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CONSUMER INFORMATION AWARENESS ON DRUGS ADMINISTRATION ON BROILER CHICKEN FOR CONSUMPTION IN FUFORE LGA OF ADAMAWA STATE, NIGERIA

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ABSTRACT

This study investigated consumer awareness of veterinary drug use on broiler chicken for consumption in Fufore Local Government Area (LGA) of Adamawa State, Nigeria. The study was guided by four objectives which include; to determine the level of consumer awareness on general drugs administration in broilers chicken consumption, to determine the level of consumer awareness on veterinary drug residues in broilers chicken consumption in Fufore local government area of Adamawa State. The research method was quantitative. This study employed descriptive survey design. Data were collected directly from respondents through self-developed questionnaire. The target population consisted of 67,893 residents of Fufore LGA, with a sample size of 398 respondents determined through Yamane 1976 formula for determining sample size. Simple random sampling techniques were used. The data analysis was done using percentage, frequency and mean. The findings of the study revealed that Consumers are not aware of general Drugs Administration in Broilers Chicken Consumption. On average, the level of Consumer Awareness on general Drugs Administration in Broilers Chicken Consumption in Fufore Local Government of Adamawa State as indicated by the grand mean of 2.23 which is less than the benchmark mean of 2.5. Consumer are not aware of the veterinary Drug residues in Broilers Chicken for Consumption in Fufore Local Government of Adamawa State as indicated by the grand mean of 1.9 which is less than the benchmark mean of 2.5. Consumer are not aware on the health concern on the products and by-products of Broiler chicken Administered with veterinary drugs in Fufore Local Government of Adamawa State as indicated by the grand mean of 1.94 which is below the benchmark mean of 2.5 and Consumers are not aware of the sources of Consumer awareness regarding drug administration in broiler chicken for consumption in Fufore Local Government of Adamawa State as indicate with a range of 55-70 percent. The study concluded that consumer are not aware of information regarding veterinary drug administration on broiler chicken consumption in Fufore LGA. This underscores the necessity for enhanced education and awareness among consumers. Based on the findings, study recommended among others that government and community should collaborate with stakeholders to create awareness to consumers about proper veterinary drug administration, and improve consumer access to accurate information on veterinary drug usage by establishing community information centers.

Keywords: Awareness, Veterinary Drug, Drug residues and Consumes

Introduction

The current poultry industry demonstrates efficiency in producing broilers that achieve weights of approximately 2 kg or more by the conclusion of their 6- to 7-week production cycle. Significant advancements in genetic selection and nutrition are pivotal factors contributing to the increased size of these broilers. Additionally, optimal environmental conditions and effective management practices further enhance the overall growth of the birds (Alwis et al., 2022). Various hormones, including 17-B-Estradiol, Progesterone, and Testosterone, along with anabolic substances such as Clenbuterol and Zeranol, are employed in livestock production for fattening purposes (Hirpessa et al., 2020).

However, the use of these substances has been associated with numerous adverse effects, including genotoxic, mutagenic, carcinogenic, immunotoxic, and teratogenic impacts on human health. Consequently, governments worldwide have enacted regulations prohibiting the use of hormones in livestock and poultry production (Hirpessa et al., 2020). In the United States, 87% of consumers express concerns regarding antibiotic use in broiler chickens. A similar sentiment is echoed in China, where half of the consumers are worried about the overuse of antibiotics in broiler chickens, and 72.9% believe that

the rearing conditions for these birds require improvement to enhance food safety. In Iran, over half (52%) of consumers frequently purchase antibiotic-free broiler chicken, while an additional 26% do so occasionally. Canadian consumers have shown a willingness to pay a premium of 48% for broiler chicken raised without antibiotics, and 35% more for chicken raised with responsible antibiotic practices. In Kenya, urban consumers indicated a readiness to pay a significant premium of 236% for broiler chicken produced without antibiotics or growth hormones. Furthermore, consumers in Ghana demonstrated a higher willingness to pay for chicken produced without antibiotics or growth hormones compared to other attributes, such as freshness, production method, and cut (Alonso et al., 2020).

