

Pattern of Skin Diseases and Occupational Dermatoses in Veterinarians and Veterinary Workers of Kashmir

Abstract

Background: Across the globe, skin disorders represent a frequent occupational concern for many health professionals including veterinarians and there is a serious impact of skin diseases on their lives and careers. But little is known about the prevalence and distribution of skin diseases (especially occupational) within this important professional group across Asia, especially India. **Materials and Methods:** The study was a cross-sectional study carried out over a period of one year in which veterinarians and veterinary workers of Kashmir valley were screened for various skin diseases and occupational dermatoses. **Results:** The study group comprised 910 veterinarians and associated workers working across the valley with the majority being males; 846 workers (93%). The mean age of the group was 38.53 years. Out of these, 267 veterinarians and associated workers (29.3%) were found to have skin lesions. Of the 267 cases, 165 (61.80%) had non-infectious lesions, while the rest had 102 (38.20%) had infectious skin diseases. The main non-infectious lesions included friction-related disorders, eczemas, pigmentary disorders, papulosquamous disorders, and many others; while the infectious lesions were of fungal, bacterial, viral, and parasitic etiology. Fungal infections, eczemas, and melasma were more common in them, indicating an occupational etiology. **Conclusion:** A huge group of skin diseases was seen in veterinarians and veterinary workers, with some diseases showing an occupational nature. To reduce the burden of skin diseases in this particular group, proper prevention measures need to be instituted at work places by veterinary governing bodies of the state.

Keywords: Contact dermatitis, occupational dermatoses, veterinary workers

Introduction

Veterinary professionals comprise a diverse group of individuals (veterinarians and associated workers) who mostly remain involved in rearing of a wide variety of animal species, treating their illnesses, inspecting animal food products, cleaning and disinfection of the premises, and numerous other related activities. On a daily basis, they are exposed to a range of skin irritants and allergens including animal fluids, proteins, disinfectants, chemotherapeutic agents, and extreme temperatures that can produce dermatological injuries and illnesses.^[1] Moreover, close association with animals can be an important risk factor for many illnesses and physical injury. This exposure to hazardous situations in daily practice affects their health by causing infectious diseases, skin afflictions, allergies, and injuries in them.^[2,3]

Workers in this industry experience the sixth highest incidence rate of

non-fatal occupational illnesses.^[4] Among these occupational illnesses, cutaneous afflictions contribute significantly, causing occupational morbidity in them. The atmosphere in animal farms usually contains infectious organisms, agricultural dust, toxic gases, and chemicals (disinfectants, antimicrobial drugs, veterinary medicines, tranquilizers, etc.), which can endanger the workers' health, leading to increased rates of specific occupational skin injuries, and other health problems in them. Moreover, all the three broad groups of occupational skin diseases namely, irritant contact dermatitis, allergic contact dermatitis, and infective diseases have been recognized in this occupational group.^[5-7]

In order to evaluate the various occupational dermatoses and other skin diseases, specifically associated with this profession, various surveys and studies have been carried out in different parts of the world, especially Europe, America,

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and Australia. However, little is known about them in the Indian subcontinent. Keeping this in view, a study was devised so as to obtain information on the pattern of skin diseases and occupational dermatoses among the veterinary professionals of Kashmir region of the state.

Materials and Methods

The study group included veterinarians and veterinary workers of Kashmir Valley working in the State Departments of Sheep and Animal Husbandry and Faculty of Veterinary Sciences, Sheri-Kashmir University of Agricultural Sciences and Technology of Kashmir. The study was a cross-sectional analytical study carried over a period of one year, in which 910 veterinarians and veterinary workers were included.

In order to ensure appropriate coverage and to avoid any individual or selection bias, the study was carried out in five out of ten districts of Kashmir region, namely, Srinagar, Shopian, Anantnag, Budgam, and Baramulla, selected randomly by a lottery method. In each district, the first visit was made to the district Sheep and Animal Husbandry Hospitals and their employees were screened. Then, in each district, a block was selected randomly in which all the veterinary centres, subcentres, and dispensaries were visited and all the employees screened. Visits were carried out on a weekly basis for a period of 1 year. The inclusion criteria include all veterinary professionals and associated workers who were willing to participate in the study.

A questionnaire to collect required data was formulated with questions related to demographic and occupational parameters and skin-related diseases. A detailed general physical and cutaneous examination was also carried out in each subject to ascertain any type of cutaneous affliction. Relevant laboratory investigations and specialized tests like KOH examination of skin scrapings and nail clippings, skin biopsy, and patch test were carried out in selected patients wherever deemed necessary. These investigations were carried out in the hospital as per the disease protocol and the patients followed up accordingly.

Statistical analysis

The data at the end of the study was analyzed by SPSS (Statistical Package for Social Sciences, SPSS Inc. Chicago, USA) version 20.0. A *P* value of less than 0.05 was taken as significant.

