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INSIGHT INTO TRAINING NEEDS OF GOVERNMENT VETERINARY OFFICERS FROM SUB-TROPICAL REGION OF INDIA

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ABSTRACT

The present study aimed at identifying the training needs of the veterinary officers serving under different state governments. Three states of the sub-tropical region of the country namely Uttar Pradesh, Uttarakhand, and Jammu and Kashmir were chosen purposively for their accessibility and ease in communication. A total of 120 veterinary officers were selected i.e., 40 from each state. A Schedule was developed that consisted of 44 statements across different domains viz clinical care, diagnostics, managemental practices, extension activities. The responses were recorded by assigning scores as 3, 2 & 1 for most needed, needed and least needed respectively. The results revealed that most of the training needs were associated with management of infertility and reproductive health in livestock (Mean Obtained Score: MOS 2.57), followed by sample collection, storage, and transportation procedure in disease diagnosis (MOS 2.57) and disease diagnosis through ultrasonography and radiography (MOS 2.56). Under the specific domains viz. clinical care, diagnostics, managemental practices, extension related activities, training needs were concentrated in the domains of management of infertility and reproductive health in dairy cows and buffaloes (MOS 2.57), sample collection, storage and transportation for disease diagnosis (MOS 2.57), handling the outbreaks (MOS 2.43), technical and popular writing skills (MOS 2.39), stress and time management (MOS 2.45), and biosafety measures (MOS 2.34) respectively. To meet the training needs the study suggests organizing formal and informal trainings and creating better training resources in the reported niche areas. Focusing on improving the training experience can help in augmenting the skills of veterinarians, which indirectly helps to realize the objective of empowering the animal husbandry sector.

Keywords: Clinical care, Diagnostic, Management, Training needs and Extension.

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INTRODUCTION

Veterinarians play a major role in achieving the One–Health program objective i.e. achieving optimal health outcomes by working with various components of one health viz. human, livestock and wildlife health (OIE, 2008). They are major contributors in improving the productivity of livestock that adds value to the life of livestock farmers and humans. They also have a role to play in the food safety and security. Veterinarians play multi-role of diagnostics, curative, preventive, public health concerns and researching for various medical conditions and diseases of livestock, wildlife and pets (nap.nationalacademies.org/read/11365/-2005, fao.org/3/y3542e/y3542e.pdf -2002, Mlangwa and Kisauzi1994). In this fast-changing world, the requirements from a particular profession are also changing, and veterinary and animal husbandry is no exception to that. Major changes are expected to occur in veterinary services in next five years. Veterinarians also require developing skills in business management, communication, and psychology to meet the future challenges. Experts have started talking Continuing Professional Development courses in the veterinary profession to make sure that all the required skills are kept up to date. (www.ed.ac.uk/files/imports/fileManager/India%20Vet%20Report_2012_Final_G.pdf.).

Programmes of Department of Animal Husbandry & Dairying (DAHD), Ministry of Fisheries Animal Husbandry & Dairying (MoFAH&D) for strengthening veterinary services:

Professional Efficiency Development (PED): This programme was implemented for improvement in the efficiency of veterinary professionals. The Veterinary Council of India (VCI) and states are mandated to impart training to veterinarians on the latest technical knowledge, by way of Continuing Veterinary Education (CVE) this will help in timely enhancement in competency among veterinarians about new and recent advances in medicine, gynecology, surgery as well as other needed areas (dahd.nic.in).

Assistance to States for Control of Animal Diseases (ASCAD): This programme was started with the objective to aid the governments of various states and union territories, for controlling diseases of economic importance and zoonotic diseases, strengthening of existing laboratories meant for animal disease diagnosis, and by providing in-service training to Veterinarians and Para-veterinarians.

