aware of the correct method of disposal of antimicrobials and did not have any treatment guidelines. This could be due to the lack of guidelines on the disposal of antimicrobials and the lack of national treatment guidelines.

Conclusions

Veterinary professionals in Zambia acknowledge the importance of AMR but require additional support to translate their knowledge into effective practice. Strengthening professional training, developing clear regulatory frameworks, and improving access to diagnostic tools can enhance antimicrobial stewardship efforts in the veterinary sector.

Public Health Implications

Addressing AMR in the veterinary sector is crucial for safeguarding both animal and human health. Policymakers and stakeholders should prioritize integrating AMR education into veterinary curricula, strengthening surveillance systems, and fostering collaboration between the veterinary and human health sectors to mitigate the risks associated with AMR effectively.

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