This trend is also observable in Nigeria and particularly in Fufore Local Government Area of Adamawa State, a region renowned for its agricultural production, including crops such as millet, rice, beans, soybeans, and sorghum. Farming is the primary livelihood for residents in this area, with poultry farming, particularly broiler production, playing a crucial role in household income. Broiler chickens are highly favored by both farmers and consumers due to their rapid growth and high meat yield. Consumption patterns of broilers in Fufore are influenced by various factors, including cultural preferences, economic conditions, and the availability of poultry products. In this predominantly rural area, where subsistence farming prevails, the demand for broiler chickens is driven by the necessity for household protein sources as well as special occasions such as festivals and celebrations. This shift has transformed poultry production from a backyard enterprise to a commercially oriented industry (Anosike, 2020).

To satisfy the increasing demand for poultry meat, farmers frequently resort to the use of veterinary drugs to enhance production efficiency and improve the health of their flocks. These drugs, which include growth promoters and vaccines, enable farmers to maintain high production levels while effectively managing diseases that can impact poultry performance. According to Fasina et al. (2019), the use of veterinary drugs is essential for optimizing broiler production, especially in the context of rising consumption levels in Nigeria. While these drugs offer benefits such as accelerated growth rates and improved disease control, they also introduce potential risks, including the emergence of antimicrobial resistance and concerns regarding regulatory compliance.

As reported by the Food and Agriculture Organization (FAO), the global increase in broiler production necessitates the responsible use of veterinary drugs to ensure the health and welfare of poultry (Food and Agriculture Organization, 2021). Poultry farmers routinely employ these medications to combat diseases that threaten poultry productivity, thereby securing the sustainability of their broiler operations (Al-Mustapha, Adetunji, & Heikinheimo, 2020).

Research conducted by Onyeanu et al. (2020) indicates that approximately 42% of all veterinary drugs utilized in broiler production are classified as feed additives, followed by anti-infective agents (19%), parasiticides (13%), biologics (11%), and other pharmaceuticals (15%). Growth promoters constitute about 80% of veterinary drugs administered in broiler farming, often exceeding the volume of antibiotics employed in human healthcare. As income levels rise in developing nations and populations continue to grow, the demand for animal-based food products has surged, resulting in an increased reliance on veterinary drugs to satisfy market demand swiftly (Al-Mustapha, Adetunji, & Heikinheimo, 2020).

However, the accumulation of residual veterinary drugs, including hormones, coccidiostats, and antimicrobials, in broiler products raises significant food safety concerns, which could diminish the marketability of these products both locally and internationally (Fasina et al., 2019). Furthermore, Bamidele et al. (2022) noted that the presence of these drug residues in meat can lead to undesirable characteristics such as shrinkage, toughening, and altered taste in cooked poultry, thereby impacting meat quality.

This highlights the necessity to assess whether consumers in Fufore Local Government Area are aware of the potential risks associated with the administration of veterinary drugs in broilers. This research aims to examine consumers' awareness regarding the administration of veterinary drugs in broiler chicken production and its influence on their consumption practices in Fufore Local Government Area, Adamawa State.

Statement of the Problem

The improper administration of veterinary drugs in broiler chicken production presents significant public health risks, particularly through the presence of drug residues in meat products. The effective administration of these medications requires strict adherence to established guidelines, including the implementation of safe practices and observance of withdrawal periods that allow drug residues to diminish to acceptable levels prior to consumption. However, improper or excessive use of these drugs can lead to adverse consequences, such as the emergence of antibiotic resistance and contamination of meat with hazardous residues (World Health Organization, 2020).

In Fufore Local Government Area of Adamawa State, where poultry farming serves as a crucial livelihood, the utilization of veterinary drugs in broiler production has risen in response to increasing consumer demand for chicken meat. Nevertheless, as highlighted by Sha'arani, Aminu, and Aminu (2024), there is mounting concern regarding the excessive use of these medications, with drug residues being detected in broiler chickens, which raises serious public health issues. Noncompliance with Good Veterinary Practices, such as neglecting proper withdrawal periods, administering incorrect dosages, and engaging in indiscriminate therapy, can result in the accumulation of drug residues in the meat consumed by the public. Additionally, preliminary investigations conducted by the researcher revealed that segments of the population may not be fully informed regarding the use of veterinary drugs and the associated health risks.

