Prevalence of skin disorders among primary-school children in Baghdad governorate, Iraq

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معدّل انتشار اضطرابات الجلد بين أطفال المدارس الابتدائية في محافظة بغداد، العراق

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الخلاصة: اختار الباحثون 2160 من طلاب 30 مدرسة من المدارس الابتدائية في بغداد، العراق اختياراً عشوائياً، للتعرُّف على معدّل انتشار أمراض الجلد بينهم. وقد جمع الباحثون معطيات اجتماعية ديموغرافية من كل طالب، وفحصوا الأجزاء المكشوفة من جسم كل طالب فحصاً سريرياً. ووجدوا أن معدّل انتشار الأمراض الجلدية (40.9٪)، كما اتضح لهم ترابط يعتدّ به إحصائياً بين معدّل انتشار أمراض الجلد والمستوى التعليمي للآباء، وأن معدّلات انتشار أمراض الجلد السارية (8.8٪) وغير السارية (33.7٪). وقد يظهر من المعدّل المرتفع لانتشار اضطرابات الجلد الأوضاع الاجتماعية والاقتصادية المتدنية.

ABSTRACT To determine the prevalence of skin diseases among primary-school children in Baghdad, Iraq, a total of 2160 schoolchildren were randomly selected from 30 primary schools. Sociodemographic data were collected from each pupil and exposed parts of the body of each child were clinically examined. The overall prevalence of skin diseases was 40.9%. A significant association between the prevalence of skin diseases with education level of parents was demonstrated. The prevalence rates of transmissible and nontransmissible skin diseases were 8.8% and 33.7% respectively. The high prevalence rate may reflect prevailing low socioeconomic conditions.

Prévalence des affections cutanées parmi les enfants d'école primaire du gouvernorat de Bagdad, Iraq

RÉSUMÉ Afin de déterminer la prévalence des affections cutanées parmi les enfants des écoles primaires à Bagdad (Iraq), 2 160 écoliers ont été sélectionnés au hasard dans 30 écoles. Les données socio-démographiques ont été recueillies auprès de chaque élève et les parties du corps exposées de chacun d'entre eux ont été examinées sur le plan clinique. La prévalence globale des affections cutanées était de 40,9 %. Une association significative entre la prévalence des affections cutanées et le niveau d'éducation des parents a été établie. Le taux de prévalence des affections cutanées contagieuses et non contagieuses était de 8,8 % et 33,7 % respectivement. Ce taux de prévalence élevé peut refléter les mauvaises conditions socio-économiques observées dans le pays.

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Introduction

Skin diseases are a major health problem affecting a high proportion of the population and causing distress and disability [*1*]. They are more frequent among primary-school children in both developing and industrialized countries [*2*]. Unfortunately, no previous study concerning the overall burden of skin diseases among primary-school children in Baghdad, Iraq, has been carried out. However, studies on the prevalence of pediculosis [*3,4*] and atopic dermatitis [*5*] are available. A prevalence of 31.8% of skin diseases among students was reported in Basra,, Iraq [*6*].

This study was designed to determine the prevalence of skin diseases among primary-school children in Baghdad, and to describe their association with various sociodemographic factors such as age, sex, residence and education level of parents.

Methods

This cross-sectional survey was conducted from 10 February to 26 April 2004.

A multi-stage, stratified sample of 2160 schoolchildren from 30 primary schools in Baghdad governorate was randomly selected for the study. In the first sampling stage primary schools were classified into 4 groups according to sex and residence. They were categorized into urban male schools, urban female schools, rural male schools, and rural female schools. Then using the appropriate allocation method of sampling, 20 schools were randomly selected from the urban groups and 10 schools from the rural schools. In the second sampling stage 12 pupils were selected from each grade by simple random sampling. Sample size was determined using a confidence level of 95%, with 10% degree of precision of the expected proportion and an estimated prevalence of 16%.

A self-administered, closed-ended questionnaire was designed by the researchers. The questionnaire was subjected to a pilot trial on 50 children before it was distributed in its final form. Analysis revealed that the questionnaire was consistent, reliable and easy to answer. Then the questionnaire form was distributed to each selected pupil to be answered by his parents. Verbal consent was obtained from the children, who were asked to bring written consent from their parents for participation in the study. All questionnaires were returned with completed responses. Data collected included general sociodemographic information such as age, sex, residence (urban or rural), number of household members, number of rooms and educational level of parents. Household crowding index was calculated by dividing the number of household members by the number of rooms.

The exposed parts of the body of each child were clinically examined by a consultant dermatologist and the dermatological findings were recorded. Wood's light examination was used to confirm the diagnosis of tinea capitis, pityriasis versicolor and vitiligo. Skin diseases were classified into transmissible and nontransmissible diseases according to the classification adopted by other workers [*7,8*]. Transmissible skin diseases were categorized into bacterial (impetigo and boils), viral (herpes simplex and warts), superficial mycotic (tinea versicolor and tinea capitis) and parasitic infections (pediculosis capitis). Nontransmissible diseases included dermatitis/eczema (eczema, atopic dermatitis, pityriasis alba, lip-licking dermatitis), skin appendages disorders (alopecia areata, hypertrichosis, acne vulgaris), papillosquamous disorders (psoriasis, lichen nitidus, lichen planus, pityriasis rubra pilaris, ichthyosis), pigment disorders (vitiligo, freckles, naevi) and insect bites.

