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RESEARCH ARTICLE

Field Study on Farm Workers Occupational Health Hazards Associated with Camels Zoonotic Dermatophytosis, with Reference to Fungal Etiology, and Morbidity Rates, Taif, KSA

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Abstract

This investigation was conducted on (15 camel farms, 1187 camels and 45 farm workers) at Taif area, KSA. The farm workers were (42.2, 31.1 and 26.7%) with nationality (Somalis, Sudanese and others). Camels were infected by superficial skin mycosis as 19.2%, also farm workers were infected as 24.4% by zoonotic superficial skin mycosis. Eleven farm workers infected had given 37 specimens from their lesions area, which resulted in (29.7, 18.9, 18.9, 16.2 and 16.2%) respectively from sites of (upper limbs, lower limbs, body, heads and faces) of them. The results of dermatophytes isolation and identification were (34.4, 26.6, 17.2, 12.5 and 9.4%) respectively from upper limbs included (Tinea unguium and Tinea manuum), lower limbs (Tinea unguium, Tinea pedis, Trichophyton verrucosum and Trichophyton rubrum), body (Tinea corporis, Tinea cruris, Trichophyton verrucosum and Trichophyton rubrum), faces (Tinea barbae and Tinea faciei) and heads (Tinea capitis). Tinea species were higher than Trichophyton species with values of (92.2 and 7.8%) respectively. The results of Tinea species were (28.1, 17.2, 10.9, 10.9, 9.4, 7.8, 4.7 and 3.1%) for (Tinea unguium, Tinea manuum, Tinea pedis, Tinea corporis, Tinea capitis, Tinea barbae, and Tinea cruris) respectively, while Trichophyton species were (4.7 and 3.1%) for (Trichophyton verrucosum and Trichophyton rubrum) respectively. The conclusion intend to recommend many improvements from veterinary medicine site which in-need for farm workers in the protection of them against an occupational diseases for farm field.

I. Introduction

Dermatophytosis are mycoses (fungal infections) of skin causes by dermatophytes filamentous fungi which have the ability to invade the epidermis and keratinized structures such as hair or nails. There are three genera: *Trichophyton*, *Epidermophyton* and *Microsporum*, related to microorganisms in the soil which are capable of digesting keratinous material[1]. Fungal infections caused by dermatophytes were limited to the superficial layers of epidermis and keratin-consisting skin appendages such as nails and hair[2]. The infections based on the source, dermatophytes can be divided into three groups: anthropophilic, zoophilic and geophilic. *Trichophyton rubrum* belongs to anthropophilic group, it spreaded mostly among humans[3]. *Ringworm* in camels was over 25% and 11% suffered from *Trichophyton verrucosum* infection[4] .Camels less than 3 years was characterized by circumscribed crusty hairless lesion, (1-2 cm) distributed over the head, neck, shoulder, limbs and flanks[5]. Skin scrapings from camels had given 56.6% of *Trichophyton verrucosum*[6]. Higher prevalence of *Ringworm* due to *Trichophyton species* infection in *Bactrian* than in *Dromedary* camel, it was higher prevalence in she-camel as 77% than males 23%, which included (*Trichophyton verrucosum,* and *Trichophyton rubrum*)[7]. *Ringworm* was zoonotic disease and

