SOCIO-ECONOMIC FACTORS RELATED TO REARING FEMALE DOGS IN INDIA: RELATION TO THE DEVELOPMENT OF CEH-PYOMETRA

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ABSTRACT

Pyometra is one of the major reproductive problems in intact bitches at middle to advance age. Present study describes the impact of breed, age, management and breeding practices of dog in the prevalence of CEH-pyometra in the bitch. A questionnaire based questionnaire based interview was conducted on 93 pet owners who have visited the Gynaecology unit of Referral Veterinary Polyclinic, Indian Veterinary Research Institute, Izatnagar. The point prevalence of pyometra was 34.4%. About 76.3% responders mentioned the purpose of keeping pets as a part of hobby or special interest to the dog, however, only 11.8% owners were keeping dog for safety at their home. Labrador was the most preferred breed among the responder (34.4%), followed by Pomeranian (11.8%). Most of the owners (81.7%) maintained single dog and about 50.5% owners did not breed the female, whereas 24.7% maintained the female without breeding after a single whelping. The awareness about use of hormones in controlling estrus and termination of pregnancy was negligible, only 3.2% owners have used hormones as contraceptive. Most of them preferred to consult veterinarian at Government hospitals than private veterinary dispensary. Although, majority of responders used disinfectant for cleaning the area used by their pet, around 15% responders did not use any disinfectant. Thus, more preference towards single or no whelping until middle to advance age and lack of awareness on regular breeding and proper use of antiseptic and disinfectant for cleaning of pet cages or houses could be the major risk factors for development of CEH-pyometra in the bitch.

Key words: Socio-economic, Dog, Management, Breeding, Pyometra

INTRODUCTION

Nowadays, dogs have become an integral part of family (Vijayakumar et al., 2006) and often considered as a status symbol of the dog owners (Sawaimul et al., 2009a). Presently, India's dog population is 11.672 million, out of which 9.494 million and 2.177 million are present in rural and urban areas, respectively (Basic Animal Husbandry Statistics, 2012). The socio-cultural sensitization towards pets is changing; more pet owners have come to humanize their pets, and do not mind spending on what they perceive as being necessary or beneficial for their pets (Singh *et al.,* 2020). With increasing awareness about the health and well being of the dog, pet healthcare industry is also growing. The pet owners prefer female over male for ease of management and compatibility. Apart from registered kennel club, majority of owners in urban and peri-urban areas rear pet without spaying or ever breeding (Patra *et al.,* 2019).

Uterine and ovarian diseases are the common cause of infertility in middle to aged nulliparous bitches. Among uterine pathologies, pyometra is the most prevalent and late diagnosed condition (Singh *et al.,* 2020) characterized by persistent endometrial inflammation and bacterial colonization, consequent with accumulation of endotoxin and establishment of life threatening complications as systemic inflammatory response syndrome (Smith, 2006). Understanding the predisposing factors in development of CEH-pyometra in bitches is critical for developing suitable package of practices for breedable dogs and for awareness to the pet owners for addressing this life threatening problem at the early stage of development. In this context, present study was designed to assess the impact of socio-economic profile of the dog-owners *vis-à-vis* the prevailing management practices as a possible risk factor in the development of CEH-pyometra in dog in the *Rohilkhand* region of Bareilly district, Uttar Pradesh, India.

MATERIALS AND METHODS

Adopting *ex-post facto* research design, the present study was conducted on ninety–-three dog owners of Bareilly and adjoining districts of *Rohilkhand* region. The questionnaire based interview schedule was developed in consultation with the suggestions of expert in social science to assess the socio-economic profile of the pet owners, breed preference, experience in pet keeping and the prevailing management and breeding practices as possible risk factors in development of pyometra. All the owners were selected from the registered cases at Veterinary Gynaecology and Obstetrics unit of Referral Veterinary Polyclinic, IVRI. The data were analyzed for 'z' test in online Vassarstat for significance difference in

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between proportion of different attributes and finally, the rankings were given based on it.

