

*Original Research***Studies on Feeding and Mangemental Practices Followed By Dog Owners in Gurdaspur and Ropar District of Sub-Mountainous Zone Of Punjab****Harsimranjeet Singh, O.P. Malav, M.K. Chatli, A.P.S. Sethi, Udeybir Singh Chahal, Nitin Mehta and Neeraj Kashyap**

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Abstract

Under the present study, dog owners from the Gurdaspur and Ropar districts were surveyed and data regarding the feeding and management of their pets were collected. Dog owners are mainly giving the homemade food. There was significant ($P \leq 0.05$) difference in chapatti, rice, meat and egg feeding among the urban and rural dog owners in Gurdaspur district. The quantity of meat given to the dogs in urban area was significantly ($P < 0.05$) higher than the rural areas. 40 dogs from the urban area and 43 dogs from the rural area of Ropar district were selected. There was no significant difference was found among feeding of milk, milk product, curd, sweets, chapatti, dal, rice, vegetable, meat, bone and egg in the diet of dog adopted by the dog owners in urban and rural areas of Ropar district. Average age of pet dogs in District Ropar is higher than Gurdaspur.

Key words: Data, Dog, Feeding Practices, Gurdaspur, Ropar

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Introduction

India being the fastest growing economy in the world, is adopting western life cycle in a swift manner leading to more of nuclear families, eventually the demand for adoption of companion animals such as dogs is increasing day by day. This change in socio-cultural values of humans resulted in change of attitudes towards companion animal ownership, with higher expectations and demands for greater and timely information for management of these companion animals. India's pet dog population is increasing by 26% every year and about 17% of the household owns a pet dog. Presently, India's dog population is 11.6 million. Out of them, 9.4 million and 2.1 million are present in rural and urban areas, respectively. Among all states in India, Tamil Nadu, Maharashtra and Karnataka stands 1st (11,13,031), 2nd (10,77,856) and 3rd

(10,28,869) in dog population respectively (Sakshi *et al.* 2017). The dog population in Punjab is 4, 70,558 having 3, 63,708 males and 1,06,850 females (19th Livestock Census 2012).

Home-cooked diets are often fed due to the lower cost and poor availability of commercial diets. Milk has traditionally been a popular food given to dogs. Mostly vegetarian diet are given to dogs but it does not fulfill the requirements of all the nutrients including high quality proteins, vitamins, minerals and essential amino acid requirements. To complete and balance the diet of dogs, it should include the meat, fish, egg and their products i.e. the foods of animal origin. Most of the dog owners resort to unscientific management practices, because of convenience. In a study conducted by Seneviratne *et al.* (2016) in Colombo, Sri Lanka, via questionnaires distributed to pet owners. They reported that 42% of dogs were fed only home-cooked food, while 18% were fed only commercial food. About 40% of dogs were fed a mixture of commercial and home-cooked food, 49% of dogs were fed milk as a separate meal in addition to their normal diet and 57% of dogs received dietary supplements.

Social considerations, such as cultural or religious practices, may also necessitate avoidance of animal products in pet foods. This practice is not good on part of the pets, as their nutritional requirements are not fulfilled by the pure vegetarian diets. Various dietary habits and trends are followed by dog owners in different regions of Punjab and India. Study regarding the prevalent feeding and management practiced followed by the pet owners in Punjab is not available. Therefore, the primary objective of this study is to evaluate feeding and management practices followed by dog owners in Gurdaspur and Ropar District of sub-mountainous zone of Punjab.

Materials and Methods

To fulfill the objective of the study, the present investigation was carried out to studies on dietary trends followed by dog owners in Gurdaspur and Ropar districts of sub-mountainous zone (kandi region) of Punjab. The detailed methodology about the survey and data analysis are mentioned below:

Selection of Districts

The sub-mountainous zone of Punjab includes six districts i.e. Gurdaspur, Pathankot, Ropar, Mohali, Hoshiarpur and Nawanshahr. Data were collected from the Gurdaspur and Ropar districts. A sample survey was designed and survey performa was prepared by the expert committee. This survey performa includes the queries regarding the feeding and mangemental practices followed by the dog owners such as breed, age, weight of dog, kinds of food (processed or non-processed) given, place of purchase of food provided, methods of cooking, foods of animal origin, raw or cooked, meat and animal byproducts, cleanliness practices, vaccinations, deworming, body score etc.

