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Occupational hazards among veterinarians of Kerala with special reference to physical hazards[#]

D. Premkumar[1*], Binsy Mathew[2], C. Latha[3], K. Vrinda Menon[4] and Reeja George[5]
Department of Veterinary Public Health
College of Veterinary and Animal Sciences, Mannuthy, Thrissur- 680 651
Kerala Veterinary and Animal Sciences University
Kerala, India

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Abstract

Veterinarians by virtue of their profession are exposed to several occupational health hazards. The common hazards faced by veterinarians during practice can be categorised as physical, chemical, biological, psychological and ergonomic. Albeit the hazards require much attention in safeguarding the health of veterinarians, there has been a dearth in comprehensive studies regarding this issue in Kerala. Hence, the study was envisaged to identify the physical hazards among veterinarians working in Kerala and to assess practices regarding physical hazards. A well-structured questionnaire was designed based on three group discussions with veterinarians and the relevancy of the survey questions were then assessed by experts. The questionnaire was circulated among the veterinarians working in the Animal Husbandry department using google form. A total of 399 veterinarians from across Kerala responded to the questionnaire used for the study. The results from the study revealed that majority of the veterinarians were exposed to the physical hazards while handling the animals for treatment (83.70 per cent), kicking by animals (82.20 per cent), back pain resulted during large animal treatment procedures(80.95 per cent) and injuries to lower extremities (72.93 per cent) and the most common procedure that resulted in physical exhaustion was dystocia (94. 73 per cent). The study revealed that appropriate handling technique was chosen by majority of the respondents (90.22 per cent) as measure to prevent physical hazards at workplace. As it is practically impossible to prevent exposure to physical hazards, continued education and training to a great extent can help minimise the physical hazard exposure among veterinarians.

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1. *MVSc. Scholar*
2. *Assistant Professor*
3. *Director (Academics and Research), Kerala Veterinary and Animal Sciences University, Pookode, Wayanad*
4. *Associate Professor*
5. *Professor, Department of Veterinary and Animal Husbandry Extension, CVAS, Mannuthy*

**Corresponding author: drdpremkumar402@gmail.com, Ph. 8328439337*

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Veterinarians by virtue of their profession are exposed to common hazards which can be categorised as physical, chemical, biological, psychological and ergonomic (Prassanna and Mohan, 2019; Parmar *et al*. 2021). The demand of the profession exposes veterinarians to various risks that include traumatic injuries while handling and restraining animals, injury by horns, injuries to upper and lower extremities and accidents during visit to attend cases (Khillare and Bhave, 2018). The procedures done by veterinarians often induce discomfort to animals, which might result in aggressive behaviour. Receiving kicks, bites, scratches, needle stick injuries, sustaining falls, crushing and stamping on foot is part of everyday job (Khillare and Bhave, 2018; Prassanna and Mohan, 2019). Veterinarians often have to handle, restrain and manipulate body parts of large animals, subjecting themselves to severe physical strain.

Though a few studies on occupational hazards among veterinary professionals in the country have been carried out, no comprehensive studies have been reported from Kerala. Hence the present study was initiated with the objectives *viz.,* identification of major source of physical hazards among veterinarians and to assess practices of veterinarians regarding physical hazards.

Materials and methods

The present study was conducted to assess the physical hazards among veterinarians working in animal husbandry department from all the 14 districts of Kerala which were the target population for the study. Kerala is one of the southern states of India. It has a total land area of 38,863 km^2 (1.18 per cent area of India) and is wedged between the Arabian Sea to the west and the Western Ghats to the east. Kerala's coastline runs for 580 km in length, while the width of the state at various points is between 35 km and 120 km. Geographically, Kerala can be divides into three climatically distinct regions. These include, the western lowlands (coastal plains), the central midlands (rolling hills) and eastern highlands (rugged and cool mountainous terrain).

The state of Kerala is divided into 14 revenue districts which are further divided into 78 taluks. The state also has 941 gram panchayats, 152 block panchayats, 14 district panchayats, 87 municipalities and six corporations, *i.e.,* 1200 local self-government institutions (https: // web.cdit.org / animal husbandry / wp-content / uploads / 2020 / 02 / rti_2015to19).

