Print ISSN : 0972-8813
e-ISSN : 2582-2780

[Vol. 19(2), May-August, 2021]

Pantnagar Journal of Research

(Formerly International Journal of Basic and Applied Agricultural Research ISSN : 2349-8765)

G.B. Pant University of Agriculture & Technology, Pantnagar

PANTNAGAR JOURNAL OF RESEARCH

Vol. 19(2) May-August, 2021

CONTENTS

Occupational hazards among veterinarians

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ABSTRACT: Veterinary professionals are always exposed to occupational risks like traumatic injuries, zoonotic diseases and mental health hazards. Physical injuries reported were bite (31.8%), scratch (65.1%), kick (62.8%), horn wound (14%), needle prick (89.2%), fracture (3.8%) and injuries due to falling/ lifting animals/ moving heavy equipment (61.3%). Majority of veterinarians experienced some form of allergy. Incidence of skin irritation was highest among 50.2% veterinarians. Ringworm (13.5%) and fungal infection (26.5%) were most common zoonotic infection. Low level stress was reported in 45% of participants, 34% had moderate and 21% felt high level of psychological stress. The proportion of participants using protective equipment includes 60% gloves, 1.1% goggles, and 39.8% apron. The study showed that 171(43.6%), 122 (31.1%), 67 (17.1%), 32 (8.2%) veterinarians followed deworming at 6 month, 1 year, 2 year and more than 2 year intervals respectively. The awareness levels concerning occupational hazards among the veterinary health professionals was near optimal but the need was felt to implement efforts aimed at addressing deterrence of occupational hazards.

Key words: Epidemiology, hazard, veterinarian, zoonotic

A veterinarian is a person who interacts with a range of animals and thus in process carries the greatest risk of occupational hazards (Epp and Waldner, 2012). This veterinary profession exposes veterinarians to various risks like traumatic injuries, zoonotic diseases transmitted by animals or by their parasites (Roberts, 1995),various hazardous chemicals and drugs, allergies caused by animal handling or by animal products, and mental stress (Hill *et al.,* 1998). Physical and mental illnesses or stress also serve as the potential risks to humans (Hill *et al.,* 1998; Fritcshi *et al.,* 2008). The hazards at animal welfare hospitals may outnumber those at human health workplace (Nienhaus *et al*., 2005). Chemical hazards are resulting mainly due to use of antibiotics, pesticides, X-rays, prostaglandins, formaldehyde, chemotherapeutic agents and gaseous anesthetics (Jeyaretnam and Jones, 2000). The hazardous effect of chemicals such as chromium salts, nickel salts, acetamide and propanol used in veterinary practice include teratogenicity, corrosiveness, carcinogenicity, allergic reaction and lung damage (AVMA, 1990).

Biological risk is prevalent in all work activities where there is possibility of exposure to pathogenic microorganisms. Human brucellosis is major occupational hazard affecting dairy farmers, veterinarians, veterinary assistants and veterinary pharmacists (Yohannes and Gill, 2011). The main route of transmission of disease includes needle prick injuries while vaccinating female calves, and contact with infected excretions and secretions of animals (Leggat *et al*., 2009; Kutlu *et al*., 2014). In addition to zoonotic diseases, veterinarians are also prone to develop allergies. The common allergens are amniotic fluids, vaginal secretions, latex gloves, and exposure to dander, parasites and blood proteins (Jeyaretnam and Jones, 2000). Lack of awareness regarding the hazards is leading more veterinarians at risk and in turn succumbing to various hazards. The risk factors once removed will prevent many veterinarians facing the hazards.

MATERIALS AND METHODS

The study design was a descriptive cross-sectional type. It occupied only qualitative and quantitative data collection methods. The data were collected by using a self-prepared questionnaire from Uttarakhand and some places of Uttar Pradesh and Punjab states. The period of study was August 2017 to February 2018. Data were collected through personal interview with veterinarians at their hospitals, by distributing questionnaire to government Veterinary officers during their monthly meetings and posted to various veterinary hospitals. The study population included field veterinarians of Uttarakhand state and academic veterinarians belonging to clinical departments of different institutions of Uttarakhand, Punjab and Uttar Pradesh states. The data collected from questionnaire were identified by numbers, coded numerically and entered into the MS Excel program

and percentage frequencies were calculated on 40 questions based on the demographics and occupational hazards and preventive measures taken. Occupational hazards were further categorized into physical hazards, radiation hazard, chemical hazards, zoonotic hazards and psychological hazards. Details of all these occupational hazards and preventive measures applied by veterinarians were categorized into different tables to present and evaluate information concerning different kind of attributes.