Selection of Dog Owners

Total 86 dog owners were selected randomly from the Gurdaspur district, 44 dogs were from the urban area and 42 dogs were from the rural area of Gurdaspur district. Total 83 dogs were selected randomly from the Ropar district, 40 dogs were from the urban area and 43 dogs were from the rural area of Ropar district. 196 dog owners were surveyed. The dog owners visiting district polyclinics and private veterinary clinics were also included in the survey.

Statistical Analysis

The data was analyzed using software package for social science (SPSS version 21.0) and SAS (2011). The average values are reported along with standard error. The statistical significance was estimated at 5% level ($P < 0.05$) and evaluated with Duncan's Multiple Range Test (DMRT).

Results and Discussion

Feeding Practices followed by urban and rural dog owners in Gurdaspur district of Punjab

Feeding practices adopted by the dog owners in urban and rural areas, in Gurdaspur district are shown in Table 1. In this survey data regarding the feeding of milk, curd, sweets, chapatti, dal, rice, vegetables, meat, bone and eggs were collected from the rural and urban areas of Gurdaspur district. It was observed from the analysis of data there was significant ($P \leq 0.05$) difference in chapatti, rice, meat and egg feeding among the urban and rural dog owner. The rice was not served to not a single dog in case of rural areas. The consumption of chapatti showed significant increase ($P \leq 0.05$) in case of rural areas by 24.4% as compared to urban areas (Figure 1). The significantly ($P \leq 0.05$) higher amount of chapatti and meat feeding in case of rural areas might be due to higher intake of these food stuffs by the local community.

Table 1: Feeding practices followed by urban and rural dog owners in Gurdaspur district

S. No.	Food ingredients	Urban (44)	Rural (42)
1	Milk (ml)	212.70 \pm 8.43	222.60 \pm 12.23
2	Curd (ml)	20.91 \pm 10.27	17.74 \pm 9.98
3	Sweets (g)	4.55 \pm 2.35	4.84 \pm 3.36
4	Chapatti (no)	3.52 ^b \pm 0.27	4.38 ^a \pm 0.28
5	Dal (g)	11.82 \pm 5.50	8.06 \pm 5.73
6	Rice (g)	19.09 ^a \pm 7.28	0.00
7	Vegetables (g)	10.36 \pm 4.63	1.61 \pm 0.06
8	Meat (g)	29.45 ^b \pm 12.03	74.19 ^a \pm 16.37
9	Bone (g)	3.63 \pm 2.55	1.61 \pm 0.06
10	Egg (no)	1.09 ^b \pm 0.25	2.00 ^a \pm 0.38

Value in parenthesis represents number of respondents; Figures with different superscripts differ significantly $P < 0.05$.

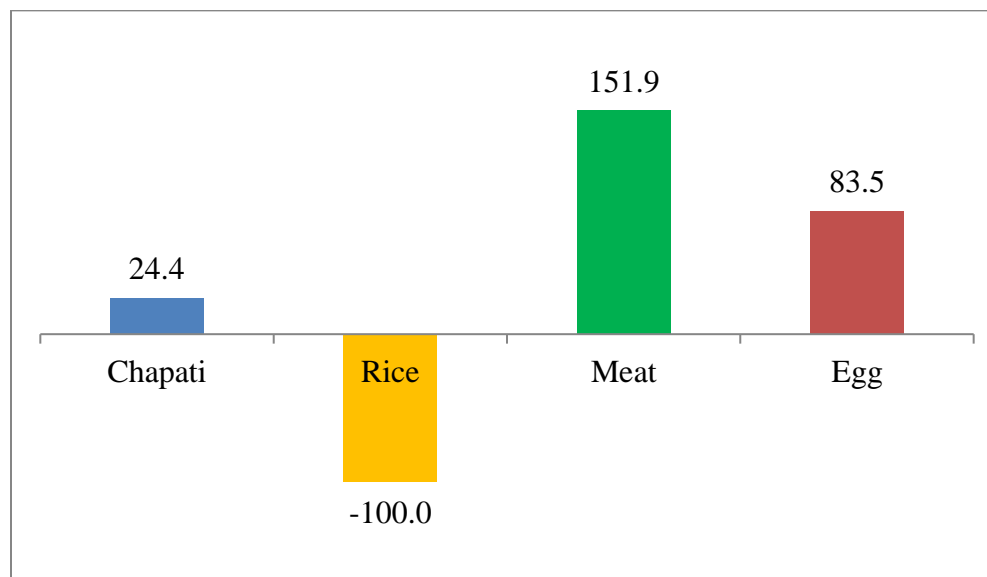


Figure 1: Percent difference in use of food items by rural dog owners in comparison to urban dog owner in Gurdaspur district