The Animal Husbandry Department of Kerala has 856 Veterinary Dispensaries (VD), 213 Veterinary Hospitals (VH), 47 Veterinary Polyclinics (VPC), 14 District Veterinary Centers (DVC) and 9 Mobile Veterinary Hospitals (MVH) with a total of 1,139 veterinary institutions for the treatment of livestock and poultry (https:// web.cdit.org/animalhusbandry/wp-content/ uploads/2020/02/rti_2015to19).

A mixed method of research design was adopted for the study (Prassanna and Mohan, 2019). It included qualitative method followed by quantitative method. In consistence with the objectives set forth for the study, the data were collected from each district of Kerala by using google form questionnaire.

The sample size for the survey was 399 which included veterinarians working in Animal Husbandry Department of Kerala. All the fourteen district of Kerala was the sampling area. The data collected from the respondents were tabulated and analyzed using suitable SPSS 24.0 software programme.

Results and discussion

The data that was collected from the veterinarians working in the animal husbandry department are elaborately discussed and compared with reported findings of other research works.

Demographic data

For demographic data collection, all the questions were asked as closed ended questions on parameters such as age of the respondents, gender, work experience in Animal Husbandry Department, distance of travel between residence and veterinary hospital,

district of the work place, mode of transport, type of practice, topography of working area, number of outpatient cases handled per day and number of house visits per day.

To assess the age of respondents in the survey, age groups were categorised in to three groups *viz.,* up to 35 years, 36 to 50 years and above 50 years. Majority of the respondents belonged to 36 to 50 years age group (44.36 per cent). The findings of the study are in line with the results of Smith *et al.* (2009) who conducted a survey on the musculoskeletal disorder (MSD) among veterinarians in Queensland, Australia, and reported that, majority of the respondents were aged between 31 and 50 years (53 per cent). The findings of the present study are contradictory with the results of Rosnah *et al.* (2020), who conducted survey on occupational injuries among small animal veterinarians in Klang valley, Malaysia and reported that, majority of the respondents belonged to age group between 20 to 29 years of age (48.9 per cent).

To assess the gender of respondents in the survey, variables were categorised in to three groups viz., male, female and others. Majority of the respondents were male veterinarians (50.63 per cent) which dominated the female (49.37 per cent) by a narrow percentage. The findings of the study are in line with the results of Fritschi *et al.* (2006), who conducted a survey among Australian veterinarians (large animal practitioners) between 1960 to 2000, and found that, 1,545 male (56.84 per cent) and 1,173 female veterinarians (43.15 per cent) participated in their survey. In a study by Epp and Waldner (2012) on occupational hazards among veterinarians in western Canada, reported that, 368 male (89.10 per cent) and 45 female veterinarians (10.90 per cent) responded to their survey. Similarly, a study by Mishra and Palkhade (2020) on occupation-related biological health hazards and infection control practices among veterinarians who worked with large animal practice in Gujarat and Maharashtra, found that, majority of the respondents were male 90.4 per cent than female (9.6 per cent). However, Rosnah *et al.* (2020) in a survey on occupational injuries and zoonotic disease among small animal veterinarians in Klang valley, Malaysia reported that, majority of the respondents were female (64.7 per cent).

To assess the work experience of respondents, data was categorised in to three groups *viz.,* below 11 years, 11-22 years and more than 22 years. According to the study findings, majority of the respondents had an experience of below 11 years (42.61 per cent). These findings are in line with the results of Bharwana *et al.* (2012) who conducted a survey on risks of zoonoses in veterinarians working in laboratory practice in Pakistan and stated that, majority of the respondents had experience of 1 to 5 years (30 per cent).

Physical hazards

To identify the major sources of physical hazards among veterinarians working in Animal Husbandry Department, Kerala, four questions were asked as closed ended checker box option and six were in Likert scale format. Physical hazards of veterinarians working under Animal Husbandry Department, Kerala was analysed and majority of the respondents (83.70 per cent) had exposure to physical hazards while handling the animals for treatment (perceived situations), kicking by animals (82.20 per cent), back pain during large animal treatment procedures (80.95 per cent), injuries to lower extremities (72.93 per cent) and the most common procedure that resulted in physical exhaustion was dystocia (94. 73 per cent). These findings are in line with results of Smith *et al*. (2009) who conducted a survey among veterinarians in Queensland, Australia, and reported that, handling dystocia cases resulted in back problems during large animal treatment procedures (62.6 per cent). Prassanna and Mohan (2019) conducted a survey among veterinarians working in farm sector in Karnataka and stated that, stamping on foot by animals as the major physical hazard (100 per cent) followed by kicking by animals (96.66 per cent). Parmar *et al*. (2021) conducted a survey on physical hazards among Indian field veterinarians from Uttarakhand, Uttar Pradesh and Punjab found that, kicking by animals was the most common physical hazard (62.8 per cent). Kabuusu *et al.* (2010) conducted a survey on animal-related injury among veterinarians in metropolitan

