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# Retraining Needs of Lecturers in Disease Prevention and Control Practices in Small Ruminants in Colleges of Education in North Central Nigeria

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***Abstract:*** *The study determined the retraining needs of lecturers in disease prevention and control practices in small ruminants in colleges of education in North-central Nigeria. Four research questions were answered, four hypotheses were tested at the 0.05 level of significance, and four objectives guided the study. The population for the study was 182 lecturers. All the population was used because the size was small and manageable; hence, there was no sampling. A 102-item structured questionnaire (LRNDPCPQ) was used for data collection. The instrument and content were validated by five experts. The Cronbach alpha (α) method was used to determine the internal consistency of the instrument items, which yielded a reliability coefficient of 0.91 and 0.89, for need and performance respectively. Data collected was analysed using standard deviation to answer research questions (NPI) and the Need Performance Index for performance. The findings revealed that agricultural education lecturers needed retraining in disease prevention practices, in disease control measures, in identifying materials for disease prevention, and in treatment practices; therefore, it was recommended that agricultural education lecturers be trained and retrained through seminars, workshops, and short-term retraining courses to make up for their deficiencies in disease prevention and control practices in the colleges of education.*

***Keywords:*** *Small Ruminants, Agricultural Education, Lecturers, Disease Prevention and Control, Colleges of Education*

## Introduction

There is a need for every country to be food-secured to enhance development and economic stability among its citizens. This is why the federal government is interested in all the institutions that are saddled with the responsibilities of teacher preparation, like the colleges of education. Presently, a college of education is the basic institution accepted by the National Commission for Colleges of Education in its benchmark policy on education to prepare teachers for primary and secondary education in Nigeria. According to the National Policy on Education of the Federal Republic of Nigeria (FRN, 2014), a College of Education is an approved tertiary institution that offers three years' minimum training to students in many programmes of interest for entry into the teaching profession. As contained in the College of Education minimum standard. The National Commission for Colleges of Education (NCCE, 2015) stated that colleges of education prepare teachers for three years in Agricultural Education programmes that incorporate small ruminant production as a course content in the curriculum in which lessons in small ruminants (sheep and goats) are taught with the aim of training students on disease prevention and control practices by lecturers in colleges of education.

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Small ruminants (sheep and goats) are polygastric animals. They are cloven-footed animals and belong to the genus *Ovis aries* (sheep) and *Capra hircus* (goats), respectively. They were domesticated over 8,000 years ago in Africa, Asia, and parts of India. The sheep and goat breeds found in Nigeria have Western Asia origins through the Middle East, North Africa, and finally Nigeria (Federal Department of Livestock and Pest Control Services, 2012). Ocholi (2015) stated that small ruminants are polygastric; they chew the cud, regurgitate, and ruminate and have four stomach compartments, namely the Rumen, Reticulum, Omasum, and Abomasum.

The population of sheep and goats in Nigeria is estimated at 34,453,724 and 22,092,602, respectively (Federal Department of Livestock and Pest Control Services, 2017). There are more sheep and goats in the North than there are in the southern part of Nigeria. Sheep and goats are found more in villages than in urban and peri-urban areas. It is estimated that there are 5 to 7 goats, or 3 to 7 goats per compound. While the cattle are in the hands of the nomadic Fulani or pastoralists, sheep and goats are in the hands of smallholder farmers (women, men, and youths) in Nigerian villages and peri-urban areas (International Index for Livestock Development, 2014). Sheep and goats play important roles in agriculture and in the socio-economic and cultural lives of the people. The International Index for Livestock Development (IIFLD) (2014) reported that sheep and goats provide meat in the form of mutton and chevon respectively - to humans in most parts of Nigeria. Small ruminants, especially sheep and goats, are slaughtered for consumption almost routinely, while premiums are put on sheep during festivities by Muslims and for burial rites and other festivities (Ocholi, 2015). In North-central Nigeria, the sheep and goats that are available are the less hairy types. They do not produce wool like the woollen sheep skins, which are by-products after slaughter and are used in making shoes, belts, drums, and leather skin products (Emerdo and Emerdo, 2013). The skin from the red bororo goats is highly sought-after leather in the international market. It earns Nigeria foreign exchange. Feacal droppings from sheep and goats are used as manure to enrich the soil. The scarcity and high cost of inorganic fertiliser have caused the demand for sheep and goat manure to increase, especially in the North and North Central Nigeria, where there is a vegetable farm (Falade *et al.*, 2014). Economically, small ruminants such as sheep and goats serve as a form of investment. They have a quick rate of turnover, which makes all farmers prefer to store their wealth in the form of livestock. Sheep and goats can be converted to cash quickly by being sold when the need arises. It is insurance against crop failure, especially in the absence of disease and mortality rates, which is the crux of this study (Oche, 2016). It is easier for a livestock farmer to buy several goats than one cow. Besides, the cost of feeding and maintaining sheep and goats is lower than that used to maintain cattle. They can be kept on a limited area of land (Brown et *al.*, 2014).