The potential health issues linked to drug residues, including genotoxic, mutagenic, carcinogenic, immunotoxic, and teratogenic effects, could be attributed to a lack of awareness. According to the European Food Safety Authority (EFSA, 2019), many consumers remain uninformed about the withdrawal periods necessary to mitigate drug residues in animal tissues, and this lack of awareness may impact their food choices and foster mistrust towards poultry products. It is against this background that this study seeks to investigate the level of consumer information awareness regarding the administration of veterinary drugs in broiler chickens and its implications for meat consumption in Fufore Local Government Area of Adamawa State.

Objectives of the Study

The main objective of this study is to investigate Consumers Information Awareness on Drugs Administration in Broilers Chicken Consumption in Fufore Local Government of Adamawa State. Specifically, the study is designed to:

I. Determine the level of Consumer Awareness on general Drugs Administration in Broilers Chicken Consumption in Fufore Local Government of Adamawa State.
II. Determine the level of Consumer Awareness on veterinary Drug residues in Broilers Chicken Consumption in Fufore Local Government of Adamawa State
III. Determine the level of Consumer Awareness on the health concern on the products and by-products of Broiler chicken Administered with veterinary drugs in Fufore Local Government of Adamawa State.
IV. Determine the Consumers Source of Information and Awareness on Drugs Administration on Broilers Chicken Consumption in Fufore Local Government of Adamawa State

Research Questions

Four research questions were raised to guide the conduct of the study. These research questions are:

1. What is the level of Consumer Awareness on general Drugs Administration in Broilers Chicken Consumption in Fufore Local Government of Adamawa State?
2. What is the level of Consumer Awareness on veterinary Drug residues in Broilers Chicken Consumption in Fufore Local Government of Adamawa State?
3. What is the level of Consumer Awareness on the health concern on the products and by-products of Broiler chicken Administered with veterinary drugs in Fufore Local Government of Adamawa State?
4. What are the Consumers Source of Information and Awareness on Drugs Administration in Broilers Chicken Consumption in Fufore Local Government of Adamawa State?

Scope of the Study

This study aim to investigate the level of consumer awareness and understanding regarding the use of veterinary drugs in broiler chicken production, particularly focusing on drug administration practices.
The study is geographically limited to Fufore Local Government Area in Adamawa State, Nigeria. It covers consumers who regularly purchase and consume broiler chickens within this locality.

Significance of the Study

This study holds significant importance in enhancing public health and food safety within the region, particularly concerning poultry consumption. By identifying gaps in consumer awareness regarding veterinary drug use and its associated health implications, this research provides valuable insights that can inform the actions of both the consumer and the researcher regarding poultry farms.
The findings can contribute to the development of targeted consumer education programs that aim to improve food safety awareness, thereby fostering safer poultry consumption practices among the community.
For librarians, this work is particularly valuable as it emphasizes the need for accessible and reliable information regarding veterinary drug administration and food safety. Librarians play a critical role in curating and disseminating information resources that educate consumers and stakeholders about safe practices in food consumption. By facilitating access to research findings and educational materials, librarians can support public health initiatives and empower the community with the knowledge necessary for making informed decisions about poultry products.
Moreover, the study's recommendations can serve as a crucial resource for regulatory agencies, guiding them in enforcing compliance with Good Veterinary Practices and drug residue control measures. This not only helps in promoting overall public health and welfare in Fufore Local Government Area but also emphasizes the importance of well-informed regulatory frameworks.
Consequently, this study not only contributes to the broader discourse on food safety but also highlights the essential role that libraries play in promoting health literacy and community well-being.

Literature Review

Onyeama, Ezenduka, and Anaga (2020) conducted an investigation into the utilization of gentamicin by poultry farmers, as well as the prevalence of gentamicin residues in the tissues of commercial broilers at the Ikpu slaughterhouse in Nsukka. Their research indicated that 21.1% of farmers produced their own medicated feed, while 78.8% depended on commercially produced feed, with 11.5% of these incorporating antibiotics. All respondents acknowledged the use of gentamicin; however, only 47.1% were aware of the implications of antimicrobial residues in animal-derived foods and the pertinent regulations governing the responsible use of antimicrobials in livestock. The study identified a 65% occurrence of gentamicin residues among the surveyed birds, with tissue distribution as follows: muscle (44.4%), liver (51.9%), and kidney (59.3%).
Bosha et al. (2019) analyzed 400 samples, including 100 each from the liver, kidney, lungs, and breast muscles, reporting a total residue incidence of 70%. Their findings revealed that the liver, kidney, lungs, and muscle contained tetracycline residues at rates of 60%, 31%, 14%, and 5%, respectively. The highest concentration recorded was 6 µg/kg in the liver from a single farm. The researchers concluded that, despite the significant overall incidence of 70%, the residue levels were notably ($p<0.01$) below the recommended Maximum Residue Limits (MRL) of 600, 300, and 200 µg/kg for the liver, kidney, and muscle, respectively.
Onipede, Nwankwo, Adewuyi, and Nwachukwu (2021) employed High-Performance Liquid Chromatography with Diode Array Detection (HPLC-DAD) at a wavelength of 365 nm to assess the concentrations of tetracycline, doxycycline, chlortetracycline, and oxytetracycline in catfish and chicken sourced

