

Report

Spectrum of winter dermatoses in rural Yemen

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Abstract**Background** Surveys that have been carried out to determine the prevalence of skin diseases in rural Yemen are scarce or not available.**Objective** To investigate the spectrum of winter dermatoses in a rural Yemeni community.**Methods** A retrospective study was conducted at the dermatology outpatient clinic of the Al-Helal Specialized Hospital (Radaa' district of Al Bayda' Governorate) using data analysis of 700 selected records of patients managed during four months of the 2013–14 winter season.**Results** Seven hundred patients with 730 diseases were reported in this study; the major bulk of patients (46.57%) were in the >18–40-year age group, and females outnumbered males. By far, dermatitis, eczematous, and allergic disorders (38.49%) topped the list of the most frequent skin disorders groups, followed by skin infections and infestations (20%) and the pigmentary disorders (13.70%) group. Contact dermatitis (10.68%) was the most prevalent skin disorder, followed by hyperpigmentations (8.77%), acne (8.08%), viral infections (5.75%), atopic dermatitis (5.62%), and parasitic infestations (5.34%).**Conclusion** This survey has documented the spectrum of winter dermatoses in a rural Yemeni community but also reflects the pattern of common dermatoses in the whole country. Dermatitis, eczematous, and allergic disorders, skin infections, and pigmentary disorders are the commonest groups. Contact dermatitis is the most prevalent disorder, and leishmaniasis is the most prevalent skin infectious disease. Climate, occupational, social, and environmental factors are the main contributors. Such statistics can form an important basis for community-based health policies.**Introduction**

Skin diseases are a common problem in developing countries particularly in rural communities.¹ The World Bank Report 2002 estimated skin disease cases as more than 600 million in less developed countries.²

Up to 21–87% of the population may be affected by some type of skin problem, depending on the locale. Dermatoses can have a profound effect on both the individual and the community. They are responsible for considerable disability. Therefore, the WHO has stressed the need to address skin disease in developing countries.^{3–6}

There are more than 3000 known diseases of the skin.⁷ The pattern of skin diseases varies from one country to another and across different parts of the same country.⁸

Many regional factors, such as socioeconomic status, personal habits, cultural differences, climate, and heredity, influence the prevalence of skin diseases.⁹

Yemen is considered a rural community, with 74% of the population living in rural settlements, and many of them spread over a large territory with insufficient accessibility. Only 50% of the total population and 30% of the rural population has access to public health services.³

The WHO estimates that 80% of the populations of most developing countries rely on traditional medicine as their primary source of healthcare.¹⁰ Traditional medicine still plays an important role in Yemen, and in many rural areas, it is the only medical assistance available.¹¹

Surveys that have been carried out to determine the prevalence of skin diseases in rural populations in Yemen are scarce or not available.¹²

Objective

To the author's knowledge, no study to date in the English language literature has investigated the seasonal prevalence of skin diseases in Yemen. This study was set up to investigate the spectrum and relative magnitude of common winter dermatoses in rural Yemeni communities.

Patients and methods

At the dermatology outpatient clinic of the Al-Helal Specialized Hospital (Radaa' district, Al Bayda' Governorate, Yemen) a retrospective cross-sectional study was conducted using data

analysis of 700 selected manual records of patients managed during the 2013–2014 winter season.

The study sample encompasses 175 consecutive patients from each month who were seen on their first visit from December 2013 to March 2014. The majority of patients were from rural villages of the 21 districts of Al Bayda' Governorate and adjacent areas in central Yemen.

Patients attending our clinic were either by self-referral or referred from primary care units in remote villages. They were managed by the author, and diagnoses were based on history, examination, microscopy, dermoscopy, and Wood's light, but further laboratory investigations were used to confirm difficult diagnoses.

Study variables included age, sex, disease group, subgroup, and disease name. Patients were distributed into nine age groups, and skin conditions were classified into 13 principal groups according to the etiologic and morphological criteria (author's classification). Selected records were analyzed using a Microsoft Access database, and the frequency of each variable was calculated.

Results

Seven hundred patients with 730 diseases were reported in this study; some presented with more than one complaint.

