

## **Competences, capacity needs, and training modalities to enhance continued professional development for Veterinary Para-professionals in Uganda**

<sup>1</sup>Baluka, SA., <sup>1</sup>Mugisha\*, A., <sup>1</sup>Nowayesu, P., <sup>2</sup>Tukahirwa, L., <sup>3</sup>Mugabi, K.

1. School of Veterinary Medicine and Animal Resources, Makerere University
2. School of Women and Gender Studies, Makerere University
3. Ministry of Agriculture, Animal Industry and Fisheries, Entebbe Uganda

\*Corresponding author

[mugishaa@yahoo.com](mailto:mugishaa@yahoo.com)

doi: <https://doi.org/10.37745/ijaerds.15/vol10n31129>

Published October 28, 2023

Citation: Baluka, SA., Mugisha A., Nowayesu, P., Tukahirwa, L., Mugabi, K. (2023) Competences, capacity needs, and training modalities to enhance continued professional development for Veterinary Para-professionals in Uganda, *International Journal of Agricultural Extension and Rural Development Studies*, Vol.10, No.3, pp.11-29

**ABSTRACT:** *This study assessed the competence and capacity needs for VPPs continued professional development as well as the best modalities for training in Uganda. It used mixed approach combining qualitative and quantitative research methods, namely, focus group discussions (FGDs), key informant interviews (KIIs), participant observations (POs) as well as questionnaire survey. The study was conducted in Sembabule and Soroti districts. The capacities and competences needed most by VPPs were; artificial insemination (AI) ranked first, clinical treatment ranked second, and animal nutrition and feeding ranked third. Face to face practical training was ranked first as the best format for delivering Continued Professional Development (CPD) training followed by face-to-face lectures and mentorship in the third position. The best training modality recommended by VPPs for their CPD training was the blended approach which combines face to face, online learning and mentorship.*

**KEYWORDS:** competences, veterinary para-professionals, small holder farmers, livestock, continued professional development, and training

### **INTRODUCTION**

In Uganda, 58% of households depend on livestock for their livelihoods (FAO, 2019). Livestock farming is largely subsistence in nature carried out by smallholder farmers who are poorly supported by extension services (NDP III, 2020-2025). Animal diseases undermine animal health, limit production and productivity of livestock, negatively affect incomes and livelihoods of livestock owners, and sometimes lead to complete loss through death of animals thus comprising a major hindrance to smallholder livestock farmers.

Publication of the European Centre for Research Training and Development -UK

Veterinary paraprofessionals (VPPs) are the animal health service providers who are most accessible to smallholder farmers (SHF) in rural areas. Thus, VPPs are among the most important actors in the livestock industry because they are available and easily accessible to farmers including the smallholder farmers. Hence the importance of VPPs in the provision of animal health care cannot be overemphasized. However, their training in animal health and welfare is regarded as insufficient (Ilukor, 2014). The quality of VPP education is threatened by the growing number of new private veterinary training institutions in the country which are not recognized by the responsible veterinary regulatory body. These institutions do not have the facilities to train VPPs and thus they produce ill equipped animal health service providers. Over the past decade for example, the number of VPPs training institutions in Uganda has grown from three to nine (MAAIF, 2020).

With such rapid growth comes risks relating to maintaining educational and professional standards in teaching and in professional practice. Many VPPs are trained in animal production rather than animal health (Ilukor, 2014). They are therefore less conversant with dealing with sick animals and often use trial and error approaches which are likely to result into high costs of treatment and/or treatment failures. This is made worse by the limited referral of cases to veterinarians who are the professional supervisors of VPPs, only 0.34% of VPPs referred cases to veterinarians (Ilukor, 2014).

## **LITERATURE/THEORETICAL UNDERPINNING**

The quality of animal health services provided by VPPs is affected by various factors. The Veterinary Surgeons Act 1958, (CAP 277) provides the legal basis for veterinary practice in Uganda. Under this Act, Section 13 outlaws veterinary practice by unregistered or unlicensed persons. The diploma and certificate holders in animal husbandry, as well as CAHWs are not covered under this law and therefore are operating in the country under different informal arrangements. Yet in Uganda, especially the rural areas, VPPs offer the only veterinary care for millions of farm and companion animals. Furthermore, the training system is not geared towards addressing the current needs and trends in the sector such as trade, diversification and intensification of production systems, antimicrobial resistance (AMR) and the one health concepts. According to Bugeza *et al.* (2017), some of the main factors affecting VPPs' service quality include; (i) Lack of tools and equipment, (ii) Poor communication and information flow, (iii) Limited technical capacity to diagnose diseases, (iv) Reluctance of farmers to pay for services rendered, and (v) Inadequate facilitation.

Ilukor (2014) cited the delay in reporting of sick animals by owners as one of the challenges faced by VPPs which eventually translates into poor quality of the animal health services delivered. VPPs are often called late by the livestock farmers but when the treated animal fails to recover, the farmer becomes reluctant to pay (Ilukor 2014) which consequently affects the VPPs' attitude and service delivery. When VPPs notice that a farmer is unable or reluctant to pay for the right dose, they are willing to administer an under dose that is affordable to the farmer. Veterinarians believe that many VPPs make wrong diagnoses and prescriptions and

Publication of the European Centre for Research Training and Development -UK

end up overdosing the sick animals if they don't respond to the administered treatment promptly (Ilukor 2014).

The study assessed the competences and capacity needs of VPPs that affect their service delivery, and identified the best training modalities that should be used to enhance continuous professional development (CPD) for VPPs.

### **METHODOLOGICAL APPROACH**

The study used mixed approach combining qualitative and quantitative research methods. The qualitative research methods used PRA tools including focus group discussions (FGDs), key informant interviews (KIIs) and participant observations (POs). While the quantitative research method used a structured questionnaire survey. It was conducted in Sembabule and Soroti districts representing different agro-ecological zones and livestock production systems (Figure 1). The research was carried out in Soroti and Sembabule districts because the two districts are predominantly livestock keeping and many VPPs operate there. Sembabule (Figure 2) from central region represented the dry land ecosystem and agro-pastoralist production system.