As observed by Olaitan, Alaribe, and Mohammed (2012), small ruminant feeds are cheaper because sheep and goats can thrive on poor-quality feeds and roughages if the situation compels them to do so, thus converting poor-quality feeds into valuable products at minimal cost. Sheep and goats give outputs such as milk, fibre, meat, and skin in quantities that are enough for sustained consumption by families or that can be sold in a day in the local market. Here, there is no suffering from storage facilities; they can be kept on a long-term basis, hence the re-training needs of lecturers in preventive practices and disease control of small ruminants in colleges of education in North-central Nigeria. There are no cultural or religious rules against keeping sheep and goats or eating their meat in North Central Nigeria, unlike Muslims who are against the eating of pigs and Hindus not killing or slaughtering cows (Adeka, 2015). The sheep and goat breeds found in Nigeria and in North Central Africa by migration are: the large, long-legged, long-tail breed (the Balami

sheep); the large, long-legged, longtail breed with two pie coat colours Uda); he medium-ssized breed (Yankasa); and the small, short-legged, short-tailed breeds referred to as West African Dwarf sheep (Zailani, 2016).

There are three main groups of goats that can be identified in North-central Nigeria. Each group has distinctive characteristics that are peculiar to the group (National Vetrinary Research Institute, 2016). This group occupies these distinctive ecological zones. The large breeds of the North are the Bornu red, the medium-sized breed of Sudan and Guinea-Savannah called the red Sokoto goats, and the small breeds of the south found also in the North Central Zones of Nigeria are the West African dwarf goats (Sanchi, 2015). These breeds are now domesticated in the middle belt, otherwise referred to as North-central Nigeria. Education, as contained in the minimum standard for the Nigerian Certificate of Education prepared by the National Commission for Colleges of Education in the 2019 revised edition, stated education as the process through which knowledge, ideas, values, and customs are transmitted from generation to generation.

The school curriculum, as pointed out by Agbulu and Wever (2011), must possess the ingredients that can equip the learner with skills, understanding, attitudes, habits, and appreciation that will continue to contribute towards the education of the learner. It is for this reason that agricultural education was introduced into the school system in Nigeria. Agricultural Education, in the opinion of Ekele (2019) Agricultural education is a programme of study offered by some tertiary institutions in Nigeria that is concerned with the teaching and learning of agriculture. Their programmes are evaluated at intervals in order to know where performance is low and where improvements can be made. In agreement, Bakare and Owoduni (2011) stated that agricultural education entails a combination of scholarship between agriculture and the educational systems by linking pedagogy and technical areas of agriculture in humanistic dimensions. In the United States of America, agricultural education is viewed as the teaching of natural resources and land management through hands-on experience and guidance to prepare students for entry into middle-level jobs and further advance agricultural jobs (Phipps, Dyer, Lloid, and James, 2008). In Nigeria, it is a programme designed for preparing and equipping learners with knowledge, skills, and attitudes in teaching and technical areas of agriculture to enable them to impart the same to students in schools and colleges (Ukonze and Olaitan, 2013). In the submission of Agbulu (2014), agricultural education is a systematic programme of instruction for private and public school leavers, postsecondary youths, and established farmers organised to improve agricultural education ograms. Agricultural education puts its emphasis on learning by doing, which provides guidance and consideration for disadvantaged students and emphasises agricultural development. In agreement, Joshua (2015) stated that agricultural education involves the acquisition of knowledge, skills, and attitudes in agriculture and teaching by would-be teachers in recognised universities or other institutions like the Colleges of Education. It targets producing teachers and improving the quality of life for all people by helping farmers increase production, conserve resources, and provide nutritious foods.

The introduction of the Agricultural Education programme in the Colleges of Education is designed as an academic full-time course of high academic and professional content with a minimum standard set, which is aimed at achieving set objectives and contains resources that are necessary for intended learning outcomes. This is based on regular accreditation visits to the Colleges of Education to ensure that resources recommended and needed are put in place for the retraining needs of lecturers in the disease prevention and control practices of small ruminants in

the Colleges of Education in North Central Nigeria. The National commission for Colleges of Education (2019) stated in its bench mark that any institution, whether private or public; public for example, those owned and funded by state or federal government while private Colleges of Education are those owned and funded by private individuals offering Agricultural Education, should provide the needed items such as laboratories, one for crops and soil and one for livestock especially small ruminants; sheep and goats that can be managed and maintained by students for study and experimental purpose in the area of retraining needs of lecturers in disease prevention and control practices in small ruminant in Colleges of Education in North Central Nigeria.

Agricultural education at the NCE level embraces the general education component, which is 36 credit hours of teaching practice and 6 credit hours of General Studies, 14 credit hours The teaching of professional agricultural education components is 72 credit hours, of which the teaching of ruminant animals (as a basis for livestock production) is a 4 credit hour course otherwise referred to as AGE225 and SIWES is 2 credit hours (National Commission for Colleges of Education, 2019). Furthermore stated, this is to enable lecturers to deliver the needed set agricultural objectives appropriately, hence the use of the National Commission for Colleges of Education Benchmark for this study: retraining needs of lecturers in disease prevention and control practices in small ruminants in colleges of education in North Central Nigeria. It is in recognition of the need, therefore, to revive the agricultural sector in Nigeria rather than as a survival strategy for the poor that agricultural education was introduced into the school system through colleges of education.

