UNIVERSITY OF ILORIN

THE TWO HUNDRED AND EIGHTY-THIRD (283RD) INAUGURAL LECTURE

"THE PUBLIC HEALTH VETERINARIAN THROUGH TICKS, SNAILS, AND COMMUNITY SERVICE"

By

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DEPARTMENT OF VETERINARY PUBLIC HEALTH AND PREVENTIVE MEDICINE, FACULTY OF VETERINARY MEDICINE, UNIVERSITY OF ILORIN, NIGERIA

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Academic and Non-academic Staff of the University,
My Lords, Spiritual and Temporal,
Distinguished Invited Guests,
Gentlemen of the Press,
Students of the Faculty of Veterinary Medicine and other students here present,
Great students of the University of Ilorin,
Distinguished Ladies and Gentlemen.

Preamble

In The Name of Allah, The Most Beneficent, The Merciful. I give all glory to Almighty Allah, the Lord of the World, for this golden opportunity to give an account of my academic journey in the *Better by Far* University. It is, indeed, a rare privilege to present this 283rd inaugural lecture at this great citadel of learning, the University of Ilorin. I thank the Vice-Chancellor, Prof. Wahab Olasupo Egbewole, *SAN*, for the approval given to present the lecture.

This is the third inaugural lecture from the Faculty of Veterinary Medicine. The first was delivered by the immediate past Deputy Vice-Chancellor, Management Services, Prof S. F. Ambali, the Department of Veterinary Pharmacology and Toxicology and the second by the present Dean of the Faculty, Professor O. M. Azeez, of the Department of Veterinary Physiology and Biochemistry.

History is being made today because this is the first inaugural lecture from the Department of Veterinary Public Health and Preventive Medicine, University of Ilorin. This lecture which is titled: **The Public Health Veterinarian through Ticks, Snails, and Community Service**, will describe my incredible adventure as a public health veterinarian.

The title of this inaugural lecture was carefully selected to describe the duty of the poorly understood doctor. The lecture would emphasise the importance of animal health and how to prevent vector-borne zoonotic diseases, and enhancing food safety. It will also dwell on the widespread implications of animal health on human health and well-being. This lecture also comes from a lecturer in a department that keeps getting the questions: You're a Vet, why are you part of the human health sector? And recently, why are you a professor of public health? I thought you were a vet?

The health of the human population is closely connected with the health of animals and the environment they live in. Therefore, it is always difficult to delineate the boundaries where public health is concerned. This is supported by the assertion in the 18th century by Rudolf Virchow, one of the most prominent physicians generally regarded as the father of comparative medicine: Between animal and human medicine, there is no dividing line-nor should there be. The object is different, but the experience obtained constitutes the basis of all medicine.

Vice-Chancellor Sir, Ladies and Gentlemen, today's inaugural lecture will talk about the doctor whose patients cannot talk, but a doctor that just has to know. It would elucidate the often-misguided knowledge of veterinary public health and also unpack some of its contribution in modern medicine for an improved health system.

My Journey into the Veterinary Profession

I have always wanted to be a doctor. It was therefore expected that I applied to study human medicine upon completion of my secondary education at the Federal Government Girls' College, Bauchi. But fate had other plans in store for me. During my hunt for admission that took me to the University of Maiduguri, the first Vet. I ever met in my life was Prof. S. S. Baba of blessed memory. He was the person who facilitated my admission to study veterinary medicine with the plan that after the first year, I would change to human medicine (MB;BS). This was the common norm amongst the majority of the entrants to veterinary medicine at the time. After my 200 Level, where Vet. students took biochemistry courses within the College of Medicine, I was invited by the College to change my course to MBBS, my dream course. I shocked myself by opting to continue with Veterinary Medicine. I realised my interest in having always wanted to be a doctor was only if it was without the responsibility of seeing human blood. Those who knew me growing up would know that I could curl into a hole to avoid receiving an injection!

I completed my basic undergraduate training in Veterinary Medicine with distinctions. Since graduating from veterinary medicine, I have, however, spent the last twenty years saving not only animal lives but human lives in the interesting field of public health. My undergraduate supervisor, Prof. G. O. Egwu, who supervised my thesis on zoonotic brucellosis in small ruminants, sowed the seed in me which further strengthened my resolve to pursue a career in Veterinary Public Health. For some of us that are firm believers in fate, it is no coincidence that as one of the top 3 graduating students of Veterinary Medicine during my set, the then Vice-Chancellor of University of Maiduguri, Prof. Jibril Aminu, who is also a Vet., offered me an automatic employment in the Department of Veterinary Public Health and Preventive Medicine in 2005. Sadly, I could not accept the offer due to family reasons, but it set the tone for my future career choices. Looking back, I remember that even as a

young Doctor of Veterinary Medicine, I always knew my knowledge would be used in a unique way that would benefit both animal and human health.

Today, I stand before you all and to the Glory of Almighty Allah, as the first female Professor in the Department of Veterinary Public and Preventive Medicine and the very first female Professor of Veterinary Medicine from Kwara State, North-central, Nigeria. It has been a journey not without its challenges, but a journey worth taking all over again, if the opportunity arises. The profession has taught me hard work, perseverance, and above all, to believe in myself.

Vice-Chancellor Sir, in order to do justice to this lecture, I will be presenting my contribution to the field of Public Health and Preventive Medicine under the following subheadings: Understanding Veterinary Public Health and its Application in Healthcare Service Delivery, Vector-borne Zoonotic Disease and Public Health, and my contribution in Community Service.

Introduction

History of Veterinary Public Health

Public Health is the science and art of preventing disease, prolonging life, and promoting health through the organised efforts and informed choices of society, organisations, public and private communities, and individuals (Winslow, 1920). Public Health, unlike other fields of medicine, is not about doctors

treating individual patients, but about an entire population. It is an extremely large multidisciplinary field of medicine that has several other professionals, including veterinarians, working to safeguard the health of people.

Veterinary Public Health has been defined by the WHO as a component of public health activities that focuses on the application of veterinary medicine to the protection and improvement of human health (WHO, 2002). Veterinary public health activities conducted at the human-animal interface is used to provide a conceptual framework and programmatic structure for public health activities, which involve the application of knowledge, expertise and resources in veterinary medicine towards the protection and improvement of human health.

The initial domestication of animals brought man in to close contact with animals, and therefore with their diseases. These animal diseases that can affect humans are as old as when humans began domesticating animals. These diseases, referred to as "zoonoses", are naturally transmissible between humans and animals. More than 70% of the emerging or re-emerging diseases that have affected humans over the past 20 years are of zoonotic origin. It is the recognition of this group of pathogens that Schwabe (1984) asserts that veterinary medicine is fundamentally a human health activity and that the veterinarian contributes either directly to public health through biomedical research or indirectly by addressing animal health.

Historically, diseases of humans that have been documented to be of animal origin include: the bubonic plague transmitted by rat flea that killed an estimated 50 million people in Europe, Asia and Africa in the 14th century; the deadly rabies virus transmitted from infected animals, especially dogs, which has been classified as the eleventh killer disease of the world, killing over 100,000 people annually mainly in Africa and Asia; the frightening yellow fever epidemics, whose vector is mosquitoes with wild animals as reservoir; the rare but serious anthrax disease gotten from infected ruminants and also salmonellosis gotten from several infected domestic and wild animals etc. Records from the early 1900s also reported

consumption of milk infected with tuberculosis to have accounted for the deaths of thousands of children in many cities of the world (Steele, 2008).

Recent emerging and re-emerging disease of animal origin caused by pathogens such as Severe Acute Respiratory Syndrome (SARS), highly pathogenic avian influenza viruses, Lassa fever virus and the Ebola virus, also underscore the importance of comparative medicine involving veterinary public health. Of course, the COVID-19 (SARS-CoV-2) coronavirus pandemic, also of zoonotic origin is still fresh in our memories. We also continue to record old zoonotic diseases such as rabies, brucellosis, Q-fever (coxiellosis) and zoonotic tuberculosis, to mention but a few. These diseases remain endemic, especially within middle and lower-income countries, affecting mostly our poor and marginalised populations.