from six farms and markets across various regions of Lagos and Ota in South-Western Nigeria. The results indicated that the levels of tetracycline in catfish ranged from ND to 0.0167 µg/g, while those in chicken ranged from ND to 0.058 µg/g.

Ezenduka (2019) examined the prevalence of antimicrobial residues in poultry within Enugu Metropolis, Enugu State, Nigeria. This study involved the collection of four organs—kidney, liver, muscle, and gizzard—from 100 commercial broiler birds, which were analyzed using the Three Plate Test, a microbiological method employing Bacillus subtilis as the test organism. Among the 100 birds sampled, 64 tested positive for antimicrobial residues, leading to a prevalence rate of 64%. Out of a total of 400 organs examined, 155 were found to contain antimicrobial residues, with varying prevalence rates across the different organs. The findings suggest a correlation between the type of organ and the presence of antimicrobial residues, with the kidney exhibiting the highest prevalence (p value: <0.0001, Chi-Square test).

Research indicates that consumer awareness regarding antimicrobial resistance (AMR) in broiler chickens remains generally inadequate. Additionally, surveys conducted by organizations such as the Food and Drug Administration (FDA) reveal that a significant number of consumers do not fully understand the relationship between antibiotic uses in animals and associated human health risks (FDA, 2019). Consumer awareness of drug administration in broiler chickens is critical for ensuring food safety and protecting public health. The increasing demand for poultry products has intensified concerns regarding the use of antibiotics and other pharmaceuticals in livestock, which may contribute to antibiotic resistance and pose health risks to consumers.

This awareness encompasses understanding the types of drugs utilized, their intended purposes, and the potential implications for human health (Samreena et al., 2021). Broiler chickens commonly receive various medications to prevent illness and promote growth. Frequently administered substances include antibiotics, parasiticides, and hormones. The use of these drugs is regulated by governmental agencies such as the Food and Drug Administration (FDA) in the United States, as well as equivalent organizations globally.

Consumer understanding of the regulatory framework governing drug administration in poultry is critically important, particularly as it ensures that any substances used do not jeopardize human health (World Health Organization 20311). Awareness of specific drugs employed in poultry production and their potential health effects (American Poultry Association) is vital, especially considering that the improper use of antibiotics in broiler production can lead to antibiotic-resistant bacteria entering the food supply, thereby posing significant public health risks.

Informed consumers are more likely to make thoughtful decisions regarding their poultry purchases and are better equipped with information about safe consumption practices (Samvesna et al., 2021). Consumer awareness of food safety, particularly concerning antimicrobial residues in broiler chicken, represents a significant concern with implications for public health. Antimicrobial residues may occur as a result of antibiotic application in poultry production, which is often employed to enhance growth and prevent disease.

Research indicates varying degrees of consumer awareness regarding antimicrobial residues. Many consumers demonstrate insufficient understanding of the implications of these residues and their potential health impacts (McCarthy et al., 2019). A considerable number of consumers assume that organic or antibiotic-free labels signify safer products; however, persistent misunderstandings about the meanings of these labels exist. Awareness levels are influenced by demographic factors, including age, education, and geographic location. Younger consumers typically exhibit more knowledge of food safety issues than older individuals (Bennett et al., 2021). Increased media attention on antibiotic resistance has contributed to a heightened awareness among certain consumer segments; nonetheless, targeted educational initiatives could further enhance overall comprehension.