Soroti (Figure 3) represented the greater north eastern region, which is traditionally pastoralist and has many para-veterinary professionals operating in the district. Arapai Agricultural college (A satellite campus of Busitema University) which is a renowned institution for training para-veterinary professionals in Uganda is located in Soroti District. Three sub-counties were purposively selected for proper representation of the different production factors and farm characteristics from each study district. In Soroti, Gweri (predominantly livestock keeping), Arapai (crop and livestock), and Eastern Division (peri-urban) were selected while Mateete (peri-urban), Ntutsi (livestock keeping), and Mijwala (crop and livestock) were selected from Sembabule.

The study protocol obtained research ethics approval from Makerere University Social Sciences Research Ethics Committee (Number MAKSSREC 11.2022.611). The respondents were assured of confidentiality of the data they provided for purposes of the study. The objectives of the study were clearly explained to the respondents and informed consent was obtained from all of them. Respondents filled and signed written consent forms prior to their participation or commencement of the interviews.

Furthermore, the respondents were informed that they had the right to withdraw from the study at any time without any penalties or consequences. Government laws and regulations were observed. District authorities and sub-county leaders were consulted in all areas prior and during engagement with the communities and they oriented the research team on the different cultural sensitivities of the different study communities which were considered and respected by the researchers. All participants were treated fairly, equitably and with dignity following the basic ethical principles of respect for all persons, justice, and beneficence. All data collected is being held in confidentiality and anonymity.

Publication of the European Centre for Research Training and Development -UK

PRA approach enabled the smallholder livestock farmers in the study area (Soroti and Sembabule districts) to share their views, options, and knowledge on how animal health care services should be handled. For each district, the activities started with visiting the District Veterinary Office and holding discussions with the District Veterinary Officer (DVO) and the District Animal Production Officer who briefed the team on the status of the livestock sector and animal health services in the district. The DVO then linked up with the sub-county VOs to ensure proper mobilization of the VPPs to participate in the community PRA activities in their areas.

Participants for the focus group discussions (FGDs) and key informant interviews (KIIs) were purposively selected based on their knowledge about the subject matter or were most affected by the animal health care constraints or provided smallholder livestock farmers with animal health care services using the chain-referral or snowball sampling technique.

FGDs, KIIs and Participant Observations were conducted to analyze community issues using tools such as Pair-wise ranking with VPPs and Veterinary Doctors. Ten (10) prominent livestock farmers were interviewed including; five (5) from each study district (three (3) males and two (2) females). Three (3) veterinary practitioners were engaged as key informants from the two study districts; that is one (1) from Soroti and two (2) from Sembabule. A homogenous group of either women or men was engaged for 2 hours. The researchers (a facilitator and a note taker) facilitated the participants to discuss and analyse the issues of interest. A woman member of the research team facilitated the women's FGD, whereas the men's FGD was facilitated by a man member of the research team. The smallholder livestock farmers, VPPs and Veterinarians FGDs and KIIs were guided by a checklist of important questions using PRA tools including proportional piling and scoring and ranking.

The study sampled ten (10) primary respondents in each of three sub-counties of Soroti District with five females and five males making a total of thirty (30) smallholder livestock farmers for Focus Group Discussions (FGDs). However, in Sembabule there were six (6) male and five (5) female smallholder livestock farmers who were also sampled in each of the three sub-counties making a total of thirty-three (33) primary respondents for the FGDs. Although the study originally targeted two (2) FGDs with five (5) respondents per sub-county, in Sembabule District, FGDs had more than five respondents per FGDs so as to cater for the higher number of livestock farmers. The total number of respondents engaged in FGDs and KIIs from the two districts were sixty-three (63) and thirteen (13) respectively.

The study conducted twelve (12) FGDs in the two Districts of Soroti and Sembabule. In Soroti District, they were six (6) FGDs each comprising Five (5) participants of the same sex in each group to enable them freely express themselves as a homogenous group. However, in Sembabule District although the target was five (5) men and five women (5), the number of men was higher than the targeted; that is six (6) men per group. Men were more in number may be because males are the ones mainly engaged in livestock keeping in Sembabule District.