Of all patients, 468 (66.86%) were females and 232 (33.14%) were males, with a female-to-male ratio of 2.02 : 1.

Figure 1 shows patient distribution by age and sex; the majority of patients (326, 46.57%) were in the >18–40 year age group, 163 patients (32.29%) in the >2–12 years group, 108 (15.43%) in the >12–18 years group, and 35 (5%) in the 0–2 years group. Females were the most predominant sex in all age groups.

Figure 2 shows the overall prevalence of principal skin disorder groups, and their frequency among each age group. Of all the groups, dermatitis, eczematous, and allergic disorders topped the list (281 patients, 38.49%;

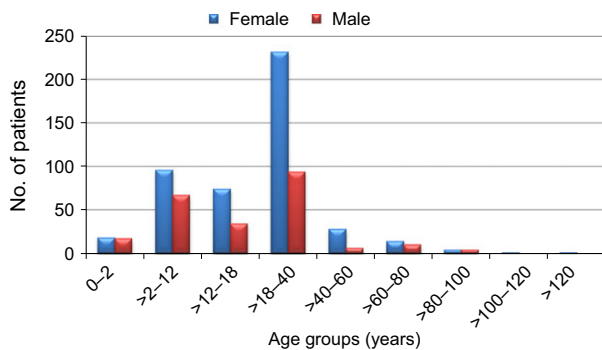


Figure 1 Patient distribution by age and sex

188 females and 93 males), followed by the skin infections and infestation group (146 patients, 20%; 93 females and 53 males), the pigmentary disorders group (100 patients, 13.70%; 64 females and 36 males), and then the acne and acneiform disorders group (84 patients, 11.51%; 65 males and 19 females). The female sex group was more frequent among all skin disorder groups, except the metabolic and nutritional group, which had equal distribution.

Table 1 shows detailed information about the frequency and rates of the skin disorder subgroups. In the dermatitis, eczematous, and allergic disorders group, contact dermatitis (27.76%) was the most prevalent disorder (particularly, irritant contact dermatitis), followed by atopic dermatitis (14.60%), photodermatitis (11.03%), and acute urticaria (10.68%). In the skin infections group, viral infections (28.77%) were the most prevalent disorder, followed by parasitic (26.71%), fungal (23.29%), and bacterial infections (21.23%). In the pigmentary disorders group, hyperpigmentation (64%) was the most prevalent pigmentary disorder, followed by hypo- and depigmentation (36%). In the acne and acneiform group, acne (70.25%) was the most prevalent disorder, followed by rosacea (20.24%) and miliaria (4.76%). Hair loss (47.92%) and alopecia (37.5%), psoriasis (80.95%), and benign tumors (94.44%) were prevalent within their groups.

Figure 3 shows the overall top 10 prevalent skin disorders (subgroups) and their frequency among each age group, respectively: contact dermatitis (10.68%), hyperpigmentations (8.77%), acne (8.08%), viral infections (5.75%), atopic dermatitis (5.62%), parasitic infestations (5.34%), hypo- and depigmentation (4.93%), fungal infections (4.66%), photodermatitis (4.25%), and bacterial infections (4.25%). By far, the top 10 skin disorders were more predominant in the >18–40 age group, except photodermatitis, which was predominant in the >2–12 age group.

Table 2 shows the frequency of different skin infectious and infestations diseases and their prevalence in both