Kampala and reported that vaccination of animals was the major factor contributing to injury (25 per cent). The present study findings are contradictory with the results Mishra and Palkhade (2020) who conducted a survey on physical hazards among veterinarians (large animals practice) in Gujarat and Maharashtra state, India and found that, needle stick injuries was the most common physical hazard (80.9 per cent). Rosnah *et al.* (2020) conducted survey on occupational injuries among small animal veterinarians in Klang valley, Malaysia and reported that, injury by recapping needles (85.0 per cent) and needle stick injuries (78.0 per cent) were the major physical hazards.

As trevices are not available for treatment at the clients premises, large animal treatment always leads to risk of kicking as the animal is not properly restrained. So also, awkward position during insemination, pregnancy diagnosis, wound treatment, teat medication makes the veterinarians prone to back injury. Dystocia is a strenuous procedure which requires immense stamina. Hence at the end of the procedure, the veterinarians are likely to be exhausted.

Distribution of respondents based on different situations exposure to physical hazards shows below (Table 1 to 5).

As there was provision to include responses other than the once mentioned in the questionnaire some respondents also mentioned the following physical hazards *viz.,* burn injuries while handling hot water, gastric problems due to untimely food and stress and that the pregnant ladies were at high risk of physical hazards.

Practices of veterinarians regarding prevention of physical hazards

The measures to prevent physical hazard was included in the questionnaire as closed ended questions. Among the option to prevent physical hazards *viz.,* use of appropriate equipments, use of personal protective equipments, use of ear protective devices and appropriate handling techniques; appropriate handling techniques was chosen by majority of the respondents (90.22 per cent) followed by use of appropriate equipments (75.18 per cent), use of personal protective equipments (70.42 per cent) and use of ear protective devices as measure to prevent physical hazards at workplace.

Statistical analysis

In order to assess correlation between physical hazards and practices of veterinarians regarding physical hazards, Spearman's coefficient correlation was calculated. Based on the present study data, Correlation coefficient between practices of veterinarians regarding physical hazards and exposure to physical hazards were negative but not significant.

The association between physical hazards and demographic data (gender) was calculated using chi-square test (Table 6). It was evident that there was a significant association ($p < 0.01$) between gender and exposure to physical hazards. Males were highly exposed than females. This could be due to the fact that male veterinarians are more likely to handle more number of animals for treatment, per rectal examination, travelling to the site of a case, performing dystocia and caesarean section procedure.

Table 1. Distribution of respondents based on exposure to physical injuries

Sl. No.	Category	Frequency (f)	Per cent (%)
1	Injury by horns	121	30.32
2	Slipping during work	231	57.89
3	Injury caused by instruments	119	29.82
4	Needle sticks	254	63.66
5	Crushing by animals	174	43.60
6	X- rays	11	2.76
7	Bite/scratches caused by animals	243	60.90
8	Kicking by animals	328	82.20
9	None	9	2.26

Table 2. Distribution of respondents based on body part affected by physical hazards

Sl. No.	Category	Frequency (f)	Per cent (%)
1	Injuries to lower extremities	291	72.93
2	Injuries to upper extremities	89	22.31
3	Back pain	323	80.95
4	Intervertebral Disc Prolapse	119	29.82
5	None	13	3.26

Table 3. Distribution of respondents based on perceived situations of exposure to physical hazards

Sl. No.	Category	Frequency (f)	Per cent (%)
1	While handling the animals for treatment	334	83.70
2	While restraining animals	177	44.36
3	During physical examination	240	60.15
4	Travelling to the site of a case	120	30.07
5	None	8	2.00

Table 4. Ranking of respondents based on exposure to the physical hazards

Sl. No.	Category	Mean score	Rank
1	Long working hours	3.8696	1
2	Physically demanding work, including lifting	3.8521	2
3	Shift and night work	2.6566	5
4	Accidents during visit to attend cases	2.7994	4
5	Travelling through difficult terrains	3.4285	3

Table 5. Distribution of respondents based on perceived situations of physical exhaustion