Establishment & Strengthening of Existing Veterinary Hospitals and Dispensaries (ESVHD): Under this programme GoI aids the state animal husbandry department for establishment of new veterinary hospitals, as well as for renovation of old ones

Various programs of DAHD for strengthening the vet service and providing training, doesn't have desirable performance. The main reason behind this being meager financial outlay and little flexibility (Report of the working group on Animal Husbandry & Dairying 12th five-year plan). The animal husbandry sector has a shortage of manpower with a wide gap between required and available practitioners (Fig 1), and even the existing ones are lacking adequate veterinary competency [Working Group on Animal Husbandry & Dairying (WGAHD) -12th Five Year Plan, Rao *et al.* 2015]. According to the WGAHD -12th five-year plan report, the training infrastructure of veterinary education is very poor, initially at graduation level itself there is very little practical exposure with heavy theory classes. The report also advocated mandatory refresher training courses for veterinarian every five year during their career but still is not applicable at ground level.

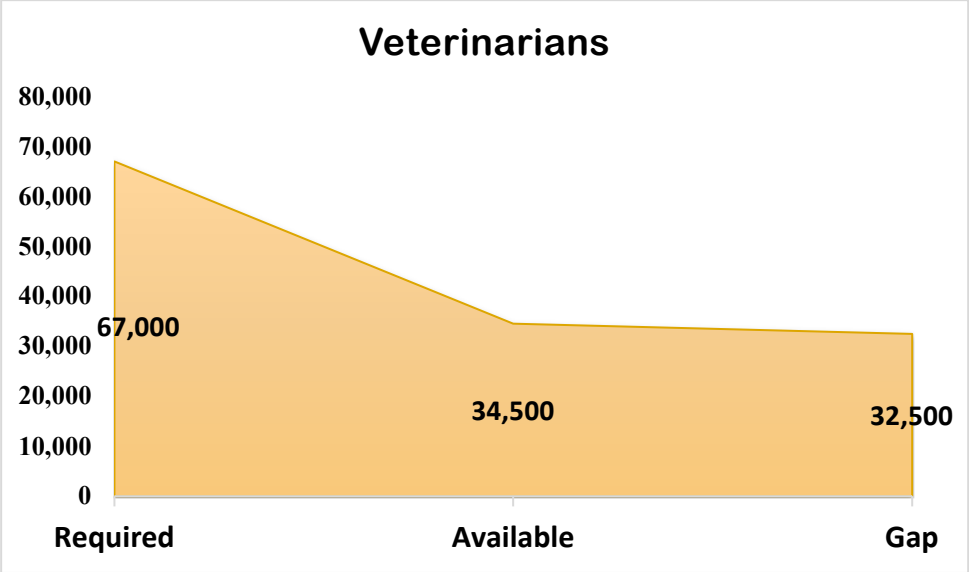

Fig 1 Status of manpower in animal husbandry sector [Report of the Working Group on Animal Husbandry and Dairying 12th Five Year Plan (2012–17) submitted to Planning Commission, GoI]

Veterinarians have a varied role to play from enhancing the productivity of animals, to prevention and control of spread of zoonotic diseases. Such a range of expertise requires extremely thorough trainings and workshops on relevant and required subjects in regular intervals and in organized manner. So, comprehending the relevant and required training areas, which interest the veterinarians is equally important, as understanding the need of training for veterinarians. Therefore, keeping in mind, the urgent training requirement of veterinarians in India and need to identify the areas they perceive to acquire advance skills or lack expertise in, the present study was designed with the objective to analyze the training needs of the veterinary officers working under the state government.

MATERIALS AND METHODS

Three states of the sub-tropical region of the country namely Uttar Pradesh, Uttarakhand, and Jammu and Kashmir were identified for the study. Further, four districts from each state were selected purposively for their accessibility and ease in communication. From these districts a total of 120 veterinary officers were selected

randomly i.e., 40 from each selected district. Verbal consent was taken from the respective Veterinary and Animal Husbandry departments as well as from the Veterinarians before conducting the survey. An exploratory research design was adopted and a semi structured interview schedule consisting of 44 statements under different domains viz. clinical care, diagnostics, managemental practices and extension activities, was developed for identifying the training needs in consultation with the experts. The responses were recorded by assigning scores as 3, 2 & 1 for most needed, needed and least needed respectively. With the help of these scores Total Obtained Score (TOS) and Mean Obtained Score (MOS) for each statement were calculated. The statements were then ranked based on MOS under each category.