Application of Veterinary Public Health in Healthcare Service Delivery

There is a common saying, "We are what we eat". This couldn't have been more apt in describing the functions of a public health veterinarian in the area of food safety. Consumption of unhealthy food from animals that may be infected with zoonotic pathogens such as *Salmonella* and *Escherichia coli* contaminating food during processing can present significant public health threats.

In the area of biomedical research and policy formulation, several disease processes affect animals that are identical to those occurring in humans, such as cancers and diabetes. Biomedical research through the veterinary lens yields solutions that can benefit both animals and humans. The contributions of veterinary research to advancements in medicine are diverse and ancient as summarised by Steele (2008). For instance, comparative studies in anatomy and physiology provided the basis for our understanding of human embryonic development, human blood circulation and the structure of virtually all organs. Recent advancement in embryo transplantation was pioneered by the veterinarian Ralph Brinster's studies that laid the initial

foundation. Earlier investigation of toxoids by Gaston Ramon, a French military veterinarian, led to the discovery of tetanus toxoid for both horses and humans (Steele, 2008). Also, Salmon's research in 1878 helped to establish that quarantine and disinfection as a preventive approach to limit the spread of infectious diseases. Furthermore, the widespread use of laboratory animal models in comparative medicine, over the last 50 years, has led to the advancement of scientific knowledge in human medicine (NASEM, 2005). The research in 1893 by Smith and Kilborne, a veterinarian was the first to demonstrate the importance of tick as a vector of Texas fever, thus leading to the discovery of role of mosquitoes in the transmission of malaria and yellow fever (NASEM, 2004).

Veterinary pharmaceutical is another component of veterinary public health that encourages the development of vaccines, other biologicals, pesticides and medical devices. Others include health education and extension, bio-terrorism prevention, emergency preparedness and response, diagnostics, disease surveillance and antimicrobial resistance.

Control and Eradication of Zoonoses is a major niche in the application of veterinary public health in healthcare service delivery. Nigeria, like many other parts of the world, has witnessed an upsurge in the emergence of zoonotic diseases in recent times, claiming several lives. **Elelu** *et al*. (2019) extensively reviewed some of these diseases, while also elucidating the role of the public health veterinarian. These diseases, however, exhibit clinical symptoms that mimic common endemic malaria, typhoid, as well as HIV/AIDS in humans, leading to misdiagnosis, under-diagnosis and under-reporting, thus underestimation of the disease burden and lack of prompt preventive action. To put this into proper context, I will dwell a little on a few endemic zoonotic diseases in Nigeria:

Brucellosis

Brucellosis, is a neglected bacterial zoonotic disease that can lead to abortion and other reproductive losses in infected animals. It is endemic in Nigeria with several animal studies

reporting varying prevalence rates (**Elelu** *et al*., 2025a; Adamu *et al*., 2012). Human brucellosis is a chronic, debilitating disease that presents clinical symptoms similar to malaria. Other symptoms include flu-like symptoms (acute form) to undulant fever, headache, malaise, night sweats, arthritis and arthralgia. One of its classical clinical signs is brucellar arthritis, also referred to as hygroma, which can be seen in both animals and humans (Fig.1). Human brucellosis can be contracted either directly or indirectly from exposure to infected animals, other by-products or consumption of unpasteurised milk, where the *Brucellae* organisms are shed in large numbers in the milk, urine, blood of infected animals.

A
Brucellosis in cattle with classical sign of arthritis (hygroma)

B
Human brucellosis showing arthritis (hygroma), similar to that in cattle

Fig. 1: Clinical symptoms of animal and human brucellosis. (Image A Source: **Elelu**, 2019 unpublished; image B- https://www.nddb.coop/ farmer/ animal-health/zoonosis/brucellosis)

A recent study by **Elelu** *et al.,* (2025a) carried out in Kwara State revealed that the majority (89.3%) of the livestock farmers interviewed have heard of brucellosis. While only 38.8% could identify the symptoms of brucellosis in their herds, while over 90% of the study participants did not believe they could be infected with the disease. This makes it a worrisome public health risk. The same study also reported a prevalence of 5.8% amongst humans, presenting with malaria symptoms at some hospitals utilising cutting edge molecular methodology in the laboratory set up within the University of Ilorin by the IFS research grant won by yours truly and published in a top ranking Nature Scientific Report journal (**Elelu** *et al*., 2025a).

Good farm management practices, such as biosecurity, animal vaccination and proper waste management, would reduce animal disease burden, thus preventing human infection. Mass awareness campaigns on preventive strategies are also important, especially amongst population most at risk of contact with animals.

Zoonotic Tuberculosis

A proportion of human tuberculosis, referred to as Zoonotic tuberculosis (zTB), is caused by the animal tuberculosis complex. It is a global problem that has remained largely neglected and untracked, especially amongst the population suffering from poverty. Human infection occurs as a result of ingesting contaminated unpasteurised milk and milk products such as "wara" or "fura". It is also contracted from eating infected raw or improperly cooked meat, such as lungs, intestines or by inhaling aerosol from infected livestock. The WHO estimated that there were approximately 140,000 new cases of human zTB and over 11,000 deaths due to the disease globally. They are detected in our abattoirs all the time. Infected lungs are however erroneously referred to as '*fuku elegusi*' and not even considered as a major public health threat by our abattoir workers (Fig. 2).

Tuberculosis is characterized by the formation of granulomas (tubercles) in lung tissues

Generalized tuberculosis in cattle lung tissue
*****commonly referred to as 'fuku elegusi' in Yoruba Language

Fig. 2: Cattle lung with TB lesion from an abattoir in Kwara State (Source: **Elelu**, 2014, unpublished)

Zoonotic TB is globally targeted for elimination by the year 2035. The burden of human tuberculosis cannot however be reduced without improving standards of food safety and controlling the disease in the animal reservoir. The effective lifesaving Bacille Callmette-Guérin (BCG) vaccine against TB is one of the oldest an d most administered vaccines worldwide. The vaccine was developed in the early 1900s by attenuating a strain of zoonotic TB pathogen *M. bovis*. All newborn individuals are encouraged to receive the vaccine.

Other Zoonotic Diseases of Public Health Importance

At this juncture, I would like to emphasise that there are several other zoonotic diseases of public health concern. A few of these are emerging and re-emerging viral diseases that have rodents or wild primates as vectors or reservoirs and have caused devastating human fatalities in Africa. These include Lassa Fever, Ebola haemorrhagic fever, Marburg haemorrhagic fever and Crimean haemorrhagic fever. It is worth mentioning that often, these diseases disproportionately affect children and poor rural families and must be prioritised for preventive intervention.

Vector-Borne Zoonotic Diseases and Public Health

Ticks

Ticks vectors are blood sucking ectoparasites of domestic, wild animals as well as humans. They are the second-largest vectors of human disease after mosquitoes. Many tick species can act as vectors of pathogens, causing several tick-borne diseases, which cause serious impairment to human health, and they lead to significant economic losses in the livestock industry. The recent climate change, leading to warmer temperature, is likely to lead to an increased risk of human parasitism by tick vectors, thus the risk of transmission of zoonotic tick-borne diseases.

Ticks are classified either as hard ticks (Ixodid) or soft ticks (Argasids), with several new and additional classifications reported due to recent molecular advancement. Zoonotic tick-borne pathogens have been reported from several species of both hard and soft ticks globally.

The zoonotically significant brown dog tick, *Rhipicephalus sanguineus* (Fig. 3), is an example of hard ticks and is the most widely reported tick in the world. Human parasitism by *Rh. Sanguineus* tick has been reported in several parts of Europe and Africa, especially during warmer months. A multitude of life-threatening pathogens such as *Coxiella burnettii* (causative agent of human Query 'Q' fever), *Anaplasma phagocytophilum* (causative agent of human granulocytic anaplasmosis), *Rickettsia massiliae* (causative agent of Spotted-fever rickettsia) are transmitted to humans by these veterinary important ticks.

