

Prevalence of skin diseases in rural areas of Assiut Governorate, Upper Egypt

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Abstract

Background Few epidemiological surveys have been carried out to determine the prevalence of skin diseases in the population of Egypt, particularly "Upper Egypt". So it is a pressing necessity to conduct such a study in rural Assiut.

Objectives To determine the prevalence of various skin diseases in rural Assiut.

Subjects and methods A cross-sectional community-based survey was followed. The survey included 8008 rural inhabitants of all ages and both sexes from a representative of three villages of Assiut Governorate, Upper Egypt. The data were collected through personal interview and examination at homes from December 1994 to December 1996.

Results They showed that 6961 (86.93%) of the studied population had one or more skin diseases. The group with parasitic skin infestations had the highest prevalence rate (27.40%) of the total sample, of which pediculosis capitis (19.37%) was the commonest. Eczema/dermatitis group had a rate of 19.82%, with pityriasis alba forming the majority (13.49%). Pigmentary disorders were 17.68%, followed by fungal skin infections (16.17%), then naevoid disorders (16.10%), hair and scalp disorders (12.07%), bacterial skin infections (10.10%), sweat gland disorders (6.16%), acne vulgaris (5.37%). Leprosy constituted 1.6/10,000. Other various skin disorders were recorded.

Conclusions Infective-parasitic diseases were a major problem particularly among the younger age-group and those of low socio-economic status.

Introduction

A major reason for targeting skin diseases in the developing world is that the majority are transmissible and therefore potentially preventable and controllable.¹⁻³

Most of the available statistics on the pattern of skin diseases have been based on hospital or private practice, and can provide a very crude indication of true prevalence and incidence in a community, as many social and economic factors affect the decision to seek medical advice.^{4,5} So, the present study was designed to determine the actual extent of the skin disease problem in Assiut Governorate, Upper Egypt, especially in the rural areas.

Subjects and Methods

Assiut Governorate is located 375 km south of Cairo. In 1996, the total population was 2,802,185, and the rural population represented 72.76% according to CAPMAS (1997).⁶

A cross-sectional study was carried out among three rural representative areas of Assiut Governorate: one mother village on the east of the River Nile; and two small villages on the west of the River Nile. The study areas were mapped, the houses were

numbered and the household members were listed. Systematic random sample of the village, i.e. every other house and total coverage of the two ezbas, were followed to yield 8494 persons with a 94.28% response rate (8008 interviewed subjects).

Two study questionnaires were designed: one for the family and house, i.e. father's and mother's education and work position, family size, information tools, and sanitation for assessment of a social standard score,⁷ and a personal and clinical examination. A pilot study was carried out to test the questionnaires.

Communication with the health authority and the community leaders were assured. Home visits were conducted during the period from December 1994 to December 1996, covering all seasons. Data were collected through a personal interview with the household members at their homes. Their consent to participate was verbally requested. A suitable place within the house in day-light was used for the clinical examination by one female dermatologist.

Treatment was prescribed, and was sometimes offered to poor persons, and some cases were referred to Assiut University Hospital. Several visits and appointments were arranged to decrease "dropout".

Diagnoses were recorded according to the International Classification of Diseases (ICD 10th revision)⁸ and to the Rook/Textbook of Dermatology.⁹ Diagnosis of atopic dermatitis was

Table 1 Distribution of affected persons by skin diseases according to sex in rural Assiut, Upper Egypt

Sex	Free		Affected		Total	
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Males	671	17.29	3209	82.71	3880	48.45
Females	376	9.11	3752	90.89	4128	51.55
Total	1047	13.07	6961	86.93	8008	100.00
χ^2 -test	$P = 0.0001$					

based on the criteria of Hanifin and Rajka.¹⁰ For data entry and statistical analysis the EPI INFO-5 program (Assiut University Hospital, Assiut, Egypt) was used.

Results

Overall prevalence of skin diseases

It was reported that 86.93% of the total studied population had one or more skin diseases.

1 Sex: Prevalence of skin diseases among females (90.89%) was significantly higher than males (82.71%) (Table 1).

2 Age: The highest prevalence of skin diseases was observed in the old age group (60+ years) at 94.34%; in younger age-groups (5-9 and 10-19 years) the prevalence was 91.57% and 91.28%, respectively. The lowest prevalence (72.56%) was observed in the age group 0-4 years (Table 2).