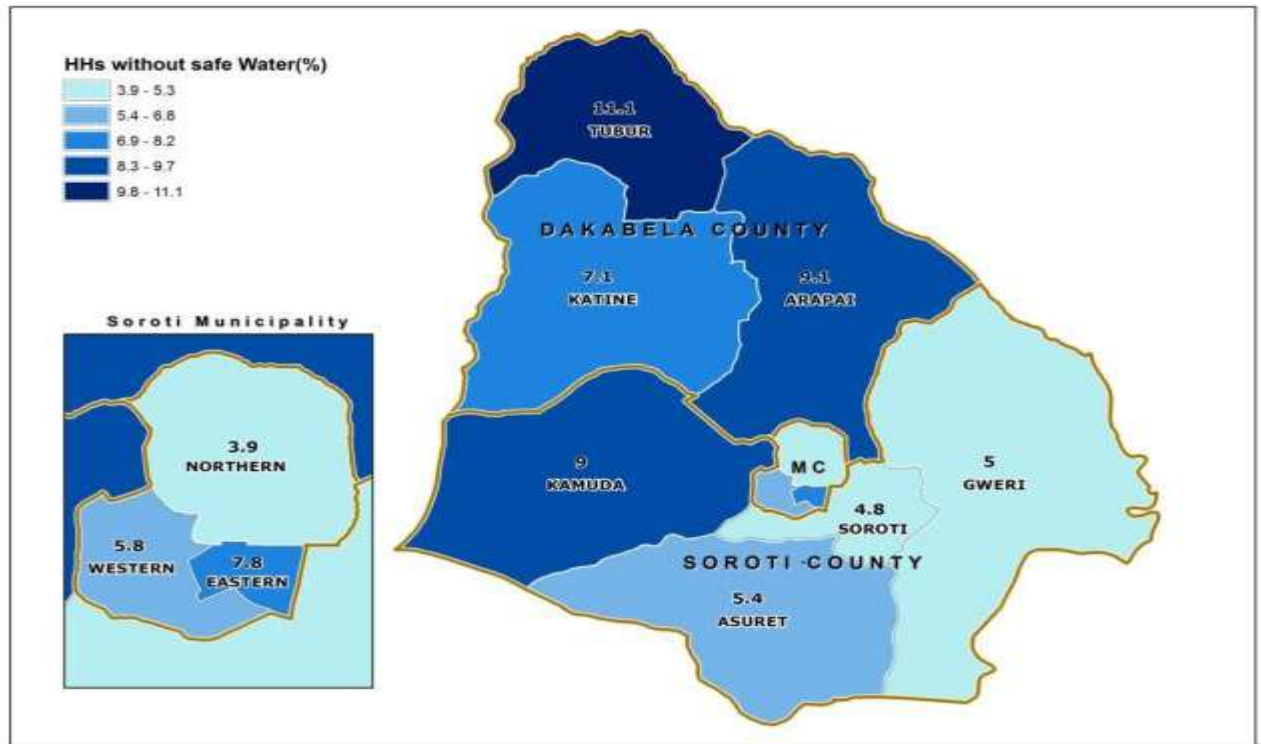


In all these Districts each FGD lasted between one and two hours which was enough time to exhaust questions and gather the information that was needed for this study. The study employed this method because it allowed individuals to hear from other participants in the group in a way that created new ideas and influenced previously held opinions and views. The FGDs of men and female separately were to collect information on gender issues related to livestock rearing, animal health services and constraints smallholder livestock farmers face in accessing animal health services.

Information was received in a naturalistic relaxed manner whereby facilitators listened and also noted emotions, ironies, contradictions, and tensions. Participants were given time to open up, think deeply and consider alternatives. This enabled the researcher not only to get facts but also the meaning behind them. Sessions were kept interesting and extra care was taken to avoid conflict.



Figure 1: Map of Uganda showing the regions and districts



**Figure 3: Map of Soroti District**

The meetings started with plenary sessions where participants and the research team introduced themselves for purposes of building rapport. Then the objectives of the meeting were presented and followed by brainstorming sessions. FGDs were conducted with VPPs and Veterinarians, using pair-wise-ranking and checklist tool questions to analyse issues. Afterwards, participants interrogated the pairwise ranking diagrams drawn on flip charts guided by the checklist questions and probing questions facilitated by the research team. The initial plenary session took around 30 minutes, the group tasks took around two hours and the plenary presentations took around one hour. During group discussions, farmers used pairwise ranking (Figure 4) and proportional piling (Figure 5) to analyse issues.



**Figure 4: Pair-wise ranking was used for comparing and ranking issues/topics**



**Figure 5: Proportional piling was used to visualise relative proportions of issues**

After the FGDs sessions, participants returned to the plenary sessions, and each team presented their findings written on flip charts (Figure 6), generating more discussions and questions from members of the other group. This gave more opportunity to the research team to ask more probing questions.





**Figure 6: Participants and the Research team in a plenary session**

### Capacities and Competency Preference

Capacity needs and competencies for VPPs were assessed from three perspectives; (i) perspective of the VPPs, (ii) perspective of the Vets who supervise them, and (iii) perspective of the smallholder farmers who are served by VPPs. Key informant interviews are qualitative in-depth interviews with people who know what is going on in the community. The purpose of key informant interviews was to collect information from a wide range of people including community leaders, professionals, or residents who have first-hand knowledge about the community (York 2010). The key informant interviews were conducted with ten (10) prominent livestock farmers and three (3) veterinary practitioners for this study. This method was used because the key informants were considered to be knowledgeable about livestock farming and production (York, 2010). The interviews were conducted following a semi-structured questionnaire. The plenary sessions were facilitated by the lead researcher. The summary of the tools used and the number of participants in the PRA in Sembabule and Soroti district is presented in Table 1.

**Table 1: Summary of the tools used and number of participants**

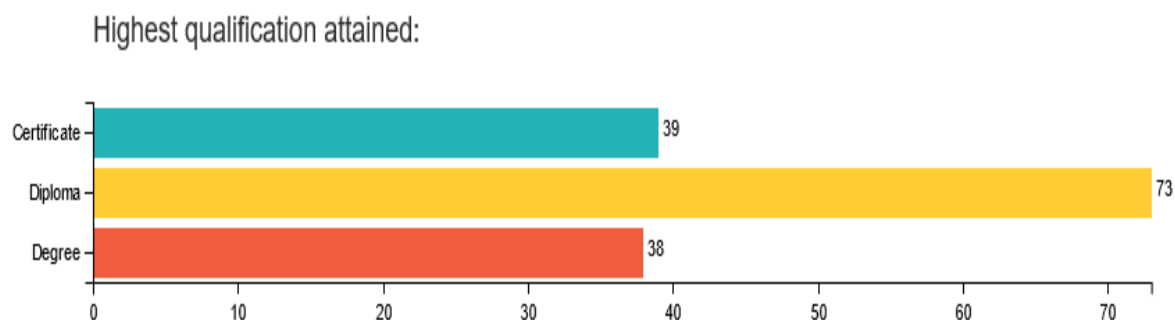
Tools used	Soroti				Sembabule				TOTAL
	N° of events	N° of participants			No. of events	No. of participants			
		Men	Women	Total		Men	Women	Total	
Focus Group Discussions-VPPs	4	25	15	40	4	18	11	29	69
Focus Group Discussions-Vets	1	3	0	3	1	2	1	3	6
Key Informant Interviews- VPPs	8	6	2	8	7	4	3	7	15
Key informant Interviews-Farmers	5	3	2	5	5	3	2	5	10
Key Informant interview-Vets	1	1	0	1	2	2	0	2	3



## RESULTS / FINDINGS

### *Capacities and competencies for VPPs*

The highest qualification for the majority of VPP respondents was a diploma (Figure 7).