RESULTS AND DISCUSSION

The fastest growing economy and change in socio-cultural values of majority of nuclear families in peri-urban region in India favors adoption of dogs as companion animal. The socioeconomic profile of pet owners, preference to breeds, age and factors associated in management and breeding practices are enlisted in Table 1. In our study, most of the responders (96.8%) were from the peri-urban region of Bareilly and neighboring districts. Studies on socio-economic profile of the dog owners in the other part of India also showed similar trend in maintaining dog in a family in the urban areas as compared to rural population (Vijay Kumar *et al.,* 2004a). The education background of the responders revealed that 64.5% were graduates and about 49.5% were employed in government or private sector, and 21.5% were engaged in business. In a multistage random sampling survey conducted on 60 dogs owners in the corporation of Chennai, Tamil Nadu it was suggested that the 46.6% of graduates are more interested in dog rearing followed by post graduates, professionals, persons with secondary or primary level of education (Balan *et al.,* 2015). The socio-economic status of the dog owners showed that the person with a good educational status had higher preferences for pet dogs, which could be attributed to their interest and knowledge gained on pet dog management through comprehension. In a similar study at Amravati region, Andhra Pradesh also revealed that the government servants were more interested in dog keeping followed by the businessmen and other (Sawaimul *et al.,* 2009a). The primary purpose of pet keeping was seen as a part of hobby or special interest to the dog (76%), whereas only 16.1% owners have mentioned that the primary purpose of keeping dog is for safety purpose. This change in socio-cultural values towards companion animal's ownership resulted in higher expectations and demands for greater and timely information for management of these companion animals (Basarajappa, 2013).

The level of experience in dog rearing practices indicated that about 62.4% responders had more than five years experience and mostly preferred to breed their pet (65.2%). Labrador was the most preferred breed among the responders (34.4%), followed by Pomeranian (11.8%); although, 15.1% owners were still maintaining a non-descript bitch. In several study conducted in Indian Metro cities, it was observed that the majority of dog owners prefers to own a medium to large breed of dog, such as German shepherd, Labrador, Doberman, Boxer, Golden Retriever and Great Dane (Vijay Kumar *et al.,* 2004b; Hedge *et al.,* 2009; Sawaimul *et al.,* 2009b; Shibu and George, 2012).

In our study, the survey was done exclusively with the owners presented a female dog for routine visit or for any examination. There is a distinct preference towards a single dog (81.7%), followed by two dogs (10.8%), and three or more in 7.6% cases per owners. Although, it was reported previously that the pet owners usually prefer young male in respect to the age, sex, pedigree and registration of dogs for ease in training and management (Sawaimul *et al.,* 2009b). In present study out of 93 owners interviewed, 35.48% have reported pyometra in their bitches. The incidence of pyometra goes up to 20% in different breeds of the bitches at a median age of 10 years (Jitpean *et al.,* 2012). Based on the registered clinical cases at referral veterinary polyclinic, we previously reported that the point prevalence of canine pyometra was 28% with the highest incidence in the Labrador (28.89%), followed by Spitz (22.22%), non-descript (20.00%) and German Shepherd (8.89%) (Singh, 2017).

Breed and genetic factors strongly predispose to the development of pyometra (Jitpean et al., 2014). The selectiveness in choosing the sex of dog and their management practices depends upon the knowledge level for the importance of selection and genetic diversity in dog rearing and interest of dog lovers (Vijay Kumar *et al.,* 2004b and Cole *et al.,* 2004). In our study, there was a clear indication towards the preference for a single dog which is being maintained without breeding (50.5%) or maximum of single whelping (24.7%). Repeated exposure of the uterus to sustained and high progesterone concentration in consecutive estrous cycle drives the development of endometritis pyometra complex in the intact bitches at middle to advance age (Kida *et al.,* 2006).

Innovation in veterinary care and a better understanding of canine reproductive management helps in contributing to welfare and a longer life expectancy for dogs (Vijaya Kumar *et al.,* 2004b). We have observed about 34.4% owners followed cage or separate house for their dog whereas, rest of the owners did not provide any separate accommodation for their pet, rather preferred to keep their pet along with them. In a similar study, it was observed that around 51% of the breeder housed the dog at their homes and provides the vegetable and non-vegetable mixed diet for 2 to 3 times a day (Hedge *et al.,* 2009). However, the level of awareness for use of hormones in controlling estrus and termination of pregnancy was negligible, only 3.2% respondents have ever used hormones as contraceptive. In contrast, the reports from western countries suggest that prolong use of hormones as contraceptives or even at therapeutic doses predispose the female developing CEH-pyometra (Hagman, 2018).

