

Leveraging Ethnoveterinary Knowledge And Materials Improvisation For Youth Innovation And Entrepreneurship In Nigeria's Livestock Sector

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Abstract: *Integration and promotion of ethnoveterinary and improvisation in animal rearing with attention to the use of locally available resources and knowledge do not only reduce costs of production but also improve the remedy to animal health care in rural communities and among the less privileged and low-income individuals. This practice is essential for empowering smallholder entrepreneurs and thus improving animal rearing and ease of production. Livestock entrepreneurs who are start-ups often face challenges in accessing veterinary services and materials needed for production due to their affordability and sometimes due to distance. Benefits of ethnoveterinary practices and improvisation include use of cost-effective resources that are easily accessible in rural areas thus reducing dependence on external inputs thus improving animal health, increasing food security and providing support for local economies. Embracing ethnoveterinary and improvisation can develop more sustainable, resilient and productive livestock production. However this approach comes with a few challenges which include; lack of scientific validation, variability in practice, lack of standardization, dependence on individual practice and inability to integrate indigenous technology with modern veterinary and technological practices. It is hereby recommended that these practices could be improved upon by adopting documentation and validation, capacity-building and training programs, policy support and national task force, research and development, as well as integration with modern way of livestock production.*

Keywords: Ethnoveterinary, Improvisation, low-income individuals, Indigenous technology,

Introduction

Entrepreneurship in Nigeria is an essential driver of economic development, especially in rural and semi-urban areas, and creates employment opportunities in developing economies. Entrepreneurs who engage in this growing trend are driven by the need to diversify income sources in a challenging economic environment characterized by high unemployment and fluctuating income streams (Abeba, 2021). They often face financial risks and income fluctuation and to mitigate this risk and ensure economic stability, many entrepreneurs do rely on the use of local indigenous herbs and animal by-products, and also locally available materials as a replacement for conventional livestock production materials. The benefits of small-scale animal farming go beyond income generation; it also enhances food security and contributes to rural development. As a result, many Nigerian entrepreneurs are incorporating small-scale livestock farming into their portfolios to supplement their primary sources of income, particularly in areas where other business ventures may be slow or seasonal (Adeniran, Okpi, Anjorin, Ajagbonna, 2020). The economic benefit of livestock rearing lies in its potential to enhance household income and improve livelihood (Agbidi&Ikeoji, 2019).

Livestock farming has gained so much attention by human beings since ancient time and it remains an essential activity for means of livelihood for humanity, providing sustenance through food, hides, skins, milk, and other products as protein source and human consumption. It serves as a strong pillar to food security and supplementary multiple source of income for people living below average in the society. It has been documented that livestock rearing had successfully played a critical role in the betterment of the economies of most developing countries of West Africa; boosting their internally generated revenue (IGR) and as one of the primary source of income of most rural and urban households (Eiki, Sebola, Sakong, & Mabelebele, 2021). Livestock production had successfully contributed to the improvement of welfare of poor households in African communities in various ways.

First, as a productive asset involving livestock product i.e. Animal source of protein (e.g., eggs, milk, and meat) and non-food products (e.g., hides, skin and wool), and essential inputs serving as aids and support for agricultural production (e.g., manure for crops or draught power). These products are food materials which are consumed, utilized as raw materials, or sold for income. (Busari, Soetan, Aiyelaagbe, & Babayemi, 2021).

Improvisation in livestock production

Improvised materials are locally sourced materials used in place of the prescribed ones as recommended for use in livestock production. Improvisation of agricultural materials is often a spontaneous creation from materials that are easily found within the

farmers' environment but requires relative connection in the standard of usage with the intended objective of the original material used.(Nwufor&Nwafor, 2015).

Improvisation is successful if it is understood, but the individual farmer in addition needs to improve on their skills (Mannucci, Orazi, &Valck, 2020). Improvement skills are vital for the required application of energy in the implementation of new ideas and creative abilities. Notwithstanding, the high cost of livestock production materials is also worrisome as most farmers do not have access or fund to purchase the prescribed materials and they cannot afford them because they are very expensive. To bridge this skill gap, the low- scale livestock farmers have to know how to source alternative materials with local ones, particularly where the prescribed ones are lacking or unavailable. Based on the foregoing, there is a need to examine the improvisation of materials and improvement of skills needed by livestock farmers for Animal husbandry in their locality (Nuro, Tolossa, &Giday, 2024)

Ethnoveterinary (Traditional and indigenous medicine) in livestock production.