Sl. No.	Category	Frequency (f)	Per cent (%)
1	**Dystocia**	**378**	***94.73***
2	Caesarean section	213	53.38
3	Prolonged surgery	147	36.84
4	Downer cow syndrome	160	40.10
5	Prolapse cases	356	89.22
6	None	3	0.75

Table 6. Association between physical hazards and gender

Gender	Physical hazards						Total	χ^2- value	P -value
	L		M		H				
	OV	%	OV	%	OV	%			
Female	26	63.4	121	55.8	50	35.5	197	0.000	0.000
Male	15	36.6	96	44.2	91	64.5	202		
Total	41	100	217	100	141	100	399		

(p< 0.01 level); L = Low, M= Medium, H= high, OV = Observed value

There was no significant association (p < 0.01) between demographic data *viz.,* age, work experience in animal husbandry department, distance of travel between residence and veterinary hospital, district of workplace, mode of transport, type of practice, topography of working area, number of outpatient (OP) cases per day, number of house visits per day and exposure to physical hazards.

Conclusion

As trevices are not available for treatment at the clients' premises, large animal treatment always leads to risk of kicking as

the animal is not properly restrained. Also, awkward situations during insemination, pregnancy diagnosis, wound treatment, teat medication makes the veterinarians prone to back injury. Dystocia is a strenuous procedure which requires immense stamina. Hence at the end of the procedure, the veterinarians are likely to be exhausted. In order to minimise the physical hazards faced by veterinarians, ergonomic devices must be made use of wherever possible and the animals must be properly restrained to prevent injury during treatment. The government must also provide funds to upgrade the restraining facilities in veterinary hospitals, so that the veterinarian can work comfortably. Regular awareness training programmes is needed in future on practices of veterinarians regarding prevention of physical hazards.

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Conflict of interest

The authors declare no conflict of interest

References

Animal Husbandry Department, Government of Kerala. Information under right to information Act 2005. Available online: https://web. cdit.org/animal husbandry /wp-content/uploads/2020/02/rti2015 to19.pdf (accessed on 11 June, 2022).

Bharwana, S.A., Ali, S., Abbas, F. and Baloch, I.H. 2012. Risks of zoonoses in veterinarians and infection control practices. *Greener J. Biol. Sci*. **2**: 7-12.

Epp, T. and Waldner, C. 2012. Occupational health hazards in veterinary medicine: physical, psychological, and chemical hazards. *Can. Vet. J.* **53**: 151-152.

Fritschi, L., Day, L., Shirangi, A., Robertson, I., Lucas, M. and Vizard, A. 2006.Injury in Australian veterinarians. *Occu. Med.* **56**: 199-203.

Kabuusu, R.M., Keku, E.O., Kiyini, R. and McCann, T.J. 2010. Prevalence and patterns of self-reported animal-related injury among veterinarians in metropolitan Kampala. *J. Vet. Sci.* **11**: 363-365.

Khillare, R.S. and Bhave, S.S. 2018. Occupational hazards associated with veterinarians and their control measures. *J. Foodborne Zoonot. Dis*. **6**: 13-17.

Mishra, S. and Palkhade, R. 2020. Risk factors and prevalence of work-related injuries and accidents among veterinarians in India. *Vet. Wld*. **13**: 2555-2564.

Palkhade, R., Mishra, S. and Barbuddhe, S. 2022.Research Article Occupation-Related Health Hazards and Infection Control Practices among Indian Veterinarians. *Vet. Med. Int.* **22**: 9-10.

Parmar, T., Upadhyay, A.K. and Rautela, R. 2021. Epidemiological Studies on Physical, Chemical, Zoonotic and Psychological Hazards among Veterinarians. *J. Anim. Res.* **11**: 131-136.

Prassanna, S.B. and Mohan, H.V. 2019. Occupational health hazards among veterinarians working in farm sector in Karnataka. *Pharma. Innov. J.* **8**: 345-348.

Rosnah, I., Hanizah, M.Y., AS, R.A. and Norziela, A. 2020. occupational injuries and zoonotic disease among small animal veterinarians in klang valley, Malaysia. *Int. J. Public Hlth. Clin. Sci.* **6**: 78-88.

Smith, D.R., Leggat, P.A. and Speare, R., 2009. Musculoskeletal disorders and psychosocial risk factors among veterinarians in Queensland, Australia. *Aust. Vet. J.* **87**: 260-265.

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