**Figure 7: Highest qualification attained by the VPPs-(From telephone survey)**

### **Knowledge Attitude and Practice of VPPs**

Many VPP respondents in Soroti and Sembabule had knowledge about the parasites including ticks, tsetse flies, worms, mange and fleas as well as their treatment methods. They indicated that ticks were controlled through applying acaricides in form of pour-ons, or spraying using amitraz and cypermethrins. They indicated that tsetse flies transmitted trypanosomosis which was treated using diminazine aceturate and can be prevented using traps. However, the tsetse traps are not common and key informant VPP in Soroti indicated that he had never used traps that are recommended by the government.

### **Capacities and competency preference**

Among the preferred or most needed capacities and competences, VPPs ranked artificial insemination (AI) first, skills in clinical treatment second, and skills in animal nutrition and feeding third (Table 2).

The study, however, observed some gender differences; offering treatment to sick animals was ranked highest by the female VPPs in Sembabule, but it was scored zero by male VPPs in the same district. While male VPPs scored meat inspection highest but female VPPs scored it zero. Female VPPs scored farmer advisory skills higher, whereas male VPPs scored it zero. On the other hand, male VPPs scored disease diagnosis and prescription higher, whereas female VPPs scored it low.

It was argued that during the training VPPs do more theory than practicals and the modules they take are limited in scope in regards to animal health. This can be demonstrated by the quote from one of the participants: *'We used to have farm visits, morning and afternoon. These days farm structures are dilapidated'*-VPP Key informant, Soroti.

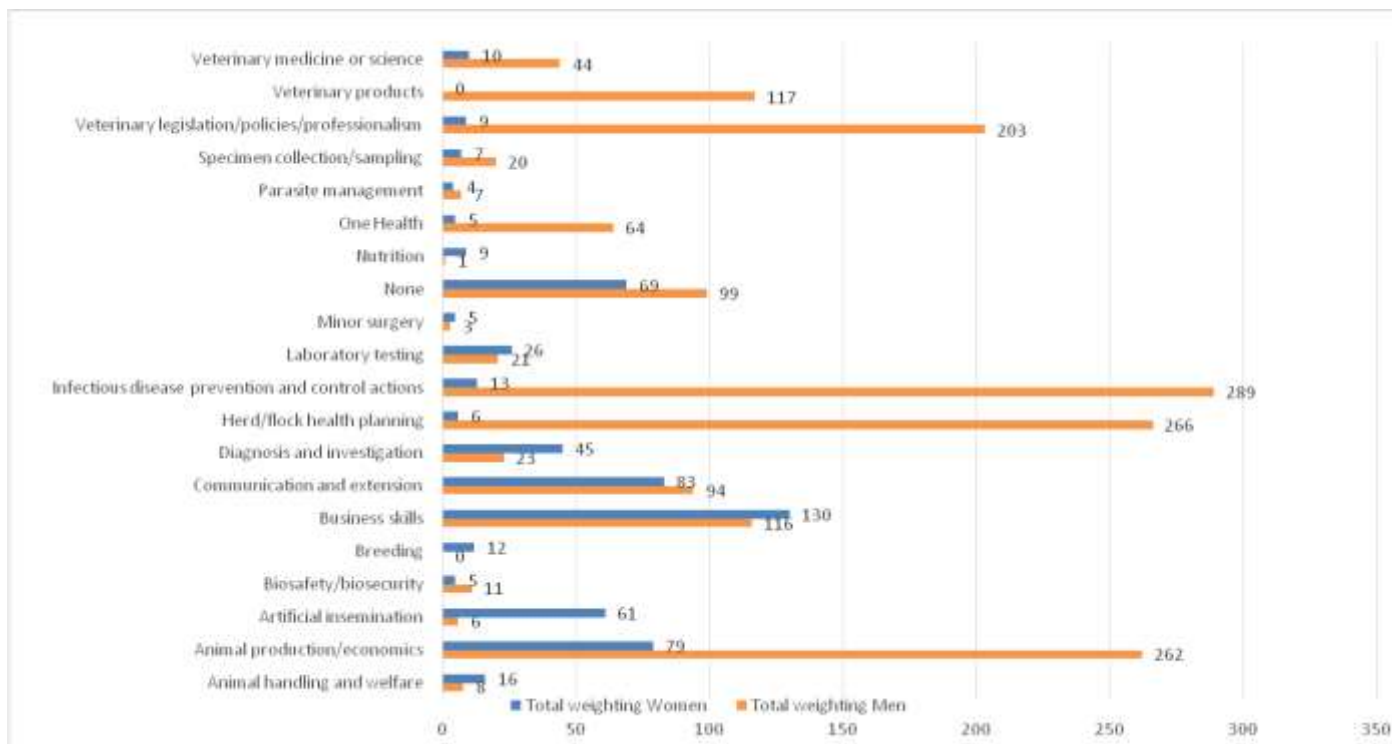
**Table 2: VPPs ranking of the capacity needs**

Districts	Soroti			Sembabule			Aggregate score			
	Women	Men	Av score	Women	Men	Av score	Women	Men	Av. Score	Rank
Artificial Insemination	2.7	5.3	4	3	6	4.5	2.85	5.65	4.25	1
Treatment	3.3	4	3.65	8	0	4	5.65	2	3.83	2
Feeding and Nutrition	2	6	4	1	2	1.5	1.5	4	2.75	3
Disease Diagnosis and Prescription	0.7	4.7	2.7	0	4	2	0.35	4.35	2.35	4
Meat inspection	0.0	0	0	0	8	4	0	4	2	5
Farmers Advisory Skills	4	0	2	3	0	1.5	3.5	0	1.75	6
Disease prevention	2	1.7	1.85	2	0	1	2	0.85	1.43	7
Disease Surveillance	3.3	0	1.65	2	0	1	2.65	0	1.33	8
Business Planning	1.3	1.3	1.3	0	0	0	0.65	0.65	0.65	9
Parasite Control	0.7	0	0.35	1	0	0.5	0.85	0	0.43	10
Minor surgeries	0.0	0.3	0.15	0	0	0	0	0.15	0.08	11
Estimation of Live Body Weight	0.0	0.3	0.15	0	0	0	0	0.15	0.08	11