Education is critical to the attainment of development goals in any sector of the economy, whether in crops or livestock production, e.g., sheep and goats. This is the reason why the National Commission for Colleges of Education included the study of small ruminant animals (sheep and goats) in the curriculum and also included their disease, management system, prevention, and disease control practices for lecturers in small ruminants in Colleges of Education in North Central Nigeria. Therefore, agricultural education takes place at the formal level, which occurs at the primary, secondary, and university levels, and at the informal level, which goes outside the normal school system. The National Commission for Colleges of Education (NCCE) minimum standards (2019 revised edition) stated that the objectives of agricultural education in colleges of education are to:

1. Prepare graduates with the right attitudes, knowledge, and professional requirements in vocational agriculture.
2. Produce teachers who will be capable of motivating students to acquire an interest in and aptitude for agriculture.
3. Develop the student teachers appropriate communication skills for effective transmission of agricultural information to students in the context of their environment.
4. To equip the student teachers to equip and manage model schools effectively.
5. Provide a sound background to enhance the further academic and professional progression of students and teachers.

These objectives guide the lecturers for effective improvement in the teaching of agricultural education and the retraining needs of lecturers in disease prevention and control practices in small ruminants in the colleges of education in North-Central Nigeria. With reference to the study series of experiences packaged into a programme of agricultural education approved by the National Commission for Colleges of Education for the teaching of pedagogical and technical competence in agriculture to students in colleges of education. A lecturer, according to Bakare and Owoduni

(2011), is an individual who has been trained and teaches the prescribed course to students in a college of education or university. In agreement, lecturers, according to Okwuenu (2006), as cited by Ekele (2016), are those trained in the methodology or pedagogy of a recognised educational institution. Lecturing is an integral aspect of learning; it is a methodology of teaching in which good lesson delivery is ensured. Retraining lecturers in disease prevention and control practices in small ruminants therefore involves organising seminars, workshops, and so on with appropriate methodology.

A lecturer in the context of the study refers to an individual who delivers instruction to students in disease prevention and control practices in small ruminant colleges of education in North-central Nigeria. A lecturer of agricultural education in the colleges of education delivers instructions to students and evaluates them to master the relevant topics in agriculture for the award of a Nigerian Certificate in Education. Re-training refers to the set of activities directed towards upgrading the capabilities of lecturers in agricultural education in disease prevention and control practices in small ruminants and the various management practices (Pillai, 2017). In determining the retraining needs of lecturers of small ruminants for effective teaching and upgrading, there must be a needs assessment. Assessment, as explained by Borich in 1980 (as cited in Asogwa, 2014), is a type of evaluation used by researchers in determining various needs or discrepancies in education. He further stated that need is based on the notion that the relevance of education must be empirically determined and should identify the discrepancy between "what it is" and "what it should be". In the context of this study, assessment is the process of determining the difference between the level of needs of lecturers and their expected capabilities based on their performance in disease prevention and control practices. This process results in a proponent of the value called needs (TRCN, 2010).

Need, as explained by Rossett and Sheldon (as cited in Asogwa, 2016), is the difference between the perceived need (real performance) and the actual need (expected performance). Furthermore, subtracting the present performance level (PPL) from the actual need level (ANL) Asogwa (2016) considered needed requirements as the discrepancy between a current state of affairs and a desired future state. They maintained that there is a distinction between perceived and felt needs. To determine the level of the needed practices of the lecturers in disease prevention and control in small ruminant animals as well as ascertain what these lecturers need to know more in order to be effective in improving agricultural education for students benefits in the colleges of education, a need gap analysis is required. Need gap analysis is the tool that is used by an individual to compare its actual performance with its potential performance. Need gap analysis is described by Asogwa (2016) as a technique for determining steps to be taken in moving from the present state to a desired future state. It begins with a listing of characteristic factors such as the level of needs and performance level of the present situation, a cross-listing of the factors required to achieve future objectives, and highlighting gaps that exist and need to be filled. In this study, need gap analysis is the computation of the mean values of perceived performance of lecturers, subtracting from the computation of the mean values of their expected performance in disease prevention and control practices in small ruminants. The result obtained between the level of need and level of performance will indicate the re-training needs of lecturers in disease prevention and control practices in small ruminants in colleges of education in North Central Nigeria (Asogwa, 2016).

**Objectives of the Study**

The main objective of this study is to determine the retraining needs of lecturers in disease prevention and control practices in small ruminants (sheep and goats) in colleges of education in North-central Nigeria. Specifically, the study sought to:

1. Determine the retraining needs of lecturers in disease prevention practices in small ruminants in Federal and State Colleges of Education in North-Central Nigeria.
2. Determine the retraining needs of lecturers in disease control measures in small ruminants in Federal and State Colleges of Education in North Central Nigeria.
3. Determine the retraining needs of lecturers in identifying materials for disease prevention practices in small ruminants in Federal and State Colleges of Education in North Central Nigeria.
4. Determine disease treatment practices in small ruminant animals where lecturers in Federal and State colleges of education would require retraining in North Central Nigeria.

**Research Questions**

The following research questions were raised and answered by the study:

1. What are the retraining needs of lecturers in small ruminant disease prevention practices in Federal and State Colleges of Education in North-Central Nigeria?
2. What are the re-training needs of lecturers in disease control measures in small ruminants in Federal and State Colleges of Education in North Central Nigeria?
3. What are the retraining needs of lecturers in identifying materials for disease prevention practices of small ruminants in Federal and State Colleges of Education in North Central Nigeria?
4. What are the retraining needs of lecturers in disease treatment practices in small ruminant animals in the Federal and State colleges of education in North Central Nigeria?