Formula for calculating TOS and MOS:

TOS = Sum of the scores given for each statement by the respondents

$$MOS = \frac{TOS}{k}$$

Where k= total number of respondents,

RESULTS AND DISCUSSION

Training is critically necessary in case of professional services like veterinary practice. Fig 2 shows, the major training needs of state veterinary officers based on MOS (Mean Obtained Score). The results revealed that most of the training needs were associated with management of infertility and reproductive health in dairy cows and buffaloes (MOS 2.57), procedure for sample collection, storage and transportation (MOS 2.57), followed by disease diagnostic techniques through ultrasonography and radiography (MOS 2.56). Shree and Rajeshwari (2017), also reported that advancement in clinical skills and diagnostic techniques/laboratory techniques were the major training needs of the Veterinary officers in Karnataka. Rao *et al.* (2015) had similar suggestions that field veterinarians be provided continuing education in areas like clinical subjects, diagnostic and laboratory techniques, food safety and SPS standards, entrepreneurship and market intelligence, fodder crisis management etc. Das *et al.* (2018) reported that infertility management and supervision of reproductive health in dairy cows and buffaloes was referred as the most preferred training course by veterinary officers of Maharashtra, followed by advances in treatment and diagnosis of infectious diseases related to livestock, management of common surgical conditions, role of veterinarians in control of zoonotic diseases, and improved fracture fixation techniques. Other areas enlisted were disease diagnosis by ultrasonography and radiography, advanced laboratory diagnosis techniques, management of wild animals, management of major surgical condition and pharmacology of new drugs in the field.

