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KNOWLEDGE, ATTITUDE AND PRACTICES OF POULTRY FARMERS ON ANTIMICROBIAL USE AND ANTIMICROBIAL RESISTANCE IN SOROTI WESTERN DIVISION ALOET WARD

By

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• A research dissertation submitted to the faculty of agriculture and animal sciences in partial fulfillment for award of the degree of bachelor of animal production and

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DECLARATION

I NAKIVUMBI SUMAYIA hereby declare that the information written in this proposal is min-
and has never been submitted to any other university for any academic award.
Signature

Approval by academic supervisor

Name: Assumed and long.

Signature:

AKNOWLEDGEMENT

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AMU-Antimicrobial Use

AMR-Antimicrobial Resistance

LMIC-low- and middle-income countries

OiE-Office International des Epizooties

ABSTRACT

The use of antimicrobials in livestock production, for disease prevention and growth promotion, is of increasing concern owing to the threat of antimicrobial resistance in both humans and animals. The high usage of veterinary antimicrobials and the environmental contamination identified requires multisectoral interventions, as well as a review of government strategies, policies, and regulations on antimicrobial use. Using antimicrobial drugs in food animals yields healthier and increasingly fruitful animal production. Antimicrobial drug usage in animals and humans is likely to cause emergence of antimicrobial resistant bacteria. Increased use of antimicrobials corresponds to increased emergence of antimicrobial-resistant bacteria Their use in food animal production could lead to harmful concentrations of drugs. The study was aimed at assessing the knowledge, attitude and practices of poultry farmers on antimicrobial use and antimicrobial resistance in Soroti western and northern division. Structured questionnaire were

adopted from a previously published study with significant modifications to meet the objectives of this study and distributed to different sampled respondents in the study area.

A total of 138 households with poultry were involved in a questionnaire survey. The survey was conducted in Aloet parish in Arapai Sub County, Soroti district. Majority of the respondents were female (60.1%) and the rest (39.9%) were male. Of these, 50.7%, 37.7%, 9.4%, and 1.5 were in the age range of 41 - 60, 26 - 40, below 25 and above 60 years.

To determine farmers' knowledge on Antimicrobial Resistance (AMR), it was identified hat 81.9% of the respondents use antimicrobials for treating birds, 53.0%, 25.4% and 17.4% use antimicrobials for disease preventive purposes, growth promoters and other purposes respectively. In this study, the attitude of poultry farmers on antimicrobial resistance was assessed based on the contribution of use of antimicrobials, accuracy and completion of treatment dose, restriction of antimicrobials use of expired drugs, and the addition of antimicrobials

1.0. CHAPTER ONE

1.1. INTRODUCTION

An anti-microbial is defined as a substance that kills microorganisms or stops them from growing or causing diseases. They are majorly used for therapy, metphylaxis, and prophylaxis and as growth promoters (Geta & Kibret, 2021b). Over the past 50 years, the poultry sector has extended, consolidated and globalized, driven primarily by high demand, making it possibly the fastest growing and most malleable of all livestock sectors(Nkukwana, 2018). The Uganda poultry industry has been enhanced with opportunities like increasing: population growth, number of urban centers and advancement in technology(Tainika & Duman, 2019).) In Uganda, apparently there are 47.6 million birds reared of which 20% are exotic breeds on commercial production(UBOS, 2018). The chicken growing activities showed an increase in the last census by 11.4% compared to 9.8 which was reflected in the previous year (Government of Uganda, 2022). Most of the poultry kept by the local population in Uganda are indigenous chicken, while

5.0. REFERENCES

- Afakye, K., Kiambi, S., Koka, E., Kabali, E., Dorado-Garcia, A., Amoah, A., Kimani, T., Adjei, B., & Caudell, M. A. (2020). The impacts of animal health service providers on antimicrobial use attitudes and practices: An examination of poultry layer farmers in ghana and kenya. *Antibiotics*, 9(9), 1–16. https://doi.org/10.3390/antibiotics9090554
- Alhouzani, T., Saleem, M., Sharma, A., Khadka, S., Gupta, R. P., & Aryal, P. (2021). Irrational Use of Antimicrobials in Poultry Farms and Antimicrobial Resistance: A Cross-Sectional Study. *Europasian Journal of Medical Sciences*, *3*(2), 10–14. https://doi.org/10.46405/ejms.v3i2.316

Antimicrobial Resistance. (n.d.).

- Chea, B., Kong, S., Thim, S., Ban, N., Seng, S., Fernandez-Colorado, C., & Kang, K. (2022). Knowledge, Attitudes, and Practices of Antimicrobial Use and Resistance among Livestock Producers in Cambodia. *Open Journal of Animal Sciences*, *12*(03), 454–466. https://doi.org/10.4236/ojas.2022.123034
- Conan, A., Goutard, F. L., Sorn, S., & Vong, S. (2012). Biosecurity measures for backyard poultry in developing countries: a systematic review. In *BMC Veterinary Research* (Vol. 8). https://doi.org/10.1186/1746-6148-8-240
- Díaz-Sánchez, S. (2015). Antibiotic use in poultry; A driving force for organic poultry production Sanitary risks of farm-rearing and release of red-legged partridges. View project Avian influenza at the peridomestic wild bird, poultry and human interface View project. *CITATIONS*, 27, 370.
- District, S. (2011). Soroti District. 3, 3–5.
- Geta, K., & Kibret, M. (2021). Knowledge, attitudes and practices of animal farm owners / workers on antibiotic use and resistance in Amhara region, north western. *Scientific*