RESULTS AND DISCUSSION

Out of total 1000 questionnaire only 400 responses were achieved. Out of 400 responses, 8 were excluded from further analysis on account of incompletely filled response. Field veterinarians were prompt (61.8%) compared to veterinarians in academics (38.2%).

Physical injuries

Various studies on veterinary profession have revealed that veterinary work is physically challenging and poses a raised risk of severe injuries or trauma. Majority of veterinarians reported some sort of injuries within last five year. Out of total 392 respondents, 20 (5.1%) reported no injury, 186 (47.5%) respondents had 1-5 injuries, 126 (32.1%) encountered 5-10 injuries and 60(15.3%) veterinarians had more than 10 injuries during last 5 years. From the analysis of survey, we can affirm that physical injuries remain one of the main risk factor for veterinarians as also observed by Bonini *et al.* (2016). Present study explain needle prick injuries are frequent in the veterinary (Table 1), this is found to be in alignment with the work of Fowler *et al*. (2016). Needle stick injuries may involve the risk of self-injecting drugs and other harmful substances and the primary method to diminish needle stick injuries is to keep away from recapping needles or at the very least use 'one handed scooping technique' to recap (Weese and Jack, 2008). Apart from needle prick injury, veterinarians were also injured by bite, scratch, kick, horn wound, fracture and injuries due to falling while lifting or restraining animals (Table 1). The ergonomic injuries have been acknowledged as physical hazards with recurring task and manual handling burden through lifting and restraining animals contributing too many physical problems among veterinarians (Moore *et al*., 1993).

Table 2: Veterinarians using protective gears while taking x-rays

Attributes	Frequency	Percentage
Total no. of veterinarians taking x-ray	75	19.1% (75/392)
No. of veterinarians using lead gloves	46	61.3% (46/75)
No. of veterinarians using lead apron	65	86.7% (65/75)
No. of veterinarians using lead sleeves	7	9.3% (7/75)
No. of veterinarians using protective glasses	25	33.3% (25/75)
No. of veterinarians using personal monitor	38	50.6% (38/75)

Table 3: Veterinarians contractedvariouszoonotic diseases while dealing animals

Attributes	Frequency	Percentage
Ringworm	53	13.5%
Other fungal infections	104	26.5%
Scabies	20	5%
Toxoplasmosis	2	0.5%
Other parasitic infections	37	9.5%
Amoebiosis	20	5%
Tuberculosis	2	0.5%
Brucellosis	0	0%
Staphylococcosis	0	0%
Salmonellosis	0	0%
Influenza	78	19.8%

Radiation hazards

The dose of radiation depends on the numbers of x-ray taken by the person, type of machine and setting, involvement of veterinarian in physical restraining of animals and protective devices used by the person (Shirangi *et al.,* 2007). The low proportion of veterinarians (19.1%), taking x-ray is not consistent with an Australian study where 79% practicing veterinarians used radiography as diagnostic tool (Shirangi *et al.,* 2007). The reason for this variance may be unavailability of x-ray machines in government veterinary hospitals in India

Table 1: Details of different kinds of physical injuries among veterinarians

S.N	Type of Injury	Veterinarian injured (Number-392)		Veterinarian took treatment for injuries	
		Frequency	Percentage	Frequency	Percentage
1	Animal bite	125	31.8%	120	96%
2	Scratch	255	65.1%	94	36.8%
3	Kick	246	62.8%	43	17.4%
4	Horn wound	55	14%	31	56.3%
5	Fracture	15	3.8%	15	100%
6	Needle prick	350	89.2%	28	8%
7	Injuries due to falling while lifting or restraining animals	241	61.3%	143	59.3%

especially Uttarakhand. The results regarding using protective gears by veterinarians while performing x-rays revealed that 86.7% were using lead apron but other protective gears like lead gloves, personal monitor, protective glasses and lead sleeves were not common (Table 2), this proportion is nearly similar to those reported by Jacobson and Farowe (1964).

