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Research Article

KNOWLEDGE LEVEL OF VETERINARY PRACTITIONERS OF PUNJAB ABOUT ANIMAL FEED TECHNOLOGIES

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ABSTRACT

The present study was planned on 102 randomly selected veterinary practitioners (VPs) of Animal Husbandry Department of Punjab for their awareness and knowledge about ten animal feed technologies, namely: Mineral mixture (MM), Silage making, Hay making, Bypass fat (BF), Bypass protein (BP), Total mixed ration (TMR), Urea treatment of wheat straw (UTWS), Uromin lick (UL), Buffer and Probiotics. Knowledge score was found maximum for mineral mixture (3.38), followed by silage (3.07) with Knowledge Index of 67.6 and 61.4, respectively. They were followed by bypass fat (2.99), Probiotics (2.88), UL (2.81), and buffers 2.52, Bypass protein (2.04), TMR (1.93) and UTWS (1.67). Data indicates that VPs were aware about the technologies but lack in knowledge about their practical usage. MM, Silage and Bypass fat were better known to VPs. Overall knowledge index of VPs was 50.5 and highest score was 68. Experience had negative but non-significant correlation with knowledge. Post graduation had positive correlation but non-significant effect. The study infers the immense scope for furthering the specialized cognitive domain of VPs in the field of applied Animal Nutrition and need for refresher courses in this arena to aid to their clinical competence.

Key words: Animal feed technologies, Knowledge index, Punjab, Veterinary practitioners

In India, dairy farming is emerging from being a subsidiary occupation to a remunerative enterprise. But, the study of NSSO, 2007 indicates that the productivity of our animals is below their genetic potential and it is estimated that milk yield of bovine is 26-51 per cent below the attainable yield under field conditions (Birthal and Jha, 2005). To achieve the projected figures optimization of dairy nutrition is the most appropriate choice. Veterinary research institutions have developed various technologies which not only help to reduce the cost of feeding and handling shortage of fodder but also improve nutrient digestibility, maintain rumen environment, provide balanced nutrition, protect animals from metabolic and deficiency diseases and help in reducing wastage of feed resources. Some of these technologies are known to farmers and some are still not very popular (Birthal and Taneja, 2006).

Punjab has 1367 veterinary hospitals and 1487 veterinary dispensaries all over the state with veterinary officers who are providing integrated services to livestock owners. Sasidhar and Suvedi (2016) designated knowledge about animal nutrition as specific subject matter based, production related core competency for veterinary assistant surgeons in India. To meet the objective of extension of animal feed technologies among farmers by veterinary practitioners in Punjab, it is must to assess their (VP's) knowledge about these technologies. Keeping these facts in view, study was planned to assess the knowledge level of veterinary practitioners of Punjab about animal feed technologies (AFTs).

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MATERIALS AND METHODS

A total of 102 veterinary practitioners were randomly selected from those listed on website of Animal Husbandry Department of Punjab to assess their awareness and level of knowledge regarding animal feed technologies.

Knowledge test: Keeping in mind the technologies which can reduce the cost of production directly or indirectly and are convenient to be adopted ten animal feed technologies were selected to assess the knowledge level of respondents, namely: Mineral mixture (MM), Silage making, Hay making, Bypass fat (BF), Bypass protein (BP), Total mixed ration (TMR), Urea treatment of wheat straw (UTWS), Uromin lick (UL), Buffer and Probiotics.

A questionnaire was developed which included: demographic profile, awareness status and knowledge index. Awareness assay included name of the technologies and whether the respondents had ever heard about this technology or not. Knowledge test included testing the knowledge of the veterinary practitioners through multiple choice questions. Questions were collected from the pertinent literature, personal experience and discussions held with the experts in the area of investigation.

Demographic profile: i) Gender- male/ female; ii) Qualification- graduation (1)/ post-graduation (2); Experience of service- Upto 5 years (1)/ 6-10 years (2)/>10 years (3).

Awareness status: From a list of ten selected technologies, respondents were asked whether they were aware about the existence of technology or not. Score 1 was given to the candidate when answered "YES" and 0 if the answer was "NO". Maximum score for awareness assay was 10

and minimum possible score was 0.

Knowledge score and Index: Each technology (10) was tested through five multiple choice questions (total 50). All 50 questions had four options each, with only one correct option. Each right answer was scored as one and each wrong answer was scored 0. The sum of score was taken as knowledge score which was used for calculation of knowledge index as follows:

$$KI = \frac{\text{Total score obtained}}{\text{Total obtainable score}} \times 100$$

Overall maximum score possible was 50 and minimum was 0and for a particular technology maximum score possible was 5 and minimum was 0. The level of knowledge was decided on the basis of mean and standard deviation of knowledge test score.

Level of knowledge	Limit
Low	Less than Mean± S.D
Medium	Between Mean-S.D to Mean+S.D
High	Above Mean ±S.D

Statistical Analysis: The data was analysed through suitable ststistical tools like frequency, percentage, Standard deviation, corelation and ANOVA through SPSS version 22.0.

