Training Evaluation of Field Veterinarians: Implications for Scaling Up

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Abstract

This paper presents the evaluation findings on effectiveness of gynecological training programmes organized for field veterinarians in Andhra Pradesh. The key evaluation questions were on training methodology, relevance of course content, knowledge and skill improvement, utility of the topics and overall effectiveness of the programmes. The findings indicated a high relevance of the contents with overall increase of 29.03 per cent knowledge and skill gain by the participants. The findings also suggested that field veterinarians' competencies have been improved using a combination of theoretical, practical and field exposure sessions in an organized way. It is recommended to standardize the curriculum and scale-up training programmes to all field veterinarians as open education resources to update their competencies.

Keywords: Field veterinarians training, gynaecology, effectiveness, Andhra Pradesh, India

Introduction

The pattern of growth in crossbred dairy cows and graded buffalos as per recent census indicates a shift towards economically more efficient species in Andhra Pradesh. The expansion in bovines is less in populations of males than females, mainly because bovine draught power is being replaced with mechanization and the importance is on producing milk (Livestock Census, 2012). This demonstrates that the livestock sector in Andhra Pradesh is both expanding and adapting to emerging socio-economic and technological forces, with firm implications for veterinary service delivery (Rao *et al.*, 2015). While the bovine sector is registering phenomenal growth, several challenges remain unaddressed. One of these includes inadequate clinical competencies among field veterinarians (Hegde, 2010). To improve gynaecological competencies among field veterinarians, the Animal Husbandry Department (AHD) had

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designed and implemented a tailor-made training programme. The present study was taken up with the objective of evaluating the overall effectiveness of the training programme.

Methodology

Residential training programmes of six days duration on 'Gynecological competencies up-gradation' were organized at State Animal Husbandry Training Centre (SAHTC), Mandapeta. A total of 212 field veterinarians were trained in 13 batches. The data on inputs used in the training programmes in terms of money, human resources and training curriculum were obtained from office records. The effectiveness of the training programmes was measured in terms of change in knowledge and skills in Gynaecology using pre and post evaluation tests. The test items consisted of 50 objective questions on various aspects of gynaecology training curriculum. The scores were converted into percentages and average scores worked out for 13 training programmes. The feedback on various aspects of the training was obtained on 1 to 5 scale. The major learning outcomes and suggestions for improvement were also obtained from the participants and summarized.

Results and Discussion

Training Curriculum: The training objectives were to:

1. Refresh on anatomy and physiology of bovine female reproductive system.
2. Refresh on palpation of female reproductive tract, detection of heat mechanism, aberrations of heat, pregnancy diagnosis and differential diagnosis in bovines.
3. Refresh on important infertility problems of bovines, and
4. Conduct village survey, collect data, analyze and interpret results on field problems.

A critical evaluation of training curriculum revealed that, core gynaecological technical competencies were covered as per the training objectives with related topics from anatomy, physiology, pathology and process competencies (Box 1).

Box 1: Gynaecology Competencies up-gradation Training Curriculum

Technical Competencies: Anatomy of bovine female reproductive organs on slaughter house specimens; Physiology of female bovine reproductive system; Ovarian development and follicular dynamics; Rectal Examination - purpose, procedure, care & precautions; Heat behaviour, heat aberrations, palpable changes and pregnancy diagnosis; Differential diagnosis; Endometritis and latest protocols in treatment of uterine pathology; Anoestrum and its management; Oestrus synchronization; Repeat breeding, and; Cryo-preservation of semen, thawing procedures and handling of AI equipment.

Process Competencies / soft skills: Indian dairy industry - present scenario and SWOT analysis; Concepts of ideal dairy, farming practices/parameters; Data collection through household survey – purpose and procedure; Data consolidation analysis, interpretations and identification of focal areas of interventions. Presentations by participants (Group work); Field visit for hands on training and practice; Veterinarians role in enhancing livestock productivity; Tips for enhancing conception at field level.

Inputs: The total money spent on 13 training programmes was Rs. 2,39,200/- (Rs. 18,400 per training) towards reading material, slaughter house specimens, field visits, training material, working lunch, snacks. There were 212 participants and five faculty members from the training centre involved in 13 training programmes.

Training Methodology: The training methodology followed in all 13 training programmes is summarized under the following heads.

Training Manual and Disc: A manual prepared by covering all the aspects of the training curriculum was provided to each participant in addition to the text material from different sources. A compact disc with notes and all class-room presentations was also given to participants.

Pre and Post Tests: To see the difference in skills and knowledge gain, pre and post training tests were conducted using similar questionnaires covering all the aspects of the training curriculum. This helped the faculty to assess the trainees' perception level and to impart training in a systematic approach covering the contents.

Expectations: At the beginning of the training, trainees were asked to give their expectations from the training programme. During the sessions, special focus was given to the expectations of the trainees. At the end, it was discussed to confirm if the expectations were met.