**Methodology**

A descriptive survey research design was adopted. The population for the study consisted of all the agricultural education lecturers in federal and state colleges of education in North Central State: 54 from federal colleges of education and 128 from state colleges of education in North Central State. The instrument for data collection was a 102-questionnaire item titled lecturers Retraining Needs in Disease Prevention and Control Practices Questionnaire (LRNDPCPQ) structured on a four-point rating scale. Highly Needed, Needed, Slightly Needed and Not Needed. The instrument was validated by five experts—two from educational foundations, one from agricultural education, and two from animal production at the University of Agriculture Makurdi—whose comments were used to improve the quality of the items. The reliability was determined by using lecturers outside the study area but from the same kind of institution, who are the agricultural education lecturers. The reliability index of 0.91 was obtained using the Cronbach alpha reliability technique. The data was collected by administering 188 copies of the questionnaire, out of which 182 were retrieved, giving a return rate of 96.8%. The mean and standard deviation were used to analyse the data so as to answer the research questions. While the t-test was used to test the null hypotheses, the Need Performance Index was also used to answer the questions on performance, respectively. Any item with a mean rating of 3.00 and above is considered acceptable, while only ratings below 1.5 are regarded as unacceptable.

## Results

### Research Question 1

What are the retraining needs of lecturers in small ruminant disease prevention practices in Federal and State Colleges of Education in North Central Nigeria?

**Table 1: Retraining Needs of Lecturers in Small Ruminants Diseases Prevention Practices in Federal and State Colleges of Education in North Central Nigeria (n= 182: 54 Federal and 128 State)**

| S/N | Item Statement | $\bar{X}_{n1}$ | $\bar{X}_{p1}$ | $NPI_1(\bar{X}_{n1} - \bar{X}_{p1})$ | $\bar{X}_{n2}$ | $\bar{X}_{p2}$ | $NPI_2(\bar{X}_{n2} - \bar{X}_{p2})$ | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | Ability to provide good health care and sanitation | 3.8 | 3.20 | 0.60 | 3.61 | 2.02 | 1.59 | RN |
| 2 | Ability to provide good management practices | 3.69 | 1.96 | 1.73 | 3.45 | 2.04 | 1.41 | RN |
| 3 | Ability to provide quality Feed | 3.76 | 1.74 | 2.02 | 3.43 | 1.91 | 1.52 | RN |
| 4 | Ability to clean feeder and water containers | 3.78 | 1.91 | 1.87 | 3.52 | 2.15 | 1.37 | RN |
| 5 | Ability to detect and isolate sick animals | 3.56 | 2.26 | 1.30 | 3.62 | 2.14 | 1.48 | RN |
| 6 | Ability to quarantine newly purchased Sheep and Goats | 2.89 | 2.17 | 0.72 | 3.07 | 2.09 | 0.98 | RN |
| 7 | Ability to regularly vaccinate small ruminants | 3.39 | 2.19 | 1.20 | 3.43 | 2.10 | 1.33 | RN |
| 8 | Ability to deworm infected Sheep and Goats | 3.39 | 2.24 | 1.15 | 3.40 | 2.13 | 1.27 | RN |
| 9 | Ability to Identify and Eliminate disease vectors | 3.54 | 2.26 | 1.28 | 3.51 | 2.14 | 1.37 | RN |
| 10 | Ability to carry out tuberculin test for tuberculosis | 3.43 | 2.22 | 1.21 | 3.56 | 2.12 | 1.44 | RN |
| 11 | Ability to carry out Agglutination test for TB | 3.39 | 2.22 | 1.17 | 3.42 | 2.12 | 1.30 | RN |
| 12 | Ability to carry out strip cup test for mastitis | 3.07 | 2.20 | 0.87 | 3.25 | 2.11 | 1.14 | RN |
| 13 | Ability to apply appropriate fumigation in the housing of animals | 3.28 | 2.19 | 1.09 | 3.36 | 2.10 | 1.26 | RN |
| 14 | Ability to dispose wastes and carcass of dead farm animals | 3.31 | 2.22 | 1.09 | 3.41 | 2.12 | 1.29 | RN |
| 15 | Ability to carry out routine check in pen of sheep and Goats to see if animals are sick or doing well | 3.56 | 2.26 | 1.30 | 3.55 | 2.14 | 1.41 | RN |
| | **Grand NPI** | **3.45** | **2.22** | **1.24** | **3.44** | **2.09** | **1.34** | **RN** |

*n = number of respondents; $\bar{X}_{n1}$ = Mean of Needed Category for Federal Colleges of Education, $\bar{X}_{p1}$ = Mean of Performance Category for Federal Colleges of Education, $NPI_1$ = Needed-Performance Index for Federal Colleges of Education ; $\bar{X}_{n2}$ = Mean of Needed Category for State Colleges of Education, $\bar{X}_{p2}$ = Mean of Performance Category for State Colleges of Education, $NPI_2$ = Needed-Performance Index for State Colleges of Education; and RN = Retraining Needed*

Table 1 reveals that the need-performance index for lecturers in Federal Colleges of Education in all 15 items ranges from 0.60 to 2.02, with a grand index of 1.24, and was positive, while the need-performance index for lecturers in State Colleges of Education in all 15 items ranges from 0.98 to 1.59, with a grand index of 1.34, which was also positive. This result indicates that the lecturers in both the Federal and State Colleges of Education in North Central Nigeria need retraining in small ruminant disease prevention practices.

**Research Question 2**

What are the retraining needs of lecturers in disease control measures for small ruminants in Federal and State Colleges of Education in North Central Nigeria?