Consumers who are cognizant of the risks associated with antimicrobial residues are more likely to seek information regarding food sourcing and make informed purchasing choices (Stanley, Batacan, & Bajagai, 2022). The primary health risks linked to the consumption of broiler chickens treated with veterinary medications include the following: excessive use of antibiotics in livestock can contribute to the emergence of antibiotic-resistant bacteria. Ingesting meat that contains these resistant strains may lead to infections that are difficult to manage (Aslam et al., 2021).

Additionally, residual amounts of veterinary drugs may persist in meat products following slaughter. Consuming these residues over time may result in health hazards, including potential toxicity or allergic reactions. The World Health Organization (WHO) has stated that antibiotic resistance constitutes one of the most significant threats to global health today. Consumers who remain unaware of these concerns may inadvertently exacerbate this escalating issue by consuming products from animals treated with such medications (WHO, 2019).

Research indicates a range of consumer awareness concerning the health implications of products and by-products from broiler chickens administered veterinary drugs. For instance, a study by Asfaw et al. (2020) revealed that a significant number of consumers lack sufficient understanding of the consequences of antibiotic use in poultry farming. Surveys indicate that while some consumers express concern about food safety and animal welfare, their purchasing choices do not consistently reflect this awareness, often being influenced by factors such as price and convenience (Bennett et al., 2021). Educational initiatives aimed at enhancing awareness of the risks associated with veterinary drug usage have been shown to positively influence consumer behavior, resulting in more informed purchasing decisions.

According to Mongi, Meshi, and Ntwenya (2022) and Karasu & Ozturk (2021), consumers typically rely on diverse sources for information about food safety, including media reports, social media platforms, government publications, and educational campaigns conducted by non-profit organizations focused on food safety and consumer advocacy. Each source plays a unique role in shaping public understanding of this critical issue affecting food safety and health outcomes.

Methodology

Creswell (2012) defines a research design as the detailed blueprint used to guide a research study toward its objectives. This research employs a survey research design to gain a comprehensive understanding of consumer information awareness regarding veterinary drug administration in broiler chickens intended for consumption. The adoption of the survey research design facilitates the collection of substantial data within a short timeframe and is cost-effective, making it suitable for gathering information for quantitative analysis.

The target population comprises 67,893 residents of Fufore Local Government Area (LGA). Sampling is essential in nearly all forms of data collection, as it is often not feasible to obtain data from every available source (Elisha et al., 2024). A purposive sampling technique was utilized to select 385

respondents for the study. Applying the Taro Yamane Method for determining sample size, a total sample size of 398 was drawn from the target population of 67,893.

A questionnaire developed by the researcher served as the instrument for data collection. This well-structured 26-item questionnaire, titled "Consumer Information Awareness on Veterinary Drug Administration in Broiler Chickens for Consumption Opinion Questionnaire," is divided into two sections (A and B). Section A: focuses on the respondents' bio-data, while Section B addresses the four objectives of the study. The questionnaire is designed using a four-point rating scale, which includes High Level (HL), Moderate Level (ML), Low Level (LL), Not Aware (NA), Strongly Agreed (SA), Agreed (A), Disagreed (D), and Strongly Disagreed (SD).

The instrument underwent face validity evaluation by two experts from FCE, Yola, one from the Department of Agricultural Science Education and the other from the Library Department. These experts were invited to provide corrections, critiques, and suggestions regarding the language used. Their feedback on the clarity and simplicity of the wording in the instrument was instrumental in restructuring the items effectively. To establish the reliability of the instrument, a pilot study was conducted. The researcher administered 50 copies of the questionnaire to respondents in Song Local Government Area of Adamawa State, which, while not part of the study area, shares similar characteristics and geographical location based on geopolitical zoning. The researcher collected the completed questionnaires the same day. The data gathered from this pilot study were analyzed for reliability using Cronbach's Alpha Statistic, which was chosen to evaluate the internal consistency of the items in the instrument. The overall coefficient yielded a reliability score of 0.792, which is considered sufficiently high and reliable for the study's purposes.

Data analysis was conducted using percentage, frequency, mean, and standard deviation. Specifically, percentages were computed to determine the level of awareness among consumers, while means were calculated to assess the central tendency of responses concerning knowledge and perceptions of drug administration practices.

Results and Discussions

Responses Rate

Table 1: Questionnaire Return Rate

Item	Frequency	Percentage
Questionnaire Distributed	385	100%
Questionnaire Well filled and returned	364	94.6%

Source: Survey 2024

From the analysis in table 1 above, even though 385 questionnaires were distributed to the 385 sampled despondence, it is clear that it is only 364 questionnaire representing 94.6 percent were returned and well filled while the remaining 21 questionnaire representing 5.4 percent were either not returned or not well filled.