Results

Among 910 veterinarians and associated workers screened, 846 were males and 64 were females, which respectively accounted for 93% and 7% of the total professionals, giving a male female ratio of 13.2:1. The mean age of the study group was found to be 38.53 years ± 10.66 years. Most of the veterinarians, 621 (68.2%), remained in animal contact for 6 to 8 hours daily, while the rest, 289 (31.8%), remained in contact for more than 8 hours daily.

Out of the total 910 veterinarians and related workers, 464 (51%) were involved in using different chemicals – disinfectants, pesticides, and numerous drugs during their daily work, while 446 (49%) did not remain in touch with any chemical. Among the total number of 910 veterinarians screened, 267 (29.3%) were found to have skin lesions, while the rest 643 (70.7%) were free from any skin problem.

While working out the frequency of infectious and non-infectious skin lesions out of the total lesions, infectious skin diseases contributed to 102 cases (38.20%), while non-infectious skin lesions were seen in 165 (61.80%) cases.

Among the non-infectious lesions, the largest subtype was constituted by callosities - 23 cases (8.6%), followed by allergic contact dermatitis 19 cases (7.1%) [Table 1 and Figures 1, 2].

Out of the infectious lesions diagnosed in veterinarians and their workers, the majority was constituted by fungal infections 58 cases (comprising 21.7% of the total skin

Table 1: The pattern of non-infectious cutaneous manifestations seen in the study group

Non-infectious lesions	Number	Percentage
Friction-related injuries		
Callosities	23	8.6
Fissures and cuts	11	4.1
Eczemas		
Allergic contact dermatitis*	19	7.1
Irritant contact dermatitis*	5	1.9
Pigmentary disorders		
Melasma	14	5.3
Ephelides	5	1.9
Vitiligo	5	1.9
Papulosquamous disorders		
Polymorphic light eruption	11	4.1
Psoriasis	8	3.0
Chronic actinic dermatitis	2	0.7
Hair disorders		
Androgenetic alopecia	13	4.9
Diffuse hair loss	4	1.5
Alopecia areata	2	0.7
Others		
Urticaria	10	3.7
Xerosis	6	2.2
Acne vulgaris	5	1.9
Actinic keratosis	5	1.9
Lichen planus	4	1.5
Acrochordons	4	1.5
Pigmented purpuric dermatosis	3	1.1
Lichen simplex chronicus	3	1.1
Discoid Lupus Erythematosus	3	1.1
Total	165	61.80%

*Denotes eczemas whose cumulative percentage=9%

lesions seen), followed by bacterial, parasitic, and viral infections [Table 2 and Figure 3].

Patch testing was done in the 19 suspected cases of allergic contact dermatitis using Indian Standard Series of 25 antigens approved by CODFI (Contact and Occupational Dermatitis Forum of India). Out of these cases, positive patch test results were obtained in 7 handlers (36.84%) for 5 allergens with a total of 9 positive patch test reactions [Table 3 and Figure 4].

While comparing the daily duration of contact and the frequency of skin lesions observed, it was seen that the total daily working hours had a direct correlation with the proportion of skin disease observed. This result is statistically significant with a *P* value of 0.006 [Table 4]. While correlating the use of chemicals by workers with the prevalence of disease, a higher prevalence of disease



Figure 1: Callosities over the palmar aspect of metacarpophalangeal joints in a veterinary worker

Table 2: Pattern of infectious lesions seen in the study group

Infectious skin lesions	Frequency	Percentage
Pityriasis versicolor [#]	22	8.2
Onychomycosis [#]	14	5.3
Scabies	14	5.3
Tinea corporis [#]	13	4.9
Folliculitis	13	4.9
Furunculosis	13	4.9
Tinea Pedis [#]	6	2.2
Verruca vulgaris	4	1.5
Intertrigo [#]	3	1.1

[#]Denotes fungal infections whose cumulative percentage=21.7%.



Figure 2: Allergic contact dermatitis involving the hands



Figure 3: Fungal infection in the form of tinea corporis in an animal handler

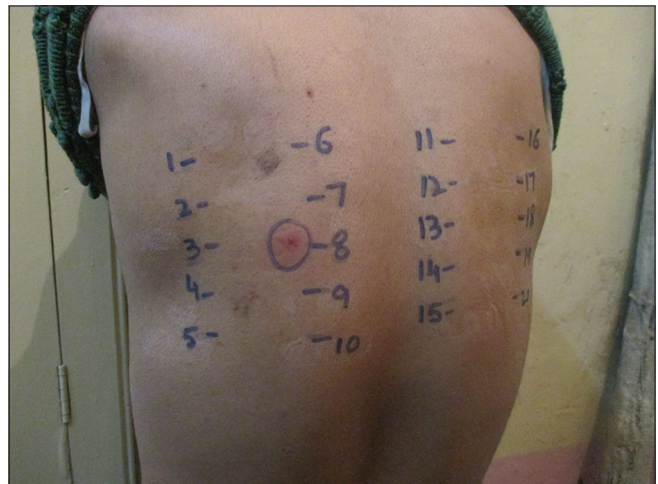


Figure 4: Positive patch test to nickel sulfate

Table 3: Pattern of positive patch test reactions

Allergen	No. of reactions
Mercaptobenzothiazole	3
Neomycinsulphate	2
Nickel sulphate	2
Nitrofurazone	1
Epoxy resin	1