As far as the consumption of non-vegetarian foodstuffs were concerned, it was observed that consumption of meat and egg showed significant increase ($P \leq 0.05$) by 151.9 % and 83.5 % as compared to urban areas (Fig. 1). There was no significant difference ($P \geq 0.05$) was found among feeding of milk, curd, sweet, dal, vegetarian and bone in the diet of dogs adopted by the dog owners in urban and rural areas in Gurdaspur district.

Feeding practices followed by urban and rural dog owners in Ropar district of Punjab

Feeding practices adopted by the dog owners in urban and rural areas, in Ropar district are shown in Table 2. In this survey, data regarding the feeding of milk, milk product, curd, sweets, chapatti, dal, rice, vegetables, meat, bone and eggs were collected from the rural and urban areas of Ropar district. It was observed from the analysis of data there was no significant difference was found among feeding of milk, milk product, curd, sweets, chapatti, dal, rice, vegetable, meat, bone and egg in the diet of dog adopted by the dog owners in urban and rural areas.

Rearing patterns of dogs in Gurdaspur and Ropar district of sub-mountainous zone (kandi region) of Punjab

It was observed that, 75.3% of the dog owners in Gurdaspur district and 79.6% dog owners in Ropar district are giving only homemade food to their pets (Figure 2). 24.7% of the dog owners in Gurdaspur district and 20.4 % dog owners in Ropar district are giving both homemade and commercial dog foods to their pets. More popularity of homemade food in these district might be due to its easy availability, cheapness and more cost and less availability of the commercial dog foods. Seneviratne *et al.* (2016) also reported after a

survey in Srilanka that homemade diets were fed to 42% of the dogs while commercial food accounts for 18% and both of these diets were fed to 40% of dogs. In another survey study, involving 637 dog owners and 469 cat owners in United States and Australia, Laflamme *et al.* (2008) found that more than 90% of pet dogs were fed commercial foods; however, non-commercial foods accounts to at least 25% of the diet for 17.3% of dogs. 23.6% of dogs were fed with bones or raw foods at least on weekly basis. In another study, Michel *et al.* (2006) reported that, 86.8% dog owners were classified as commercial feeders and 10% as non-commercial feeders and the remaining 3.2% did not lies under any feeder category.

Table 2: Feeding practices followed by urban and rural dog owners in Ropar district

S. No.	Food ingredients	Urban (40)	Rural (43)
1	Milk (ml)	147.50 ± 7.37	163.00 ± 6.58
2	Milk product (g)	22.00 ± 7.89	23.26 ± 8.86
3	Curd (ml)	21.25 ± 7.14	17.44 ± 5.74
4	Sweets (g)	3.75 ± 2.11	4.65 ± 2.24
5	Chapatti (no)	3.80 ± 0.29	4.49 ± 0.27
6	Dal(g)	7.50 ± 3.37	8.14 ± 3.69
7	Rice (g)	5.00 ± 2.40	3.49 ± 1.96
8	Vegetable (g)	6.25 ± 2.26	12.79 ± 5.54
9	Meat (g)	36.75 ± 11.06	38.37 ± 10.50
10	Bone (g)	18.00 ± 6.32	13.95 ± 5.08
11	Egg (no)	0.60 ± 0.19	0.67 ± 0.18

Value in parenthesis represents number of respondents; Figures with different superscripts differ significantly $P < 0.05$