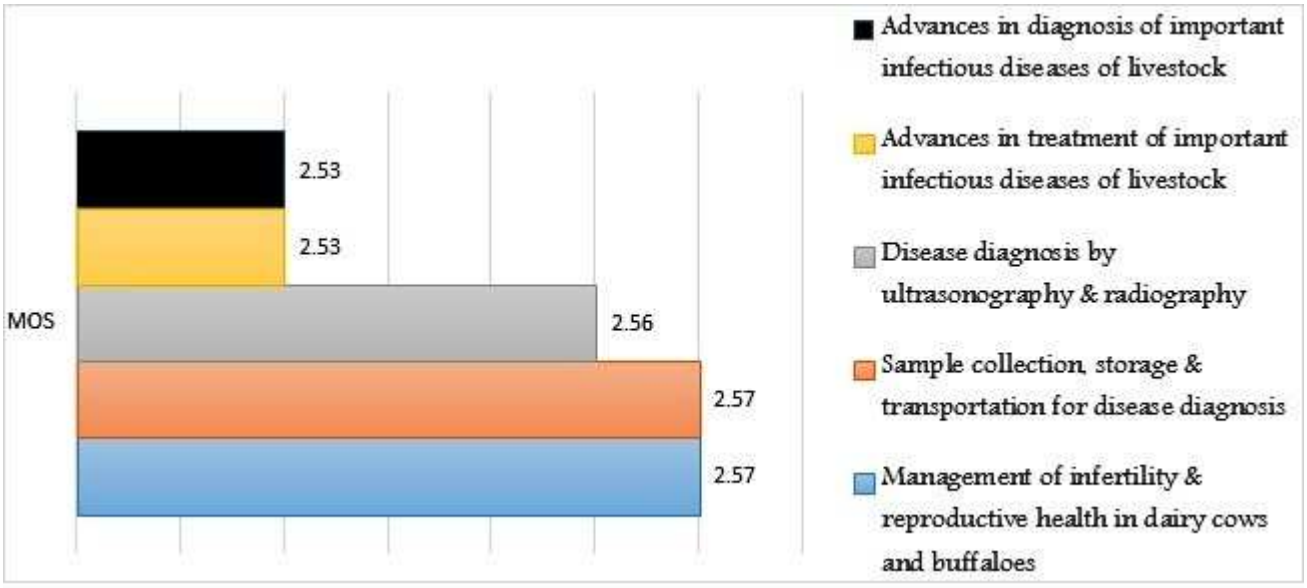

Fig 2 Top five training areas as perceived by veterinary officers

Training needs of veterinary officers under the major categories

Clinical care practices: MOS scores in Table no. 1 under clinical care practices reveals that the training need for management of infertility and reproductive health in dairy cows and buffaloes ranks first with a MOS of 2.57, followed by advances in treatment of important infectious diseases of livestock ranked 2nd (MOS 2.53), and

advances in fracture fixation techniques in animals ranked 3rd (MOS 2.40). Similar line of results were also obtained by other researchers, Das *et al.,* (2018) found that management of infertility, advancement in fracture management and treatment of infectious diseases, and management of surgical conditions, were major training need of veterinarians. Shree and Rajeshwari (2017), reported that advancements in clinical skills, and treatment of emerging livestock diseases were the most needed trainings. Shree *et al.* (2017) also reported that 55 per cent, 50 per cent, and 48.33 per cent of the respondents had high training needs for animal reproduction, gynaecology and obstetrics (mainly treatment of infertility), veterinary diagnostics and therapeutics, and veterinary surgery and radiology (mainly fracture management), respectively. Also under surgery, and gynaecology related trainings most needed training was for fracture management, and diagnosis and treatment of infertility respectively. There are various causes to infertility, malnutrition being the major one followed by others like infection, congenital defects, managemental errors and hormonal imbalances in the female. These factors may lead to problems like anestrus, repeat breeding, ovarian cyst, and early embryonic death. Infertility causes major economic loss among dairy farmers and businesses in India (Mishra and Tiwari, 2014, Roy *et al.* 2020). The dairy industry can be made a sustainable venture in the long run only if it acquires supra normal profit (Mishra and Tiwari, 2014) which can't be achieved without eliminating infertility problem from the herd. Therefore, therapeutic interventions for these disorders, and a call on treating or culling of dairy animals depending on its condition by veterinarians requires immense expertise. Which can be acquired by attending regular trainings, and refresher knowledge courses in this area. Livestock population of the country has poor health status (DAHDF Annual Reports) and reported to have occurrence of various infectious, zoonotic **(**www.oie.int), and even notifiable diseases like Glanders has 123 new cases reported in 2017, as well as alert has been issued for the same disease to 9 states (nrce.gov.in). Such high and recurrent disease occurrence have severe effect on human and animal health and effects to a great extent with production and productivity of livestock, as well as causes heavy economic loss (Ahuja *et al.* 2008, Singh *et al.* 2014 & Singh *et al.* 2015*)*. To keep a check on emergence of new clinical conditions, and diseases, as well as for cutting short the recovery period, requires trained veterinarians in various advanced techniques. According to a study 4.20% of total hospital cases at the clinics of Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India were related to bovine fracture with 90.2% involving long bones (Yadav *et al.* 2019). Fracture management is complex condition and requires high level of expertise for its execution, also there is immediate requirement for the fracture to be treated without delay (www.mmccare.com/treat-that-fracture). This shows that the competency in major surgeries and fracture management should be of prime importance.