Table 4: Correlation between contact hours and skin lesions

Contact hours	Skin lesions		Total
	Present	Absent	
6-8			
Frequency	172	449	621
%	27.7%	72.3%	100%
8-10			
Frequency	64	158	222
%	28.8%	71.2%	100%
10-12			
Frequency	31	36	67
%	46.3%	53.7%	100%
Total			
Frequency	267	643	910
%	29.3%	70.7%	100%

P value=0.006

was seen in the workers using chemicals-157 (33.8%), while the non-users had comparatively a lower prevalence of disease —110 cases (24.7%). This finding was also statistically significant with a P value of 0.002.

Discussion

This study was a cross-sectional descriptive study, carried over a period of one year, in which 910 veterinarians and veterinary workers were screened for various skin diseases and occupational dermatoses. The prevalence of skin disorders found in veterinarians and their workers was 29.3%; among which infectious lesions were seen in 38.2%, while non-infectious lesions were seen in 61.8% cases. The higher proportion of non-infectious dermatoses as compared to the infectious types is comparable with the findings of Buckle DM and Devos SA^[5] who reported a prevalence of 79.3% and 20.7%, respectively, for the non-infectious and infectious hand and forearm dermatoses. However, the proportion of infectious skin lesions was comparatively higher in our study possibly as the veterinarians of our region have to work under improper sanitary conditions and many of the workers are not aware about the various modes of acquiring infections.

Among all the cutaneous lesions observed, a few occupational disorders were identified as their prevalence was greater in veterinarians as compared to the general population and other occupational groups. Among all lesions, the cumulative percentage of the various fungal

infections observed by us was 21.7% [Table 3]. This figure of 21.7% is nearly 1.9 times greater than the prevalence of fungal infections (11.3%) seen in the Kashmiri population by Massod Q and Hassan I.^[8] Thus, there was a high proportion of fungal infections in the workers, which could be attributed to the exposure to potential fungal spore inoculums, high humidity, and ambient temperature inside animal enclosures. This suggests that fungal infections could be occupational dermatoses in veterinarians of the area studied.

Within the whole spectrum of infectious and non-infectious lesions seen, callosities (8.6%) formed the single largest group followed by pityriasis versicolor (8.2%) and allergic contact dermatitis (7.1%). On the hands, callosities generally reflect repeated frictional injury and represent distinctive occupational stigmata in many trades and professions.^[9] In the present study, the callosities were mostly present over the palmar aspect of interphalangeal joints of both hands. This can be attributed to their practice of handling large animals and the physical labour needed in this profession. However, the prevalence of callosities in our study is comparatively lower than that seen in a study in poultry processing workers of North Carolina.^[4]

Eczemas (allergic contact dermatitis and dermatitis) accounted for 9% of the total cutaneous manifestations of our study. These lesions were mostly seen on the hands and forearms (the parts mostly exposed while working). Similarly in other studies, veterinarians have reported flaring of hand dermatitis on contact with animal amniotic fluid, blood, serum, disinfectants and other chemicals.^[10] In a hospital-based study in Kashmir by Masood Q and Hassan I,^[8] the most common type of eczema was found to be contact dermatitis (6.9%), which is lower than the proportion of eczemas found in our study, suggesting the role of occupation in causing and worsening hand eczema in veterinarians.

The high proportion of melasma in our study (5.3%) as compared to the study by Masood Q and Hassan I,^[8] where it was only 1.8%, could be due to the frequent working of some animal handlers in open sun while attending grazing flocks, especially at higher altitudes.

It was seen that total daily animal contact duration had a positive correlation with skin diseases observed with increased prevalence in those with greater hours of contact.

Correlating the use of chemicals by workers with the prevalence of disease, expectedly a higher proportion of disease was recorded in the workers using chemicals during their professional assignments (33.8%), while non-users had comparatively a lower proportion of 24.7%, the result being statistically significant. So, contact with chemical agents is an important factor responsible for causing and worsening skin diseases in veterinarians.

Limitations

Lack of a control group (for better comparison and drawing more inferences) is a limitation of our study.

Conclusion

Veterinarians are exposed to many hazardous situations in their daily practice. A huge group of dermatological disorders (infectious as well as non-infectious) are seen in veterinary professionals and associated workers. Some infectious and non-infectious dermatoses are comparatively more frequent in this profession, which can affect their quality of life. This study is the first of its kind done in Kashmir Valley of the Indian subcontinent. So, the findings of this study can be a starting point for further investigation into the prevention of work place hazards in veterinarians and a stimulus for targeted injury prevention measures that could be instituted by individuals and veterinary governing bodies.

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Conflicts of interest

There are no conflicts of interest.

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