highly contagious, as well of animals were scanty. Zoophilic dermatophytosis were sporadic infections of man caused by dermatophytes typically invading animals[8]. Persistent dermatomycosis *Ringworm* caused by *Trichophyton verrucosum* affected 20 dairy calves were spread to 2 farm workers[9]. Fungal infections of the skin were especially typical of farm workers, each day harm, they spent several hours in a rubber boots which provided an ideal microclimate for the development of fungal feet infections[10]. In 1997 skin diseases were 10.8% of all newly farm workers in Poland, at (1995 and 1996) were (11.2 and 13.4%), in 1994 a total of 559 farm workers with skin problems had been subjected to medical evaluation because of possible occupational dermatitis. In the same year, 37 occupational skin diseases in farm workers were acknowledged and compensated which comprised 12.9% in farm workers[11]. They met an occupational health professional for the first time when the disease was already advanced and legal action towards obtaining an occupational rent had already been issued[12]. Zoophilic fungal infections were among farm workers compared to non-farm workers in Poland, while dermatophytes infection was found in farm workers as 55.2%, zoophilic dermatophytes as 4.3%, *Tri*chophyton *verrucosum* was found in 3 cases. Zoophilic fungi were responsible for superficial mycosis[13]. Animals caught infected humans with dermatophytes, occupational relationship was established when the same fungus was isolated from both (animals and farm workers), 995 cases of zoophilic dermatophytosis were registered as occupational dermatomes in the farm workers at German over a 4 years period[14]. Between (1992-1994), 32 isolates of *Trichophyton verrucosum* from cases of *(Tinea corporis*, *Tinea faciei* and *Tinea capitis*) from farm workers[15]. Zoonotic diseases was an ever-present concern in small animal veterinary practice and are often overlooked. These may cause human disease ranging from mild and self-limiting to fatal. The risk of zoonotic disease development lessened by early recognition of infected animals, proper animal handling, basic biosecurity precautions, and most importantly personal hygiene[16]. Occupations at risk were on farm workers infection occurred rarely by direct contact with infected soil[17]. It had been observed that the greatest economic and human health problems in the developed countries came from dermatophytosis of domestic cattle. Approximately 60% of children were affected by *Tinea capitis*, and more than 50% of *Tinea pedis*. *Ringworm* in humans was characterized by pruritus and inflammation that was most severe at the edges, with erythema, scaling and occasionally blister formation. Central clearing was sometimes seen, particularly in *Tinea corporis* resulted in the formation of a classic *Ringworm* lesion[18]. The commonest features were scaling and erythema of the skin in hairy areas, alopecia developed. Sometimes more inflammatory changes with boggy swelling occur, especially on the scalp and beard areas. *Tinea pedis* was a common infection in the general population. A large European population-based survey found evidence of fungal foot disease in 35%[19]. *Trichophyton verrucosum* infected cattle, farm buildings and straw. *Trichophyton mentagrophytes* caught been transmitted by cattle and domestic animals[20]. Dermatophytes *species* were the most common causative agents of *Tinea* in rural areas of Iran[21]. Zoonotic dermatomycosis infection as *(Tinea pedis* and *Tinea manuum)* were found in 19.4% of farm workers, one *Tinea corporis* was determined in the farm workers. The most frequently isolated agent in the two groups was *Trichophyton rubrum*. The frequencies of superficial mycosis were found to be higher in the farm workers group. The farm workers had greater rates of contact with zoonotic pathogenic fungi present in soil from infected farm animals[22]. Dermatophytes most common isolated from toenails and skin lesion where it was identified in 60%[23]. In favorable conditions untreated infection can spread to other glabrous skin regions like skin on calves or hands[24]. Cutaneous mycosis describes a wide spectrum of fungal infections caused by dermatophytes *species*. Zoophilic as *Trichophyton verrucosum*, was associated with wild and domestic animals[25]. The isolated agents were identified as *Trichophyton verrucosum*, the identical strain isolated was verified in both samples of calves and the owner[26]. Zoophilic dermatophytosis was a major public and veterinary health problem globally widespread among cattle during (2006–2007). Only 5.2% cases of dermatophytosis were identified in cattle and *Trichophyton verrucosum* was the exclusive fungus isolated. Moreover, 20.8% cases of human dermatophytosis were identified and *Trichophyton verrucosum* was the prevalent causative agent in the body, scalp, foot, nail and groin. It was the predominant cause of dermatophytosis in livestock and dairy farm workers. Occurrence of dermatophytosis in (humans and cattle) and confirmed that the dermatozoonosis were responsible for predominant forms of the disease in people who were in contact with cattle[27]. Once the disease was introduced into the herd, it was spreading rapidly among susceptible animals, close confinement, age, breed of animal and production system coupled with prolonged wetting were believed to be important predisposing factors. In spite of the significance of *Ringworm* in global economy[28]. Superficial mycosis was more prevalent in tropical and subtropical countries including India, *Trichophyton species*., was proved most common causative agents, such fungi attacked various parts of the body and lead to dermatophytosis as *Tinea pedis* (athlete's foot) effects on the feet; *Tinea unguium* on the fingernails and toenails; *Tinea corporis* on the arms, legs and trunk, *Tinea cruris* (jock itch) groin area ; *Tinea manuum* hands and palm area, *Tinea capitis* on the scalp, *Tinea barbae* affects facial hair and *Tinea faciei* on the face[29].