Table 1: Ranking of training needs of field veterinary officers under clinical care practices based on MOS

Training Needs	U.P (n=40)		U.K (n=40)		J&K (n=40)		Pooled (N=120)		Rank
	TOS	MOS	TOS	MOS	TOS	MOS	TOS	MOS	
Clinical care practices									
Management of infertility & reproductive health in dairy cows and buffaloes	103	2.57	99	2.47	106	2.65	308	2.57	I
Advances in treatment of important infectious diseases of livestock	110	2.75	91	2.27	103	2.57	304	2.53	II
Advances in fracture fixation techniques in animals	89	2.22	90	2.25	109	2.72	288	2.40	III
Mastitis – prevention and control strategies	88	2.20	92	2.30	105	2.62	285	2.37	IV
Control of zoonotic diseases	98	2.45	84	2.10	99	2.47	281	2.34	V
Management of major surgical condition in the field	98	2.45	89	2.22	92	2.30	279	2.32	VI
Effectiveness of new drugs in the field	92	2.30	82	2.05	90	2.25	264	2.20	VII
Management of minor surgical condition in the field	82	2.05	85	2.12	87	2.17	254	2.12	VIII
Anaesthesiology	77	1.92	85	2.12	90	2.25	252	2.10	IX
Major treatment procedures of wild animals	75	1.87	82	2.05	75	1.87	232	1.93	X

Diagnostic practices: Ranking based on MOS revealed that training need for sample collection, storage and transportation for disease diagnosis ranked 1st with a MOS of 2.57, followed by disease diagnosis by ultrasonography and radiography rank 2nd (MOS 2.56), and advances in diagnosis of important infectious

diseases of livestock ranked 3rd (MOS 2.53). Shree *et al.* (2017) and Das *et al. (*2018) also reported that under laboratory, diagnostics was also a required area for the training, with main training needs were, collection, preservation and dispatch of biopsy material and samples for microbiological examination, hematology and interpretation of results, and examination of blood for blood parasites. Veterinary Council of New Zealand, and association of American Veterinary Medical College also enlisted accurate diagnosis, followed by development of appropriate treatment strategies as a competency standard indicator for the veterinarians. Animal disease diagnostics leads to identify the most relevant cure of any disease, and by this means, plays an essential role in disease management and prevention. Veterinary diagnostics is exponentially growing field, driven by the need to control and prevent diseases in animals (www.futurebridge.com/blog/veterinary-diagnostics-growth-trends-and-impact/). A small outbreak of disease can be a threat for the entire animal as well as human community. Thus, to achieve the one health concept, the practice of veterinary diagnostics becomes essential.

Table 2: Ranking of training needs of field veterinary officers under diagnostic practices based on MOS

Training Needs	U.P (n=40)		U.K (n=40)		J&K (n=40)		Pooled (N=120)		Rank
	TOS	MOS	TOS	MOS	TOS	MOS	TOS	MOS	
Diagnostic practices									
Sample collection, storage & transportation for disease diagnosis	104	2.60	99	2.47	105	2.62	308	2.57	I
Disease diagnosis by ultrasonography & radiography	103	2.57	104	2.60	100	2.50	307	2.56	II
Advances in diagnosis of important infectious diseases of livestock	106	2.65	94	2.35	104	2.60	304	2.53	III
Advance laboratory techniques for disease diagnosis	96	2.40	97	2.42	94	2.35	287	2.39	IV
Diagnostic techniques for various parasitic and fungal infections	89	2.22	96	2.40	94	2.35	279	2.32	V

Managemental practices: Under various management related practices ranking on the basis of MOS revealed that training needs for handling the outbreaks ranked 1st with MOS of 2.43, followed by clinical nutrition, and hospital management both ranked 2nd (MOS 2.23), and breeding management practices ranked 3rd (MOS 2.18). Shree and Rajeshwari (2017) reported that control of outbreaks was felt as a moderate need by respondents. Shree *et al.* (2017) also reported that under various animal science related factors, nutrition requirement of animals, care of young ones and pregnant females, and housing management, were important training needs. The veterinarians have major role to play in disease prevention, management and control animal to human spread as well (www.woah.org/en/covid-19-and-veterinary-activities-designated-as-essential/). The threat posed by the recent outbreak of COVID-19 demanded the veterinarians to be on 24*7 duty and provide their service as the front-line workers. India has world's largest population of animals so also bears the highest risk for zoonotic diseases; therefore, the veterinarians should be able to provide information and be skilled in nutrition, breeding, selection and prevention of outbreaks along with curing (www.ed.ac.uk/files/imports/fileManager/India%20Vet%20Report_2012_Final_G.pdf).

