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Skin Conditions and Microbial Infections Among Iraqi Primary School Students in the Babil Governorate, Iraq

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ABSTRACT

Background and Aim: Paediatric skin conditions are considered as one of the main organ-specific reasons for visiting the primary health care centre In Iraq. The aim of this study was to determine the prevalence and predominant types of skin infections among the primary school children, as well as their association with important sociodemographic and epidemiological factors to achieve the third goal of sustainable development (good health and welling being).

Case Presentation: In this obseravational study, 16 primary schools were selected, using a sophisticated approach known as a multistage. The total number of participants was 800. Over half of the participants (60%) were from rural areas, whereas 52.5% of the participants were male. Dermatological condition of the cases were eveluated. The skin-related problems of the cases represented 45%. The effects of gender and residency were not significant (P>0.05), while education level of their parents were significantly effective (P<0.05).

Conclusion: Bacterial, fungal, and viral infections were the main causative agents of the skin diseases among the students, which were significantly related to the parents education level.

Keywords: Bacterial Infection, Dermatological Condition, Fungal Infection, Paediatric, Viral Infection

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1. Introduction

According to the experts, skin problems play a significant role in the overall burden of non-fatal diseases, thereby contributing to the global disease burden. Skin problems, the most common organ-specific ailments, are the primary reasons for visiting the healthcare centers in Iraq **(1)**. The World Health Organization (WHO) conducted a comprehensive research analysis and found that the prevalence of dermatological issues in adolescents ranges from 21% to 87%. Skin issues are the most reason for seeking medical attention in the primary care facilities **(2)**. The prevalence of skin disorders is widespread in numerous countries **(3, 4)**. The racial and genetic makeup of a community, as well as its hygiene practices, habits, jobs, dietary conditions, and age distribution all play roles in determining the prevalence of skin disorders **(5)**.

The primary causative factors for the skin disorders in developing countries include; high temperatures and humidity, limited access to the personal hygiene and clean water, growing social interactions, overcrowded living conditions, reactions to scabies, and insect bites. Generally, children are the most

communities that frequently face dermatological conditions.

The incidence rate of skin problems in Iraq has recently increased. The percentage has increased from 33.5% in 1987 to 40.9% in 2010 **(3)**. Among 2971 students with mean age of 10.2 ± 2.7 years (from 6 to 14 years), 909 infectious skin (30.6%) were detected including parasitic (1.9%), bacterial (13.4%), fungal (2.2%), and viral (16.7%) **(6)**. Male students had much greater incidences of bacterial and fungal skin infections (8.3% and 1.5%, respectively), compared to the female students (5.1% and 0.6%, respectively) (P<0.001). The male students had a non-significantly greater rate of viral skin infection (8.9%) than the female students (7.8%) (P>0.05) **(6)**. Over the course of a child's life changes in the biological and behavioural development might affect the skin conditions **(7)**. Typically, the skin of children is characterised to be softer and more vunerable than older people and certain irregularities in their development can increase their susceptibility to irritants and inflammation **(8)**. Therefore, children are more prone to skin issues and substantial rise in morbidity compared to the adults **(9)**.

These disorders adversely impact the individuals' quality of life, work, and educational achievement, and impose a burden on the healthcare resources. These issues affect the physical and mental well-being, as well as sleep and daily functioning. When it comes to how students perceive the challenges of schooling, we noticed that the number of absences from school has increased **(10, 11)**.

Limited access to the health facilities accompanied with knowledge absence contribute to the neglectance of skin treatment by the family.

However, evaluating the impact and behaviours related to these issues in schools can improve the health policies in the treatment programms at schools **(12)**. The purpose of this observational study was to achieve the third goal of sustainable development (good health and welling being), and also to illustrate the current range and frequency of "infectious skin diseases" among "school children" in Babil area, Iraq, as well as any potential correlation between the prevalence of transmissible skin diseases and various sociodemographic correlates.

2. Case Presentation

The sampling of 800 participants was done from April 2023 to June 2023.

A multi-stage, stratified sampling technique was used to select 16 elementary schools in Iraq, specifically in the Babil Governorate. The school selection included eight from each urban and rural areas. Then, 800 participants, 50 from each school were randomly selected (13).

$$n = \frac{Z^2\ P\ (1-P)}{d^2} = \frac{1.96^2 \times 0.41 \times 0.59}{0.05^2}$$

Where:

n: the size of the sample.

Z: the statistic that corresponds (19.96) to the 95% confidence level.