The aim: It was aimed for the obsevation of an occupational health hazards for farm workers. It was provided firstly a description brief of the camel farms at Taif area, KSA. The morbidity rates of infected camels by superfacial skin mycosis were in addation to the zoonotic superfacial skin mycosis diseases affected farm workers. Description the sources of zoonotic dermatophytes, assessing the frequency of infections with zoophilic *species* among farm workers compared to non-farm workers. Explaintion the morbidity rates of zoonotic dermatophytosis and identification of fungal pathogenes. This were very imporatant of farm workers health care to recognize and prevent the occupational zoonotic mycotic skin diseases.

II. Materials and methods

- **Understudy field area:** Taif area was the selected area for search, it was started by the preparation of agreement paper from farm owners. The visits of the camel farms and explanation the aim were done for permit the examination of camels and farm workers, the visits were ended by taken an agreement papers from farm owners for the steps of clinical examination and specimens collection. Camel farms were about (No.=200±30) at Taif area according to the collected information from owners and farm workers, camels in each farm were about (No.=50±20). Farm owners always occupied (1 farm worker / 30 camels), and the nationality of farm workers were mostly Sudanese, Somalis and others (Pakistanis, Bengalis).
- **Understudy groups preparation:** It was carried out for the preparation of understudy and control groups from camels and farm workers for the clinical examination and complains.
- **Collection of data:** The data were included the farms, camels and farm workers were collected from farm history. Total of understudy were 15 camel farms, 1187 camels and 45 farm workers. The control were 15 camels, 15 non-farm workers in each stage.
- **Clinical examination and specimens collection:** Clinically camels and farm workers were examined and were recorded. The total specimens from both were collected and differentiated according to the lesions area, as well were sent under aseptic condition to Micro. Lab. for carry up (macroscopical and microscopical) examination and microbial culturing for isolation and identification of fungal etiological agents.
- **Microbial pattern:** Macroscopical and Microscopical examination: Gross examination revealed evidence of fungi, Gram stain, different concentrations of KOH for the direct examination of specimens. Fungal spores may be viewed directly on hair shafts, which identified a fungal infection in (40-70%), but cannot identify the dermatophytes *species*. Isolation and Identification of dermatophytes: Specimens were cultured on Myco-biotic Agar (Merck, Germany) and Sabroud dextrose agar (SDA), (Merck, Germany) slant tubes, then incubated at (25-30°C) for 4 weeks, isolates of dermatophytes were identified by the morphology and microscopic features[30-32].
- **Data analysis:** The data were recorded from the previous steps and were entered into the Microsoft Excel Sheet, then summarized and analyzed as in tables and diagrams[33].

III. Results and discussion

Table and diagram 1: Description of the camel farms were examined

Camel farms were examined		
Stages Farms *No.	***Camels *No.***	***Farm workers *No. (1 Farm worker / 30 camels)***
Stage I		
1	*30*	*1*
2	*45*	*2*
3	*63*	*2*
4	*71*	*3*
5	*80*	*3*
6	*98*	*4*
7	*102*	*4*
Total *No. = 7	*489*	*19*
Stage II		
8	*122*	*5*
9	*73*	*3*
10	*52*	*2*
11	*66*	*2*
12	*85*	*3*
13	*96*	*4*
14	*89*	*3*
15	*115*	*4*

Total *No. = 8	*698*	*26*
Total Search Project Farms *No.=15	***1187***	***45***

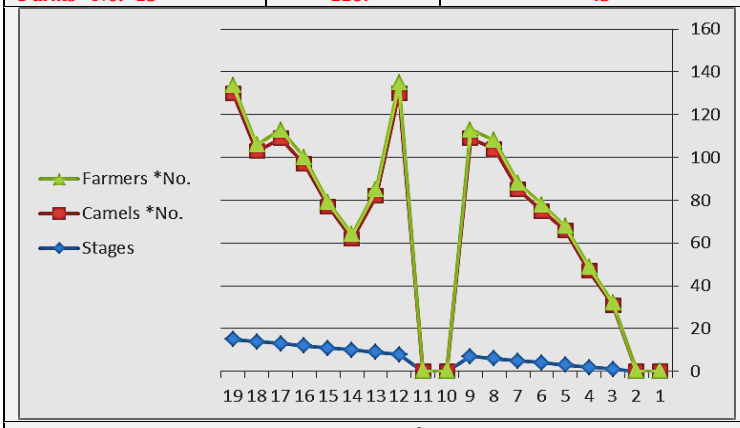

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Table and diagram 1 showed description of the camel farms were examined, the work were divided into 2 stages. Stage I contained (7 camel farms, 489 camels and 19 farm workers), stage II contained (8 camel farms, 698 camels and 26 farm workers). Finally data were totally (15 camel farms, 1187 camels and 45 farm workers) respectively.