- Reports, 0123456789, 1–13. https://doi.org/10.1038/s41598-021-00617-8
- Government of Uganda. (2022). Ubos. *Ubos*.
- Gualano, M. R., Gili, R., Scaioli, G., Bert, F., & Siliquini, R. (2015). General population's knowledge and attitudes about antibiotics: a systematic review and meta-analysis. *Pharmacoepidemiol. Drug Saf.*, 24(1), 2–10. https://doi.org/10.1002/pds.3716
- Ishak, Ali, H. M., & Kheder, S. I. (2017). Prevalence and knowledge of antibiotics misuse and resistance in poultry and livestock in Khartoum State Sudan. *Sudan Medical Monitor*, 12(2), 45. https://doi.org/10.4103/summ.summ
- Kimera, Z. I., Frumence, G., Mboera, L. E. G., Rweyemamu, M., Mshana, S. E., & Matee, M. I. N. (2020). Assessment of drivers of antimicrobial use and resistance in poultry and domestic pig farming in the Msimbazi river basin in Tanzania. *Antibiotics*, 9(12), 1–20. https://doi.org/10.3390/antibiotics9120838
- Leopold, S. J., van Leth, F., Tarekegn, H., & Schultsz, C. (2014). Antimicrobial drug resistance among clinically relevant bacterial isolates in sub-Saharan Africa: a systematic review. *Journal of Antimicrobial Chemotherapy*, 69(9), 2337–2353. https://doi.org/10.1093/JAC/DKU176
- Mesquita, M. De, Saraiva, S., Lim, K., & Farias, D. (2022). Antimicrobial resistance in the globalized food chain: a One Health perspective applied to the poultry industry. *Brazilian Journal of Microbiology*, 465–486. https://doi.org/10.1007/s42770-021-00635-8
- Mottet, A., & Tempio, G. (2017). Global poultry production: Current state and future outlook and challenges. *World's Poultry Science Journal*, *73*(2), 245–256. https://doi.org/10.1017/S0043933917000071
- Mudenda, S., Malama, S., Munyeme, M., Hang'ombe, B. M., Mainda, G., Kapona, O., Mukosha, M., Yamba, K., Bumbangi, F. N., Mfune, R. L., Daka, V., Mwenya, D., Mpundu, P., Siluchali, G., & Muma, J. B. (2022). Awareness of Antimicrobial Resistance and Associated Factors among Layer Poultry Farmers in Zambia: Implications for Surveillance and Antimicrobial Stewardship Programs. *Antibiotics*, 11(3), 1–12.
 https://doi.org/10.3390/antibiotics11030383

- Nkukwana, T. T. (2018). Global poultry production: Current impact and future outlook on the South African poultry industry. 48(5).
- Ochoa, S., Simaluiza, R. J., Toledo, Z., & Fernández, H. (2016). Frequency and antimicrobial behaviour of thermophilic Campylobacter species isolated from ecuadorian backyard chickens. *Archivos de Medicina Veterinaria*, 48(3), 311–314. https://doi.org/10.4067/S0301-732X2016000300011
- Reza. (2009). Antibiotic Resistance of *Escherichia Coli* Isolated From Poultry and Poultry Environment of Bangladesh. *American Journal of Environmental Sciences*, 5(1), 47–52. https://doi.org/10.3844/ajessp.2009.47.52
- Sindato, C., Mboera, L. E. G., Katale, B. Z., Frumence, G., Kimera, S., Clark, T. G., Quigley, H. L., Mshana, S. E., Rweyemamu, M. M., & Matee, M. (2020). Knowledge, attitudes and practices regarding antimicrobial use and resistance among communities of Ilala, Kilosa and Kibaha districts of Tanzania. *Antimicrobial Resistance & Infection Control*, 1–17. https://doi.org/10.1186/s13756-020-00862-y
- Struik, P. C., & Kuyper, T. W. (2012). Sustainable intensification in agriculture: the richer shade of green. A review. https://doi.org/10.1007/s13593-017-0445-7
- Tainika, B., & Duman, M. (2019). *Poultry Production in Uganda: Challenges and Opportunities Poultry Production in Uganda: Challenges and Opportunities. December.*
- Thanner, S., Drissner, D., & Walsh, F. (2016). Antimicrobial resistance in agriculture. *MBio*, 7(2). https://doi.org/10.1128/MBIO.02227-15/ASSET/AEA1BBC9-19DB-42FE-8A41-AB489317422D/ASSETS/GRAPHIC/MBO0021627880001.JPEG
- Thrusfield, M., & Brown, H. (2017). Surveys. *Veterinary Epidemiology: Fourth Edition*, 270–295. https://doi.org/10.1002/9781118280249.CH13
- UBOS. (2018). UBOS,2018. Uganda National Household Survey 2016/17. Kampala, Uganda;UBOS. 2018.
- Umut, T. N. (2017). Technology and the Virtues: a philosophical guide to a future worth wanting. *İnsan & Toplum Dergisi (The Journal of Human & Society)*, 7(2). https://doi.org/10.12658/human.society.7.14.d0145

- Van Boeckel, T. P., Brower, C., Gilbert, M., Grenfell, B. T., Levin, S. A., Robinson, T. P., Teillant, A., & Laxminarayan, R. (2015). Global trends in antimicrobial use in food animals. *Proceedings of the National Academy of Sciences of the United States of America*, 112(18), 5649–5654. https://doi.org/10.1073/pnas.1503141112
- Zishiri, O. T., Mkhize, N., & Mukaratirwa, S. (2016). Prevalence of virulence and antimicrobial resistance genes in Salmonella spp. isolated from commercial chickens and human clinical isolates from south Africa and Brazil. *Onderstepoort Journal of Veterinary Research*, 83(1). https://doi.org/10.4102/OJVR.V83I1.1067