P: In 2010 [13], the frequency of pediatric dermatoses in Iraq was 40.9%.

d: the standard calculation for precision degree is (5%).

This formula emphasized no fewer than 372 individuals in the sample size.

Each student who was selected for the study was given a closed-ended, self-administered questionnaire by the researchers to ask their parents to provide written agreement for their child to participate in the study. The researchers documented the dermatological findings after conducting a clinical examination on the students with the consent of their parents.

The chi-squared test was employed for the analysis of statistics. P-value was considered statistically significant if it was ≤ 0.05.

The majority of participants (52.5%) who were predo minantly male, resided in the rural areas for more than half of the time (60.0%). Table 1 demonstrates that 35.2% of the participants' fathers and 59.7% of the participants' mothers had primary degree, while 25.5% of the fathers and 16.4% of the mothers had university degree. Increase in the education level of the parents increases the chances of disease prevention and awareness of the skin diseases. This study was approved by the Ethics Committee of Al-Mustaqbal University, Babylon, Iraq.

Table 1. Participants' sociodemographic distribution

Characteristics		N (%)
Gender	Male	420 (52.5)
	Female	380 (47.5)
Residency	Urban	320 (40.0)
	Rural	480 (60.0)
Father education	Primary school	281 (35.2)
	Secondary school	315 (39.4)
	College or higher	204 (25.5)
Mother education	Primary school	478 (59.7)
	Secondary school	191 (23.8)
	College or higher	131 (16.4)

N: number

Figure 1 reveals that the largest proportion of indivi duals surveyed (544, 68.0%) had normal body mass index (BMI). Furthermore, the cases were classified as overweight (19.6%), obese (7.4%), and underweight (5%).

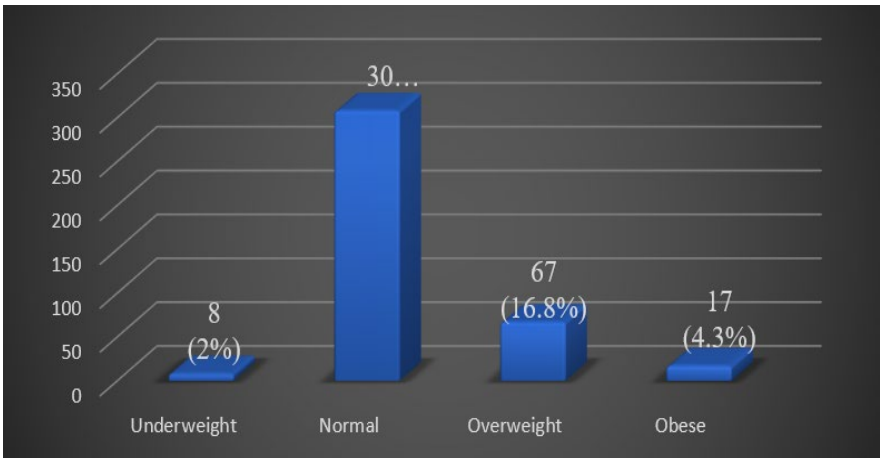

Figure 1. Subjects' BMI classification

The most significant finding of the current analysis was that 45% of the cases had skin diseases (Figure 2).

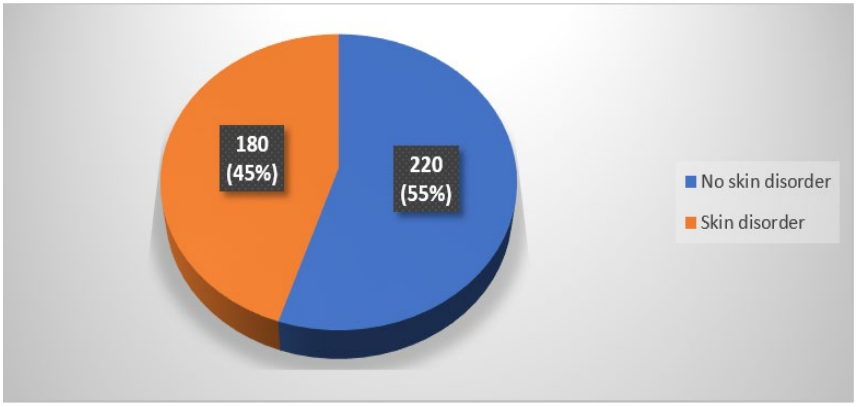

Figure 2. The frequency of skin problems

In terms of the prevalence of the skin condition types, the viral infection was the most prevalent among 18.4% of the participants, followed by the fungal sickness at 12.7% and the bacterial infection at 7.6%, as illustrated in Table 2.