Table and diagram 2: Incidence of the number and nationality for farm workers

Stages	***Nationality***			***Total***
	Sudanese	***Somalis***	***Others***	
Stage I				
****No.***	*6*	*8*	*5*	*19*
%	*6/19 31.6%*	*8/19 42.1%*	*5/19 26.3%*	*19/19 100%*
Stage II				
****No.***	*8*	*11*	*7*	*26*
%	*8/26 30.8%*	*11/26 42.3%*	*7/26 26.9%*	*26/26 100%*
Total Search*No.	***14***	***19***	***12***	***45***
%	***14/45 31.1%***	***19/45 42.2%***	***12/45 26.7%***	***45/45 100%***

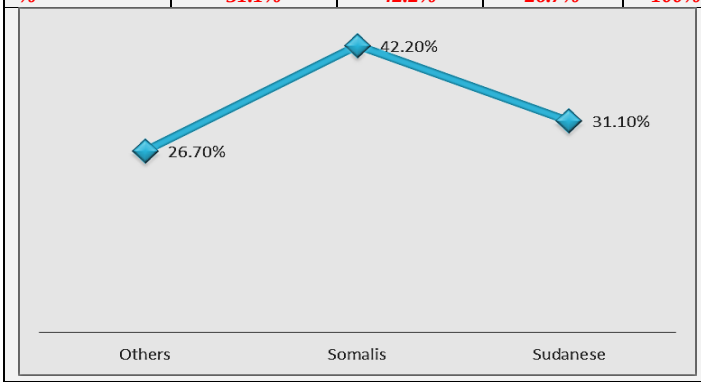

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Table and diagram 2 showed incidence of the number and nationality for farm workers, in stage I were 19 farm workers as (42.1, 31.6 and 26.3%), in stage II were 26 farm workers were as (42.3, 30.8 and 26.6%), and finally total were 45 farm workers as (42.2, 31.1 and 26.7%) with nationality (Somalis, Sudanese and others) respectively.

Table and diagram 3: Incidence of examined camels for superficial skin mycosis

Stages	***Camels control *No.***	***Total camels examined *No.***	***Infected camels *No.***	***Infected *No. / Total *No. (%)***
Stage I	*15*	*489*	*85*	*85/489*

				(17.4%)
Stage II	*15*	*698*	*143*	*143/698 (20.5%)*
Total	***30***	***1187***	***(85+143) 228***	***228/1187 (19.2%)***