Theory Sessions: The theory sessions were conducted as per the curriculum designed and were dealt using participatory and interactive learning methods. All audio-visual teaching aids were practically utilized in dissemination of knowledge. Special emphasis was to cover the focal areas of trainee's specific field application issues on bovine gynaecology. A special session on ethics/ motivation was also held in every training programme.

Field Survey: A field survey in each training programme was conducted by participants to assess the reproductive status of dairy animals in villages neighboring Mandapeta (within 40 km). The survey questionnaire contained questions relating to various management practices and reproductive parameters. The data were analyzed and conclusions were drawn about the reproductive health and status of the dairy animals in that village. The critical analysis and comparison of data with reference to the ideal parameters gave an understanding of the virtual field situation and the various corrective and adoptive methods to be implemented in future. Participants made presentations in groups on each village covered during the field survey.

Practical sessions: The practical sessions under each training programme covered the following aspects:

a. *Slaughter house specimens:* During the training days, fresh specimens of bovine reproductive system were procured from slaughterhouse and presented to the trainees for palpation and observation of the utero-ovarian physio-pathological conditions. On the last day, the trainees were asked to make a blindfold examination of specimens and later to compare the same with visual observations for self-evaluation.

b. *Fertility Camp:* The trainees were divided into two groups in every training programme and each group attended a fertility camp organized in connection with the training program along with one of the faculty members as facilitator. The camps were conducted in the same village, where the survey was conducted. There, each trainee examined animals and got on-field training from the faculty.

c. *Exposure to Pathology Museum:* Trainees were taken to the museum of the institution and were exposed to different pathological conditions of the reproductive organs enabling them to visualize the vide variety of diseases and disorders of rare occurrence and enough text supplements provided on-spot to answer their queries.

d. *Diagnostic Tests and Practice:* Different diagnostic tests were demonstrated to the trainees in bovine gynaecological practice *viz.* Fern pattern and bamboo stick pattern of oestral discharge, White side test for endometritis, pH of vaginal, cervical and uterine discharges, Prostaglandin induced milk flow test (PGIMF), Intra Vulvo Sub Mucosal injection of Oxytocin/ PGF2-alfa, and examination of stained smears of cervical discharge for phagocytes/ flagellates. Trainees were practically shown the application of rope in mechanical/ manual methods of managing pre and post partum prolapse. In each training program the obstetrical maneuvering methods, especially de-torsion techniques were also demonstrated.

Impact of the Training

The data in Table 1 shows the knowledge score obtained by participants during pre and post training tests. It is evident from the data that as a result of the training, the mean knowledge score of the participants rose to 77.43 from 48.39 registering an average increase of 29.03 per cent. This clearly indicates the positive impact of the training programmes in improving the gynaecological knowledge among the participants.

Table 1. Impact of the Training on improving the Knowledge level

Training Batch	Pre-training	Post-training	Gain
1	45.33	72.67	27.34
2	40.33	67.67	27.34
3	38.43	69.41	30.98
4	45.33	74.00	28.67
5	41.57	81.17	39.6
6	47.33	74.67	27.34
7	60.00	80.00	20.00
8	50.37	83.33	32.96
9	47.59	80.37	32.78
10	59.78	83.11	23.33
11	43.33	81.66	38.33
12	53.53	77.84	24.31
13	56.19	80.71	24.52
Mean knowledge and skill gain	48.39	77.43	29.03
Standard deviation	5.14	5.22	5.75

The data further revealed that feedback on the training was perceived by the participants to be at high level in different components of training (Table 2). The mean feedback rating on overall components of the training programmes was

3.42 out of maximum possible score of 5, which indicates a scope for further improvement. The greatest feedback was in the areas of usefulness of the course (3.75), relevance of the course contents (3.69) and handling of sessions (3.63). Majority of the respondents (58.02%) felt that the duration of the training programmes was short, while 36.79 per cent of respondents felt the duration as sufficient.

Table 2. Feedback on different components of Training Programme

Sl. No.	Training Component	Average Rating on '5' Scale for 13 trainings (Maximum score 5 and minimum score 1)
1	Usefulness of the course	3.75
2	Relevance of the contents	3.69
3	Practical exposure during the programme	3.01
4	Handling of sessions	3.63
5	Facilities for training	3.61
6	Library facilities	3.41
7	Boarding facilities	3.23
8	Facilities for stay	3.20
9	Fulfillment of the objectives	3.22
	Mean rating on overall training components	3.42
10	Duration of the training	Sufficient : 78 (36.79%)
		Short : 123 (58.02%)
		Long : 11 (5.19%)

The results also revealed that participants had learned a few new technical and process skills while refreshing their prior knowledge and skills (Box 2).

Box 2: Summary of Learning Outcomes as perceived by the participants

- Oestrus synchronization
- Hormonal therapy
- Repeat breeding
- Endometritis
- Importance of field data collection
- Dairy farm management practices
- Heat detection
- Pregnancy diagnosis
- Palpation of ovaries
- Follicular dynamics
- Latest technological innovations
- Reproductive pathology

The participants of the 13 training programmes made several suggestions to improve the training in future. Various suggestions given for improvement of training, are summarized and presented in Box 3.