Fig 3A: Dorsal view of female *Rhipicephalus sanguineus* (brown dog tick) collected from domestic dogs in Kwara State, North-central, Nigeria

Fig 3B: Ventral view of female *Rhipicephalus sanguine s*tick collected from domestic dogs in Kwara State, North-central, Nigeria. Images captured with Nikon 5MZ745T microscope attached with a Motic digital camera (**Elelu** *et al*., 2021

The *Rh. Sanguineus* ticks show very close morphological similarity. Molecular characterisation is therefore, important to identify and verify its taxonomic status. It is common to come across several morphological studies to identify these ticks in Nigeria, molecular data of these ticks that have significant medical importance are however, lacking. As there were no molecular data to support the morphological claims of these tick species in Nigeria, I therefore carried out a molecular characterisation study to provide missing taxonomic data on *Rh. Sanguine s*ticks collected from domestic dogs, presenting at the University of Ilorin, Veterinary Teaching Hospital (VTH), Nigeria.

Results of the molecular analysis were based on the 16S mitochondrial rRNA, which revealed that our ticks are genetically different from the temperate strains, but closely related to the tropical groups (**Elelu** *et al*., 2021). This study, for the first time, confirmed the identity of *Rh. Sanguineus* brown dog ticks from Nigeria, providing valuable missing taxonomic data (Fig. 4). The study also showed that they were still the most widely reported tick from domestic dogs, and this presents a significant public health risk because dogs are the most widely kept species of animal by humans. The study was funded by a post-doctoral research fellowship awarded to **Elelu** in 2017 by the Africa Research Excellence Funds.

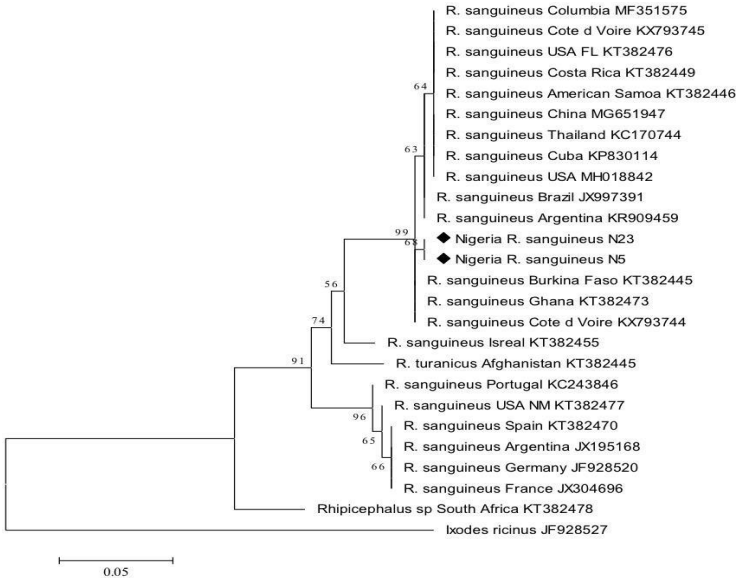

Fig. 4: Molecular Phylogenetic analysis by ML method of *Rhipicephalus sanguineus* based on the 450bp 16S mitochondrial RNA partial gene sequence of known *Rhipicephalus* species taken from the NCBI database and sequence amplified from *Rh. Sanguineus* tick collected from a Nigerian dog (**Elelu** *et al*., 2021).

Zoonotic Diseases associated with Ticks
Tick-borne Relapsing Fever

Tick-borne relapsing fever (TBRF) is a tick borne bacterial febrile illness caused by the zoonotic spirochaete of the genus *Borrelia*. It is an endemic public health problem in some parts of the world. In Western Africa, the incidence of human tick-borne relapsing fever (TBRF) is high, accounting for about 13% of febrile illnesses (Parola *et al.,* 2011). The organisms are transmitted either via saliva or excreted coxal fluid of *Ornithodoros*s of ticks or some hard ticks, including *Ixodes* and *Rhipicephalus* (*Boophilus*) species, during feeding (Bankole *et al.,* 2023). These ticks reside within cracks and crevices of animal dwellings, feeding indiscriminately on several animals, including humans (Fig 5).

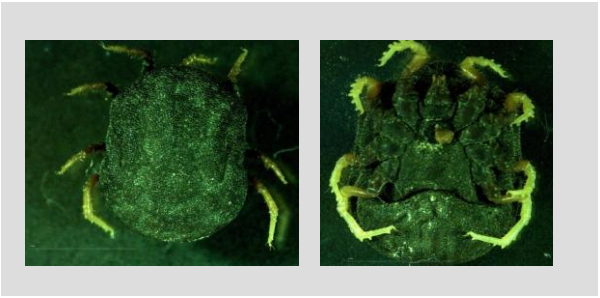

Fig. 5: Soft Ticks *Ornithodoros savyngyi* (dorsal and ventral views).
Source: (**Elelu,** 2018 unpublished)

Tick-borne relapsing fever (TBRF) is poorly documented in veterinary medicine. To establish the baseline of TBRF in veterinary medicine, **Elelu** (2018) undertook a systematic literature review of TBRF in domestic and wild animals, bringing together several reports to show their potential veterinary medical impact. The review hypothesised that the existence of the suitable tick vectors in most places in Africa and across the world makes TBRF a likely animal health problem that is presently underreported. It could also potentially be of public health significance due to cohabitation of humans and animals;

hence it should be investigated for in human patients presenting in the hospital with febrile illnesses.

Zoonotic tick-borne relapsing fever (TBRF) has so far not been documented in Nigeria, yet clinically compatible cases have been described, and soft tick species are endemic in the country. Consequently, **Elelu** *et al*., (2018) teamed up with a group of researchers at the University of East London, UK, to investigate the presence of TBRF-associated *Borrelia* in Nigeria. That also provided me the opportunity to co-supervise my first Ph.D. student at the School of Health, Sports and Bioscience at the University of East London, UK. To address this, I examined a pool tick samples collected from Gubio, Borno State, Northern Nigeria, to identify the tick species and screen them for *Borrelia* utilising molecular assays (Fig.6).

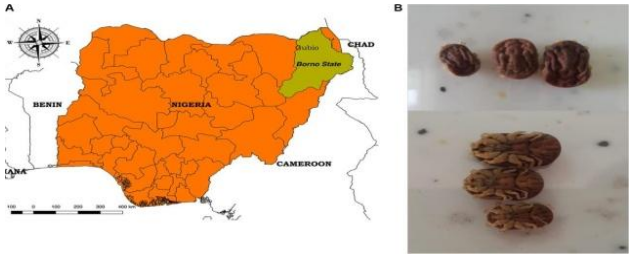

Fig. 6: (A) Study location (Gubio, Borno State, Nigeria). (B) Dorsal and ventral views of ticks collected (**Elelu** *et al*., 2018; Cutler *et al*., 2018)

The tick species from the study by molecular amplification and Sanger sequencing of the 16SrRNA were *Ornithodoros savignyi* (Fig. 7), an aggressive multi-host rapidly feeding tick species with significant veterinary and public health importance, while *Borrelia* species was detected in 3 out of 49 pooled tick samples screened. Molecular analysis of amplified 16S rRNA, intragenic spacer fragments revealed that the *Borrelia* isolated from the study was synonymous with the recently described *Candidatus* Borrelia kalaharica (Fig. 8). This was the *Borrelia* described as the causative agent of TBRF reported in a German tourist returning from holiday in southern Africa (Fingerle *et al*., 2016). At the time of the report, the vector of the disease had not been previously established.