RESULTS AND DISCUSSION

Fig. 1 describes the profile of veterinary practitioners; out of 102 veterinarians, 70.59% were male and rest (29.41%) were females. 43.14% had done post graduation and 56.86% got employed after graduation and did not pursue post-graduation. 12.75% respondents had up to 5 years job experience, 41.18% had experience of 5-10 years and 46.07% belonged to >10 years experience category.

Table 1 depicts the cognition of veterinary practitioners for the animal feed technologies under study. MM was the one of the most familiar technology among VPs. Silage stands second in the awareness percentage. Third was UTWS with 98.03% respondents being aware about it. Least known technology was observed to be bypass protein with 88.23% respondents being aware about it. TMR and probiotics were at par with 92.15% VPs been familiar about them. Bypass fat, hay, UL and buffers were known to 93.13, 96.07, 95.09 and 94.11% VPs, respectively. Overall picture depicts relative difference in knowledge which could be due to gap from education (Custers and Cate, 2011), relative exposure to a particular technology, dearth of practice (Broomfield, 1996), and interest and practice (Broomfield, 1996) of nutritional technologies in prevention and control of ailments.

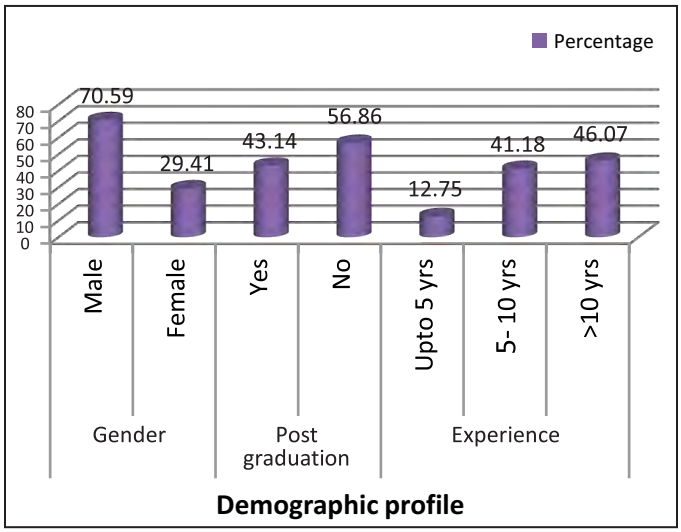

Fig. 1. Demographic profile of veterinary practitioners

Table 2 summarizes the knowledge score and Knowledge index of VPs (out of five) about each animal feed technology under study and figures depicts that corresponding to awareness, the knowledge score and index was significantly higher for mineral mixture i.e. 3.38 and 67.6 followed by silage with mean score of 3.07 (significantly high, P<0.001). Knowledge about bypass fat followed silage with 2.99 as the score and 59.8 as KI, the probable reason could be the relevance of technology under field conditions. Next was probiotics and buffers with score and KI of '2.88 and 50.4' and '2.52 and 57.6', respectively. Both of technologies are being prescribed by practitioners for digestive ailments to the cattle. Bypass protein got the score of 2.04 and KI of 40.8. Second last was the TMR that had a low score of 1.93 and KI of 38.6, the probable reason being that it is a technology for larger herds and not relevant for masses. Noticeable is that the minimum score and KI was recorded for UTWS (1.67 and 33.4) which was the second most known technology in awareness evaluation. i.e., the VPs have heard about the

Table 1
Frequency distribution of VP's awareness/ familiarity towards different animal feed technologies (n=102)

Name of technology	Frequency (%)
Mineral mixture	102 (100)
UTWS	100 (98.03)
UL	97 (95.09)
Silage	102 (100)
Hay	98 (96.07)
Bypass fat	95 (93.13)
Bypass protein	90 (88.23)
TMR	94 (92.15)
Buffer	96 (94.11)
Probiotics	94 (92.15)

technology but lack in knowledge about the facts about its practical usage. It was observed that technologies commercially constituted by GADVASU (MM, UL, Bypass fat) are better known to VPs. The mean score of VPs for knowledge test was 25.70 out of 50. Even the highest score (34/50) was 68%. That indicates immense scope for improvement as higher knowledge of nutritional technologies may be used for prevention and control of ailments which will aid to the competence of VPs. Similar status of cognition was reported in veterinary graduates by Singh and Verma (2017). They evaluated the veterinary interns of eight prime veterinary institutions of India. GADVASU interns had mean score of 6.11/14 in animal nutrition and 66% students had the score less than 50%. While at Khalsa College of Veterinary & Animal Science (KCOV & ASc), Amritsar, the mean score was 4.5/ 14 and 90% respondents had their score less than 50%. Overall, for all colleges, mean knowledge score was found to be 6.3/14 and 51.3% respondents had the score less than 50%. Merely 35.1% respondents were confident about identification of fodder and 41.9% about ration computation. Both studies give an indication that we need to strengthen the aspect of animal nutrition among veterinary graduates.