Extension activities: Under various extension related practices training needs for technical and popular writing skills ranked 1st with MOS of 2.39, followed by personality development ranked 2nd (MOS 2.35), and new advancements in extension techniques ranked 3rd (MOS 2.34). Shree and Rajeshwari (2017) reported that training needs in extension services, and communication skills were felt to be moderate by the respondents. Kustritz and Nault, (2010) opined that good communication is also important for becoming a successful practicing veterinarian and reveled that University of Minnesota has improved the curriculum by adding courses for improving leadership skills, teamwork, and verbal and written communication; in the veterinary curriculum. Even after so many years of the improvement in curriculum in other countries, India still fails in finding the need for such courses in the curriculum and giving required stress on such attributes in trainings as well. The livestock sector is reported to have fast growth rate compared to agriculture, whereas only 5 per cent of farm households having access to livestock related information in India, which is meagre against 40.4% for crop farming (Planning commission, 2012, Shubeena *et al.* 2018). Various enterprises and organizations like milk co-operatives, feed manufacture, animal welfare organizations, insurance companies, NGO's require

advisory and technical services of veterinarians. The veterinary officers working at grass root level under animal husbandry department being significant middle level livestock extension professionals, should certainly have strengthened extension related skills, which is almost totally absent (Chander *et al.,* 2010, Sasidhar and Suvedi, 2016).

Table 3: Ranking of training needs of field veterinary officers under managemental practices based on MOS

Training Needs	U.P (n=40)		U.K (n=40)		J&K (n=40)		Pooled (N=120)		Rank
	TOS	MOS	TOS	MOS	TOS	MOS	TOS	MOS	
Management practices									
Handling the outbreaks	95	2.37	97	2.42	100	2.50	292	2.43	I
Clinical nutrition	83	2.07	88	2.20	97	2.42	268	2.23	II
Hospital management	72	2.07	88	2.20	97	2.42	268	2.23	II
Breeding management practices	83	2.07	92	2.30	87	2.17	262	2.18	III
Ideal pregnancy management practices	79	1.97	82	2.05	95	2.37	256	2.13	IV
Fodder crisis management	89	2.22	80	2.00	85	2.12	254	2.11	V
Diseases and health management of wild animals	82	2.05	85	2.12	84	2.10	251	2.09	VI
Feeding management practices	69	1.72	88	2.20	93	2.32	250	2.08	VII
Health care of neonatal animal	70	1.75	77	1.92	98	2.45	245	2.04	VIII
Disaster management practices for livestock	85	2.12	76	1.90	82	2.05	243	2.02	IX

Table 4: Ranking of training needs of field veterinary officers under extension activities based on MOS

Training Needs	U.P (n=40)		U.K (n=40)		J&K (n=40)		Pooled (N=120)		Rank
	TOS	MOS	TOS	MOS	TOS	MOS	TOS	MOS	
Extension activities									
Technical & popular writing skills	92	2.30	94	2.35	101	2.52	287	2.39	I
Personality development	93	2.32	94	2.35	95	2.37	282	2.35	II
New advancements in extension techniques	87	2.17	92	2.30	102	2.55	281	2.34	III
Leadership skills	91	2.27	89	2.22	96	2.40	276	2.30	IV
Communication skills	89	2.22	76	1.90	98	2.45	263	2.19	V
Knowledge & use of different ICT techniques and instruments	87	2.17	78	1.95	89	2.22	254	2.12	VI
Preparing extension literature	83	2.07	77	1.92	93	2.32	253	2.11	VII
Organization of camp, gosthies & other extension activities	77	1.92	75	1.87	92	2.30	244	2.03	VIII
Power point presentation skills	69	1.72	68	1.70	89	2.22	226	1.88	IX