3 Socio-economic status: The lowest prevalence of skin diseases was detected among persons belonging to "high" class (76.76%), while the highest prevalence was among "very low" class (87.88%). The prevalence of skin diseases decreased with upgrading of social class (Table 3).

4 Number of skin disorders among affected persons: Persons free of skin disease comprised only 13.07% of the total population. Those with one skin disease comprised 43.79%, while 30.51% presented with two skin diseases and 12.63% had three or more skin diseases (Fig. 1).

Prevalence of infective-parasitic skin diseases

1 Parasitic diseases: Pediculosis was the most common disease, while insect bite constituted 6.31%, and lastly scabies

Table 2 Distribution of affected persons by skin diseases according to age in rural Assiut, Upper Egypt

Age group (years)	Free		Affected		Total	
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
0-4	380	27.44	1005	72.56	1385	17.30
5-9	111	8.43	1206	91.57	1317	16.45
10-19	181	8.72	1895	91.28	2076	25.92
20-29	106	11.09	850	88.91	956	11.94
30-39	117	14.61	684	85.39	801	10.00
40-49	73	12.67	503	87.33	576	7.19
50-59	50	12.99	335	87.01	385	4.81
60+	29	5.66	483	94.34	512	6.39
Total	1047	13.07	6961	86.93	8008	100.00
Mean \pm SD	21.28 \pm 18.88		17.37 \pm 17.95		21.86 \pm 18.95	
t-test	$P = 0.0001$ sign					

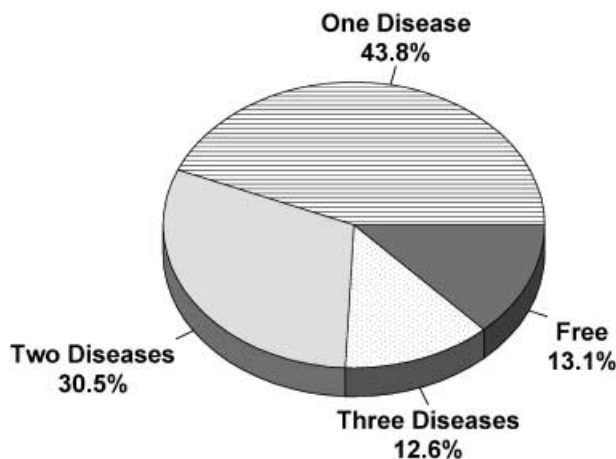


Figure 1 Distribution of affected persons with skin conditions according to the number of diseases in rural Assiut, Upper Egypt

was 1.72%. Fungal diseases: Tinea (T) pedis was the most common fungal infection (7.95%) followed by T. versicolor (5.74%), T. capitis (0.96%) and T. corporis (0.56%).

2 Bacterial diseases: Boils (5.47%) and impetigo (3.31%) constituted the main groups in this category.

Socio-economic class	Free		Affected		Total	
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Very low	141	12.12	1022	87.88	1163	14.52
Low	615	12.44	4328	87.56	4943	61.73
Middle	235	14.15	1426	85.85	1661	20.74
High	56	23.24	185	76.76	241	3.01
Total	1047	13.07	6961	86.93	8008	100.00
χ^2 -test for linear trend	$P = 0.0001$					

Table 3 Distribution of affected persons by skin diseases according to socio-economic status in rural Assiut, Upper Egypt

Table 4 Prevalence of common infective-parasitic skin diseases in rural Assiut, Upper Egypt

Infective parasitic skin diseases	Number of cases	% of total population (prevalence) (n = 8008)
Parasitic: n = 2194 (27.40%)		
Pediculosis capitis	1551	19.37
Insect bite	505	6.31
Scabies	138	1.72
Fungal: n = 1295 (16.17%)		
T. pedis	637	7.95
T. versicolor	460	5.74
T. capitis	45	0.56
T. corporis	29	0.36
Bacterial: n = 809 (10.10%)		
Boils	438	5.47
Impetigo	265	3.31
Viral: n = 185 (2.31%)		
Warts	78	0.97
Herpes simplex	57	0.71
Mycobacterial: n = 16 (0.20%)		
Leprosy	13	0.16
Cut. Tuberculosis	3	0.04

3 Viral diseases: Warts came at the top of list of viral diseases (0.97%).

4 Mycobacterial skin diseases: They constituted a significantly minor prevalence: leprosy constituted 0.16% and cutaneous tuberculosis 0.04% (Table 4).