Elelu *et al*. (2018) demonstrated the presence of the soft ticks *O. savignyi* in Nigeria, with evidence of *Borrelia*. Furthermore, this is the first report of TBRF spirochaetes from Nigeria. This spirochaete is highly related to the zoonotic *Ca. B. kalaharica*, suggesting that *O. savignyi* ticks are the vector for this pathogen. This *Borrelia* species can cause human TBRF and has a geographically wide distribution from Africa through the Middle East. Consequently, greater consideration of TBRF as part of the differential diagnosis among febrile patients from these region is essential.

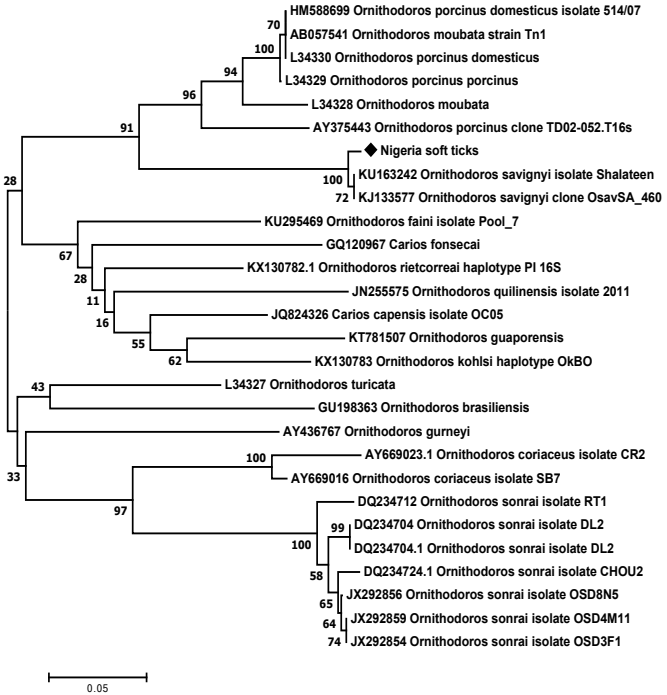

Fig. 7: Analysis of NJ tree of tick 16S rRNA sequence data (431 bp) comparing Nigerian soft ticks with other *Ornithodoros* species. The diamond identifies Nigerian tick sequence (**Elelu** *et al*., 2018)

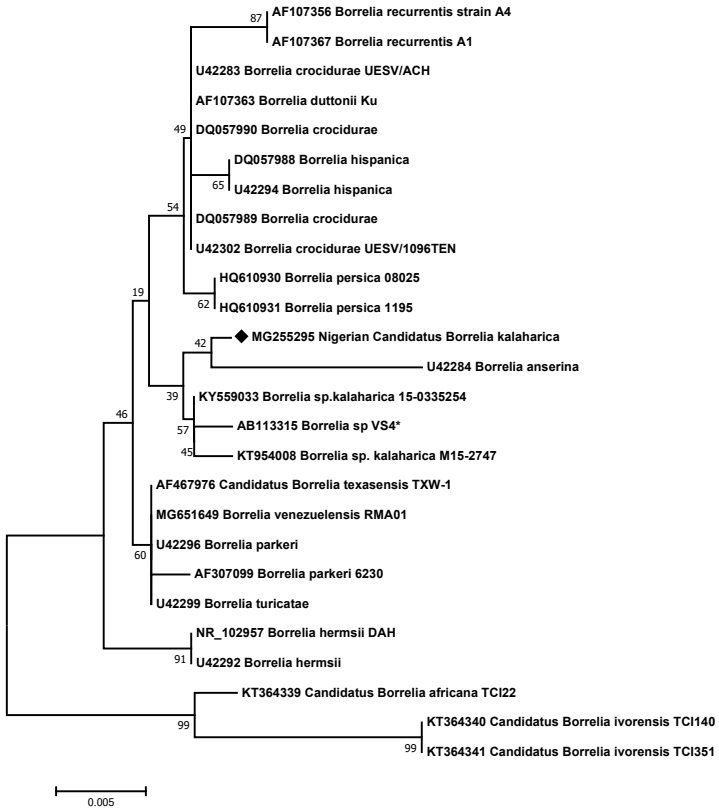

Fig. 8: Phylogenetic analysis Neighbour Joining of *Borrelia* 16S rRNA sequence (555 bp). Bootstrap validation was conducted using 1000 replicates. The diamond identifies the Nigerian *Borrelia* sequence (**Elelu** *et al*., 2018; Cutler *et al*., 2018)

Tick-borne Spotted Fever Rickettsiosis

Tick-borne rickettsiosis is another vector-borne zoonotic disease of animals and humans. It is among the oldest known vector-borne zoonotic diseases in the world. Several human tick-borne *Rickettsia*, including the newly emerging rickettsiosis caused by *Rickettsia massiliae*, are classified as members of the spotted fever groups (SFG). It is the second most frequent cause

of febrile illnesses after malaria in travellers returning to Germany from sub-Saharan Africa (Jensenius *et al.*, 2009).

Rickettsia massiliae was first isolated from ticks in Marseille, France. It is a confirmed human pathogen that has been reported in several parts of the world. In Europe and Africa, members of the *Rhipicephalus* tick complex are the documented vectors and the disease caused by the pathogen are naturally resistant to the antibiotic, rifampicin. Clinical signs in humans include fever, palpable purpuric rash on the upper and lower extremities and skin lesion on the right leg. This disease, however, remains neglected and still incompletely understood in West Africa, including Nigeria with very limited molecular studies to understand its epidemiology.

Elelu *et al.* (2022) determined the prevalence of tick infestation among small ruminants and utilised cutting-edge molecular methods to describe the clinically significant spotted fever *Rickettsia massiliae* isolated from *Rhipicephalus* hard ticks collected directly from small ruminants brought for slaughter at Ipata Municipal Abattoir in Ilorin, Kwara State, Nigeria. For the first time, the study **Elelu** *et al.* (2022), confirmed the presence of the zoonotic tick-borne spotted fever *Rickettsia massiliae* in *Rhipicephalus* ticks collected from sheep (Fig. 9).

Detection of *R. massiliae* in feeding ticks collected from sheep is of concern. This is because small ruminants such as sheep and goats are one of the most common animals kept by humans in sub-Saharan Africa. They are considered a source of investment for rural households, mostly kept as free-range and often tethered at night close to human dwellings. This provides a suitable environment for contact with disease vectors such as ticks, thus facilitating human infection. It is not presently recognised as a potential human pathogen in Nigeria, not likely to be considered during the evaluation of clinical cases and thus may be under-reported. Several confirmed life-threatening human cases elsewhere in the world, however, underscores the need to consider this as a differential diagnosis and investigate it among clinical patients who are most at risk.

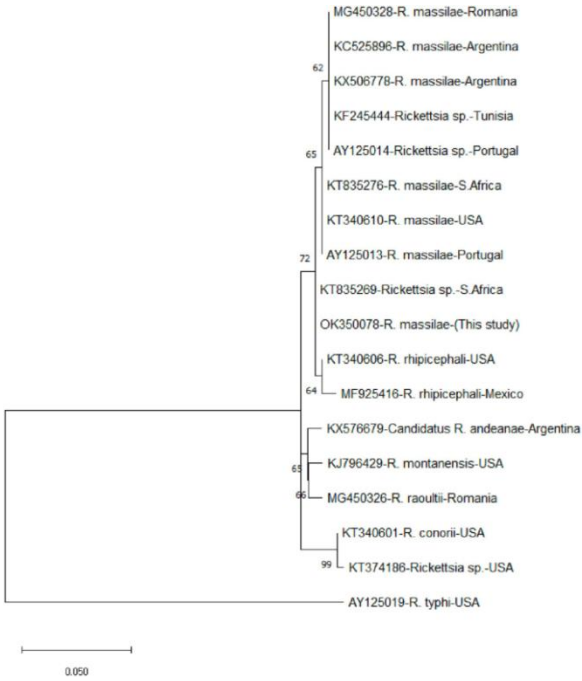

Fig. 9: Phylogenetic analysis by Maximum Likelihood of *Rickettsia massiliae* based on 350bp partial 23S-5S IGS sequences of *Rickettsia* species from the NCBI data base and sequence amplified from *Rhipicephalus* species tick collected from Nigerian small ruminants (**Elelu** *et al.,* 2022)