Additional skills and miscellaneous activities: Under various additional skills, training needs for stress and time management ranked 1st with MOS of 2.45, followed by performance appraisal methods ranked 2nd (MOS 2.37), and motivational techniques ranked 3rd (MOS 2.32). Under various miscellaneous practices training needs for biosafety measures ranked 1st with MOS of 2.34, followed by entrepreneurship and market intelligence ranked 2nd (MOS 2.32), and organic farming and Animal Husbandry ranked 3rd (MOS 2.24). According to a survey 90 per cent of veterinary surgeons from Royal College of Veterinary Surgeons (RCVS) reported the veterinary related work to be stressful (Institute for employment studies, 2014). Lakkawar *et al.* (2020) also suggested veterinary profession to have high degree of occupational stress. Therefore, training for stress management, performance appraisal, and motivational techniques, are crucial for veterinarians to prevent them from psychological, and physical health issues. Biosafety measures are important to prevent the employees at veterinary laboratories from accidental or intentional release of dangerous pathogens (osti.gov, Brass *et al.*). Veterinarians being important extension personnel, have a duty to disseminate organic farming, entrepreneurship, and market intelligence knowledge, especially agripreneurship, as majority of backward regions in India depends on agriculture. So, field veterinarians should be trained in entrepreneurship, and market intelligence, as well as organic farming and A.H.

Table 5: Ranking of training needs of field veterinary officers under additional skills and miscellaneous activities based on MOS

Training Needs	U.P (n=40)		U.K (n=40)		J&K (n=40)		Pooled (N=120)		Rank
	TOS	MOS	TOS	MOS	TOS	MOS	TOS	MOS	
Additional skills									
Stress & time management	91	2.27	97	2.42	106	2.65	294	2.45	I
Performance appraisal methods	87	2.12	94	2.35	103	2.57	284	2.37	II
Motivational techniques	90	2.25	90	2.25	99	2.47	279	2.32	III
Teamwork & group dynamics	85	2.12	92	2.30	98	2.45	275	2.29	IV
Refer to make use of publications (Journals, research paper)	83	2.07	92	2.30	75	1.87	250	2.08	V
Miscellaneous activities									
Biosafety measures	98	2.45	85	2.12	98	2.45	281	2.34	I
Entrepreneurship & market intelligence	86	2.15	97	2.42	96	2.40	279	2.32	II
Organic farming and A.H.	87	2.17	82	2.05	100	2.50	269	2.24	III
Policies and legislation for animal welfare, animal ethics & euthanasia	82	2.05	80	2.00	95	2.37	257	2.14	IV
Efficient record keeping	77	1.92	82	2.05	94	2.35	253	2.11	V

Conclusion: The goal of the current study was to pinpoint the key areas in which field veterinarians needed to receive training to develop their abilities and increase their level of knowledge. The main areas where most veterinarians desired to enhance their expertise were management of infertility and reproductive health in dairy cows and buffaloes, procedure for sample collection, storage and transportation, disease diagnostic techniques through ultrasonography and radiography, and advances in treatment and diagnosis of important infectious diseases of livestock. Veterinarians can be trained through undergoing formal training programmes, informal trainings, improving publicly accessible training resources and providing educational opportunities like continuing education and newly emerging training resources such as internet-based learning. High-quality, easily accessible resources and effective trainings should be made available. To minimise needless financial loss, save time, pique the interest of the professionals and increase the quality and effectiveness of the learning process, the training programme should be structured around pertinent and necessary themes of interest to veterinarians. Educating veterinary officers in accordance with their requirements will enable them to stay up with the rapidly changing environment. Additionally, it will raise the standard of the veterinary profession in our society. The state department of animal husbandry, training facilities, and other agencies that are directly or indirectly involved should emphasize the aforementioned topics while developing continuous educational programmes for field veterinarians.

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