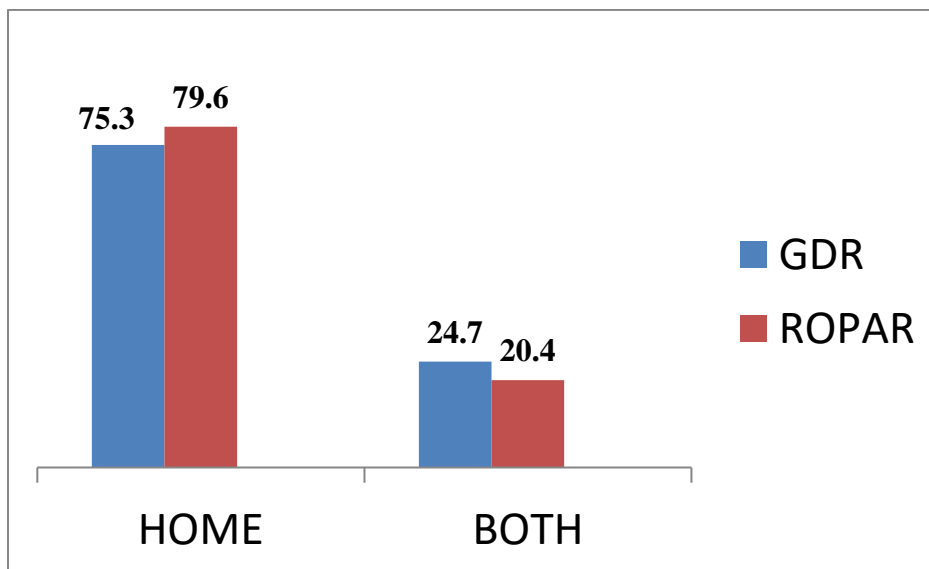


Figure 2: Type of food (homemade or commercial) provided to dogs in Gurdaspur and Ropar district
60.5% of the dog owners in Gurdaspur district and 72.3% dog owners in Ropar district are only feeding the vegetarian diets to their dogs (Figure 3), whereas the very less proportion of dog owners i.e. 10.5% in

Gurdaspur and 2.4 % in Ropar district are feeding only non-vegetarian diet including meat, bone, eggs and meat byproducts to their dogs. 29.0% of the dog owners in Gurdaspur district and 25.3 % dog owners in Ropar district are giving mixed diet including foods of both plant and animal origin. These results are in agreement with Dodd *et al.* (2019) who found that pet owners who are vegetarian also have huge interest in feeding plant based diets to their pets. Dogs reared exclusively on plant based diets may suffer from deficiency of some vital nutrients

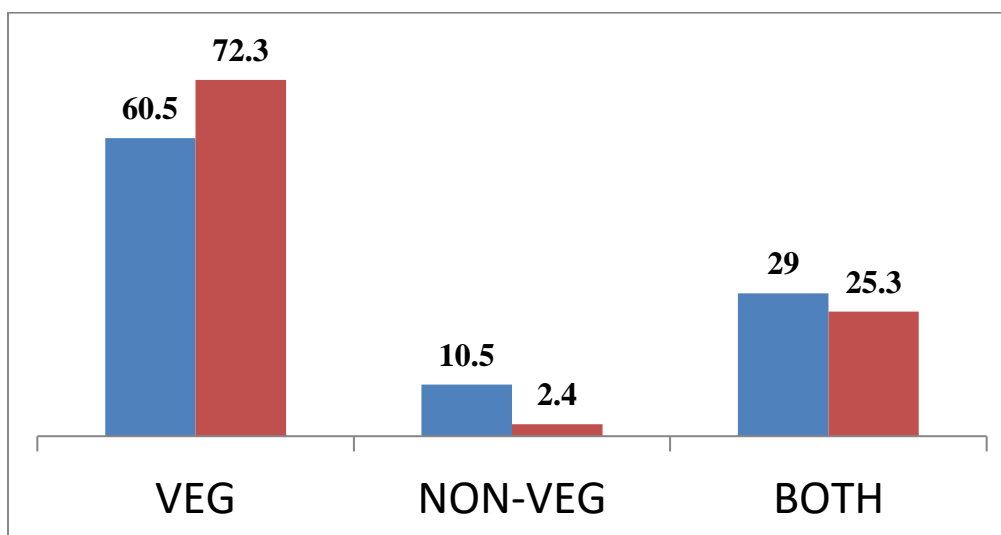


Figure 3: Type of food (Veg/Non veg/both) provided to dogs in Gurdaspur and Ropar district