**Table 2: Retraining Needs of Lecturers in Disease Control Measures of Small Ruminants in Federal and State Colleges of Education in North Central Nigeria (n = 182: 54 Federal and 128 State)**

| S/N | Item Statement | $\bar{X}_{n1}$ | $\bar{X}_{p1}$ | $NPI_1(\bar{X}_{n1} - \bar{X}_{p1})$ | $\bar{X}_{n2}$ | $\bar{X}_{p2}$ | $NPI_2 (\bar{X}_{n2} - \bar{X}_{p2})$ | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | Ability to provide good housing for keeping Animals | 3.69 | 2.30 | 1.39 | 3.67 | 2.15 | 1.52 | RN |
| 2 | Ability to provide good health care services | 3.72 | 2.26 | 1.46 | 3.57 | 2.15 | 1.42 | RN |
| 3 | Ability to provide quarantine for small ruminant (Sheep and Goats) | 3.67 | 2.30 | 1.37 | 3.56 | 2.15 | 1.41 | RN |
| 4 | Ability to carry out vaccination of animals and decontamination of pens | 3.61 | 2.28 | 1.33 | 3.42 | 2.15 | 1.27 | RN |
| 5 | Ability to carry out disinfection of pasture/feed equipment | 3.63 | 2.24 | 1.39 | 3.61 | 2.13 | 1.48 | RN |
| 6 | Ability to reduce stocking rate by selling off some of the small ruminants | 3.43 | 2.28 | 1.15 | 3.43 | 2.15 | 1.28 | RN |
| 7 | Ability to build houses with suitable materials that permits free air | 3.35 | 2.19 | 1.16 | 3.44 | 2.10 | 1.34 | RN |
| 8 | Ability to construct housing pen with galvanized sheets | 3.43 | 2.26 | 1.17 | 3.48 | 2.14 | 1.34 | RN |
| 9 | Ability to do the partitioning of pens for sheep and Goats housing | 3.52 | 2.24 | 1.28 | 3.51 | 2.12 | 1.39 | RN |
| 10 | Ability to protect Sheep and Goats from theft | 3.31 | 2.26 | 1.05 | 3.40 | 2.12 | 1.28 | RN |
| 11 | Ability to regularly clean housing units with disinfectants | 3.63 | 2.28 | 1.35 | 3.61 | 2.17 | 1.44 | RN |
| 12 | Ability to remove infected animals from the flock | 3.69 | 2.22 | 1.47 | 3.56 | 2.18 | 1.38 | RN |
| 13 | Ability to feed small ruminants by placing their feeds in trough that are devoid of contamination by faeces | 3.61 | 2.26 | 1.35 | 3.37 | 2.15 | 1.22 | RN |
| 14 | Ability to treat sick animals with recommended anti biotic | 3.52 | 2.24 | 1.28 | 3.41 | 2.16 | 1.25 | RN |
| 15 | Ability to control the activities of straying animals into the farm to avoid disease spread | 3.67 | 2.24 | 1.43 | 3.64 | 2.10 | 1.54 | RN |
| | **Grand NPI** | **3.56** | **2.25** | **1.31** | **3.51** | **2.14** | **1.37** | **RN** |

*n = number of respondents; $\bar{X}_{n1}$ = Mean of Needed Category for Federal Colleges of Education, $\bar{X}_{p1}$ = Mean of Performance Category for Federal Colleges of Education, $NPI_1$ = Needed-Performance Index for Federal Colleges of Education ; $\bar{X}_{n2}$ = Mean of Needed Category for State Colleges of Education, $\bar{X}_{p2}$ = Mean of Performance Category for State Colleges of Education, $NPI_2$ = Needed-Performance Index for State Colleges of Education; and RN = Retraining Needed*

Data in Table 2 reveals that the need-performance index for lecturers in Federal Colleges of Education in all 15 items ranges from 1.05 to 1.47, with a grand index of 1.31, and was positive, while the need-performance index for lecturers in State Colleges of Education in all 15 items ranges from 1.22 to 1.54, with a grand index of 1.37, which was also positive. This result indicates

that the lecturers in both the Federal and State Colleges of Education in North Central Nigeria needed retraining in disease control measures in small ruminants.

**Research Question 3**

What are the retraining needs of lecturers in identifying materials for disease prevention practices in small ruminants in Federal and State Colleges of Education in North Central Nigeria?

**Table 3: Retraining Needs of Lecturers in Identifying Materials for Disease Prevention Practices in Small Ruminants in Federal and State Colleges of Education in North Central Nigeria (n = 182: 54 Federal and 128 State)**