On the other hand, the VPPs appeared to prioritize CPD training in disease treatment ahead of disease prevention. A Key informant in Sembabule was not happy with the way college training of VPPs is currently being handled. He had this to say: *‘We have training which has become commercialized. The knowledge and skills are lacking. Something is lacking with currently mushrooming training institutions. They have no direction. This is causing challenges in the animal health sub-sector. Someone comes for some few days and he starts claiming that he is a graduate, but has no knowledge on the animals. These people need to be registered with the DVO’s office. They need to be continuously trained on disease management. We used to have a strong link with research and extension, but it is no longer there. They need to be close to the DVO’s office both for case referral and monitoring. They need to be equipped with new knowledge and technology including computer literacy’*- **A Male VPP Key informant-Sembabule.**

### Topics for CPD training according to priority by gender

The PRA results indicated some gender differentials in the preferred topics for CPD training. For instance; treatment was ranked highest by the female VPPs in Sembabule, but it was scored zero by male VPPs in the same district. Male VPPs instead scored meat inspection highest but female VPPs scored it zero. Female VPPs scored farmer advisory skills higher, whereas male VPPs scored it zero. On the other hand, male VPPs scored higher disease diagnosis and prescription, whereas female VPPs scored it low (Figure 8).



**Figure 8: Topics for CPD training according to priority by gender**

From the telephone questionnaire survey as can be seen in Table 2, respondents indicated the following topics as the most preferred ones: men preferred Infectious disease prevention and control, Herd/flock health planning, Animal production/economics, veterinary legislation, policy and professionalism, and veterinary products. while women preferred; business skills, animal production and economics, communication and extension, and artificial insemination (AI).

Although these topics may seem to differ from those mentioned during the PRA activity, on closer scrutiny, the topics in the telephone survey look to be detailed areas of the topics mentioned during PRA. Thus, the findings in the telephone questionnaire survey are in agreement with those of PRA.

### ***Training modalities***

Both male and female VPPs, in Soroti and Sembabule ranked face to face practical training highly as the best format for delivering CPD training. This is followed by face-to-face lecture and then mentorship in the third position (Table 3).

One of the Key Informant Interviewees in Soroti had this to say concerning modality of training: *‘The best training I ever got was mentorship at the DVO’s office’*. On further explaining to her what online training is, she said: *‘Online training then would be the best but unfortunately i don’t have a smart phone. It would be number 1 since you can take the course*

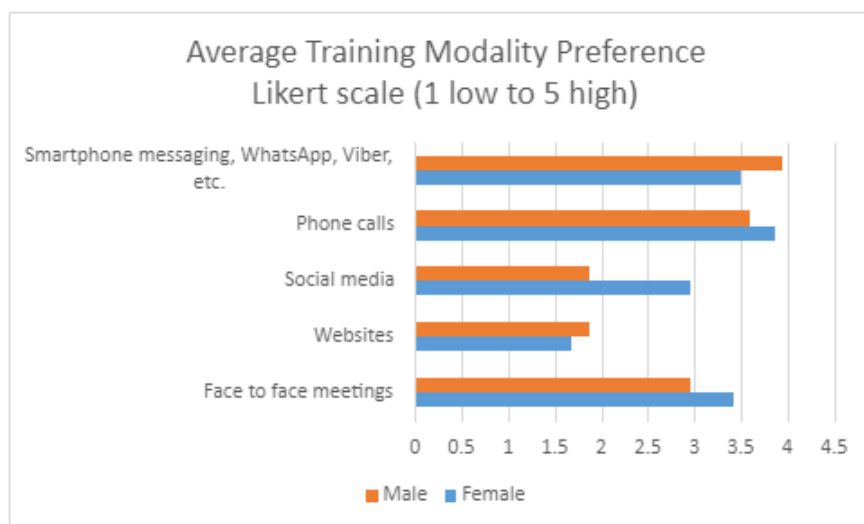
Publication of the European Centre for Research Training and Development -UK

*from wherever you are, even at home. It does not necessitate transport, and the material can be re-read several times*’ - **Female VPP KII-Soroti.**

**Table 3: Learning modality preferences**

District	Soroti			Sembabule			Aggregate Av score			
	Women	Men	Av score	Women	Men	Av score	Women	Men	Av score	Rank
Face to face Practical	8	7	7.5	8	7.3	7.65	8	7.15	7.58	1
Face to face lecture	6	6	6	5.3	4	4.65	5.65	5	5.3	2
Mentorship	3	0	1.5	4.7	4.7	4.7	3.85	2.35	3.1	3
Informal Study (Reading articles, social media etc)	4	2	3	0.7	1.3	1	3.85	1.65	2	4
Online Synchronous study (Webinars etc)	1	1	1	0	3.3	1.65	0.5	2.15	1.33	5
Videos	0	0	0	0	0.7	0.35	0	0.35	0.18	6

Online training was also better scored during the telephone questionnaire survey (Figure 8).



**Figure 8: Average in training modalities- data from questionnaire survey**

Some VPPs in Sembabule ranked mentoring highly with the following reasons: (i) Professionals with experience can easily impart knowledge therefore they will make learning easier, (ii) mentoring allows the mentees to ask questions as opposed to being given reading materials. Hence reading materials were ranked lowest: “*We are always in the field and by the time we go back we are too tired*” by **Male VPP FGD- Ntuusi Sembabule).**



Publication of the European Centre for Research Training and Development -UK

During the PRA more than 50% of VPPs indicated that they did not own smart phones. This was contradicted with the results from the telephone questionnaire survey which indicated that more than 80% of the respondent VPPs preferred training through smart phone messaging, WhatsApp, Viber, etc all of which require smart phones, implying that they had access to smart phones (Figure 8). Also, during the PRA, majority of VPPs from rural areas indicated that limited internet access and connectivity was one of the barriers to on-line training. However, 75% of the telephone survey respondents indicated that they could access internet (Figure 9). The variance could be attributed to the fact that telephone survey respondents were predominantly men and drawn from peri-urban areas as opposed to the PRA respondents who were mainly from rural areas.

Gender: grouped by How often are you able to access the internet?