29.5 % dogs reared in Gurdaspur and 15.6 % dogs reared in Ropar are of less than one year age. 51.2 % dogs reared in Gurdaspur and 60.2 % dogs reared in Ropar are between 1-4 years age and 19.7 % dogs reared in Gurdaspur and 24.2 % dogs reared in Ropar district are above 4 years of age (Figure 4). Amongst the dog breeds reared 58.1 % dogs in Gurdaspur and 54.2 % dogs in Ropar were large breeds, 15.1 % dogs in Gurdaspur and 6.0 % dogs in Ropar are of medium breeds and 26.8 % dogs in Gurdaspur and 39.8 % dogs in Ropar are of small breeds (Figure 5). Commonly reared large breeds of dogs are Labrador, German shepherd, Rottweiler; medium breeds are Bulldog, bully, non-descript breeds; small breeds are Pug, Dachshund, Beagle. It was revealed from the analysis of data that people in both the districts have more preference for the rearing of large breeds as approximately 55% of dog owners are rearing large breeds. Sawaimul *et al.* (2009) also reported that German shepherd is the most popular followed by Great Dane in Nagpur.

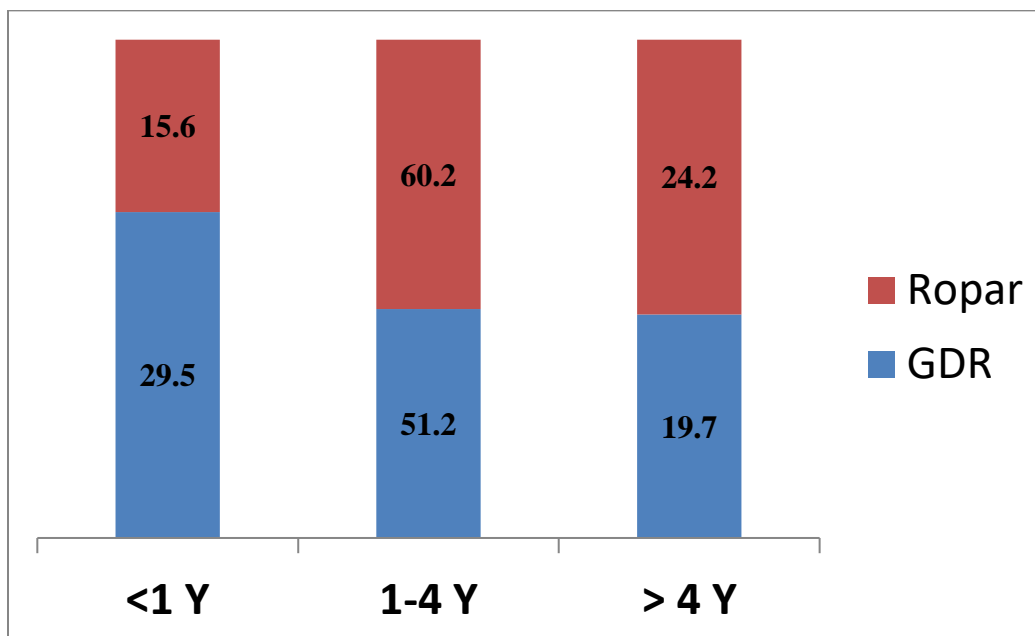


Figure 4: Age groups of dog breeds reared in Gurdaspur and Ropar district

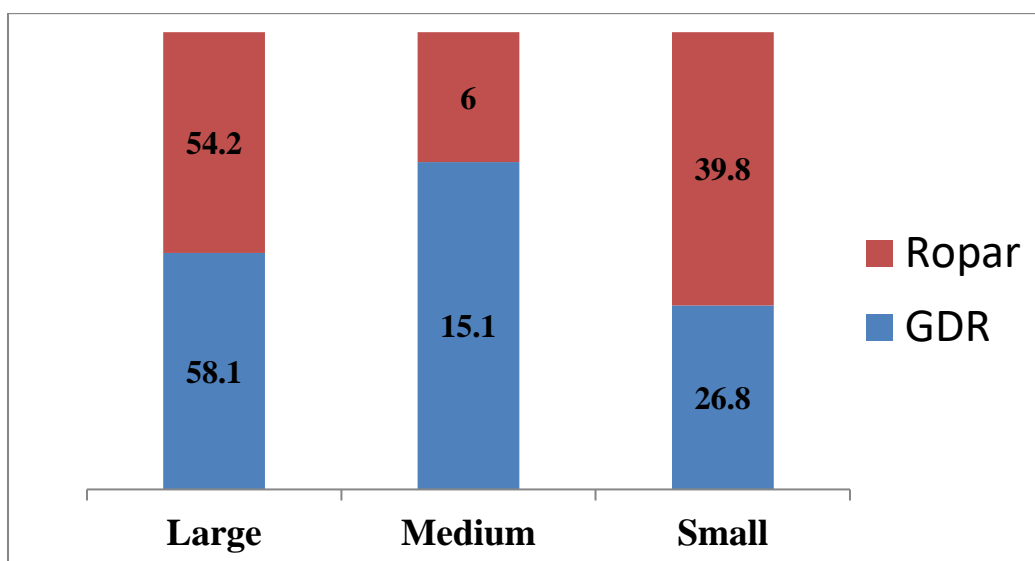


Figure 5: Type of dog breeds reared in Gurdaspur and Ropar district