| S/N | Item Statement | $\bar{X}_{n1}$ | $\bar{X}_{p1}$ | $NPI_1(\bar{X}_{n1} - \bar{X}_{p1})$ | $\bar{X}_{n2}$ | $\bar{X}_{p2}$ | $NPI_2 (\bar{X}_{n2} - \bar{X}_{p2})$ | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | Disease preventive Posters | 3.52 | 2.28 | 1.24 | 3.58 | 2.15 | 1.43 | RN |
| 2 | Immunization demonstration Posters | 3.3 | 2.17 | 1.13 | 3.57 | 2.07 | 1.50 | RN |
| 3 | Immunization guide and text | 3.46 | 2.22 | 1.24 | 3.52 | 2.12 | 1.40 | RN |
| 4 | Vaccination procedure books/records | 3.46 | 2.17 | 1.29 | 3.58 | 2.12 | 1.46 | RN |
| 5 | Disease awareness Poster | 3.57 | 2.28 | 1.29 | 3.59 | 2.15 | 1.44 | RN |
| 6 | Antibiotics use guides is not a material needed for preventive practices | 3.39 | 2.24 | 1.15 | 3.43 | 2.12 | 1.31 | RN |
| 7 | Washing hand printed posters | 3.41 | 2.24 | 1.17 | 3.48 | 2.23 | 1.25 | RN |
| 8 | Tick identification Cards | 3.48 | 2.24 | 1.24 | 3.55 | 2.08 | 1.47 | RN |
| 9 | Disease identification kits/demonstration pictures | 3.43 | 2.20 | 1.23 | 3.59 | 1.99 | 1.60 | RN |
| 10 | Disinfectant demonstration activity posters | 3.41 | 2.06 | 1.35 | 3.40 | 1.99 | 1.41 | RN |
| 11 | Show off protective equipment. i.e. Hand gloves, Mask, Eye ware | 3.57 | 2.09 | 1.48 | 3.42 | 1.97 | 1.45 | RN |
| 12 | Injection safety practice in needles and syringes for parenteral medications | 3.28 | 2.06 | 1.22 | 3.27 | 1.97 | 1.30 | RN |
| 13 | Sterile veterinary instruments | 3.41 | 2.11 | 1.30 | 3.43 | 2.10 | 1.33 | RN |
| 14 | Clinical instruments e.g. thermometers and stethoscopes | 3.04 | 2.13 | 0.91 | 3.20 | 2.02 | 1.18 | RN |
| 15 | First aid toolkits for early treatment of diseased animals | 3.30 | 2.13 | 1.17 | 3.45 | 1.91 | 1.54 | RN |
| | **Grand NPI** | **3.40** | **2.17** | **1.23** | **3.47** | **2.07** | **1.40** | **RN** |

*n = number of respondents; $\bar{X}_{n1}$ = Mean of Needed Category for Federal Colleges of Education, $\bar{X}_{p1}$ = Mean of Performance Category for Federal Colleges of Education, $NPI_1$ = Needed-Performance Index for Federal Colleges of Education ; $\bar{X}_{n2}$ = Mean of Needed Category for State Colleges of Education, $\bar{X}_{p2}$ = Mean of Performance Category for State Colleges of Education, $NPI_2$ = Needed-Performance Index for State Colleges of Education; and RN = Retraining Needed*

Data in Table 4 reveal that the need-performance index for lecturers in federal colleges of education in all 15 items ranged from 0.91 to 1.48, with a grand index of 1.23, and was positive, while the need-performance index for lecturers in state colleges of education in all 15 items ranged from 1.18 to 1.60, with a grand index of 1.40, which was also positive. This result indicates that the lecturers in both the Federal and State Colleges of Education in North Central Nigeria need retraining in identifying materials for disease prevention practices of small ruminants.

**Research Question 4**

What are the retraining needs of lecturers in disease treatment practices of small ruminants in Federal and State Colleges of Education in North Central Nigeria?

**Table 4: Retraining Needs of Lecturers in Federal and State Colleges of Education in Disease Treatment Practices in Small Ruminants in North Central Nigeria (n = 182: 54 Federal and 128 State)**

| S/N | Item Statement | $\bar{X}_{n1}$ | $\bar{X}_{p1}$ | $NPI_1(\bar{X}_{n1} - \bar{X}_{p1})$ | $\bar{X}_{n2}$ | $\bar{X}_{p2}$ | $NPI_2 (\bar{X}_{n2} - \bar{X}_{p2})$ | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | Ability to quarantine and clinically isolate animals based on symptoms | 3.44 | 2.02 | 1.42 | 3.47 | 1.76 | 1.71 | RN |
| 2 | Ability to use suitable vaccines to vaccinate animals | 3.63 | 1.89 | 1.74 | 3.45 | 2.13 | 1.32 | RN |
| 3 | Ability to Immunize animals with killed or Attenuated vaccine | 3.54 | 2.22 | 1.32 | 3.59 | 2.03 | 1.56 | RN |
| 4 | Ability to deworm animals with appropriate anthelminthic e.g. Albendazole | 3.50 | 2.13 | 1.37 | 3.41 | 2.00 | 1.41 | RN |
| 5 | Ability to spray and deep farm animals to remove ticks with pesticides | 3.46 | 2.13 | 1.33 | 3.48 | 2.16 | 1.32 | RN |
| 6 | Ability to practice rotational and alternative grazing | 3.65 | 2.28 | 1.37 | 3.69 | 2.04 | 1.65 | RN |
| 7 | Ability to practice parasite free range by eliminating snails | 3.41 | 2.17 | 1.24 | 3.47 | 2.13 | 1.34 | RN |
| 8 | Ability to provide healthy feeds and pastures | 3.46 | 2.19 | 1.27 | 3.49 | 1.94 | 1.55 | RN |
| 9 | Ability to avoid over stocking in the flocks | 3.50 | 2.09 | 1.41 | 3.43 | 1.85 | 1.58 | RN |
| 10 | The ability to use broad spectrum antibiotics and iodine to clean and teat wounds | 3.50 | 1.91 | 1.59 | 3.38 | 1.83 | 1.55 | RN |
| 11 | Ability to test, slaughter and berry sick animals with anthrax | 3.19 | 1.96 | 1.23 | 3.11 | 1.94 | 1.17 | RN |
| 12 | Ability to use antiseptics i.e. Eusol® and other decontaminants | 3.33 | 2.04 | 1.29 | 3.34 | 1.87 | 1.47 | RN |
| 13 | Ability to use Asuntol and its derivatives for tick controls | 3.44 | 2.02 | 1.42 | 3.35 | 1.90 | 1.45 | RN |
| 14 | Ability to use recommended anti-inflammatory drugs against sundry infections | 3.50 | 2.00 | 1.50 | 3.51 | 1.88 | 1.63 | RN |
| 15 | Ability to administer oral drugs | 3.54 | 2.00 | 1.54 | 3.48 | 1.93 | 1.55 | RN |
| | **Grand NPI** | **3.47** | **2.07** | **1.40** | **3.44** | **1.96** | **1.48** | **RN** |