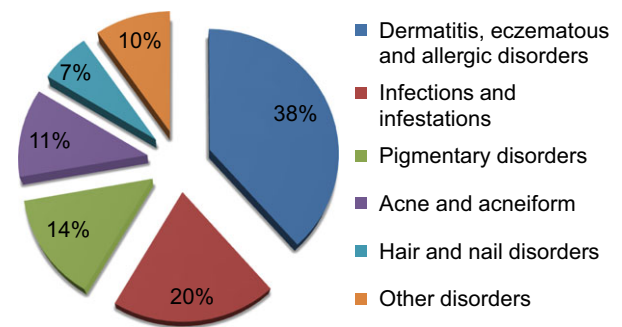


Figure 2 Frequency of principal skin disorders groups

Table 1 Frequency and rates of common skin disorders subgroups

Disease group/subgroup	Frequency	% to group	% to grand total (730)
Dermatitis, eczematous and allergic disorders	281	–	38.49
Contact dermatitis	78	27.76	10.68
Atopic dermatitis	41	14.60	5.62
Photodermatitis	31	11.03	4.25
Acute urticaria	30	10.68	4.11
Papular dermatitis	24	8.54	0.33
Seborrheic dermatitis	23	8.19	3.15
Others	54	19.22	7.40
Infections and infestations	146	–	20
Viral	42	28.77	5.75
Parasitic	39	26.71	5.34
Fungal	34	23.29	4.66
Bacterial	31	21.23	4.25
Pigmentary disorders	100	–	13.70
Hyperpigmentation	64	64	8.77
Hypo- and depigmentation	36	36	4.93
Acne and acneiform	84	–	11.51
Acne	59	70.25	8.08
Rosacea	17	20.24	2.33
Miliaria	4	4.76	0.55
Others	4	4.76	0.55
Hair and nail disorders	48	–	6.58
Hair loss	23	47.92	3.15
Alopecia	18	37.5	2.47
Hypertrichosis and hirsutism	3	6.25	0.41
Others	4	8.33	0.55
Keratinization disorders	21	–	2.88
Psoriasis	17	80.95	2.33
Others	4	19.05	0.55
Tumors	18	–	2.47
Benign	17	94.44	2.33
Malignant	1	5.56	0.14
Scars	1	–	1.51
Burns	6	–	0.82
Vascular disorders	5	–	0.68
Autoimmune disorders	5	–	0.68
Metabolic and nutritional disorders	4	–	0.55
Genodermatoses	1	–	0.14

their subgroups and group. Of all the parasitic infestations, leishmaniasis (30 patients, 76.92%) was the most prevalent parasitic infestation, followed by scabies (eight, 20.51%). Of all the viral infections, viral warts (20 patients, 47.62%) were the most prevalent viral infection, followed by herpes zoster (nine, 21.43%). Of all the bacterial infections, impetigo (12 patients, 38.71%) topped the list of bacterial infections, followed by other bacterial infections (11, 35.48%) and folliculitis (six, 19.35%). Of all fungal infections, tinea versicolor (nine patients, 26.47%), tinea capitis (seven, 20.59%), and tinea corporis (five, 14.71%) were the commonest.

Of all the skin infections and infestations groups, leishmaniasis (30 patients, 20.55%) was the most prevalent dermatoses, followed by viral warts (20 patients,

13.70%), impetigo (12 patients, 8.22%), and other bacterial infections (11 patients, 7.53%).

Discussion

This study is the first describing the spectrum of winter skin disorders in Yemen and the second in the country that discusses the spectrum of skin dermatoses in Yemen as a whole; the first study was conducted by Khatri¹² at the Dermatology Clinic of Saudi Hospital at Hajjah and discussed the spectrum of skin diseases in Hajjah and the adjacent region (published in 2004).

The current study was conducted at the dermatology clinic of the Al-Helal Specialized Hospital, Radaa, which has served the referral dermatology unit in Al Bayda

Governorate since 2003. The majority of patients applying to the clinic are from rural villages of the 21 districts of Al Bayda and fewer numbers from cities and neighboring governorates (Ibb, Dhamar, Al Dhalea, and Marib).

The study sample encompasses manual records of the first visit of 175 consecutive patients from each month from December 2013 to March 2014 (winter months),