The inclusion of different food ingredients in the diet of dogs in in Gurdaspur and Ropar districts are presented in Figure 6 and 7. Milk and milk products are the most favorable foods of dog owners as almost all the dog owners in Gurdaspur and Ropar districts included these in the diet of their pets. It might be due to the easy availability or some knowledge of nutrient requirements of their dogs. The staple cereal used for feeding to dogs is same as consumed by the local population. 95.4% of dog in Gurdaspur and 98.8 % of dogs reared in Ropar were feed chapatti. 10.5% dogs in Gurdaspur and 20.5% dogs reared in Ropar were offered curd. The dal was offered to app. 10 % of dogs in both the districts. The meat was included in the

diet of approximately 25% dogs reared in Gurdaspur and Ropar district. The dog owners included more vegetative ingredients in the diet of their dogs that might be due to their vegetarian habit.

Analysis of data regarding the different mangemental practices followed by the dog owners in in Gurdaspur and Ropar districts (Figure 7) revealed that 98.8% of dog owners in Gurdaspur and 93.9 % dog owners in Ropar are regularly following the vaccination schedule. 96.5% of dog owners in Gurdaspur and 93.9 % dog owners in Ropar are going for the deworming treatment of their pets. 39.5% of dog owners in Gurdaspur and 18.1% dog owners in Ropar are regularly taking their dogs for exercise.