*n = number of respondents; $\bar{X}_{n1}$ = Mean of Needed Category for Federal Colleges of Education, $\bar{X}_{p1}$ = Mean of Performance Category for Federal Colleges of Education, $NPI_1$ = Needed-Performance Index for Federal Colleges of Education ; $\bar{X}_{n2}$ = Mean of Needed Category for State Colleges of Education, $\bar{X}_{p2}$ = Mean of Performance Category for State Colleges of Education, $NPI_2$ = Needed-Performance Index for State Colleges of Education; and RN = Retraining Needed*

Table 4 presents results on the retraining needs of lecturers in Federal and State Colleges of Education in disease treatment practices in small ruminants in North-Central Nigeria. Analysis of the data reveals that the need-performance index for lecturers in Federal Colleges of Education in all 15 items ranges from 1.23 to 1.74, with a grand index of 1.40, and was positive, while the need-performance index for lecturers in State Colleges of Education in all 15 items ranges from 1.17 to 1.71, with a grand index of 1.48, which was also positive. This result implies that the lecturers in

both the Federal and State Colleges of Education in North Central Nigeria needed retraining in the disease treatment practices of small ruminants.

**Discussion of Findings**

The findings of the study revealed that agricultural education lecturers have low knowledge of the small ruminant, especially in the area of disease prevention practices in all the measures and management systems of small ruminants (sheep and goats). The preventive practices where they need retraining abilities to provide good healthcare, ability to provide quality good feed to clean feeders and provide clean water, ability to quarantine newly purchased small ruminants (sheep and goats), ability to vaccinate animals regularly, ability to identify and eliminate disease vectors, ability to carry out tuberculine tests, ability to carry out agglutination tests, waste disposal, ability to carry out fumigation in the housing of animals, and ability to carry out routine checks in pen of sheep and goats for sick animals Reports from the corresponding hypotheses in Table 1 show that education lecturers in the College of Education in North-Central Nigeria have significantly low agricultural performance, and there is a need for retraining in disease control measures for small ruminants in the Federal and State Colleges of Education in North-Central Nigeria. This finding agrees with and is consistent with Alabi, Okorie, and Ajayi (2018), in consideration of the retraining needs of sheep production and the isolated sensual factors influencing it as identified in the retraining needs of the farmers on disease control measures. The authors further stated that the control measures include the ability to provide good housing, good health care services, quarantine services, the ability to reduce stocking density, the construction of pens with desirable building materials, the ability to regularly clean the pens, the ability to detect and remove sick animals, the ability to provide protection from theft, the ability to avoid contamination of feed by animal feces, the treatment of animals with recommended antibiotics, and the ability to control straying animals. This indicates that agricultural education lecturers require retraining for effective performance in disease control measures.

The findings of the study in Table 2 reveal that agricultural education lecturers in Federal and State in North Central Nigeria have low performance and therefore need retraining in the process of identifying materials for disease prevention practices of small ruminants in all 15 practices. The practices where the lecturers have low performances and need retraining are: disease prevention posters, immunisation demonstration posters, immunisation guide and texts, vaccination books and records, disease awareness posters, use guide, washing hand-printed posters, tick identification cards, disease identification cards, show of protective equipment, injection safety practices and their uses, sterile veterinary instruments, clinical instruments, and first aid tool kits. The result is, however, validated by the corresponding hypotheses 3, which show that agricultural education lecturers in federal and state colleges of education needed retraining in the identification of materials for disease prevention practices in small ruminants (sheep and goats). This is in consonance with Olabode (2018), who in his study of sheep and goat production in Ekiti State, Nigeria, considered the training needs of farmers. Because of their low performance in their farm activities, there was a need for retraining for effective capacity building for improvement aimed at improving the productivity of the small ruminant practitioners since the study was on retraining them in their farm practices. The findings of the study revealed that the retraining needs of lectures of colleges of education in disease treatment practices of small ruminants in North Central Nigeria in all 15 items for effective performance and output have been very low, which requires retraining. The retraining needs in disease treatment practices of small ruminants (sheep and goats) include: Ability to quarantine and clinically isolate animals based on symptoms, ability to vaccinate

animals with killed or attenuated vaccines, ability to deworm animals with appropriate anthelmintic, ability to spray and dip farm animals for tick removal, free range by eliminating snails, ability to provide healthy feeds, ability to avoid over stocking of flocks, ability to test and spectrum antibiotics to treat wounds, ability to test and slaughter sick animals with anthrax, ability to use antiseptic and other decontaminants, ability to use asuntol and its derivatives for tick control, ability to be retrained in the use of recommended anti-inflammatory drugs for sundry infections and retraining in the ability to administer drugs using the recommended dose and routes.