Chemical Hazards

Veterinarians handle drugs, disinfectants, antiseptics, pesticides etc.(Shirangi *et al.,* 2007). Responses on chemical hazard linked sickness revealed that 187 (47.7%) veterinarians were using antineoplastic agents to treat animals and out of 187 individuals,4 (2.1%) veterinarian accidently injected drugs to themselves. None reported any adverse effect due to self-injection. Adverse effects of disinfectant were reported by 32(8%) veterinarians. Adverse effects like headache, nausea, skin irritation etc. due to pesticides reported by 3 (0.7%) veterinarians. Allergy due to latex gloves causing itching, skin rashes, skin irritation was reported in 41 (10%) veterinarians. Chemical risk seems to be less pertinent than physical and biological risks but the threats from chemicals and drugs cannot be overlooked and the literature advocated the relevance of these threats (Fritschi, 2008).

Zoonotic hazards

Ringworm and other fungal infection are most common zoonotic infection among veterinarians (Table 3), Epp and Waldner, (2012) also reported similar result in their study among veterinarian of Western Canada. TheInfluenza virus was reported in 78 (19.8%) veterinarians (Table 3) but there is no report of influenza in veterinarian except for 11% seroprevalence of swine influenza virus among veterinary students (Woods *et al*., 1981). Among bacterial zoonotic infection,tuberculosis was in 2 (0.5%) veterinarians but in a study conducted by Khattak*et al.*(2016) in Pakistan revealed that 0 veterinarians and 4 abattoir workers were tested positive for*M. bovis*. In our study there is no report of brucellosis, salmonellosis and staphylococcosis (Table 3) but Mudaliar *et al*. (2003); Shome *et al.* (2017) carried out a survey among veterinary workers in Delhi and Karnataka and reported seropositive cases as high as 27.7% and 7.02% respectively. Study conducted on veterinary students and doctors in the Netherlands revealed a lower MRSA carriage rate (Wulf *et al*., 2006). The presence of toxoplasmosis 2 (0.5%) was lower than as reported by Rosypal *et al.* (2015) which was 5.6% in veterinary student. Amoebiosis and scabies in veterinarian were 20 (5%) while other parasitic infection was 37 (9.5%).Our findings are suggestive of a low level of zoonotic diseases being rampant in the sampled population.

Psychological hazards

Work overload, exhaustion due to handling with animals, dealing and satisfying animal's owner, going to visit patients at their places etc. all these lead to mental stress and loss of working days. Low level of stress was shown by 137 (45%), moderate level by 104 (34%) and high level of stress was reported by 64 (21%) veterinarians. The results of the study are consistent with Fowler *et al*. (2016) they reported recent feelings of depression in 204 (25%) respondents.

Preventive health measures

Protective equipment used by participants in survey includes gloves by 60%, goggles by 1.1% and apron by 39.8%. However, 36.7% (134) participants did not use any of the protective gear during practices. All participants washed their hands properly after checking patients, similarly Aluko *et al.* (2016) showed that 100% health care worker followed effective hand washing before and after every clinical practice. Lack of prophylactic vaccination against zoonotic diseases ranked second most important constraint in dealing with life savings from zoonoses (Landge *et al*., 2016). The study revealed that veterinarians have been vaccinated against diseases like tetanus, rabies and measles. The 350(89%) participants were vaccinated against Tetanus, 260(66.3%) against Rabies and 318(81%) against Measles in their life time. The findings are comparable with the number of zoo veterinarians having vaccinations in Australia against Tetanus 95%, Rabies 70% and Measles 85% (Jeyaretnam, 2003). The study showed that 171(43.6%), 122 (31.1%), 67 (17.1%), 32 (8.2%) veterinarians followed deworming at 6 month, 1 year, 2 year and more than 2 year intervals respectively. Nigam and Srivastav (2011) analyzed the details of deworming practiced by the Indian wildlife professionals and it was inferred that only 40.7% reported carrying out deworming in the last 6 months, 22.2% in the last 1 year and 12.9% had done it once in the last two years. 24.1% of the respondents did not follow routine deworming.

CONCLUSION

The physical injuries were most prevalent among

veterinarians. The awareness level concerning occupational hazards among the veterinary health professionals was near optimal but the need was felt to implement efforts aimed at addressing deterrence of occupational hazards by developing and executing improved and safe handling practices and safety measures. There are several limitations of this study. The study design did not include serological testing of veterinarians to detect the prevalence of zoonotic diseases. These findings are a preparatory point for further investigation into prevention of workplace hazards and a motivation for targeted injury prevention measures that could be instituted by individuals, practices, and veterinary governing bodies.

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Received: August 13, 2021
Accepted: September 6, 2021