Tick-associated Q 'Query' Fever

'Query'Q fever is caused by the persistent and highly transmissible zoonotic pathogen *Coxiella burnetii*, which affects both animals and humans. In infected animals, it causes reduced productivity due to abortion and stillbirth. The causative bacteria *C. burnetii* are excreted in bodily fluids, including milk, which serves as the longest-lasting source of human infection. Transmission is primarily from infected domestic ruminants to humans through aerosolised particles from contaminated birthing materials, contact with infected urine or faeces, or through

ingestion of infected animal products such as milk or cheese. Ticks have also been reported as competent vectors, and over 40 species of ticks have been found naturally infected with the pathogen. Q fever has led to major epidemics in Europe, involving thousands of human cases. Clinical manifestations in humans range from asymptomatic or flu-like illness to severe cases of pneumonia, hepatitis, or endocarditis, with a significant risk of chronic infection in immuno-compromised individuals (Kampschreur *et al*., 2015).

In Nigeria, as far back as 1990, a high sero-prevalence of up to 44% was recorded in an epidemiological screening for Qf ever among hospitalised patients (Blondeau *et al*., 1990).The disease is highly underreported with a few recent scattered studies in Nigeria on the current burden of *C. burnetii* in animals and humans. In addition, the direct detection and molecular characterisation of *C. burnetii* in animal reservoirs, particularly in ready-to-eat milk products, remain largely unexplored in the country, presenting a huge knowledge gap.

Elelu *et al.* (2020), therefore, assessed the level of exposure to *C. burnetii* in livestock, using the sensitive Enzyme-linked Immunosorbent Assay (ELISA) serological assay from animal serum samples, through an initial grant awarded to me by the International Foundation for Science, Sweden. This was the first multi-state survey to determine the presence of antibodies to *C.burnetii* from both cattle and small ruminants. It provided data on the current epidemiological situation of *Coxiella* spp in cattle and small ruminants in the 3 Northern Nigerian States studied (Fig. 10). There was evidence of exposure to the pathogen in all the three states studied, further confirming the ubiquity of the pathogen. The percentage seropositivity to *C. burnetti* recorded from that study in cattle was up to 15.6%, consistent with those reported from previous studies in other parts of Africa.

In order to further understand the risk of human exposure to *C. burnetti*, an additional follow-up funding was awarded to me to determine the presence of *C.burnetii* in dairy products in Kwara State, Nigeria. This time, the highly sensitive real-time

Polymerase Chain Reaction (qPCR) that targeted the *C.burnetii IS1111* gene element to screen pooled raw milk samples from selected farms and cheese samples from rural markets was carried out (**Elelu** *et al*., 2025b).

Fig. 10: Map of Nigeria (within West Africa), showing the 3 Northern States (Kwara, Plateau and Borno), where cattle and small ruminants were sampled (**Elelu** *et al.*, 2020)

Findings from the study revealed the presence of the pathogen in ready-to-eat milk and cheese samples with a true prevalence of 12.5%, thus making it a confirmed public health challenge (**Elelu** *et al*., 2025b). The estimated true prevalence reported in this study showed that the disease is present in cattle sampled in Kwara State. I therefore estimated that more than 100,000 adult cows are shedding the pathogen in their milk daily based on an estimated adult cattle population of 500,000–1,000,000 heads in the state (unpublished data from the Kwara State Ministry of Agriculture and Rural Development). This relatively high shedding rate could be attributed to the general lack of awareness of Q-fever among pastoralists and dairy products retailers, poor husbandry practices during grazing and transhumance movements of pastoralists.

Evidence of the exposure to *Coxiella* infection among domestic livestock sampled as well as the presence of the

bacteria in ready-to-eat milk and cheese samples is worrisome (**Elelu** *et al*., 2025b). Its presence poses a direct risk of zoonotic transmission of the disease to humans, particularly in Nigeria, where the awareness about the disease is poor. A combined molecular detection and serological strategy for improving the routine and early diagnosis of the pathogen in humans and animals is proposed.

Results of both the studies above were carried out within the University of Ilorin using ELISA machine and PCR equipment setup courtesy of the grants awarded to me by the International Foundation for Science, Sweden in 2017 and 2022. The studies were also published in 2 top ranking journals PLOS One (**Elelu** *et al*., 2020) and BMC Veterinary Research (**Elelu** *et al*., 2025b).

Snails

Snails are the intermediate vectors of the digenetic trematode parasites such as *Schistosoma* (blood fluke), *Fasciola* (liver fluke), *Paragonimus* (lung flukes), *Paramphistomum* (rumen fluke), or intestinal flukes (*Fasciolopsis)* depending on their location within an infected host. They are referred to as digenetic because they require intermediate hosts of mollusc species such as slugs or snails where asexual reproduction takes place and a final vertebrate host such as animals and humans where sexual reproduction takes place.

The intermediate hosts of *Fasciola* spp are true water snails belonging to the phylum *Mollusca*, class *Gastropoda* and subclass *Pulmonata*. They belong to the family *Lymnaedae* and super species *Lymnaea (Radix) auricularia sensu lato.* The *Lymnaea* snail is widespread throughout Africa, including Nigeria especially in locations with rainfall in excess of 1000mm, with relatively high tropical temperatures. Its occurrence is restricted to permanent water bodies such as dams. *Planorbidae* snails are the intermediate host for the trematode parasite of the *Schistosoma* spp, which is responsible for schistosomiasis, a disease that affects both humans and cattle.

Zoonotic Trematodes associated with Snails

Fasciolosis

Fasciolosis, also referred to as distomatosis or liver-fluke, is a zoonotic parasitic disease caused by the trematode of the genus *Fasciola*. The most important species are *F. hepatica* (temperate) and *F. gigantica* (tropical) based on geographical location. The parasites are hermaphrodites and are found in the bile ducts of the liver in a large number of herbivorous ruminants, equines, pigs and rabbits, wild animals and humans.

Elelu and Eisler (2018) carried out an extensive review of zoonotic fasciolosis of cattle in Nigeria and other African countries, with emphasis on distribution and control (Fig. 11). This gave a snap shot of the states with higher animal disease burden as an indication of its zoonotic risk. *Fasciola gigantica* is endemic in Nigeria and is one of the most common causes of liver condemnation in Nigerian abattoirs (Figs. 12 & 13). Tropical fasciolosis alone has been predicted to cause losses of over US$840 M per annum in the Africa's 200 million cattle population and estimated global production losses in excess of US$3 billion annually.