Research Question One: What is the level of Consumer Awareness on general Drugs Administration in Broilers Chicken Consumption in Fufore Local Government of Adamawa State?

The data for answering research question one was analysed and the summary is presented in table two below:

Table 2: The Level of Consumer Awareness on General Drugs Administration in Broilers Chicken Consumption

S/N	Statement	HL		ML		LL		NA		Mean	Decision
		F	%	F	%	F	%	F	%		
1	Knowledge of Veterinary Drugs.	52	14.3	90	24.7	100	27.5	122	33.5	2.2	Not Aware
2	Consumer awareness regarding the administration of drugs in broiler chickens is a critical aspect of food safety and public health.	49	13.5	93	25.5	107	29.4	115	31.6	2.2	Not Aware
3	The increasing demand for poultry products has raised concerns about the use of antibiotics and other pharmaceuticals in broilers.	40	10.99	102	28.1	121	33.2	101	27.75	2.2	Not Aware
4	Broiler chickens are often administered various medications to prevent disease and promote growth.	48	13.2	95	26.1	79	21.7	142	39.0	2.1	Not Aware
5	Veterinary drugs are used in broiler chicken farming	56	15.4	101	27.7	112	30.8	95	26.1	2.3	Not Aware
6	Antimicrobial drugs are used in broiler chicken farming.	41	11.3	99	27.1	107	29.4	117	32.1	2.2	Not Aware
7	Knowledge of different classes of veterinary drugs	52	14.3	105	28.8	95	26.1	112	30.8	2.3	Not Aware
8	Understanding the implications of misuse or overuse of veterinary drugs.	71	19.5	88	24.2	96	26.4	109	29.9	2.3	Not Aware
9	Awareness of local regulations and guidelines governing veterinary drug use.	68	18.9	98	26.9	69	18.9	129	35.4	2.3	Not Aware

S/N	Statement	HL		ML		LL		NA		Mean	Decision
		F	%	F	%	F	%	F	%		
Grand Mean										**2.23**	Not Aware

Source: Survey 2024

Key: HL: High Level, ML: Moderate Level, LL: Low Level, NA: Not Aware

Table 2 displays data for the mean scores of respondents on the level of Consumer Awareness on general Drugs Administration in Broilers Chicken Consumption in Fufore Local Government of Adamawa State for items 1-9. The mean scores fall in the range of 2.1 to 2.3.This indicates that the consumers are not aware of general Drugs Administration in Broilers Chicken Consumption. On average, the level of Consumer Awareness on general Drugs Administration in Broilers Chicken Consumption in Fufore Local Government of Adamawa State received a not aware rating from the respondents, as indicated by the grand mean of 2.23 which is less than the benchmark mean of 2.5.This means that on the average, the consumers are not aware on general Drugs Administration in Broilers Chicken Consumption in Fufore Local Government of Adamawa State. The recent study agree with the report FDA, (2019) which reveal that a significant number of consumers do not fully understand the relationship between antibiotic uses in animals and associated human health risks but disagreed with the findings of Samreena, et al, (2021) who finds out that consumers are aware of these drugs administration in the form of consumers understanding the types of drugs utilized, their intended purposes, and the potential implications for human health

Research Question Two: What is the level of Consumer Awareness on veterinary Drug residues in Broilers Chicken Consumption in Fufore Local Government of Adamawa State?

The data for answering research question two was analysed and the summary is presented in table three below:

Table 3: The level of Consumer Awareness on veterinary Drug residues in Broilers Chicken Consumption in Fufore Local Government of Adamawa State