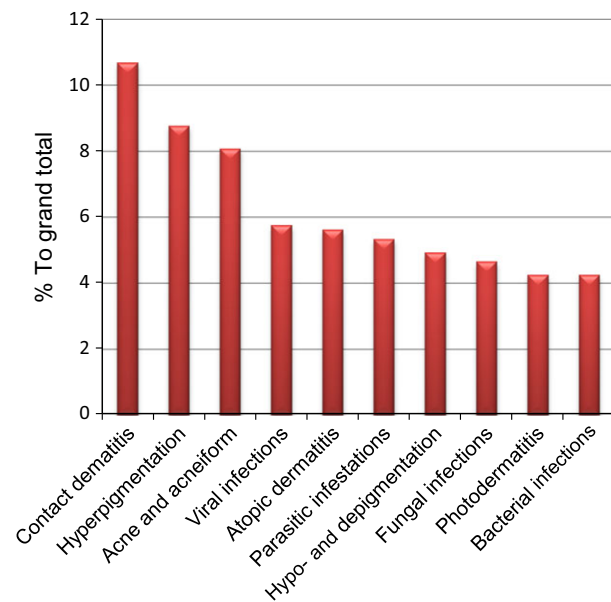


Figure 3 Top 10 most prevalent skin disorders

because it was difficult to analyze and computerize a larger number of those patients' records. Summer dermatoses will be studied in a future study.

This study has documented the current spectrum and relative magnitude of winter dermatoses in a rural community of central Yemen but also reflects the pattern of common skin disorders in the Yemeni rural population as a whole.

The Al Bayda Governorate (11,193 km² area and 695,000 inhabitants¹³) is located within the central region of Yemen, topping the inner (central) highlands, which are more like a plateau of about 2000–3200 m, the mean temperatures range from below 15 °C in winter to 25 °C in summer. The number of days and nights that are considered hot under current climate conditions is projected to increase, and the projected rate of warming is more rapid in these areas more than in areas close to the coast.¹⁴

As in many other studies from developing countries such as Saudi Arabia,¹⁵ Pakistan,¹⁶ Nepal,¹⁷ Kenya,¹⁸ and India,¹⁹ females were more vulnerable than males, and the current study indicated that females attended the dermatology clinic more frequently than males; this was considerably higher than that reported from Hajjah,¹⁰ and adults >18–40 years of age (46.57%) than other age groups. The age-related finding is also endorsed by a study in Hajjah¹⁰ (approximately 54% of the patients were in the 11–30 year age group) and Pakistan (the most commonly affected age group was between 21 and 30 years).²⁰ The author refers that to excess of women in

Table 2 Frequency of common skin infectious diseases

Skin infections and infestations subgroups	Dermatoses	No. of patients	% to subgroup	% to skin infections group	
Viral	Warts	20	47.62	13.70	
	Herpes zoster	9	21.43	6.16	
	Chickenpox	4	9.52	2.74	
	Molluscum contagiosum	4	9.52	2.74	
	Herpes simplex	1	2.38	0.68	
	Others	4	9.52	2.74	
	Parasitic	Leishmaniasis	30	76.92	20.55
	Scabies	8	20.51	5.48	
	Others	1	2.56	0.68	
	Fungal	Tinea versicolor	9	26.47	6.16
	Tinea capitis and kerion	7	20.59	4.79	
	Tinea corporis	5	14.71	3.42	
	Tinea facialis	4	11.76	2.74	
	Tinea pedis	4	11.76	2.74	
	Onychomycosis	2	5.88	1.37	
	Tinea cruris	2	5.88	1.37	
	Candidiasis	1	2.94	0.68	
	Bacterial	Impetigo	12	38.71	8.22
		Other bacterial	11	35.48	7.53
		Folliculitis	6	19.35	4.11
Others		2	6.45	1.37	

villages compared to men, in addition to social, occupational, habitual, psychological, and environmental factors related to the central Yemen rural population.

Higher than proportions reported by other studies conducted in Hajjah (northern Yemen),¹¹ neighboring Saudi Arabia,^{21,22} Qatar,²³ and Iraq,²⁴ the spectrum of winter dermatoses in the current study revealed that the dermatitis, eczematous, and allergic disorders group alone comprised more than one-third (38.49%) of the 730 skin diseases diagnosed in this study, and contact dermatitis was the most commonly encountered condition in the dermatitis, eczematous, and allergic disorders group (27.76%), ranked as the first in the top 10 most prevalent disorders (10.68%). In comparison, Khatri, reported that the dermatitis and eczematous disorders group comprised the largest number of patients (27.2%), and contact dermatitis was the second common subgroup with an overall prevalence of 6.4% in the above-mentioned study in north-west Yemen.¹²

The largest number of cases of occupational skin diseases was among construction workers, although the highest incidence has been reported in agriculture workers.²⁵ In contrast, the author considers contact dermatitis (irritant and allergic) as the most common occupational dermatoses in the Al Bayda Governorate, referring to the intense use of illegal agricultural pesticides particularly in khat shrub cultivation (the gross domestic product of the agricultural sector),²⁶ the cold climate, prolonged contact of housewives to water, soap powder detergents, and rubber products (e.g., gloves and footwear), commonly used dyes particularly in hair coloring products and henna, cheap cosmetics, widely-used popular treatment regimens, cement, and electric generator fuel.