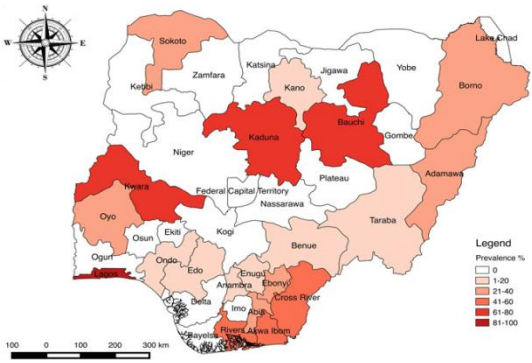

Fig. 11: Geographical distribution of cattle fasciolosis across different states of Nigeria (1980–2016) from published prevalence data (%) based on abattoir records, liver and coprological examination. States with 0% had no available data at the time of review (**Elelu** & Eisler, 2018)

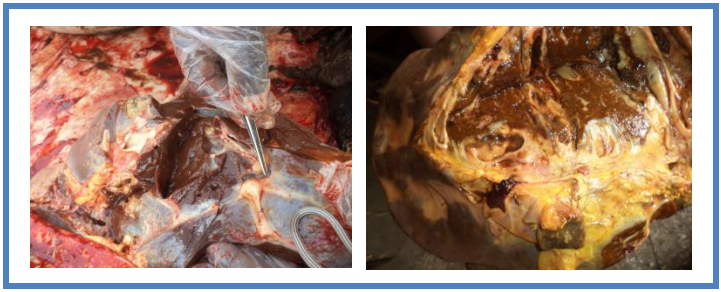

Fig. 12: Abattoir picture, showing a condemned cattle liver with adult *Fasciola gigantica* extracted from the bile ducts and a generalised jaundiced cattle liver due to infestation with fasciolosis from Kwara State

(**Source: Elelu**, 2014 unpublished)

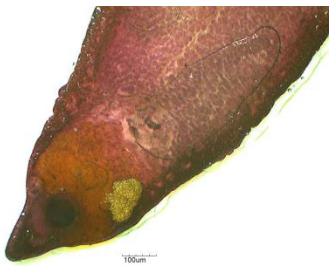

Fig. 13: Image of *Fasciola* species collected from an abattoir in Kwara State (**Source: Elelu**, 2014 unpublished)

The occurrence of human fasciolosis is determined by the presence of the intermediate snail host, domestic herbivorous animals, suitable climatic conditions and the dietary habits of man. Human infection occurs by consumption of freshwater plants contaminated with the parasite's larvae, drinking untreated contaminated water or consumption of raw or undercooked meat, organ tissues, and offals. The globally burden of human fasciolosis is approximately between 35 and 72 million people, with an additional 180 million at risk of infection (McDaniel *et al.*, 2014).

The majority of data on the burden of animal fasciolosis in Nigeria are based on abattoir surveys with very few data on the prevalence in live animals and limited data herd level risk factors that may influence disease occurrence in Nigeria, **Elelu** *et al.*, (2016a) undertook a study to investigate the prevalence of, and herd level risk factors for fasciolosis and other trematode infections in cattle in the Edu Local Government Area of Kwara State, Nigeria.

Results from that study, based on coprological examination showed that trematode infections were common in cattle and the most frequent species of trematode identified was *Fasciola gigantica* in 74.9% of cattle sampled (**Elelu** *et al.*, 2016a). Availability of water sources such as dams, which serve as a watering point for both cattle and humans, provides favourable habitat for the life cycle of *F. gigantica* and other trematode species (Fig. 14).

Fig. 14: Ndachewoye Dam serving as watering point for free-ranging animals and human activities creating a favourable situation for disease exchange

(**Source: Elelu** 2014, unpublished)

The high prevalence recorded for *F. gigantica* as well as reports of other zoonotic trematode infection recorded during my snail-borne zoonotic studies served as the basis to carry out a participatory epidemiology survey amongst Fulani pastoralists, who are custodians of 90% of our livestock. This was aimed to determine their knowledge about the common diseases of cattle

including those with zoonotic potential such as fasciolosis and proffer effective preventive and control strategies (**Elelu** *et al.*, 2016b). The high prevalence also led to the survey carried out by **Elelu** *et al.* (2017) to assess the veterinary drug retail outlets to determine the currently available anthelmintic drugs use in a rural area of Kwara State, Nigeria.

The result from the drug study drew attention to the significantly important role of the Veterinarians and other animal health workers in providing information about drugs to veterinary drug retail outlets. This underscores the need to employ veterinarians in veterinary drug stores and also the need to provide certification to smaller veterinary shops especially in rural and hard-to-reach areas by the appropriate regulatory authorities. The involvement of Veterinarians in veterinary drug supply chain will potentially reduce drug misuse, thus preventing the development of drug resistance (**Elelu** *et al.*, 2017).

Schistosomiasis

Schistosomiasis is another important zoonotic trematode infection associated with snails and has persisted as an important tropical disease. It is a parasitic disease acquired through contact with contaminated freshwater suitable for the lifecycle of its intermediate snail host. The definitive hosts are terrestrial mammals, including humans. The main *Schistosoma* species responsible for human disease are *Schistosoma haematobium*, causing urogenital disease, while S. *mansoni*, *S. japonicum*, and S. *mekongi* causes intestinal disease. Animal *Schistosoma* species include: *S. bovis*, *S. curassoni* and *S. mattheei*. **Elelu** *et al*. (2016a) carried out a study in Kwara State, that showed evidence of the presence of S. bovis in cattle sampled from three of the rural communities studied through coprological assay.

It is important to note that previous studies have reported that human *Schistosoma* species hybridised with the closely related animal *S. bovis* via contact with contaminated freshwater sources, where the intermediate hosts, freshwater snails is available (Leger *et al.*, 2017).This makes the detection of *S. bovis* in cattle keeping rural community in Kwara even more significant (**Elelu** *et al.*, 2017). The report of the disease in rural

areas, where there is limited access to safe water, hygiene and sanitation, is of consequence underscoring the need for an urgent preventive strategy. In addition, the public health potential of zoonotic schistosomes pose a significant challenge to achieving the global target of eliminating schistosomiasis by 2030. This is because of the co-habitation of human and animals which plays a crucial role in the transmission dynamics of zoonotic schistosomiasis; hence the need to collect data on both animal reservoirs along with data on humans in a 'one health' collaborative model.

My Contributions to Community Service

University-wide Service

I began my academic career in the University of Ilorin in December, 2010 as the pioneer staff member of the then newly established Faculty of Veterinary Medicine alongside Professor A. G. Ambali, before his appointment as Vice-Chancellor. I rose through the ranks and was promoted to a full Professor by the Governing Council of the University of Ilorin in the Department of Veterinary Public Health and Preventive Medicine in October 2024. This made me the first female Professor of Veterinary Medicine in Kwara State, North-central, Nigeria, also the first female Professor of Public Health and Preventive Medicine from the University of Ilorin, Nigeria and the first female Professor in my department.

I have previously served as the pioneer Faculty Examination Officer, pioneer Level Adviser, took part in the development of the first curriculum of Veterinary Medicine in the University of Ilorin and served as inaugural Faculty Representative to several faculties. I was Acting Head of Department, between 2018 and 2019, and represented the Faculty at the Business Committee of Senate. I have held several Board Membership, Chairmanship/Membership of several Faculty committees at various times. I served as Faculty Postgraduate Coordinator up until 2020, during which time I oversaw the admission of the first set of postgraduate students in the Faculty of Veterinary Medicine.

I have supervised and mentored several undergraduate and postgraduate students both within and outside of the country and also served as External Examiner at various universities in Nigeria. I have published over 50 research articles in several high ranking research outlets. I set up a state of the art molecular laboratory at the Faculty of Veterinary Medicine through a research grant awarded to me by the International Foundation for Science, Sweden. I provide expert technical advisory to the UK Medical Research Council. I have presented results of my research in several international conferences across several continents, including a presentation at the British House of Lords!

National Community Service
Primary Health Care

My inaugural lecture would be incomplete if I did not report my activities at the State and National level. For it was a real definition of linking the gown to town. I got the very rare opportunity to lead a frontline Public Health Institution, the Kwara State Primary HealthCare Development Agency (KWSPHCDA) as its Executive Secretary. I must say that it was one of the most challenging assignments that I have ever been saddled with. This was an Agency previously managed by an experienced senior consultant in the medical field, who left with a very big shoe for me to fill.

Then I remembered that I had gathered substantial knowledge in immunology, biostatistics, preventive medicine, and epidemiology that I had gained through my several years of veterinary medical training. Most importantly, the *Better by Far* University had prepared me for financial management through grants administration and leadership as a one-time head of department, several committee chairs and other board memberships. It made the initial apprehension better and the weight lighter.