S/N	Statement	HL		ML		LL		NA		Mean	Decision
		F	%	F	%	F	%	F	%		
1	Veterinary drug residues in broiler chickens	35	9.6	51	14.0	73	20.1	205	56.3	1.8	Not Aware
2	Veterinary drug residues are the remnants of veterinary drugs found in animal products such meat, milk, and eggs.	37	10.1	48	13.2	72	19.8	207	56.9	1.8	Not Aware
3	Potential health risks associated with drug residues in broiler chickens.	34	9.3	49	13.5	52	14.3	229	62.9	1.8	Not Aware
4	Understanding of regulatory standards for drugs used in poultry production to prevent drug residues in broiler chickens.	50	13.7	58	15.9	77	21.2	179	49.2	1.9	Not Aware
5	Awareness of the specific drugs used in poultry production or their potential effects on health.	61	16.8	70	19.2	81	22.3	152	41.8	2.11	Not Aware
6	Awareness on the fact that misuse of antibiotics in broiler production can lead to antibiotic-resistant bacteria entering the meat supply	51	14.0	63	17.3	78	21.4	172	47.3	1.98	Not Aware
Grand Mean										**1.9**	Not Aware

Source: Survey 2024

Key: HL: High Level, ML: Moderate Level, LL: Low Level, NA: Not Aware

Table 3 displays data for the mean scores of respondents on the level of Consumer Awareness on veterinary Drug residues in Broilers Chicken Consumption in Fufore Local Government of Adamawa State for items 1-6. The mean scores fall in the range of 1.8 to 2.11. This indicates a not awareness response of the level of Consumer Awareness on veterinary Drug residues in Broilers Chicken Consumption in Fufore Local Government of Adamawa State. On average, the level of Consumer Awareness on veterinary Drug residues in Broilers Chicken Consumption in Fufore Local Government of Adamawa State received a not aware rating from the respondents, as indicated by the grand mean of 1.9 which is less than the benchmark mean of 2.5. The finding reveals that the Consumers are not aware of veterinary Drug residues in Broilers Chicken for Consumption in Fufore Local Government of Adamawa State. The recent study disagrees with various prior research endeavors. Notably McCarthy et al., (2019), Ezenduka (2019) and FDA, (2019) which indicates a general insufficient awareness on veterinary Drug residues in Broilers Chicken for Consumption

Research Question Three: What is the level of Consumer Awareness on the health concern on the products and by-products of Broiler chicken Administered with veterinary drugs in Fufore Local Government of Adamawa State?

The data for answering research question three was analysed and the summary is presented in table four below:

Table 4: The level of Consumer Awareness on the health concern on the products and by-products of Broiler Chicken Administered with veterinary drugs in Fufore Local Government of Adamawa State

S/N	Statement	H L		M L		L L		N A		Mean	Decision
		F	%	F	%	F	%	F	%		
1	The overuse of antibiotics in livestock is a major concern as it can lead to the development of antibiotic-resistant bacteria	59	16.2	70	19.2	83	22.8	152	41.8	2.1	Not Aware
2	The overuse of antibiotics in 1 broiler chickens can lead to the development of antibiotic-resistant bacteria.	58	15.9	69	19.o	88	24.2	149	40.9	2.1	Not Aware
3	Overuse of antibiotics in broiler chickens can result in infections that are difficult to treat.	42	11.5	44	12.1	79	21.7	199	54.7	1.8	Low Awareness
4	Residual traces of veterinary drugs may remain in meat products after slaughter.	51	14.0	61	16.8	70	19.2	182	50	1.9	Not Aware
5	Overuse of antibiotics in broiler chickens can lead to potential toxicity or allergic reactions.	44	12.1	53	14.6	69	18.9	198	54.4	1.8	Not Aware
Grand Mean										1.94	Not Aware

Source: Survey 2024

Key: HL: High Level, ML: Moderate Level, LL: Low Level, NA: Not Aware

Table 4 displays data for the mean scores of respondents on the level of Consumer Awareness on the health concern on the products and by-products of Broiler chicken Administered with veterinary drugs in Fufore Local Government of Adamawa State for items 1-5. The mean scores fall in the range of 1.8 to 2.1, denoting Not aware level of Consumer Awareness on the health concern on the products and by-products of Broiler chicken Administered with veterinary drugs in Fufore Local Government of Adamawa State. On average, the level of Consumer Awareness on the health concern on the products and by-products of Broiler chicken Administered with veterinary drugs in Fufore Local Government of Adamawa State received a not aware rating from the respondents, as indicated by the grand mean of **1.94** which is below the benchmark mean of 2.5.