Atopic dermatitis was the second most commonly encountered in the dermatitis, eczematous, and allergic disorders subgroup (14.60%) in this study and ranked as fifth in the top 10 most prevalent disorders (5.62%); considerably higher than that reported from Hajjah (2.6%).¹⁰ There has been a threefold increase in patients with atopic dermatitis in the past 30 years, but the reason for this is not clear, and the hygiene hypothesis seems to be the best explanation.²⁷

Photodermatitis (which is either allergic or toxic) was the third most commonly encountered condition in the dermatitis, eczematous, and allergic disorders group (11.03%), ranked as ninth in the top 10 most prevalent skin disorders (4.25%), and children (>2–12 years) were more vulnerable to photodermatitis and sunburns; which was also considerably higher than that reported from Hajjah (1.5%).¹⁰

The skin infections and infestations group (20%) was the second most common group; comparable findings were reported from northern Yemen,¹¹ where skin infec-

tions were the second most common group (24.2%) and the fungal infections subgroup was the first most common skin infection with an overall prevalence rate of 5.75%, while in the current study viral infections were the most common skin infections (28.77%) and ranked as the fourth in the top 10 most prevalent disorders (5.75%). A comparable study conducted at the dermatology clinic at King Khaled Hospital in Al-Majmaah (Saudi Arabia)¹⁴ has reported that viral infection was the most prevalent infectious disorder, as found in the current study.

The current study revealed that leishmaniasis was the most common parasitic infestation (76.92%), the first most prevalent infectious disease (20.55%), with an overall prevalence of 4.11% among all detected skin diseases, with an expected higher occurrence in summer and autumn; an interesting finding, which was higher than that reported from Hajjah of northern Yemen (0.9%),¹⁰ and nearby Saudi Arabia.¹⁴ The author has previously reported 152 cases of leishmaniasis from central Yemen, detected within the five months of spring and summer 2013,²⁸ which reflect the magnitude of leishmaniasis disease in that region. Climate change and rising temperature may explain the high incidence of leishmaniasis in a cold season, as in our study. The magnitude of leishmaniasis disease is alarming in central Yemen and the country as a whole.

The current study revealed that the pigmentary disorders group was the third most common winter disorders group (13.70%), and comparative data have been reported from Qassim of Saudi Arabia. Hyperpigmentations were the most common in the pigmentary disorder subgroup (64%), ranked as second in the top 10 most prevalent disorders (8.77%), and chloasma and melasma were the commonest hyperpigmentary dermatoses, which is higher than that reported from comparable regions and countries.^{10,15} The author suggests that occupational, psychological, and environmental factors are responsible. Although hyperpigmentations were very common during the winter season in rural Yemen, as in this study, higher rates are expected during the summer season.

Conclusion

This survey has documented spectrum and relative magnitude of winter dermatoses in a rural community of central Yemen but also reflects the pattern of common skin disorders in the rural Yemeni population and the country as a whole.

Females and adults are predominantly the most affected groups. Dermatitis, eczematous, and allergic disorders, followed by skin infections and infestations, and pigmentary disorders are the commonest skin disorder groups. Contact dermatitis (allergic and irritant), followed by hyperpigmentations, acne, viral infections, atopic

dermatitis, and parasitic infestations topped the list of the most prevalent skin disorders. Leishmaniasis is the most prevalent skin infectious disease, and climate, occupational, social, cultural, psychological, and environmental factors contribute greatly to that situation. It is likely that this survey underestimates the burden of skin disease among rural communities, and such statistics can form an important basis for community-based health policies.

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