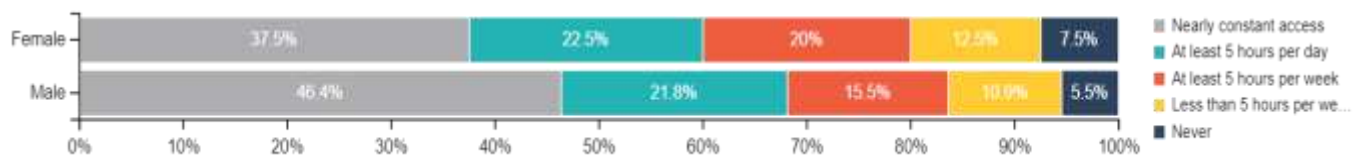


Figure 9: Internet accessibility by gender of the VPPs

**Barriers to effective training.**

Lack of childcare facilities during trainings was considered one of the major barriers to effective training by the female VPP respondents (Figure 10). Other barriers to effective training included; poor transport means to the training venue, poor facilitation, language barrier for instance unfamiliar English accent, poor or hard to reach location, poor or inexperienced or inappropriate facilitators and long duration of the training.

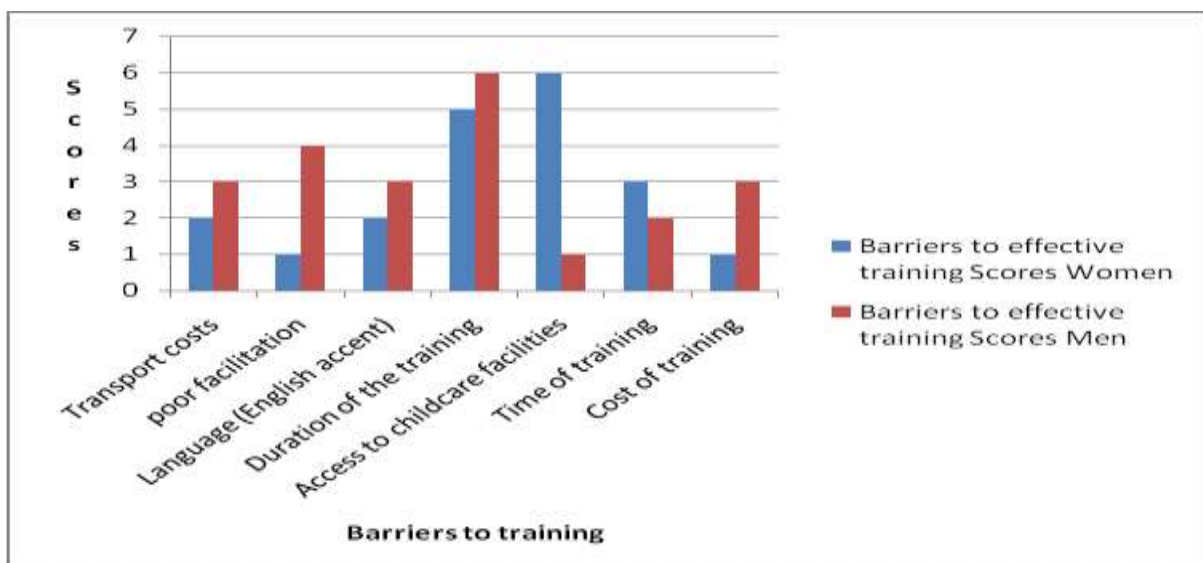


Figure 10: Barriers to effective face to face training

**Motivation for continuing professional development**

District	Soroti		Sembabule			Aggregate average score				Rank
	Women	Men	Av score	Women	Men	Av score	Women	Men	Av	
Skills acquisition	8	9	8.5	8	6	7	8	7.5	7.75	1
Certificate award	6	5	5.5	4.7	4	4.35	5.35	4.5	4.93	2
Attitude	4	3	3.5	0	0	0	2	1.5	1.75	3
Potential increase in Earnings	2	1	1.5	2	0	1	2	0.5	1.25	4
Recognition by farmers	0	0	0	4	0	2	2	0	1	5
Affordable Cost	0	2	1	0	0	0	0	1	0.5	6
Training tools	0	0	0	0	2	1	0	1	0.5	6
Net working	0	0	0	1.3	0	0.65	0.65	0	0.33	8

**Table 4: Motivation for continuing professional development**

VPPs' motivation to pay for continuing professional development training included; skills acquisition which ranked first followed by acquiring a certificate, improved services which will improve the earning potential of the VPP, networking, recognition by farmers, the cost of the training, and duration. It was observed that VPPs' attitude towards CPD training played a big part in determining their motivation for attending CPD training. Other factors that affected motivation for CPD training were ignorance about the value of the training, income status, transport constraints, gender roles at home whereby some women VPPs are stopped by their husbands, and bad weather conditions. Some female VPPs in Sembabule ranked recognition by farmers as the highest motivation for attending CPD training. But male VPPs in Sembabule and all VPP respondents in Soroti scored farmer recognition lowest because it does not translate into improved pay for their services by the farmers (Table 4).

VPPs were willing to pay 50,000-200,000 UGX (USD 15-55) for a two-day course. They would be willing to attend a course for 4 hours a day for one month. On deeper probing during the PRA feedback group discussions, participants indicated that regarding the course duration, for on-line learning they preferred 6months with 2 weeks of continuous learning, then break for one week and resume in that cycle until six months are completed. Preferred time, 2-3 hours each day, 6-8pm. For face to face, 7 days continuous, for the whole day. VPPs indicated features for effective training to include: good facilitators/trainers, accessible location, good means of transport, facilitation allowances for trainees, childcare facility for breast feeding participants, and teaching aids like flip charts and videos.

**DISCUSSION*****Capacities and competencies for VPPs***

The highest qualification for the majority of VPP respondents was a diploma (Figure 7). However, the quality of VPP education is threatened by the growing number of new veterinary

Publication of the European Centre for Research Training and Development -UK

training institutions in the country which are not recognized by the veterinary regulatory body (Uganda Veterinary Board). These institutions do not have the facilities to train VPPs and thus they graduate ill equipped animal health service providers.