Ethnoveterinary medicine (EVM) is a perception that is strongly based on people's beliefs, traditional and indigenous knowledge, attitudes, skills, methods and practices adopted for maintaining animal's health and treatment of livestock diseases. (Eiki et al., 2020). Ethnoveterinary medicine involves knowledge of indigenous use of materials and ingredients available and tested, around the farmers' locality and immediate environment which may include plants, animals products and minerals or their combinations for treatments of animal diseases. Most materials used in Ethnoveterinary in sub-Saharan Africa has been traced to trees, herbs, shrubs, and climbers as their origins. (Offiah et al., 2011). The need to have another options for animal health care that are comprehensible, cost effective, available and sustainable has brought about for ethnoveterinary practice which consist of community based local or indigenous knowledge and methods of livestock production. (Wanzala, Zessin, Kyule, Baumann, Mathias, &Hassanali, 2005).

Globally, the relevance of the knowledge of Ethnoveterinary medicine has been fading away, stepping down to the national and local levels; which can be attributed to the change in the educational systems and technological advancements. It is believed to be the practice of the aged and elderly, and it is however abandoned by the younger generation, who has failed to conserve the indigenous knowledge which was successfully practiced during the era of their forefathers which made livestock and animal health a success during their days. (Raikwar&Maurya, 2022).Extracts from some plants have been experimented to contribute to immune stimulation and enhancing resistance to pathogens. Also several parts and products from animals have been used in ethnoveterinary practice (zootherapeutics) (Woldu, 2016).

The practice of Ethnoveterinary is common in sub-Sahara African countries due to different socioeconomic factors, not denying the valid modern veterinary services available for livestock production, indigenous animal health care remains a prominent alternative practice among livestock farmers in some sub-Saharan African countries such as Nigeria (Alhaji&Babalobi, et al., 2015). It is a traditional healing method that comprises of knowledge, practices, attitudes and skills pertaining to healthcare and livestock management (Worku, 2018). World Health Organization documented that at least 80% of people in developing countries adopt indigenous practices for the control and treatment of numerous diseases of human and animals.

Non- availability and the poor accessibility of veterinary drugs and services by rural livestock farmers had necessitated the use of ethnomedicinal plants which are cheaper and more accessible.(Tolossa et al., 2013) Traditional medicine has recorded a long term safety, making organically produced agricultural products more preferred for use today and widely accepted thus increasing its demand globally for health reasons which ethno veterinary medicine being a very important practice (zirloni, 2020).

Globally, 60% of people and 80% of the population in Africa directly or indirectly turn to traditional medicinal plants for healthcare problem among humans. Seeking alternative measures in traditional medicines and its high reliance on medicinal plants is attributed to various reasons that include accessibility, cultural acceptability, affordability, fewer and tolerable side effects, and the emergence of pathogenic microorganisms that are resistant to existing modern drugs, especially antibiotics. (Nuro, 2024,Eiki, et al., 2020)

Benefits of Ethnoveterinary practice and improvisation in livestock production

The World Health Organization estimated that nearly 80% of the world's population that depend on Ethnoveterinary medicine are the poor and less privileged. In addition, sensitization of the people about the short- and long-term effects of synthetic antibiotic or antimicrobial drugs on livestock and final consumers of animal products (human) have necessitated seeking more safe and less expensive means that are natural means of disease control in livestock production (Manicci, et al., 2020).

Livestock farmers in Developed nations utilize phytotherapeutic products in compliance with directives for organic livestock treatment. Over the years, researchers have recorded medicinal plants used in treating animal diseases in sub-Saharan Africa and most ethno medicinal materials noted in sub-Saharan Africa come from trees, herbs, shrubs, and climbers as recorded by (Offiah et

al., 2011 & Eiki et al., 2020). Most Ethnoveterinary medicines have proven effective with good medicinal value yet cheaper than orthodox drugs, with little side effects and also easier to administer.

Eighteen (18) plant products that include fruit, leaf, root and bark were used to treat various diseases such as mange, cough, mastitis, diarrhoea, PPR, anthrax and snake bite in livestock. Sub-standard qualities of synthetic drugs, microbial resistance to drugs due to indiscriminate and abuse of anthelmintic and antibiotics coupled with retention of residues of these drugs on milk and other animal products are enough setbacks to shift the attention of farmers from modern veterinary medicine to ethnoveterinary medicine. (Busari et al., 2021).