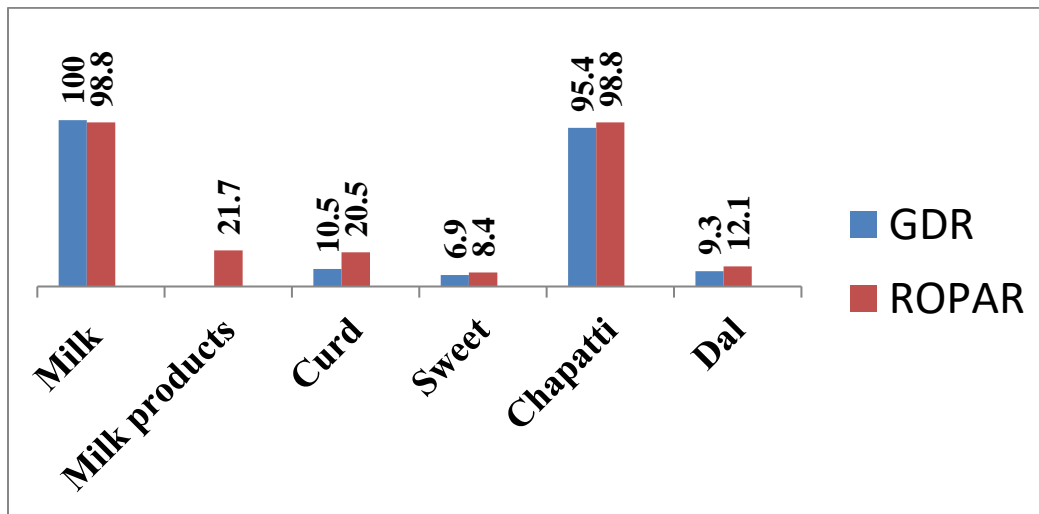


Figure 6: Food ingredients in diet of dogs in Gurdaspur and Ropar district

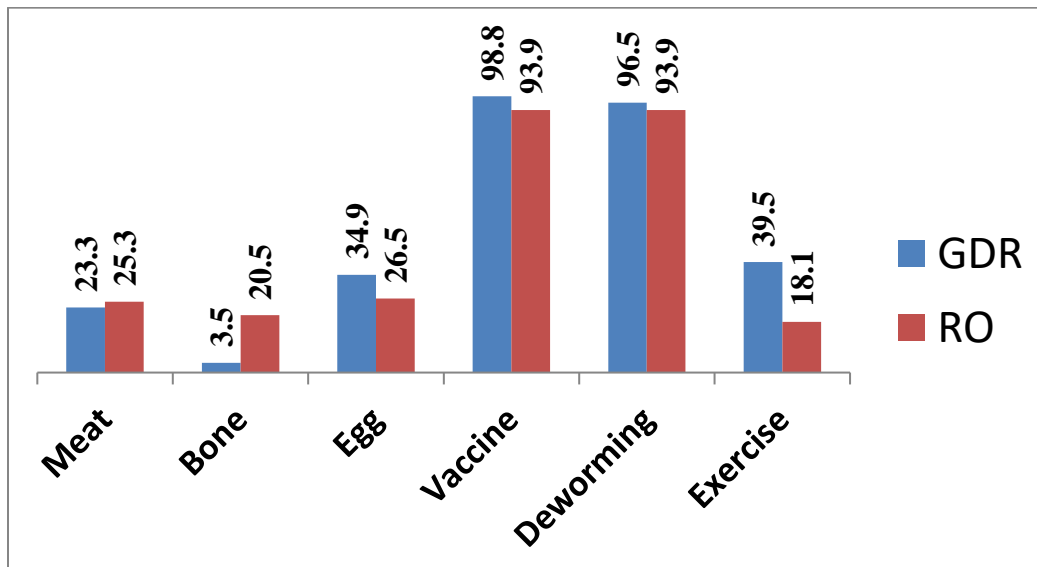


Figure 7: Food ingredients in diet of dogs and mangemental practices followed by dog owners in Gurdaspur and Ropar district

Health status of dogs reflected by the body condition scores of dogs in Gurdaspur and Ropar districts is presented in Figure 8. 98.8% of dogs in Gurdaspur and 92.8 % dogs in Ropar are having good body condition score. Rest of the dogs in both the districts were observed to have poor body condition score. The good body condition score for almost 95% dogs is also reflected by the practice of regular deworming and vaccination. Similarly, vaccination of dogs was found to be routine practice in the Nagpur city by Sawaimul *et al.* (2009).