For better appraisal of knowledge of VPs, the scores and respondents were categorized which is indicated in table 3. Score upto 20 was rated as low level of knowledge and 21-31was medium and above 31 was high level of knowledge. Majority came under medium level of knowledge with 67.65% VPs being part of this category and this category had significantly highest number of respondents (ANOVA, P<0.001). While17.65 and 14.70% respondents were in low and high knowledge level groups with significantly higher percentage of respondents in low level category. The outcome of test is formidable, since most of nutritional technologies are related to clinical competence as well and production and reproduction efficacy.

Table 2
Technology wise Mean knowledge test score and Knowledge Index of VPs towards different Animal feed technologies

Name of technology	Knowledge test score	
	Mean score* (n/5)	Knowledge index
Mineral mixture	3.38[e]	67.6
UTWS	1.67[a]	33.4
UL	2.81[d]	56.2
Silage	3.07[d]	61.4
Hay	2.39[c]	47.8
Bypass fat	2.99[d]	59.8
Bypass protein	2.04[b]	40.8
TMR	1.93[b]	38.6
Buffer	2.52[c]	50.4
Probiotics	2.88[d]	57.6
PSE	0.121	-
P Value	0.000	-

*Each technology was assessed by five multiple choice questions each carrying 1 mark for a correct answer

Table 3
Distribution of respondents on the basis of level of knowledge

Mean ± S.D Criteria	Score range	Level of knowledge	No. of respondents	% of respondents
Less than 25.70-5.65	< 20	Low	18	17.65[b]
Between 25.70-5.65 &25.7+5.65	20-31	Medium	69	67.65[c]
Above 25.70+5.65	>31	High	15	14.70[a]
PSE	-	-	-	0.160
P Value	-	-	-	0.000

Singh *et al.* (2017) reported similar outcomes on evaluation of field veterinarians of Punjab for their knowledge about applied animal nutrition aspects of dairy farming. Veterinarians' knowledge score was 47.20 % on applied animal nutrition concept. Similar to present study, knowledge level for silage and mineral mixture was better than other aspects (>75%) like TMR and probiotics (30%).

We definitely need to trace out reasons for the lower knowledge of veterinary practitioners for animal feed technologies. Becvarova *et al.* (2016) tried to find out the reason for lack of optimum skill of nutrition and found that many veterinary practitioners feel that their veterinary school education in animal nutrition was insufficient and curriculum was too crowded.

Another reason may be the perception of practitioners. Singh and Verma (2017) recorded that merely 25/87 public sector field veterinarians in Punjab perceive that skill of nutrition is must at level of entry into the field against the skill of clinical examination which was perceived 'must' by 59/87 vets which was contrary to the findings by Siebert *et al.* (2016) who concluded that veterinarians showed interest in further training in animal nutrition and assured that it is advisable for maximum success of treatment. Bergler *et al.* (2016) also assessed the perception of veterinary practitioners who reported that 20-30%cases in small animals are nutrition related and 70% of vets agreed that nutrition consultation was neglected in every-day practice. Approximately 50% of the vets did not feel sufficiently competent with regard to nutrition consultation. Only 18% had taken part in continuing education in animal nutrition. This means that perception of VPs regarding skill in animal nutrition also needs to be addressed.

Bergler *et al.* (2016) also reported vets' complaint about lack of compliance on feeding suggestions on the part of owner (30%) and false information on feeding (over 80%). Singh and Verma (2017) assessed the farmers' expectancy from VPs and reported that merely 32.5% perceived the need for ration formulation as compared to 75% for pregnancy diagnosis.

Along with perception and disinterest in refresher courses, time gap from period of knowledge acquisition (Custers and Cate, 2011), dearth of practice (Broomfield, 1996), paucity of information seeking and lack of an effective information source in field may be the reasons behind lack of optimum competence in nutrition. Even lack of knowledge to use the advanced and easily available IT based information sources may also be the rationale (Goku, 2003).

The present study assessed if independent variables could be one of the reasons behind variation in knowledge of VPs. Experience had negative but non-significant correlation with knowledge (correlation coefficient; -0.106). Post graduation had positive correlation (correlation coefficient; 0.260), but this correlation was also statistically non significant.

Whatever the reason may be, need is that Veterinary practitioners must have the knowledge and skills to apply the appropriate feeding recommendation for healthy animals and therapeutic regimens to promote optimal health and production. This can be done through refresher courses in the field of applied animal nutrition practices and this view has been strongly endorsed by Sasidhar and Suvedi (2016).

Mabhiza (2016) quoted O'Leary's (2012a) that veterinary professionals should continue their professional development through free self-directed learning opportunities provided by social media tools. He implored veterinary practitioners to acquire more knowledge on Web 2.0 applications because they facilitated participatory information sharing, interoperability, user centered design and collaboration through the world-wide-web. Examples of Web 2.0 tools were: social networking sites, blogs, wikis, video sharing sites, hosted services, web applications, mashups and folksonomies. This implies the importance of pre service and in-service training on use of electronic tools for extension workers.

Knowledge and skill of animal nutrition will not only aid to their competence but will also improve the status of economics of livestock production.

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