In a retrospective study on breeding management practices of pet dogs and the constraints faced by pet owners in Bengaluru district of Karnataka revealed that majority 54.16% of the owners neutered their dogs whereas 45.84 per cent kept their dogs intact for breeding (Srinivas *et al.,* 2017). Among the respondents who possessed female breeding dogs had complete awareness on heat symptoms and majority (73.85%) of the owners preferred to have a visit to vet clinics for pregnancy diagnosis (Srinivas *et al.,* 2017). Our observation is in accordance with the reports that majority of the owners are not aware about possible reproductive tract diseases in the intact females if not bred at regular interval (Weng *et al*., 2006; Basarajappa, 2013; Bhadesiya and Raval, 2014; Vijayakumar *et al.,* 2006). This finding strongly suggests that the relation between breeding and pyometra need to be disseminated among the bitch owners for spaying the dog at a younger age.

The expenditure on pet food and supplements revealed that nearly half of the owners spend at least rupees 1000 to 3000 whereas, 30.1% responders even spend rupees 3000 to 5000 on monthly basis. Only 8.6% responders however, did not spend any additional amount for food, mostly managed with the kitchen waste. Majority of responders used disinfectant for cleaning the rooms and accessories used by their pet, however, around 15% responders did not use disinfectant for cleaning and one third owners even not spend any money for soap, shampoo, toys etc. Thus, limited expenditure on food, recreation and sanitation often contribute to poor health and hygiene of the bitch in long term. Managing bitches in unhygienic condition during estrus favors to develop the uterine infection that often appeared as life threatening pyometra if persisted for a long term.

Conclusion

From this study, it is concluded that there is more preference towards single dog, without breeding or maximum a single whelping that increases the risk of development of pyometra at later stages of life. Creating awareness on the merits of spaying is a strategy to minimize the risk of pyometra.

Table 1. Socio-economic and other factors related to rearing female dogs

S. No	Attributes	Category	Proportion (%)	P value
1.	Social background of responders	Urban	96.8[a]	0.002
		Rural	3.2[b]	
2.	Academic background	Graduate and above	64.5[a]	0.002
		Intermediate	19.4[b]	
		High School or below	16.1[b]	
3.	Occupation	Govt. or private job	49.5[a]	0.002
		Business	21.5[b]	
		Agriculture and others	29.0[b]	
4.	Purpose of pet keeping	Hobby or special interest to pet	76.3[a]	0.0001
		Safety at home	11.8[b]	
		Others	11.8[b]	
5.	Experience in pet keeping (years)	< 2	8.6[a]	0.002
		>2 to 5	29.0[b]	
		>5	62.37[c]	
6.	No. of pet maintained by each owner	Single	81.7[a]	0.002
		Two	10.8[b]	
		Three to five or more	7.6[b]	
7.	Breed preference	Labrador	34.4[a]	0.01
		Pomeranian	11.8[b]	
		Pug	8.6[b]	
		German Shepherd	8.6[b]	
		Non-descript	15.1[bc]	
		Others	21.5[ac]	
8.	Breeding preference	No whelping	50.5[a]	0.003
		Single whelping	24.7[b]	
		Two whelping	7.5[c]	
		Three to five or more	17.2[b]	

9.	Average age of female at presentation (Years)	1 to 3	44.1[a]	0.033
		3 to 5	20.4[b]	
		5 to 10	29.0[b]	
		> 10	6.5[c]	
10.	Use of separate house or cage for pets	Separate house	34.4[a]	<0.002
		Same accommodation with owners	65.6[b]	
11.	Use of disinfectant for regular cleaning of pet cage/house	Yes	85.0	<0.001
		No	15.0	
12.	Use of hormones / contraceptives for pregnancy termination and estrus induction/suppression	Have knowledge	3.2[a]	<0.001
		No knowledge	96.8[b]	
13	Past history of reproductive problem in bitch	Yes	19.4[a]	<0.002
		No	71.0[b]	
		Not responded	9.7[a]	
14	Source for availing treatment facilities	Govt. Hospital	75.0[a]	0.002
		Local vet. Dispensary	25.0[b]	
15.	Expenditure on pet foods and medicines (Rs.)	< 1000	6.5[a]	<0.05
		1000 to 3000	48.4[b]	
		> 3000 or above	30.1[c]	
		Nil	15.1[d]	
16.	Additional expenditure on pet well being (Rs./month)	100-500	37.6[a]	<0.05
		500-1000	23.8[b]	
		>1000	6.5[c]	

The values with different superscript in each attribute indicate significant difference.

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