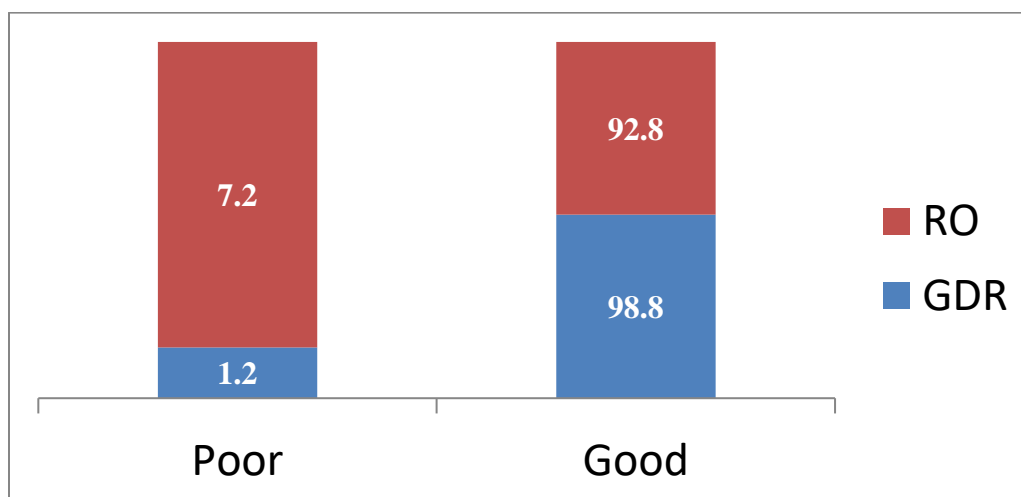


Figure 8: Body condition scores of dogs in Gurdaspur and Ropar districts

Chemical Analysis of Feed

The dog food samples obtained from Gurdaspur and Ropar districts were analyzed for various proximate parameters. 20 food samples were collected from urban and rural areas of both districts. Food samples were analysed for protein, fat, fibre, calcium and phosphorus (Figure 9 and 10). During analysis of food samples of Gurdaspur district it was found that all the food samples were having protein content in the range of 18-22%, whereas in Ropar district, 2 samples were having protein content less than 18% and 10 samples was having more than 22% protein (fig 10). Fat analysis of food samples revealed that, all the food samples collected from Gurdaspur district were having more than 5% fat, whereas in Ropar district, 50 % of the food samples were having more than 5% fat and 50 % of the food samples were having less than 5% fat.

Fibre analysis revealed that 3 food samples from Gurdaspur district were having fiber less than 3.5% and 3 food samples were having more than 3.5-6% fibre, whereas in Ropar district 7 food samples were having fiber less than 3.5% and 5 food samples were having fibre content in the range of 3.5-6%. As far as calcium and phosphorus is concerned, 100% of food samples of Gurdaspur district were having more than 0.5% calcium. 8 samples of Ropar district were having less than 0.5% calcium and 4 samples were less than 0.5% calcium. 5 samples from Gurdaspur district were having less than 0.3% phosphorus and one

sample was having phosphorus more than 0.3% phosphorus. 5 samples from Ropar district were having less than 0.3% phosphorus and one sample was having phosphorus more than 0.3% phosphorus.

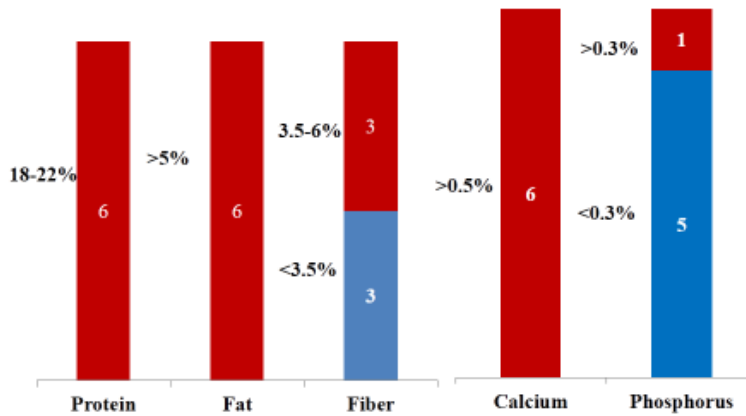


Figure 9: Proximate composition of dog foods in Gurdaspur district (N=6)

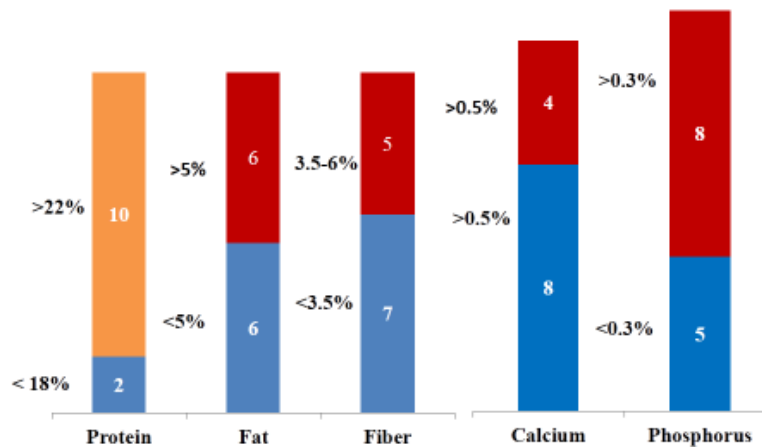


Figure 10: Proximate composition of dog foods in Ropar district (N=12)

Conclusion

The dog owners in both Gurdaspur and Ropar district are more relying on the vegetarian food ingredients for feeding their dogs so the proportion of non-vegetarian ingredients such as meat, bone, eggs and meat byproducts should be increased in diet as these may supply high quality proteins and all other essential nutrients to the pets. The dog owners are feeding their pets what they are eating. The dog owners in Gurdaspur and Ropar district are giving more homemade food to their pets and no scientific feeding schedule was followed so there is an urgent need to educate the pet owners about the formulation of balanced diets for their dogs.

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