Vice-Chancellor Sir, I am pleased to report that I was a good Ambassador of this institution, and I dare to say that I have earned a second Ph.D. in Primary Health Care System, even if

without a certificate. It was fresh learning for me and I'm glad to report that my previous training helped to prepare me for the tasks I met. This was coupled with an amazing hard-working team of the Agency and the uncommon support I received from my Principal, the dynamic People's Governor of Kwara State, Mallam Abdulrahman Abdulrasaq.

This collaborative effort has played a key role in repositioning Primary HealthCare (PHC) in Kwara State towards achieving sustainable and quality healthcare at the grassroots. Several milestone achievements were recorded. Most noteworthy is that Kwara State won the Primary Healthcare Leadership Challenge Fund Award, totalling $1,000,000, as the Zonal Champion for North-central, Nigeria, for two consecutive years. This funding was reinvested to strengthen PHC in the State for improved health care service delivery to the grassroots.

There was also tremendous improvement in Kwara State health indices, from previous bottom position to top position in the country. For example, there was over 220% increase in the number of hospital deliveries between 2020 and 2023, as PHCs were the preferred place of delivery, showing an improved confidence in our healthcare system. Hospital attendance also improved tremendously, with over 1 million Kwarans attending PHCs each of the last 4 years, to mention but a few.

COVID-19 Vaccination

I would also not forget to mention my contribution to community service during the nightmarish corona virus disease (COVID-19) pandemic of 2019/2020 caused by a novel member of the beta corona viruses, the Severe Acute Respiratory Syndrome corona virus 2 (SARS-CoV-2) with bats as its natural reservoir. The disease first erupted in China and was reported in many parts of the world, including Nigeria. Nigeria's index case was recorded on the 27th February 2020, and the disease was subsequently declared a pandemic by the WHO. Vaccination strategy using several new mRNA vaccines was immediately deployed globally as an urgent control measure, leading to several new challenges of vaccine hesitancy and deployment.

I led several outstanding innovative public health strategies during the COVID-19 vaccine deployment. This was aided by one of my very first community service assignment under the leadership of the Deputy Governor of Kwara State, Mr. Kayode Alabi, where I chaired a technical subcommittee on COVID-19 community engagement before my appointment at the KWSPHCDA. Vaccine hesitancy is always a challenge and this was not an exception during the COVID -19 vaccine deployment. My team and I had to think outside the box and one of the strategies we immediately deployed was the establishment of mass vaccination sites within the State Ministry of Health, religious houses, traditional palaces and marketplaces long before it was recommended by the National Primary Health Care Development Agency. This strategy led to Kwara State doubling the number of vaccinated individuals from 42% to 82% within 6 months, and also one of the top 5 performing states in the country.

During that period, I joined a group of researchers to undertake a national study to determine COVID-19 vaccine acceptance in Nigeria. This is important because vaccination is crucial to Nigeria's national COVID-19 control strategies. Findings from that study revealed that socio-demographic factors and public perception of the pandemic were the main predictors of the COVID-19 vaccine uptake in Nigeria and a multi-sectoral collaboration of important stakeholders, such as traditional rulers, due to their strategic position, was critical for acceptance (Al-Mustapha *et al.,* 2021).

Elelu *et al.,* (2022b) also carried out an additional survey to assess the knowledge and attitude of the public at the community level in Kwara State on COVID-19 preventive measures. This is an important survey because increased public knowledge and adherence to the recommended COVID-19 preventive measures are crucial to Nigeria's war against the pandemic. Some interesting findings from the study was participants' erroneous belief that consumption of alcohol, garlic, or taking hot baths could protect them against COVID-19,

while others thought COVID-19 could be transmitted via mosquito bites or food. Some respondents were not even aware that COVID-19 was treatable, as it was seen as a death sentence (**Elelu** *et al*., 2022b).

I still remember vividly that some of our professors were too scared of receiving the injection that some had to be restrained! I also remember those who were reluctant to take the vaccines due to the fear of magnetic fields at the point of vaccination, and there were those of extremist views that simply refused to take them due to lack of belief in its effectiveness, while we had some categories of people that eagerly took the life-saving vaccines. All these made the vaccination more challenging, but in the end, more rewarding. This is because collectively, we were able to radically reduce the transmission of the virus and bring our people back to normal life outside of lockdown.

To improve public attitudes toward preventive measures against the disease, an important public health intervention is an improved Risk Communication Community Engagement (RCCE) strategy, which would encourage community ownership of interventions, thus improving the outcome of the instituted control measures. It is also important to advocate rigorous public education and community enforcement to prevent further spread of the virus.

Conclusion

The public health veterinarian provides an overall veterinary epidemiological and surveillance direction for zoonotic diseases, linking the medical community to the public, thus improving health through prevention/control of emerging and re-emerging diseases. My future research plan is to continue to use cutting edge methods to characterise our local tick and snail vectors, and to establish their vector competence against endemic zoonotic diseases. Further investigations with more extensive human studies determining the possible pathogenic role of human vector-borne infection in Nigeria, are also in the pipeline.

I have studied several animal diseases associated with ticks and snails. I have also made interesting discoveries of the linkages between vectors and zoonotic diseases. I have established that several diseases of animals could potentially cause non-malaria fever in humans. I have provided useful insights on several effective preventive strategies and control measures. I have also linked town and gown via my extensive community service through quality research and administration. I have given a good account of myself as a public health veterinarian.

Recommendations

I wish to make the following recommendations, which I consider will be of benefits to the country:

1. **Multi-disciplinary One Health Strategy**: Effective and sustainable health improvements in resource-poor countries requires a multidisciplinary approach such as exemplified by One health strategy. For example, the success recorded in the control of the 2006-2010 avian influenza epidemics in Nigeria was largely due to the coordinated efforts between the human and veterinary professionals. Also diseases such as Zoonotic TB cannot be controlled by the human health sector alone. Veterinarians and other stakeholders in the public health sector must work together by carrying out joint nomadic vaccination, targeting both their livestock and children.

2. **Integrated Human and Animal Health Surveillance**: A sustainable surveillance program involving veterinary and medical experts both nationally and internationally for a successful zoonotic disease control program is emphasized. Some zoonotic diseases currently do not have effective preventive vaccination or chemotherapy. Therefore, there is need for strengthened joint human and animal health surveillance at the hospitals, meat inspection in the abattoirs, for food safety and to address the role of animals in maintaining and transmitting the disease.

3. **Good Farm Management Practices**: Stakeholders in animal husbandry should be duly educated on good farm management practices such as biosecurity, vector control, animal vaccination, waste management. This would reduce animal disease burden which will translates to improved food security, poverty reduction as well as prevent human zoonotic disease infection. Waste management practices, such as proper disposal of birth products as well as bodily fluids will reduce

environmental contamination and aerosolisation, persistence, and human infections. Mass vaccination of the animal reservoirs (where effective vaccines exist) combined with other control measures is the most cost-effective method of prevention in humans, as its much costlier to treat human infection.

4. **Improved Health Information and Communication**: It is important to strengthen and sustain prompt health communication between human health and animal health sectors in a joint public health strategy, as timely sharing of information will allow prompt identification of geographical areas or patient groups with a high risk of zoonotic disease exposure. This will facilitate a targeted response for prevention and control.

5. **Mass Awareness Campaigns**: It is also important to carry out mass awareness campaigns with content-specific messages to target audience, especially amongst those most at risk of contracting zoonotic infection. For example, public enlightenment campaigns against unpasteurized dairy products should be intensified. In addition, continuous engagement of the people with individually tailored messages is beneficial.

6. **Regulatory Framework for Health Information and Communication**: Dissemination of health information must be regulated, especially on social media platforms, limiting health related posting to only qualified medical professionals. During the 2020 pandemic, everyone became a doctor with a lot of misguided viral social media health messages. These infodemics led to several misinformations that have cost the world several delays in uptake of life saving interventions that can be translated to loss of human life as well as unquantifiable economic consequences.

Acknowledgements

I give Almighty Allah ALL the Glory for everything and for making this day a reality.