Ethnomedicinal and improvisation materials of importance in livestock production

Most ethnomedicinal substances of sub-Saharan Africa originated from trees, herbs, shrubs, and climbers (Offiah & Lawal et al., 2011). Herbs like Ginger, garlic and turmeric are used to treat animal diseases. Birds served garlic gained more weight and drank more water. Garlic was also found to be effective in preventing diseases infestations, evidenced by the low number of mortality recorded. Cost incurred for garlic was also low compared to other conventional drugs. Ethnomedicinal plants which are cheaper and more accessible. (Tolossa, Debela, Athanasiadou, Tolera, Ganga, & Houdijk, 2013) Traditional medicine has recorded a long term safety, making them even more preferred for use today with global increase in the demand for organically produced agricultural products for health reasons which ethno veterinary medicine being a very important practice (Nuro et al., 2024).

Evidently, they are also used in commercial breeds such as broilers (Christy, 2018). Garlic has some bioactive chemicals which include Organosulfur compounds, polyphenols, saponins, fructans, and fructo-oligosaccharides which have shown proven physiological effects and antioxidant, antibacterial, antiviral, immunostimulatory, intestinal homeostasis, and cholesterol-lowering activities properties in poultry. Feed conversion ratio and body weight of broilers were improved upon being fed garlic at 1g/1kg in their diet (Raikwar, et al., 2022). Plants like aloe vera, neem and moringa are used for medicinal purpose in animals.

Improvisation materials like old pallets, crates and containers have been converted to feeding and drinking troughs as well as shelter components for ruminants' production as "DO IT YOURSELF" materials. Locally sourced materials like bamboo are used to construct housing for livestock like sheep, goats rabbits and also bedding for small ruminants. (Uduigwome & Ikeoji, 2020). Plastic containers, plumbing pipes and pet drink containers can be used as feeders, waterers, or storage containers. Use of natural materials has been documented to reduce stress and promote animal welfare (Abeba et al., 2021)

Challenges and Limitations

The difficulty always experienced in standardizing the use Ethnoveterinary medicines are due to the different pharmaceutical value and concentration of active ingredients in each plant; which vary depending on climatic and geographical factors. The potency and efficacy of Ethnoveterinary medicines are often lesser than that in conventional medicines (Manucci et al., 2020) thus making them less suitable for treating some livestock diseases with epidemic and endemic characteristics; such as foot-and-mouth disease, rinderpest, anthrax, black quarter, and rabies. However, there is close relationship between EthnoVeterinary Medicines and many conventional drugs, as they are of plant origin. Disease diagnosis and the use of Ethnomedicinal may be inadequate as it is based on symptoms rather than the underlying cause of the disease and other factors, for example, loss of appetite, restlessness, weight loss, and nervousness, hence the need for proper diagnosis.

Adeniran et al. (2020) reported some vices and inhumane habits practiced by livestock farmers that solely rely on traditional practice. These include inappropriate ethnoveterinary practices such as vulva cauterizing to induce heat, hot iron branding, the use of dangerous chemicals to treat wound in cattle, which have negative impacts on the health of animals and thus need to be discouraged.

Conclusion

Promoting indigenous technology and improvisation can provide a relief for livestock entrepreneurs, enhancing their productivity and resilience thus fostering a more sustainable and equitable livestock industry. Ethnoveterinary practices and improvisation improved animal health and productivity, reducing dire need for distant veterinary services. Its adoption is cost-effective, and can lead to innovative solutions that address specific challenges in livestock production. Addition to bringing many benefits to animal health and production, it would however support the livelihoods of livestock entrepreneurs.

Recommendations

1. Researchers should document and validate ethnoveterinary and improvisation practices for evidence of its effectiveness as a relief for distant veterinary services.
2. Government and research institutes should roll out training and capacity building programs for livestock entrepreneurs and develop policies that support ethnoveterinary practices and improvisation.

3. Research institutes and schools of animal production should encourage research and development of new context –specific ethnoveterinary practices and improvisation techniques.
4. Animal health and production extension workers should raise awareness and educate livestock entrepreneurs, veterinary practitioners and policy makers about the benefits and potentials of ethnoveterinary practices and improvisation.

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