Prevalence of non-infective skin diseases

1 Eczema/dermatitis disorders: The prevalence rate of eczema/dermatitis disorders was 19.81%. Nevertheless, pityriasis alba came at the top of the list of these disorders at 13.49%. The other main entity was: prurigo (1.16%).

2 Pigmentary Disorders: The prevalence of pigmentary disorders was 17.68%. Lentigines were the commonest disorder with a prevalence of 7.46%, then melasma (3.23%), freckles (1.30%), and vitiligo (1.22%).

3 Appendages and scalp disorders: Diffuse hair loss constituted a major entity (8.37%). Dandruff constituted 1.37%. Miliaria constituted the main detected sweat gland disorder, with a prevalence rate of 5.84%. Acne vulgaris constituted 5.37% of the studied population.

4 Papular urticaria, urticaria and other disorders: The prevalence rates were 1.82% for papular urticaria and 1.67% for urticaria (Table 5).

Discussion

Size of the problem

In this survey, the prevalence rate of detected skin disorders

Table 5 Prevalence of common non-infective skin diseases in rural Assiut, Upper Egypt

Non-infective skin diseases	Number of cases	% of total population (prevalence) (n = 8008)
Eczema/dermatitis: n = 1587 (19.82%)		
Pityriasis alba	1080	13.49
Prurigo	93	1.16
Seborrhoeic dermatitis	92	1.15
Atopic dermatitis	85	1.06
Pigmentary disorders: n = 1416 (17.68%)		
Lentigines	597	7.46
Melasma	259	3.23
Freckles	104	1.30
Vitiligo	98	1.22
Hair and scalp disorders: n = 967 (12.07%)		
Diffuse hair loss	670	8.37
Dandruff	110	1.37
Sweat gland disorders: n = 493 (6.16%)		
Miliaria	468	5.84
Sebaceous gland disorders: n = 430 (5.37%)		
Acne vulgaris	430	5.37
Papular urticaria and urticaria: n = 280 (3.49%)		
Papular urticaria	146	1.82
Urticaria	134	1.67
Other disorders		
Skin tags	102	1.27
Solar comedones	78	0.97
Solar kartzosis	22	0.27
Psoriasis	15	0.19

among the studied rural population of Assiut Governorate, Upper Egypt, was 86.93%.

In a similar rural survey in El-Tall El-Kabir (Egypt), a skin disease prevalence rate of 72.3% was recorded.¹¹

In a rural Tanzania, the prevalence of clinically significant skin conditions was 26.9%.³ In the USA, it was found that 31.24% of a 20,749 civilian noninstitutionalized population aged 1–74 years had some skin problems that should have been seen at least once by a physician.¹²

The high prevalence rate of skin diseases in the present study and the variations between prevalence rates in different surveys could be explained by the following:

1 The differing survey methods, particularly the definitions of skin diseases, are a serious problem, preventing the valid comparison of such studies. Here, all the skin diseases whether of concern or not to the persons were recorded. Also, the classification of skin diseases differs; some disorders included herein had not been included in other comparable studies.

2 It seems possible that variations in the sample size are of great importance.

3 The high figure in the present study may be the result of a real increase, because the study was conducted in rural areas with low socio-economic status and low environmental sanitation, which are important contributory factors for transmissible skin diseases.

Prevalence of infective-parasitic skin diseases

Skin infections and parasitic infestations comprised a sizeable portion, with prevalence rates of 28.80% and 27.40% among the studied rural population.