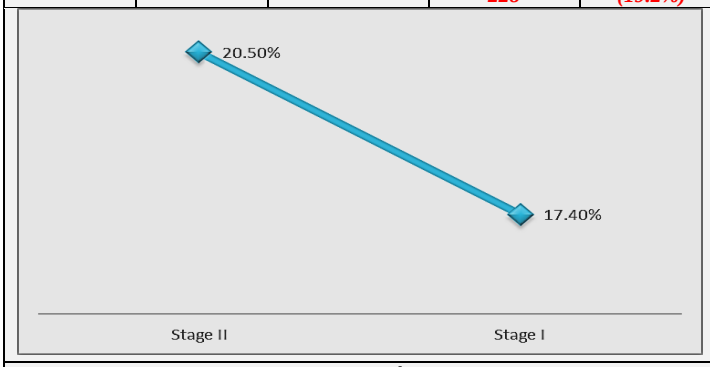

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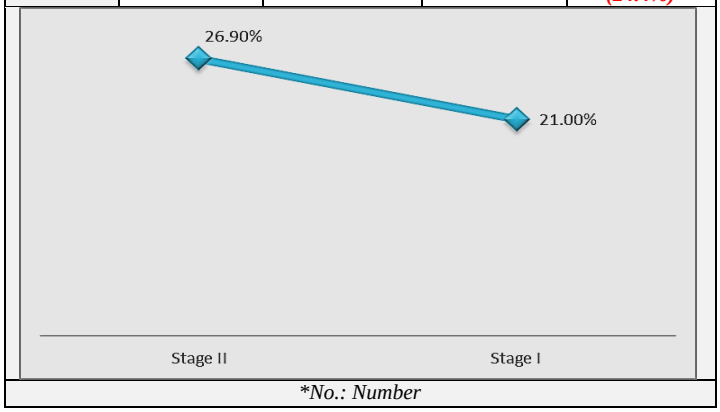
Table and diagram 3 showed incidence of examined camels for superficial skin mycosis, stage I and II results were (17.4 and 20.5%) while total result was 19.2% of camels infected by superficial skin mycosis, the control camels were non-infected. A survey of *Ringworm* in camels showed over 25% suffered from *Trichophyton verrucosum* in 11%[4], 136 camel examined, results were in 56.6% infected by *Trichophyton verrucosum*[6]. Higher prevalence of *Ringworm* due to *Trichophyton species* infection in *Bactrian* than in *Dromedary* camel and a higher prevalence in the she camel 77% than males 23%, which included (*Trichophyton verrucosum*, and *Trichophyton rubrum*) which caused sporadic cases of skin infections in individually maintained camels as well as affecting many camels in the herds[7]. Persistent dermatomycosis *Ringworm* caused by *Trichophyton verrucosum* affected 20 dairy calves[9].

Table and diagram 4: Incidence of examined farm workers for zoonotic superficial skin mycosis

Stage	***Non-Farm workers control *No.***	***Total farm workers examined *No.***	***Infected Farm workers *No.***	***Infected *No. / Total *No. (%)***
Stage I	*15*	*19*	*4*	*4/19 (21.0%)*
Stage II	*15*	*26*	*7*	*7/26 (26.9%)*
Total	***30***	***45***	***11***	***11/45 (24.4%)***



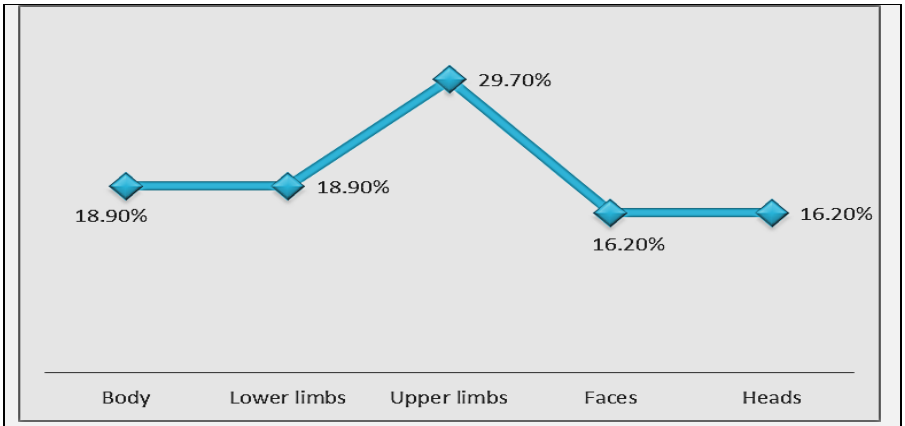
**No.: Number*

Table and diagram 4 showed incidence of examined farm workers for zoonotic superficial skin mycosis, stage I and II results were in (21.0 and 26.9%), as well total result was 24.4% infected farm workers by zoonotic superficial skin mycosis, the control of non-farm workers were non-infected. Fungal infections of the skin were especially typical of farm workers who spend several hours in rubber boots which provided an ideal microclimate for the development of fungal feet infections[10]. In 1997 skin diseases formed 10.8% of all newly farm workers in Poland, while results for (1995 and 1996) were (11.2 and 13.4%), in 1994 a total of 559 farm workers had occupational dermatitis. Occupational skin diseases in farm workers were in 12.9% of all occupational diseases for farm workers[11]. Many