Table 2. Patterns of the skin conditions

Skin condition	N (%)
Parasitic	19 (2.4)
Fungal	102 (12.7)
Viral	147 (18.4)
Bacterial	61 (7.6)
Eczema	42 (5.3)
Hair disorder	15 (1.8)
Others	38 (4.7)

The relationships between the occurrence of skin problems and sociodemographic factors are displayed in Table 3. In total, 360 cases represented the skin-related problems (45%). The effects of gender and residency were not significant (P>0.05), while education level of the parents were significantly effective (P<0.05).

Table 3. The occurrence of skin problems and sociodemographic factors

Characteristics		Skin conditions N (%)	P-value
Gender	Male	202 (56.2)	0.112
	Female	158 (43.8)	
Residency	Urban	194 (53.8)	0.214
	Rural	166 (46.2)	
Father education	Primary school or less	136 (37.7)	<0.001
	Secondary school	150 (41.6)	
	College or higher	74 (20.5)	
Mother education	Primary school or less	210 (58.3)	<0.001
	Secondary school	125 (34.7)	
	College or higher	25 (6.9)	

Statistical analysis

All statistical analyses were performed using SPSS version 26. Data were expressed as mean ± SD. The student t-test assessed the normality of all variables' distribution. Pearson correlation was applied to compare the means between the two groups. A P-value ≤ 0.05 was considered statistically significant.

3. Discussion

According to the studies, skin problems play substantial roles in the overall burden of non-fatal diseases, thereby contributing to the global disease burden. Skin problems as the most common organ-specific ailments are the primary reason for visiting the Iraqi healthcare centers in different provinces in Iraq. A 2010 survey in Baghdad revealed a prevalence rate of skin illnesses at 40.9% **(14)**. A study in Erbil found that 40.6% of the primary school children had skin illnesses **(15)**. Another study in Turkey found a significant occurrence of the skin diseases among the primary school children **(16)**. Further research conducted in Erbil found that infectious dermatome was the prevailing skin condition, with parasite infection having the highest frequency and viral infection ranking the second **(15)**.

A study conducted in Turkey found that bacterial, f ungal, and parasitic infections were less commn than viral infections as the main cause of skin issues **(16)**.

The current study findings indicated a significant association between the incidence of skin diseases and gender with P-values≤0.05.

We showed that males and those whose parents h ad primary school education or less have a greater incidence of the skin illnesses. A separate study in Baghdad also found a significant correlation between the parents' educational background, place of residence, and the prevalence of skin conditions **(14)**.

A study conducted in Egypt found that the incidence of skin sickness did not differ considerably by the children's age or sex. However, the incidence of disease was strongly correlated with living in a rural area, having a low level of education for both mothers and fathers, and having mothers who did not work (*P* ¼ 0.005, *P*< 0.001, and *P*< 0.001, respectively) **(17)**. Mothers' education, both parents' occupations, computer use, family size, crowding index, residence, and the nutritional status of the children were the factors that influenced the incidence of various skin diseases in primary school-aged children (*P* ¼ 0.027, 0.049, 0.001, 0.037, 0.036, 0.024, 0.015, 0.012, and 0.045, respectively) **(17)**.

According to this study, skin conditions are highly prevalent among primary school students in the Babil governorate. This could be for the low socioeconomic conditions that are now in place as well as parents' and educators' lack of knowledge about these conditions and their potential health consequences. The prevalence of these problems among school children would decrease with improved school health programs. Such a program ought to include routine skin disease screenings of students by their instructors and school health staff.

4. Conclusion

Skin conditions that spread between children are related to the gender and parents education level. The pathogens that cause the skin infection may be parasites, viruses, bacteria and fungi. Prevention should be performed through monitoring by the parents and the school authorities and the healthcare politicians. Conducting workshops and seminars are important to educate parents, teachers, and children to raise awareness, especially in rural areas. It is crucial not only for the skin diseases, but also to encourage them to learn more and increase their knowledge of other infections by obtaining university degrees.

5. Declarations

Acknowledgment

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Ethical Considerations

This study was approved by the Ethics Committee of Al-Mustaqbal University, Babylon, Iraq (No: 3640.Lab2/2023.22.04.2023).

Authors' Contributions

All authors contributed equally to the preparation of this research article including, study concept, Case study, Investigation, Software, Writing-Reviewing, Editing and revision of the manuscript.

Conflict of Interest

No conflicts of interest were declared by the authors.

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