I want to specially recognise the dynamic people's Governor of Kwara State, Mallam Abdulrahman Abdulrasaq, *CON*, for prioritising the health of our people and for giving me the opportunity to serve my State. I appreciate your guidance, support and leadership in making my job easy. I also want to appreciate Her Excellency, the First Lady of Kwara State, Ambassador Olufolake Abdulrasaq, our own "Maman Kwara", for your uncommon commitment to the affairs of mothers and children of Kwara State.

I sincerely appreciate the Deputy Governor of Kwara State, Mr. Kayode Alabi for giving me the first platform and a shot at community service during the Covid-19 pandemic and for your continued support all the time. I also appreciate the Right Honourable Speaker and other distinguished members of the Kwara State House of Assembly.

My appreciate goes to our most hardworking and amiable Vice-Chancellor, Prof. Wahab Olasupo Egbewole, *SAN*, for granting the approval and support for this inaugural lecture. I thank the past Vice-Chancellors, Prof. Ishaq Olanrewaju Oloyede, for approving my appointment to the University of Ilorin, my guardian and father, Prof. Abdulganiyu Ambali, under whose guidance I started my career in the University of Ilorin, as well as Prof. Sulyman A. Abdulkareem, for your kind support during my academic endeavours. I want to appreciate the Chairman of the Library and Publications Committee for going through the manuscript. I say a big 'Thank you'

My appreciation to Late Prof. S. S. Baba, for your guardianship all through my 6-year veterinary undergraduate journey. May Almighty grant you Aljanatu Firdaus, Amin.

His Royal Highness, Mai Martaba Sarkin Ilorin, Shehuuu!!! I pray for a longer life and good health. Amin. The Great Mutawallin Ngeri, Dr. Alimi Abdulrasaq. Thank you for being a father and a mentor par excellence, and for believing in me and standing by me always.

I must also sincerely appreciate the ageless Alhaji Oladimeji Abdulraheem OFR, the Jagunmolu of Igbomina Land, the Arogundade of Lagos and Babaoba of Offa. You have always been there as long as I can remember. Your fatherly role, words of encouragement and support are truly appreciated. Let me come back home and appreciate The Balogun Alanamu, Dr. Atolagbe Akanbi Jos, Shehu!!!. Your words have always been 'we must support you', and I really must say that I enjoy that support to the fullest. I also extend my royal greetings to all the traditional rulers present and dear to my heart: The Balogun Gambari, The Balogun Fulani, Baba Isale, Magaji Are, Emir of Shonga, The Olupako of Share, The Elerin of Adanla-Irese and other Traditional Rulers present.

All the top Government functionaries from Kwara State, including all the Honourable Commissioners present, the Senior Adviser and Counsellor and all other Advisers present, Chairman SUBEB and KWIRS, I thank you immensely. I must also specially recognise all the LGA Chairpersons present. I thank you for the good working relationship we've established and for also supporting health interventions in your respective LGAs. To my teachers at all levels of my educational career, I appreciate you all for the knowledge and discipline you instilled in me and particularly some of my undergraduate teachers: Prof. G. O. Egwu, Prof. Junaidu Kabir, my Master supervisors, Prof. M. D. Dairo, my Ph.D. supervisors: Prof. Mark Eisler and Prof. Gerald Coles.

I thank our most erudite and senior professors at the University of Ilorin who have in one way or the other supported my academic progress. I also want to thank the Dean, Prof. O. M. Azeez, all the Professors and the entire academic and non-teaching staff of the Faculty of Veterinary Medicine, especially for keeping the flag flying in the past 15 years of Veterinary education at the University of Ilorin. The Head of Veterinary Public Health and Preventive Medicine Department, Dr. Ibrahim Ghali Alaaya - "Ghali of Africa", and all other members of staff of the Department of Veterinary Public Health.

I could not have achieved these cutting-edge research results without the support of my funders, especially the initial platform from TETFUND, the sustained support from the Africa Research Excellence Fund (AREF) and the International Foundation for Science (IFS). I say a big thank you for supporting me to be one of the leading female researchers in Africa.

Kindly permit me to acknowledge the Veterinary family who have come to grace today's occasion. I thank you all for the honour accorded me. Special appreciation to the President of the Veterinary Council of Nigeria, Prof. M. Adamu, The Registrar Dr. D. Fadipe and the Chairperson, NVMA Kwara State, Dr. Idiat Aminu.

Special recognition to all my students at all levels, including those that have graduated. You're an important part of this event. Always remember that you can always achieve whatever you set out to achieve, with hard work and perseverance. And to my girls that I have mentored, remember that I've shattered the glass ceiling! I look forward to you all joining me at the top!! I thank the entire staff and great students of the University of Ilorin for the many goodwill messages received towards today's lecture, I appreciate you all.

A big shout out to Alanamu community: Elelu Youths, IYDF and Elelu Vanguard, that have all come out en masse to cheer me on, I thank you for the ownership and support. I also thank all members of Olufadi and Alfa Raji Family of Alanamu quarters, I cannot appreciate you enough. I must also acknowledge all socio-cultural groups, IEDPU, IEPA, Ilorin Anchor Men and Women, Sardaunan Ngeri Women Association, Ilorin Women Association, civil society organization and all other non-governmental groups that have graced today's occasion. You are all most appreciated.

I also want to appreciate all the members of staff of Wema Bank for turning out to support my lecture. To my Primary Healthcare friends turned family, I want to specially appreciate the Management team, all Agency Staff, LGA teams: HODs, LIOs, CCOs, SMOs, M&Es, NFPs, MCH and all other PHC staff here present. You are all great team players!

All the development partners here present from the State Coordinator, WHO, AFENET, Representative of UNICEF, SC NPHCDA and other staff members, I thank you immensely.

To the Chairman of the inaugural committee, Dr. Michael Sunday Oguntoye and other members of the committee: Alhaja Fatima Kuranga, Biola Alanamu, Dr. Dupe Shittu, Dr. Jamila Atata, Super sub-dean Dr. Ajadi, Dr. Karimat Hussein, Dr. Ishola, Ayuba Olufadi, Fatai 'Manyi', Adekanye Toye, Sule, Mr. Abbey, Iya Ibeji, Officer Na'allah, I say a very big thank you. I didn't expect anything less from the amazing event you've put together, despite the extremely short notice!

Mr. Vice-Chancellor, permit me to also appreciate all our family friends that have come from within Kwara and all over the country. Most especially, my darling Big Daddy, Major General Julius Oshanupin, rtd. I cannot appreciate you all enough.

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I appreciate my Dad, Alhaji Adamu Olufadi, thank you for loving our Mum unconditionally. Thank you for the prayers and all the support that you've extended to us, your children. To my most energetic, most pious and most loving Mum ever Alhaja Zainab Adamu Olufadi, I say thank you. I wonder how I got this lucky to have both of you as my parent. Alhamdullilah for your life and I can only pray for many more years in good health! Amin. I thank my siblings, their spouses, their in-laws and friends: Engr. Mohammed Kabir Adamu, Barrister Shukrat Jummai Belgore and our baby Dr. Rukayat Adamu. I love you all from the bottom of my heart.

I also want to pour out my love to my children: Aiman, Maizurah and Marzuq. Thank you so much for tolerating my

long absence; thank you for being my Angel, my Princess and my Son-shine. Daddy and I love you guys!

And now, to my Baby, my Love, my Joy, my Happiness, Oladimeji Rasaq Elelu, I couldn't have done all these without your love and support. You have been my indisputable backbone; you give me every reason to smile all the time and pick me up in all my low moments. I pray that Almighty Allah reward you abundantly. Amin.

Finally, to all those who have travelled from far and near because of today's inaugural lecture and to those I may have not appreciated due to time constraints, I plead for your understanding. Kindly forgive my oversight. You are all deeply appreciated!

Thank You Very Much for Listening!!!!!!

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