patients met an occupational health professional for the first time when the disease was already advanced and legal action towards obtaining an occupational rent had been issued[12]. Dermatophytes infection was found in farm workers as 55.2%, whereas zoophilic dermatophytes in farm workers was 4.3%[13]. Animals infected humans with dermatophytes, an occupational relationship was established when the same fungus was isolated from both the animal and farm workers, 995 cases of zoophilic dermatophytosis were registered as occupational dermatomes in the farm workers at German over a 4 years period[14]. Between (1992-1994) *Trichophyton verrucosum* isolated from cases of (*Tinea corporis*, *Tinea faciei* and *Tinea capitis*), patients included farm workers[15]. Zoonotic diseases were an ever-present concern in small animal veterinary practice and were overlooked. These may cause human disease ranging from mild and self-limiting to fatal. The risk of development of a zoonotic disease can be lessened by early recognition of infected animals, proper animal handling, basic biosecurity precautions, and, most importantly, personal hygiene[16]. Occupations at risk were farm workers, human infection occurred rarely by direct contact with infected soil[17]. It had been observed that the greatest economic and human health problems in the developed countries came from dermatophytosis of domestic cattle. A large European population-based survey found evidence of fungal foot disease in 35% of patients[19]. Zoonotic dermatomycosis infection was found in (19.4-14.3%) in farm workers. The frequencies of superficial mycosis were found to be higher in the farm worker, for they had greater rates of contact with zoonotic pathogenic fungi present in soil as well as from infected farm[22]. It was the most common of all dermatophytes that can be isolated from toenails and skin lesion where it was identified in about 60%[23]. In favorable conditions untreated infection can spread to other glabrous skin regions like skin on calves or hands[24]. Zoophilic *species* of dermatophytes, was associated with wild and domestic animals[25]. *Ringworm* isolated were verified in both samples of calves and the owner[26]. Zoophilic dermatophytosis was a major public and veterinary health problem globally widespread among cattle, during (2006–2007), only 5.2% were identified in cattle, the exclusive fungus were isolated from animals. Moreover, 20.8% cases of human were identified was the prevalent causative agent for dermatophytosis in the body, scalp, foot, nail and groin of the patients. It was the predominant cause of dermatophytosis in livestock and dairy farm workers. Occurrence of dermatophytosis in humans and cattle which confirms that the dermatozoonosis were responsible for predominant forms of the disease in people who were in contact with cattle[27]. Once the disease was introduced into a herd, it was spread rapidly among susceptible animals. Close confinement, age, breed of animal and production system coupled with prolonged wetting were believed to be important predisposing factors[28]. Superficial mycosis was more prevalent in tropical and subtropical countries including India[29].

Table and diagram 5: Incidence of zoonotic superficial skin mycosis lesions area for farm workers

Infected farm workers *No.=11	***Mycosis lesions area***						
	Heads	***Faces***	***Upper limbs***	***Lower limbs***	***Body***	***Total specimen***	***Mycotic infection %***
Farm worker1	+	+	+		+	*4/5*	*80%*
Farm worker2			+	+	+	*3/5*	*60%*
Farm worker3	+	+	+			*3/5*	*60%*
Farm worker4			+	+		*2/5*	*40%*
Farm worker5	+	+	+			*3/5*	*60%*
Farm worker6			+	+	+	*3/5*	*60%*
Farm worker7	+	+	+	+	+	*5/5*	*100%*
Farm worker8			+	+	+	*3/5*	*60%*
Farm worker9	+	+	+	+	+	*5/5*	*100%*
Farm worker10	+	+	+			*3/5*	*60%*
Farm worker11			+	+	+	*3/5*	*60%*
Total mycosis lesions area	***6/37 16.2%***	***6/37 16.2%***	***11/37 29.7%***	***7/37 18.9%***	***7/37 18.9%***	***37/37 100%***	

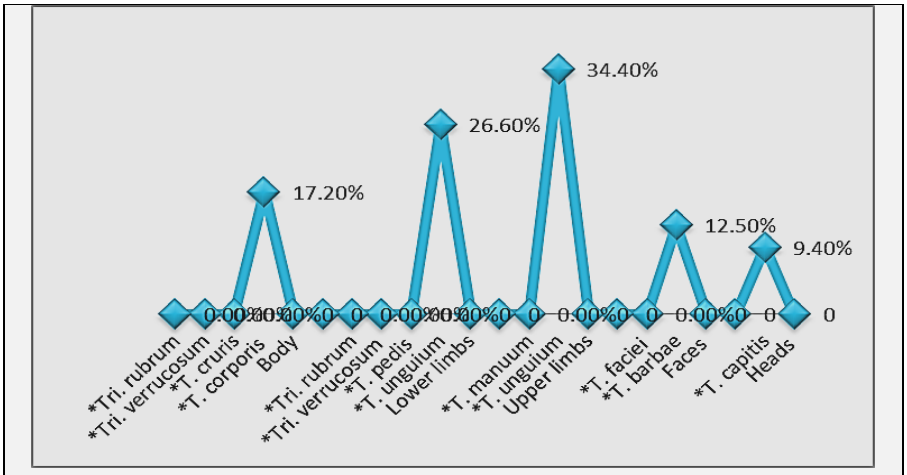


*No.: Number

Table and diagram 5 showed incidence of zoonotic superficial skin mycosis lesions area for farm workers, 11 farm workers had given 37 specimens from their lesions area. Specimens resulted in (29.7, 18.9, 18.9, 16.2 and 16.2%) from (upper limbs, lower limbs, body, heads and faces) of them respectively. The more infected farm workers were (the 7th and 9th).