Pediculosis capitis was the most prominent skin disease having a prevalence rate of 19.37%. Among a rural population in El-Tall El-Kabir, parasitic infestations ranked at the top of the list, while pediculosis capitis had a relatively low prevalence rate of 14.2%.¹¹ In some urban localities in Pakistan, the prevalence of pediculosis infestation was significantly higher (36.7%),¹³ whereas it was lower (5.3%) among a rural population in Tanzania.¹⁴ Pediculosis capitis cases are more prevalent among very low and low social classes. Also, there is a gradient between home density (crowding) and pediculosis infestation.^{3,15} In this study, 45.5% were living in houses with a crowding index of more than three persons per bedroom. Pediculosis capitis cases are usually school-centred where crowded classrooms are considered as a factor facilitating transmission of the disease.¹⁶ The highest age-specific prevalence was found in the youngest age group, and also that age represented a large sector of the total population.

Insect bites were seen in 6.31% of the studied population. This is more or less in agreement with the rural population in El-Tall El-Kabir, Egypt (4.6%).¹¹

Scabies was relatively uncommon in this study (1.72%). On the other hand, high prevalence rates of scabies were recorded in El-Tall El-Kabir (23.5%)¹¹ and in Mit-Monad village (5.4%) in Dakahlia, Egypt.¹⁷ Also, the prevalence rates were 15% in rural areas in Mexico¹⁸ and 4.5% in rural Tanzania.¹⁴ The low prevalence of scabies had no clear explanation. Nevertheless, Barret and Morse¹⁹ stated that the prevalence of scabies shows a cyclic pattern with a periodicity of 10–30 years.

Fungal skin infections constituted 16.17% in this study. A high prevalence rate of fungal skin diseases (20.5%) was detected in rural Montazah, Alexandria, Egypt.²⁰ In Iran, superficial mycoses comprised 9% of the total study population.²¹ In rural Tanzania, lower prevalence rates ranging from 4 to 6.62% were recorded.^{3,14} The reason for such differences between various reports may be because of variation in the climatic and hygienic factors of these communities.

Tinea pedis was the commonest fungal infection with a prevalence rate of 7.96% in this study. Contrary to previous findings, in rural Tanzania, T. pedis was only 0.43%.¹⁴ In the USA, T. pedis was present in 3.87% of the surveyed population, ranking at the top of the dermatophytoses.¹²

It seems unusual to report a high prevalence rate of T. pedis among a rural population in this study. This might

be explained by an increase in the number of students with increased shoe wearing, with resultant humidity and maceration of the toe-cleft skin, which is predisposed to this condition, and in most cases initiates as web-space infection.

Tinea versicolor had a prevalence of 5.74% in this study. In northern Malawi, a significantly higher prevalence of T. versicolor (17.9%) was observed among the total population.²² In the USA, the prevalence of T. versicolor was significantly lower (0.84%) among the total population.¹²

Differences in the prevalence rates of T. versicolor among different surveys have been devoted mainly to individual susceptibility. In addition, environmental factors may play a role with higher prevalence rates in tropical climates than in temperate ones.

Tinea capitis ranked the third fungal skin disease, with a prevalence rate of 0.96%. It was predominant in the youngest age-group, 0–9 years (2.18%), followed by the 10–19-year age group (0.87%). Relatively comparable findings (with respect to age-group variations) were reported in Qatar²³ and in the Nablus area (Palestine).²⁴ In tropical Africa, higher rates were reported in Nigerian school children (10.8%).²⁵

Bacterial skin infections had a prevalence rate of 10.10%. From other developing countries, nearly similar results were reported, e.g. 12% in Tanna, Vanuata,²⁶ and 8% in rural Ethiopia.²⁷

Lower rates were observed in rural Tanzania (3%)¹⁴ and in rural Mexico (6%).¹⁸ On the other hand, higher prevalence rates of bacterial skin infections were reported in rural Montazah in Alexandria, Egypt (26.9%),²⁰ and in El-Tall El-Kabir, Egypt (17.49%).¹¹

In this study, boils were not uncommon (5.47%), and impetigo had a prevalence rate of 3.31%. The prevalence rates were 1.54% vs. 10.2% in El-Akhras *et al.*'s¹¹ study of Egypt, and 0.4% vs. 11.2% in Dagnev and Erwin's survey.²