Box 3 : Suggestions for Improvement

Technical aspects

- Avoid longer hours in class-room teaching.
- Increase the duration of the course to 10 - 15 days.
- Increase practical exposure through clinical cases.
- Add embryo transfer technology demonstration in the course.
- Oestrus synchronization to be demonstrated.
- Fodder variety demonstration in the SAHTC premises.
- Provide more slaughter house specimens.
- Introduce yoga as part of training.
- Experimental animals required during training.
- Video clippings (preferably 3D) to be shown for various topics.
- Topics on surgical approaches for obstetrical problems to be included.
- More diagnostic methods to detect reproductive problems.

Competencies of field veterinarians need to be enhanced to handle the intensive livestock farming challenges which have arisen due to increased number of crossbred dairy cattle and upgraded buffaloes. Overall, veterinarians need to provide three types of integrated support to the livestock farmers (Rao and Natchimuthu, 2015):

i. Delivery of the technical services (gynecological, surgical and medical and para-clinical health care of livestock).

ii. To make available and provide access to input services such as artificial insemination, vaccines, medicines, equipment, instruments, feed *etc.* (to augment production and productivity) and,

iii. Livestock extension and advisory services as process skills (to enrich the knowledge and improve the skills of farmers).

To provide integrated support efficiently, veterinarians need to have or attain core technical competencies, remain updated on emerging technologies and

demonstrate competency in their services by attending continuing veterinary education programmes. The organization of the training programmes by the SAHTC, Mandapeta is an effort in this direction to improve technical as well as process competencies related to the subject matter of gynaecology. The Planning Commission of India (Planning Commission, 2012) also emphasized that re-training of the field veterinarians, to brace for recent developments, is paramount and they should attend mandatory refresher courses every five years during their career.

The overall effectiveness of the training programmes can be further enhanced by following adult learning principles in the delivery of technical training sessions. Constructivism, experienced learning and humanistic theories explain adult learning during training programmes. The constructivism theorist stressed that the trainee should be an actor rather than a spectator and should be actively engaged in constructing knowledge, attitude and skills (KAS) for themselves (Dennick, 2008). The constructivist implications for further improving gynaecology training effectiveness include (Festinger,1957; Bandura,1977; Dennick, 2008):assertion and activation of prior KAS of participating field veterinarians; build on existing KAS and challenge misconceptions; use group work to facilitate peer learning; stress the context and situation (as practiced in the field visits in the current trainings), and use active learning techniques and give responsibility to trainees for their learning.

Experiential learning (Kolb, 1984) is very useful for training during case studies / exercises in gynaecology training sessions. The humanistic theories (Maslow, 1968; Rogers, 1983) provided the basis for trainee-centered or self-directed learning approaches to training. The implications of humanistic theories to further improve effectiveness of gynaecology training include: respect field veterinarians' background; use their KAS as a starting point for training; ensure physical and psychological conditions for learning in training; training and learning as a relationship between trainer and trainees and encourage field veterinarians to explore self-directed learning.

By following a mix of theoretical, practical and field based training methods, implications of adult learning theories have been taken care of partly by the training organization. However, training organizations need to build the capacities of trainers/ faculty from time to time in using adult learning methodologies besides technical subject matter for effective training of field veterinarians.

Conclusion and Implications for Scaling Up

The comprehensive evaluation findings on the Gynecological Competencies up-gradation residential training programmes of six days duration organized at SAHTC, Mandapeta in Andhra Pradesh are presented in this paper. The evaluation results indicated a high relevance of the training contents with an increase of 29.03 per cent of knowledge and skills among 212 participants in the areas of both technical and process competencies. To further improve the effectiveness of these trainings, the suggestions given by the participants need to be implemented wherever applicable. It is recommended to standardize and scale-up the gynaecology training curriculum using training methodologies embedded with adult learning principles.

The training programme can be scaled-up not only in Andhra Pradesh, but also in other Indian states using the training curriculum as an Open Education Resource (OER) enabled by information and communication technologies. OER generally means that the resource is freely available to others to reuse in different contexts (McMartin, 2008). Scaling up of gynaecology training programmes can follow the four 'R's (Hilton *et al,* 2010):

- *Reuse* – the most basic level of openness. The training faculty in the same institute or adjoining AHD training centres can be allowed to use all or part of the training curriculum and methodology freely in unaltered form (for example, recording the theory, practical and field visit sessions to view / listen to at a later stage or uploading all the sessions to AHD website for listening during free time).
- *Redistribute* – sharing gynaecology training sessions with other state training centres for use.
- *Revise* – adapt, modify, translate or change the form (for example, translating into other regional languages).
- *Remix* – take two or more similar gynaecology training programme contents and combine them to create a new training programme.

While progressing from the first 'R' to the fourth 'R', the openness as well as scaling up enhances and provides opportunities for new and innovative training programmes.

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