Table and figure 6: Incidence of dermatophytes species from positive specimens of zoonotic superficial skin mycosis lesions for farm workers

*Dermatophytes *Spp. Total *No.=37*	**Spp. isolated *No.*	**Spp. *No. / Total *No.*	**Spp. isolated %*	*Total*
Heads *No.=6				
****T. capitis***	*6*	*6/64*	*9.4%*	
				6/64=9.4%
Faces *No.=6				
****T. barbae***	*5*	*5/64*	*7.8%*	
****T. faciei***	*3*	*3/64*	*4.7%*	
				8/64=12.5%
Upper limbs *No.=11				
****T. unguium***	*11*	*11/64*	*17.2%*	
****T. manuum***	*11*	*11/64*	*17.2%*	
				22/64=34.4%
Lower limbs *No.=7				
****T. unguium***	*7*	*7/64*	*10.9%*	
****T. pedis***	*7*	*7/64*	*10.9%*	
****Tri. verrucosum***	*2*	*2/64*	*3.1%*	
****Tri. rubrum***	*1*	*1/64*	*1.6%*	
				17/64=26.6%
Body *N0.=7				
****T. corporis***	*7*	*7/64*	*10.9%*	
****T. cruris***	*2*	*2/64*	*3.1%*	
****Tri. verrucosum***	*1*	*1/64*	*1.6%*	
****Tri. rubrum***	*1*	*1/64*	*1.6%*	
				11/64=17.2%
Total *Spp.	*64*	*64/64*	*100%*	*64/64=100%*

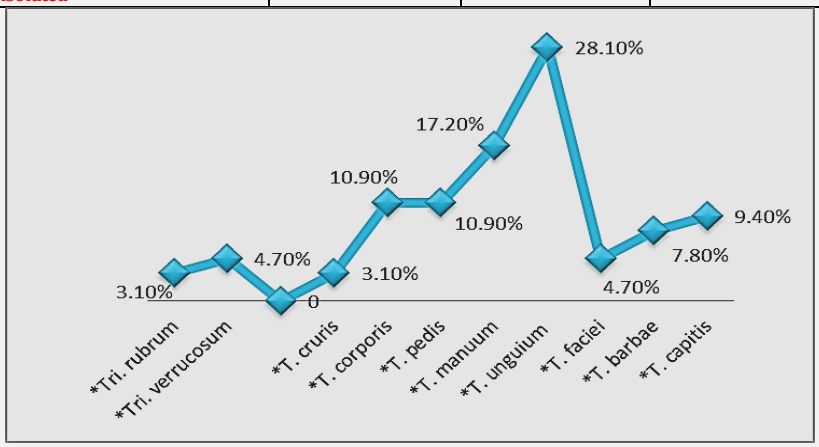


*No.: Number, *Spp.: Species, *T.: Tinea, *Tri.: Trichophyton

Table and figure 6 showed incidence of dermatophytes *species* from positive specimens of zoonotic superficial skin mycosis lesions for farm workers, the results were in (34.4, 26.6, 17.2 , 12.5 and 9.4%) respectively from upper limbs were included (*Tinea unguium* and *Tinea manuum*), lower limbs (*Tinea unguium*, *Tinea pedis*, *Trichophyton verrucosum* and *Trichophyton rubrum*), body (*Tinea corporis*, *Tinea cruris*, *Trichophyton verrucosum* and *Trichophyton rubrum*), faces (*Tinea barbae* and *Tinea faciei*) and heads (*Tinea capitis*) respectively.