Viral skin infections constituted 2.31%, with warts having prevalence rate of 0.97% in this study. El-Akhras *et al.*¹¹ reported viral infections in 1.32% and warts in 0.8% in rural El-Tall El-Kabir. In rural Tanzania, the rates were 1.07–2.9%.^{3,14}

Leprosy had a prevalence rate of 16/10,000 in this study. A nearly similar result of 0.21% was reported in a rural population in Tanzania.¹⁴

Prevalence of non-infective skin diseases

Eczema/dermatitis group constituted 19.82% in this survey. Pityriasis alba was the commonest with a prevalence rate of 13.49%. Nearly similar results were observed in El-Tall El-Kabir (11.8%)¹¹ and in rural Mexico (15%).¹⁸

The prevalence of prurigo was 1.16%. Mahe *et al.*²⁸ reported prurigo in 1.5% of children aged less than 13 years in Mali. This is more or less similar to the prevalence of prurigo in the 0–9-years age group in the present study (1.78%).

Atopic dermatitis (AD) constituted 1.06% in this survey. A lower rate (0.6%) was reported in El-Tall El-Kabir.¹¹ Bahamdan *et al.*²⁹ reported AD in 1.7% of adolescent boys (11–19 years) in Saudi Arabia, which is similar to the same age group (1.59%) in this study. In the UK, an overall 1-year period prevalence rate for all age groups in a semirural community in Scotland was 2.3%.³⁰

Papular urticaria constituted 1.82%. Similar results were also reported in El-Tall El-Kabir (1.9%)¹¹ and in rural Tanzania (1.5%).³

Pigmentary disorders comprised 17.68% in the present study. Lentiginos had a prevalence rate of 7.46% and showed a linear increase with age. Lentiginos is a common condition that can appear at any age (but most often in childhood), and solar (senile) lentiginos are commonly seen in middle and elderly people.^{31,32} Melasma was reported in 3.23% of the studied population. A nearly similar prevalence rate was detected in rural Tanzania (3.20%).¹⁴ Melasma is known to be more common among dark-skinned people.³³ Freckles were present in 1.30% of the studied population. El-Akhras *et al.* reported it in 0.5% in their study.¹¹ It is to be mentioned that freckles are common in red or fair-haired and fair-skinned persons.³⁴ Vitiligo was not uncommon in this study, with a prevalence rate of 1.22%. Lower rates were reported in a rural area in Egypt (0.2%)¹¹ and in rural Tanzania (0.3%).³ Higher rates were reported among rural (4%) and urban (3%) populations from Mexico.¹⁸ The difference in the prevalence rates between different countries may depend mainly on racial variations, also the genetic factor is undoubtedly involved.

Diffuse hair loss had a prevalence rate of 8.37%. It was more prevalent among females than males, and peaked in the 20–29-year age group. This corresponds with the period of life stresses, particularly the child-bearing period in females besides other physical stresses.

Miliaria had a prevalence rate of 5.84%. It was most frequently observed in the young age group, 0–9 years, and it peaked during summer months. In Mexico, miliaria was 2% among rural and 8% among urban populations.¹⁸

Acne vulgaris was 5.37% among the surveyed population. Reports from developing countries showed also nearly comparable figures to those in rural Egypt (4.7%)¹¹ and in rural Tanzania (5.77%).¹⁴

The rarity of malignant skin tumors in the present study (only one case of basal cell carcinoma, i.e. 0.01%) is the result of the protection offered by melanin pigment in Egyptian skin against the effect of sun rays.

Of the other important but relatively less common skin disorders was psoriasis. It had a rate of 0.19% in this survey. Nearly similar observations were reported in rural El-Tall El-Kabir, Egypt (0.1%)¹¹ and in rural Tanzania (0.1%).³ But the rate is significantly lower than those in the USA and European countries.^{12,35} As a rule, tropical races are less frequently and

less severely affected than White people.³⁶ Thus, genetic and environmental factors are the main determinants for prevalence variations.

In conclusion, there was a high overall prevalence of skin diseases. Infective parasitic skin disorders were a major problem, although most of them could be easily diagnosed, treated and prevented. Environmental factors and socio-economic status had a determinant effect in the distribution of skin diseases. Such a survey study is of importance for planning good health services.

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