The finding reveals that the Consumers are not aware of the health concern on the products and by-products of Broiler chicken Administered with veterinary drugs in Fufore Local Government of Adamawa State. The recent study disagrees with the findings that younger consumers generally exhibit greater knowledge of food safety issues than older individuals by Bennett et al., (2021). Which indicates that the bulk of older individual exhibit a not aware level of the health concern on the products and by-products of Broiler chicken Administered with veterinary drugs. The finding also disagree with the findings of Asfaw et al. (2020) who revealed that a considerable number of consumers lack adequate understanding of the consequences of antibiotic use in poultry (including broilers).

Research Question Four: What are the Consumer sources of information and awareness regarding drug administration in broiler chicken for consumption in Fufore Local Government of Adamawa State?

The data for answering research question four was analysed and the summary is presented in table four below:

Table 5: The sources of Consumers Information Awareness on Drugs Administration in Broilers Chicken Consumption in Fufore Local Government of Adamawa State

S/N	ITEMS	Yes		No	
		Frequency	Percentage	Frequency	Percentage
1	Media reports	127	35	237	65
2	Social media platforms	164	45	200	55
3	Government publications	122	33.5	242	66.5
4	Educational campaigns	146	40	218	60
5	Consumer advocacy groups.	109	30	255	70

Source: Research Survey 2024

Table 5 displays data for frequency and simple percentage of respondents on the sources of Consumer awareness regarding drug administration in broiler chicken for consumption in Fufore Local Government of Adamawa State for items 1-5. The percentage fall in the range of 33.5-40 percent for yes and a range of 55-70 percent for No. on the average a response of 60 percent indicates a No. This study disagreed with the findings of Mongi, Meshi, and Ntwenya (2022) and Karasu, & Ozturk, (2021) who stated that consumers typically rely on various sources for information about food safety, including media reports, social media platforms, government publications, and, educational campaigns by non- profit organizations focused on food safety and consumer advocacy groups. These respondents cannot rely on the aforementioned because they are not aware of the general drug administration and the effects of drug residue as such they cannot be aware of the sources of these information.

Summary of findings

The following are summary of the research findings:

1. Consumers are not aware of general Drugs Administration in Broilers Chicken Consumption. On average, the level of Consumer Awareness on general Drugs Administration in Broilers Chicken Consumption in Fufore Local Government of Adamawa State as indicated by the grand mean of 2.23 which is less than the benchmark mean of 2.5.
2. Consumer are not aware of the veterinary Drug residues in Broilers Chicken for Consumption in Fufore Local Government of Adamawa State as indicated by the grand mean of 1.9 which is less than the benchmark mean of 2.5.
3. Consumer are not aware on the health concern on the products and by-products of Broiler chicken Administered with veterinary drugs in Fufore Local Government of Adamawa State as indicated by the grand mean of **1.94** which is below the benchmark mean of 2.5.
4. Consumers are not aware of the sources of Consumer awareness regarding drug administration in broiler chicken for consumption in Fufore Local Government of Adamawa State as indicate with a range of 55-70 percent

Conclusion

The study concluded on consumer information awareness regarding veterinary drug administration in broiler chicken consumption in Fufore LGA underscores the necessity for enhanced education and awareness among consumers this is because the respondents exhibited a not aware level of awareness regarding the general use of veterinary drugs on broilers, side effects of veterinary drugs, the health issues related to these drug use and the sources of information on veterinary drug use on broiler chickens..

The findings indicate a substantial gap in consumer awareness regarding veterinary drug use in broiler chicken production within Fufore LGA, with the majority of respondents displaying low understanding of critical practices, such as withdrawal periods, proper drug administration, and potential side effects. Furthermore, the findings indicate a not aware level of concern among consumers regarding potential health risks associated with the consumption of treated broiler chickens, with particular emphasis on issues such as antibiotic resistance and chemical residues.

Recommendations

Based on the above findings, the study made the following recommendations:

1. Government and community should collaborate with stakeholders to create targeted educational initiatives that inform consumers about proper veterinary drug administration, including dosage and alternative treatments, through workshops and informational materials.
2. Improve consumer access to accurate information on veterinary drug usage by establishing community information centers and utilizing digital platforms to distribute easy-to-understand content should be done by community and government.
3. Government and community should implement initiatives that encourage community discussions on poultry consumption safety and veterinary drug use, allowing consumers to voice concerns and share experiences through forums and focus groups.
4. Government and community should regularly assess consumer knowledge on veterinary drug administration to evaluate the effectiveness of educational initiatives, using feedback to refine content and strategies for better relevance and impact

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