Table and figure 7: Incidence of the total dermatophytes species from positive specimens of zoonotic superficial skin mycosis lesions for farm workers

Dermatophytes *Spp. Total *No.=64	***Spp. isolated *No.***	***Spp. *No. / Total *No.***	***Spp. isolated %***
Spp.			
T. capitis	*6*	*6/64*	*9.4%*
T. barbae	*5*	*5/64*	*7.8%*
T. faciei	*3*	*3/64*	*4.7%*
T. unguium	*18*	*18/64*	*28.1%*
T. manuum	*11*	*11/64*	*17.2%*
T. pedis	*7*	*7/64*	*10.9%*
T. corporis	*7*	*7/64*	*10.9%*
T. cruris	*2*	*2/64*	*3.1%*
Total *T. *Spp.	*59*	*59/64*	*92.2%*
Tri. verrucosum	*3*	*3/64*	*4.7%*
Tri. rubrum	*2*	*2/64*	*3.1%*
Total *Tri. *Spp.	*5*	*5/64*	*7.8%*
Total Dermatophytes *Spp. isolated	*64*	*64/64*	*100%*



*No.: Number, *Spp.: Species, *T.: Tinea, *Tri.: Trichophyton

Table and figure 7 showed incidence of the total dermatophytes *species* from positive specimens of zoonotic superficial skin mycosis lesions for farm workers, the results showed *Tinea species* were higher than *Trichophyton species in* values of (92.2 and 7.8%) respectively. The results of *Tinea species* were (28.1, 17.2, 10.9, 10.9, 9.4, 7.8, 4.7 and 3.1%) for *(Tinea unguium, Tinea manuum, Tinea pedis, Tinea corporis, Tinea capitis, Tinea barbae,* and *Tinea cruris)* respectively. While *Trichophyton species* were (4.7 and 3.1%) for (*Trichophyton verrucosum* and *Trichophyton rubrum)* respectively. The frequency of zoophilic fungal infections among farm workers compared to non-farm workers in eastern Poland, dermatophytes infection *Trichophyton verrucosum* was found in 3 farm workers[13]. Between (1992-1994), 32 isolates of *Trichophyton verrucosum* from cases of *(Tinea corporis, Tinea faciei* and *Tinea capitis*), patients included farm workers[15]. Approximately 60% of children were affected by *Tinea capitis*, and more than 50% of Europe was reported of *Tinea pedis*. *Ringworm* in humans was sometimes seen, particularly in *Tinea corporis*[18]. *Tinea pedis* was a common infection in the general population[19]. *Trichophyton verrucosum* infected cattle, farm buildings and straw, it can be transmitted[20]. Dermatophytes *species* were the most common causative agents of *Tinea* in rural areas of Iran[21]. Zoonotic dermatomycosis infection as *(Tinea pedis* and *Tinea manuum)* were found in 19.4% of farm workers. The most frequently isolated agent was *Trichophyton rubrum*[22]. Zoophilic *species* of dermatophytes, as *Trichophyton verrucosum*, was associated with domestic animals[25]. *Trichophyton verrucosum* was verified in calves and the owner[26]. Zoophilic dermatophytosis, during (2006–2007), only gave 5.2% were identified in cattle and *Trichophyton verrucosum* was isolated from animals. Moreover, 20.8% cases of human were identified and *Trichophyton verrucosum* was in the body, scalp, foot, nail and groin of the patients, was the predominant cause of dermatophytosis in livestock and dairy farm workers[27]. The significance of *Ringworm* in global economy. Although some attempts had been made at documenting human dermatophytosis[28]. Superficial mycosis was more prevalent in tropical and subtropical countries including India, *Trichophyton species*, was proved most common causative agents. Such fungi attack various parts of the body and lead to dermatophytosis as *Tinea pedis* effects on the feet; *Tinea unguium* on the fingernails and toenails; *Tinea. corporis* on the arms, legs and trunk, *Tinea cruris* groin area ; *Tinea manuum* hands and palm area, *Tinea capitis* on the scalp, *Tinea barbae* affects facial hair and *Tinea faciei* on the face[29].

IV. Conclusion

It was important to note that there were a high level of zoophilic dermatophytosis were sporadic infections from camels to farm workers which caused infections by dermatophytes *species*, typically same strains were invaded camels. There was no compulsory medical assessment before one started work as a farm worker. Many patients met an occupational health professional for the first time when the disease was already advanced and legal action towards obtaining an occupational rent had already been issued. In these circumstances, confirming or rejecting the possible occupational etiology of a given dermatitis was very difficult. The frequency of zoophilic fungal infections among the farm workers was higher in compared to non-farm workers. There was an occupational relationship was established when the same fungus was isolated from the both (camels and farm workers). There are many improvements in-need from veterinary site to the farm workers which is very workable in the field of occupational medicine in the farming field.

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VI. References

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