The chi-squared test was used for statistical analysis. $P \leq 0.05$ was considered statistically significant.

Results

The age of selected pupils ranged between 6 and 15 years, with a mean age of 9.1 (standard deviation 3.6) years and a male to female ratio of 0.97:1.

Skin disorders were noted in 883 children, giving an overall prevalence of 40.9%. There was no significant association between the prevalence of skin diseases and age ($P = 0.06$), sex ($P = 0.74$), residence ($P = 0.06$) or crowding index ($P = 0.42$) (Table 1). The education level of parents was significantly associated with the prevalence of skin diseases ($P = 0.04$).

The prevalence rates of transmissible and nontransmissible skin diseases were 8.8% and 33.7% respectively. Analysis of association of both categories with age revealed that there was a gradual, nonsignificant ($P = 0.68$) decline in the prevalence of transmissible skin diseases with increasing age, while there was a significant ($P < 0.001$) increase in the prevalence of nontransmissible skin diseases with age (Figure 1).

Discussion

This study revealed an overall prevalence of skin diseases of 40.9%. This is higher than the previously reported prevalence (33.5%) among older students in Baghdad in 1987 [*9*]. This difference could be attributed to a decline in the general socioeconomic conditions of most groups of Iraqi people and a deterioration in the health and teaching services, and consequently a lack of cooperation between health and teaching authorities which followed the 1991 Gulf War, economic sanctions and the invasion of Iraq by Allied Forces in 2003, with the accompanying internal conflict. However, this rate is higher than that reported among primary-school children in Basrah, Iraq in 2004 (31.8%) [*6*]. It is twice than that reported in Jordan (19.3%) [*10*] and slightly higher than in Malaysia (34.4%) [*11*] and

Table 1 Prevalence of skin diseases in relation to selected sociodemographic variables (*n* = 2160)

Variable	Total examined	Positive skin disease		*P*-value
	No.	No.	%	
Age (years)				
6–7	681	255	37.4	
8–9	652	264	40.5	
10–11	583	251	43.1	
12–15	244	113	46.3	0.06
Sex				
Male	1066	432	40.5	
Female	1094	451	41.2	0.74
Residence				
Urban	1440	568	39.4	
Rural	720	315	43.8	0.06
Household crowding index				
≤ 3	1440	580	40.3	
> 3	720	303	42.1	0.42
Education level of father				
Illiterate	67	31	46.3	
Primary school	648	272	42.0	
Secondary school	1008	427	42.4	
Higher education[a]	437	153	35.0	0.04
Education level of mother				
Illiterate	278	114	41.0	
Primary school	953	413	43.3	
Secondary school	758	301	39.7	
Higher education[a]	171	58	33.9	0.04
Total	2160	883	40.9	

[a]*Diploma and BSc degrees and graduate qualifications.*

Nigeria (35.2%) [*12*]. The rate is lower than that reported in Turkey (49.3%) [*13*] and much lower than in Ethiopian schoolchildren (96.8%) [*14*]. These variations in the prevalence of skin diseases may be related to genetic and racial differences, social and hygiene factors, nutrition status, climate factors, state of industrialization, age structure of the study sample and other socioeconomic factors [*15*].

Our finding that there was no significant association between the prevalence of skin diseases and age is in agreement with previous reports on primary-school children in Iraq [*6*] and Romania [*16*]. No significant sex variations in the prevalence of skin diseases were demonstrated, a finding which is consistent with that reported from Romania [*16*]. However, other workers reported a higher prevalence among female children in Saudi Arabia [*15*] and Kuwait [*17*].

To study the association of prevalence rates with socioeconomic status, prevalence rates were analysed in relation to residence, crowding index and education level of parents, as no proper acceptable classification of socioeconomic level is available for the Iraqi population. No significant association between residence and prevalence of skin diseases was demonstrated, a finding which is inconsistent with that reported in Ethiopia [*14*] and Taiwan [*18*]. In both these countries skin diseases were more prevalent in rural than urban areas. A higher prevalence of skin diseases among children living in homes with a high crowding index was shown in our study, but the difference was not significant. However, a significant association between prevalence rates of skin diseases and crowding index was reported in Turkey [*13*]. The significant association of skin diseases with education level of parents was expected as low education contributes to a low socioeconomic status of the family. In Basrah, Iraq, a high prevalence of skin diseases in regions of low socioeconomic status was reported [*6*]. High prevalence rates were also reported in poor developing countries, which may reflect prevailing low socioeconomic conditions in such areas [*7,14,19,20*].