The finding was confirmed by the result of the corresponding hypotheses in Table 4 above that agricultural education lecturers in colleges of education possess low performance and therefore require retraining in disease treatment practices of small ruminants in North Central Nigeria. This finding is in line with Miller's (2016) study in the Colleges of Education in the south-western zone of the existing performance level of the lecturers for a better form of skill improvement. This implies that low performance could lead to non-performance or incompetence, which could lead to producing students who are not skilled enough to teach others, which could lead to a hindrance in learning and can lead to unemployment since they cannot give what they don't have. The findings revealed that agricultural education lecturers in Federal Colleges of Education in North-central Nigeria have low performance in all 16 items and need retraining in a small ruminant management system. The practices include: Vaccine safety information for recommended use, uses of vaccine fact sheet, use of immunization link, chloride of lime and its uses, Boric acid and it use, caustic soda and its use, Quarantine use literatures, Bases of routine and alternative grazing, use of literature for the bases of Quarantine, training manuals on basic meat inspection, training modules on treatment of animal disease, training in animal waste management, training on the bases of stock density, training on the bases of use of hormones and growth promoters, training on the bases of use of orthodox anthelmintic, training based on ration formulation, training on animal health and husbandry, record management practices.

The finding is in line with Kwari (2016) who stated that all livestock systems especially that of sheep and goat require skills to handle them and where these skills are lacking training and retraining of lecturers for a maximum output is very necessary especially in the management area of livestock that retraining is an essential component of livestock management which can make the students farmers and their host communities to be capable of eradicating poverty amongst the teaming farming households because of these interactions, further more small ruminant (sheep and goat) farming is an insurance against crop failure, and income can be generated in the shortest possible time eradicating uncertainty that arises from income failures. The finding is in conformity with the findings of Alabi *et al*. (2018). The study considered the retraining needs of sheep and goat farmers in Ekiti State, Nigeria, assessed their knowledge in small ruminant (sheep and goats) production, identified their training and retraining needs, and isolated the factors affecting them. Their skills were highly in feeding the animals but low in animal health management, as housing and animal health were identified as retraining needs of the farmers. In research by Miller (2016) on the retraining needs of teachers in colleges of education in South Western Nigeria in both federal and state colleges of education, it was discovered that the teachers require skill development in 97 out of the 98 items on technical skills and advised that skill improvement for enhanced performance be done through in-service education, workshops, conferences, and seminars as a form of retraining for better performance. The submission of Ekele, Odus, and Damina (2020) on the competencies and needs of pastoral farmers through improvement gave credibility to the findings of the author in this study on the constraints faced by lecturers that

teachers are continuous learners through retraining programmes in agricultural education and the retraining needs for effective performance in the Colleges of Education. Kwari (2015) states that teachers of agricultural education need improvement in areas of disease identification for effective performance. These areas include identifying the disease, etiology, signs and symptoms, diagnosis, differential diagnosis, clinical analysis, treatment, and control for proper animal health, especially in sheep and goat production, to enhance effective performance**.**

**Conclusion**

The position of the lecturers is very important and crucial to the implementation of curriculum contents in the colleges; most importantly, the teacher is involved in the process of shaping and organising the behaviour of the learner for adequate adjustment into the larger society in which they find themselves. For a lecturer to infuse knowledge, that lecturer must possess basic technical, pedagogical, and managerial abilities for greater performance and instructional delivery. Lecturers of Agricultural Education in Federal and State Colleges of Education were found to be deficient in imparting certain skills, knowledge, and the right attitude towards disease prevention and control practices in small ruminants (sheep and goats), which was demonstrated in their graduation. They could not effectively demonstrate such abilities as castration while teaching during teaching practices to students in secondary schools. In order to ensure a high level of performance, concerted efforts must be made to improve the performance of the lecturers in colleges of education by retraining them. It is in this direction that this study was carried out to enhance the retraining needs of lecturers of small ruminants in colleges of education to enhance performance.

The determination process of this study revealed that agricultural education lecturers possess a low level of performance in their activities and items; therefore, the lecturers need retraining to improve their performance in the colleges of education in North-central Nigeria. It is therefore clear that the retraining needs of lecturers in the colleges of education are indispensable if the needed human and material resources are properly harnessed, sustained, and maintained. Lecturers in Agricultural Education and her students will go a long way in the management of small ruminants (sheep and goats) in the colleges of education in North-Central Nigeria.

**Recommendations**

Based on the findings of the study, the following recommendations have been made:

1. The items in the eight clusters of retraining needs of lecturers in disease prevention and control practice should be possessed at the highest level of proficiency by lecturers for effective teaching and student performance upon graduation.
2. As a result of the deficiency observed in the performance level of lecturers of small ruminants in the colleges of education, there is a need for administrators of the colleges of education, the Ministry of Education at the federal and state levels, and the National Commission for Colleges of Education to monitor curriculum implementation in order to ensure strict and correct compliance.
3. The identified practices in disease control and prevention should be utilised in the retraining of agricultural education lecturers in areas of their deficiency to enhance performance.
4. Agricultural education lecturers in colleges of education should utilise the findings to seek sponsorship from their administrators in order to attend a retraining programme for enhancement in their performance in disease prevention and control practices in small ruminants (sheep and goats).
5. The administrators of colleges of education should use the findings of this study to approve requests from lecturers for sponsorship to participate in retraining programmes to equip

them to effectively perform their duties in teaching disease prevention and control practices in small ruminants to students in the colleges of education in North-central Nigeria.

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