Over the past decade for example, the number of veterinary training institutions in Uganda has grown from three to nine (MAAIF, 2020). With such rapid growth comes risks relating to maintaining educational and professional standards in teaching and in professional practice. As reported by (Ilukor 2014) most of the VPPs are trained in general agriculture leaning more on crop science but upon graduation they practice more of animal health in the field given the better market for veterinary services. Further still, the training system is not geared towards addressing new and growing demand for animal health driven by the current trends such as diversification and intensification of livestock production systems, emergence of antimicrobial resistance (AMR), global trade in animals and animal products, and one health concept.

### **Capacities and competences Preference**

Among the preferred or most needed capacities and competences, VPPs ranked artificial insemination (AI) first, skills in clinical treatment were ranked second, and skills in animal nutrition and feeding were ranked third (Table 2).

AI was ranked highest because of the following reasons; (i) VPPs had little knowledge and no skills on AI and yet the demand among farmers is high, (ii) undergoing training, acquiring knowledge and skills in AI and practising AI would boost their business activities, and (iii) farmers are increasingly adopting modern farming methods such as intensive farming production system where breeding using AI is critical (Table 2).

In Soroti and Sembabule, VPP respondents indicated that whenever they finish college, they volunteer with the District Veterinary Office to gain practical hands-on experience. Here, they worked under mentorship of a Veterinary Officer. One VPP argued that it helped him to reach his farmers. This is because their basic training is a Certificate in General Agriculture. They even lack further training in animal health aspects. This finding is in agreement with an earlier study that reported that most of the people operating as VPPs especially in Soroti are trained in crop science or general agriculture but because of a better market for veterinary services, crop trained paraprofessionals have joined the veterinary service market (Ilukor, 2014). One key informant had this to say: *'We lack CPD training, if it was not NDA to support us in short courses on drug handling, we would not have had any training at all'* - **A female VPP Key informant in Soroti. Nonetheless, the majority of the VPP respondents, both in Soroti and Sembabule were not registered with UVB.**

Many VPPs in Soroti argued that training was a very critical issue for their improved service delivery. Many admitted that they have not had any training since they qualified. At college, they were mainly given theoretical studies and wanted to have hands-on CPD training. The reason why disease diagnosis was ranked highly is because it is the first thing to be done when called by a farmer to attend to his/her animals and the success or failure of accurate diagnosis

Publication of the European Centre for Research Training and Development -UK

may determine the outcome of the intervention. It enables the VPP decide the right treatment to give. These findings are in agreement with the report by MAAIF (2020) and Ilukor (2014) who indicated that the quality of training of VPPs in Uganda has greatly been compromised.

***Training modalities***

Both male and female VPPs, in Soroti and Sembabule ranked face to face practical training highest as the best format for delivering CPD training followed by face-to-face lectures and mentorship (Table 3). Face to face practical training/demonstrations ranked highest because it; (i) offers a hands-on experience, (ii) the skills being imparted can be practiced by the learner during training, (iii) gives the learner an opportunity to make mistakes and correct them under the guidance of the trainer, (iv) is not common for the trainee to forget skills that have been acquired through face to face practical training or demonstration compared to lectures, (v) builds confidence in the trainee, and (vi) builds a strong relationship between the trainee and trainer.

Most VPPs have never had online training but some who are upgrading at Busitema University do appreciate it because they have been exposed to different types of arrangements for conducting lectures, physical classes and hybrid programme which involves a lot of on-line engagements with some few physical interactions. Online training was not preferred because; (i) VPPs lacked the required gadgets (smart phones, tablets, laptops). They are expensive, (ii) their work areas in the remote rural settings lack stable network due to remoteness, (iii) internet data is expensive, and (iv) unreliable power for charging gadgets. However, Online training was ranked highest by a male VPP FGD in Matete, which is a peri-urban sub-county in Sembabule while the female VPP FGD in the same district ranked it low. The reasons given by male VPPs for ranking on-line training highly were; (i) the world is moving towards the use of technology, and (ii) their busy work schedules do not enable them to attend physical training sessions away from their work place, so Online training would solve this problem.

**Barriers to effective training.**

Lack of childcare facilities during trainings was considered one of the major barriers to effective training by the female VPP respondents (Figure 10). This is because female VPPs with babies or young children provide the bulk of the care for children at home and if called for a training in a place without childcare facilities, it is impossible for them to attend such trainings.

**Implication to Research And Practice**

Continuing professional development (CPD) training programs for VPPs and veterinarians should be prioritized and implemented regularly. The CPD trainings should adopt blended face to face and online training modalities or approaches.

Furthermore, these CPD training programs should consider the gender and geographical differences so as to promote effectiveness of the training programs and optimal participation for both female and males as well as rural and urban veterinary practitioners.



## **CONCLUSIONS**

- The study established that VPP CPD training was very important for improving animal health service delivery by VPPs. Majority of the VPPs had not attended any CPD training since they left college.
- There is great variation in the primary training given to the VPPs which undermines the desired competences that are required to deliver animal health services effectively and efficiently.
- There is clear variation in the prioritisation of VPP skills by farmers and VPPs. Whereas VPPs prioritized AI and treatment, farmers prioritized farmer training skills. Farmers argue that if they are well trained by VPPs, then they could handle some cases that need treatment by themselves.
- Veterinarians prioritized disease diagnosis and professional ethics as the most important competences for VPPs CPD training so as to address the unprofessional behaviours of some VPPs who give blanket treatment to animals because they cannot carry out proper disease diagnosis. This is both costly to the farmers and poses risks for drug resistance.
- Concerning the most appropriate learning modalities for VPPs CPD training; face to face practical training and lectures were the most preferred modalities of training by the VPPs. Although the on-line training modality was generally not preferred by the rural VPPs, it was the most preferred by the peri-urban VPPs. Mentorship by more experienced VPPs and or veterinarians was highly appreciated by the VPPs.
- The best training modality recommended for VPP CPD training is the blended approach which combines face to face, online learning and mentorship.