In this study the prevalence of transmissible skin diseases was 8.8%, which is lower than that previously reported in Basrah, Iraq (12.6) [*6*] and Turkey (16.2%) [*13*]. High rates varying between 50% and 60% were reported in Ethiopia [*7*] and Ghana [*21*]. Rates of 28.8% and 20.3% were reported among blind and deaf pupils respectively in Saudi Arabia [*1*]. These differences may be attributed to variations in personal and environmental hygiene and degree of exposure.

The prevalence of nontransmissible skin diseases was 33.7%, which is lower than that reported in Saudi Arabia (82.3%) [*1*] and Turkey (57.5%) [*13*]. However, it is higher than that reported in Hong Kong (27%) [*22*]. These variations may be due to differences in the way the clinical examination was carried out, i.e. whether it covered only the exposed parts of the body or the whole body. Other factors, e.g. racial and genetic differences, may also contribute to these variations.

The decline in the prevalence of transmissible skin diseases with age may be attributed to better personal hygiene and health care practised by

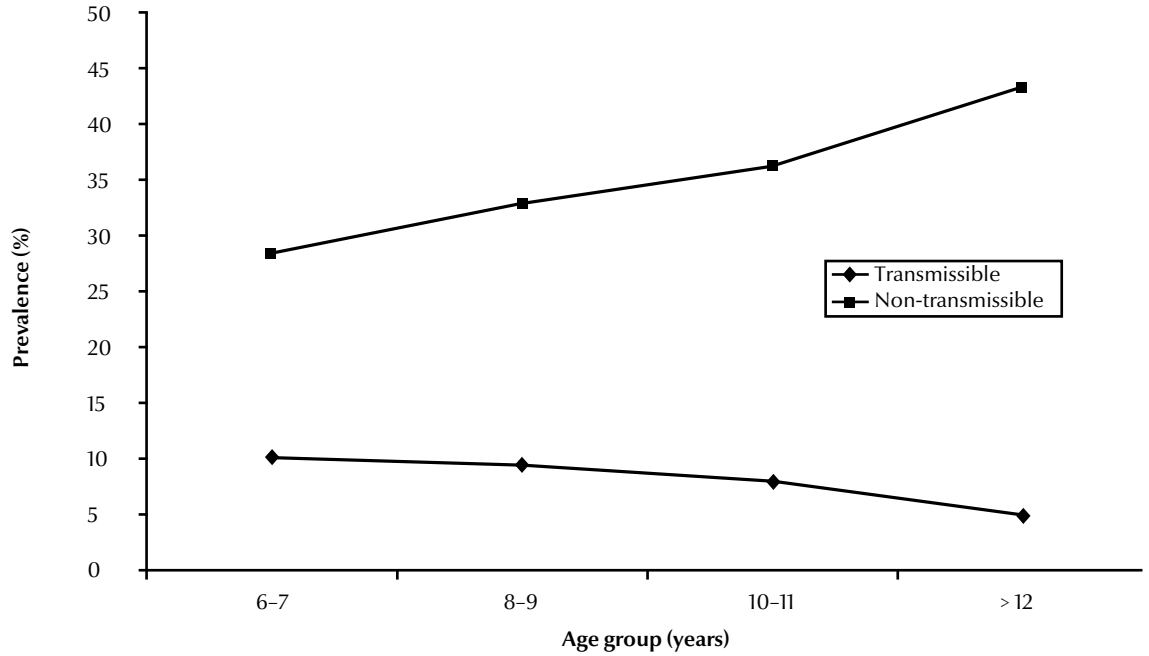

Figure 1 Prevalence of transmissible and nontransmissible skin diseases among primary-school children by age group

older school children. Other workers reported a similar trend in some transmissible diseases such as tinea capitis and pediculosis capitis in Iraq [*4,23–25*] and in other countries [*14,26–29*]. On the other hand, the significant increase in the prevalence of nontransmissible skin diseases with age may be due to increased exposure to environmental pollutants, chemicals and allergens. In addition, the reduction in the prevalence of transmissible diseases as a consequence of improvements in personal hygiene and environmental sanitation may have contributed to the increase in the prevalence of nontransmissible diseases [*30*]. Similar findings have been reported in Iraq [*6*] and other countries [*13,16,31*].

This study indicates that skin disorders are very common among primary-school children in Baghdad governorate, which may reflect prevailing low socioeconomic conditions and a poor level of awareness of these diseases or their health implications by parents and teachers. Improved school health programmes would lead to a decline in the prevalence of such disorders among schoolchildren. Routine inspection of pupils for skin disorders by their teachers and school health personnel should be incorporated in such a programme.

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Ultraviolet radiation and human health

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Small amounts of UV radiation are beneficial to health and play an essential role in the production of vitamin D. However, excessive exposure to UV radiation is associated with different types of skin cancer, sunburn, accelerated skin ageing, cataract and other eye diseases. There is also evidence that UV radiation reduces the effectiveness of the immune system.

Children and adolescents are particularly vulnerable to the harmful effects of UV radiation. Excessive sun exposure in children is likely to contribute to skin cancer in later life. The mechanisms are unclear, but it may be that skin is more susceptible to the harmful effects of UV radiation during childhood.