## **Recommendations and Future Research**

In order to carry out successful face to face and on-line CPD training for VPPs, it is important to first address the barriers such as duration of the training i.e., whether to deliver CPD training as a full month or staggered training, timing of the training whether morning, evening or full day. All these factors may undermine the participation of VPPs and comprise barriers to successful CPD training for VPPs. Hence the need to address these potential barriers while designing CPD trainings for VPPs. For face-to-face trainings, there is need to provide childcare facilities for women. For online learning, the main barriers to be resolved include lack of appropriate devices (smart phones and other gadgets), lack or poor/unstable internet, and costly internet data which should be addressed.

Further research should be conducted to identify all the barriers to effective implementation of CPD training programs for veterinary professionals and align appropriate solutions. The responsible authorities should streamline training of VPPs and register and enforce standards in the training institutions.

## REFERENCES

- Amanfu, W., Maina, J.A., Stratton, J. (2011) *PVS Evaluation Report-Ethiopia*. OIE (World Organisation for Animal Health), Paris.
- Brown, J., (2002) *Training needs assessment: A must for developing an effective training program Public Personnel Management*, doi: 10.1177/009102600203100412
- Bugeza J., Kankya C., Muleme J. (2017) *Participatory evaluation of delivery of animal health care services By community animal health workers in Karamoja region of Uganda*.
- FAO (1990) *Report of the Expert Consultation on Cost/benefit for Animal Health Programmes in Developing Countries*. Rome, FAO.
- Gaither, K. A. (2009) *Comparing the Perceived Effectiveness of E-Learning and Traditional Training in the Business Environment*. Ann Arbor: ProQuest.
- Gertzell E. (2020) *Veterinary Herd Health Management in Ugandan smallholder pig farms [Licentiate]*. Department of Clinical Sciences: Swedish University of Agricultural Sciences.
- Hopker A., Pandey N., Hopker S., Saikia D., Goswami J., Marsland R. (2020) *Animal health Perceptions and challenges among smallholder farmers around Kaziranga National Park, Assam, India: A study using participatory epidemiological techniques*. PloS One, 15(6): e 0237902.
- Hennessy D, Hicks, C. (2011) *Hennessy-Hicks Training Needs Analysis Questionnaire and Manual*.
- Holloway, K., Arcus, K. and Orsborn, G. (2018) *Training needs analysis – The essential first step for continuing professional development design Nurse Education in Practice*, doi: 10.1016/j.nepr.2017.09.001.
- Illango, J., Etoori A., Olupot H., Mabonga J. (2002) *Rural poultry production in two agro-ecological zones of Uganda. Characteristics and parameters of family poultry production in Africa. Results of an FAO/IAEA Coordinated Research Programme IAEA, VIENNA, Austria 117-136*.
- Ilukor J. (2012) *Improving the delivery of veterinary services in Africa: insights from the empirical application of transaction costs theory in Uganda and Kenya*.
- Ilukor J., Birner R., Rwamigisa P.B., Nantima N. (2012) *Analysis of veterinary service delivery in Uganda: an application of the process net-map tool*.
- Ilkor, J. (2014) *Determinants of referrals from paraprofessionals to veterinarians in Uganda and Kenya*
- Ilukor J., Birner R., Rwamigisa, P.B., Nantima N. (2015) *The provision of veterinary services: who are the influential actors and what are the governance challenges? A case study of Uganda*.
- Ilukor J. (2016) *An Analysis of Institutional Arrangements for Providing Animal Health Services: A Theoretical Framework and Empirical Evidence from Kenya and Uganda [Dissertation]*. Faculty of Agricultural Sciences: University of Hohenheim.
- International Livestock Research Institute (1995) *Livestock Policy Analysis*, ILRI Training Manual 2, ILRI, Nairobi, Kenya, pp: 264.
- Kugonza, J and Wabwire, R. (2012) *Characterization of the livestock production system and potential for enhancing through improved feeding in Nabitanga, Sembabule district*,

*Uganda.*

- Kugonza, D. R., Kyarisiima, C. C., Iisa, A. (2008) Indigenous chicken flocks of Eastern Uganda: Productivity, management, and strategies for better performance. *Livestock Research for Rural Development*, 20, 9.
- Kugonza, D. R., Nabasirye M., Mpairwe D., Hanotte O., Okeyo A.M. (2011) Productivity and morphology of Ankole cattle in three livestock production systems in Uganda. 48: 13-22. Lalljee S.V., Soudararajan C., Singh Y.D., and Sargison N.D. (2019). The potential of small ruminant farming as a means of poverty alleviation in rural southern India. *Trop Anim Health Prod* Vol. 51(2), pp.303–311.
- MAAIF and UBOS (2008) *The National Livestock census. A Summary Report of the National Livestock Census.*
- Maingi N. and Njoroge G. K. (2010) Constraints on production, disease perceptions, and ticks and helminths control practices on dairy cattle farms in Nyandarua District, Kenya. *Livestock Research for Rural Development. Volume 22, Article #138.* Retrieved August 17, 2022, from <http://www.lrrd.org/lrrd22/8/main22138.htm>.
- MoA and ILRI (2013) *Animal health strategy and vision for Ethiopia. Addis Ababa, Ethiopia: Ministry of Agriculture and International Livestock Research Institute.*
- Mpairwe D., Zziwa E., Mugasi S., Laswai G. H. (2015) Characterizing beef cattle value chains in agro-pastoral communities of Uganda's Lake Victoria Basin. *Frontiers in science* 5.1: 1-8.
- National Development Plan III (NDP III)- 2020-2025
- Nyumba, O. (2018) *The use of focus group discussion methodology: Insights from two decades of application in conservation.*
- Ocaido M, Otim CP, and Okuna NM. (2005) *Socio-economic and livestock disease survey of agro pastoral Communities in Serere County, Soroti District, Uganda. Livest Res Rural.*
- Tim Leyland and Andy Catley (2002) *Community-based animal health delivery systems improving the quality of veterinary service delivery paper prepared for the OIE seminar organization of veterinary services and food safety world veterinary congress.*
- Waithera, M. (2015) *Recognizing the vital role of veterinary paraprofessionals.*
- Wetaya, R. (2020) *Uganda moves to boost incomes of smallholder livestock farmers*