Epidemio - demographical study of Atopic Dermatitis in school Aged group

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Abstract:

Background: Atopic dermatitis is a chronic, inflammatory, and eczematous skin disease of complex etiology with a variable clinical presentation and severity. It becomes a major health problem in several countries dye to an increase in its prevalence during the past decades. the pathogenesis of atopic dermatitis is complex and appears to result from a mixture of genetic and environmental factors. The Diagnosis is established on certain criteria that deal with patient and family history and clinical manifestations. **The objectives** of this study were to determine the prevalence of atopic dermatitis in Al-Alam city population, recognize the association between family history of atopic diseases and AD, and Study the association between some demographical factors and the occurrence atopic dermatitis. **material and methods** :A cross-sectional design study involving 530 school-age population to determine the prevalence of AD. Atopic dermatitis was diagnosed by using Hannifin and Rajka, the UK Working Party, and the American Academy of Dermatology's Consensus Conference on Pediatric Atopic Dermatitis. **results:** The study revealed that the prevalence of atopic dermatitis among school age group was 27.92%, and there is strong association between the disease and positive family history to atopic diseases, site of living, and educational level for both patient and family.

Keywords: Epidemio - demographical study ; Atopic Dermatitis ; school Aged group

Introduction:

Atopic dermatitis (AD), is a chronic, inflammatory, and eczematous skin disease, which presents with serous oozing, rusting, and blister formation, besides erythema and scaling [1]. Most children experience mild disease, but for others, AD substantially impairs their quality of life and that of their families and caregivers; therefore, AD should be considered a serious disease with systemic manifestations with longstanding sequelae. [2,3] AD is an early step along the (atopic march), and can precede the occurrence of other allergic comorbidities (including rhino-conjunctivitis, asthma and food allergy) [3,4,5]. AD increases the risk of infections and associates with some autoimmune disorders and psychiatric illnesses [6].

The beginning of acute AD is characterized predominantly by the stimulation of Th2 and Th22 pathways, which are subsequently intensified in chronic disease, along with up regulation of the Th1 pathway [7]. In pediatrics, studies of new-onset AD demonstrated strong immune activation of Th2, Th9, and Th17 in skin lesions, as well as increased levels of Th2 and Th17 markers in the blood of pediatric patients with AD [8,9,10].

severe pruritus, and relapsing dry skin are the most significant hallmarks of the disease. Itching frequently start before the lesions appearance (the itch that rashes). However, the clinical presentation is highly variable, depending upon the patient's age and severity of illness [11]. Acute lesions are characterized by pruritic papules with erythema, peeling of the skin, and serous exudation. Skin thickening, leathery modification of the affected areas from chronic scratching (lichenification), and small linear-like cleaving of skin may develop over time [12]. In infants and young children, the disease typically presents with pruritic, red, scaly, and crusted lesions on the cheeks, extensor surfaces or scalp. Common triggers include various environmental stimuli, including infections, sweating, heat, frustration and anxiety. Although rarely, food allergy may also be a trigger; however, this factor is commonly over-diagnosed among children [**13**]. In older children and adolescents (2 to 16 years), AD is characterized by less exudation and often demonstrates as lichenified plaques in ante-cubital, popliteal flexures and neck. The sides of the neck may show a reticulate pigmentation, the so-called 'atopic dirty neck'. In adults, atopic dermatitis is considerably more localized and lichenified. The areas involved are the skin flexures in most cases. Less frequently, the dermatitis may also involve the face, neck, or hands [14].

In the past decades, reports on the frequency and incidence of AD had largely included surveys of the general population, or adult-specific and/or children-specific studies. 25% of children with AD will continue to be affected by in adulthood, either as a constant illness presentation or by having a relapse of the disease after some symptom-free years. Nearly 75% of patients with childhood-onset AD will have spontaneous remission before reaching puberty [15]. Two recent studies conducted in Germany presented a lower prevalence of AD among adults compared to children: prevalence of AD among children in Germany was 10.35% while among adults is 3.67% [16,17]. The incidence and prevalence of AD among children changes across the different parts of the world, based on a comprehensive report including data corresponding to 12 years, called Phase 1 (1992–1997) and Phase 3 (1999–2004) [18]. These studies had played a significant role in explanation of the epidemiological characteristics of

AD, such as highlighting the most significant risk factors. According to Noordzij *et al*., prevalence studies are important in demonstrating the burden of disease in a certain population in terms of life expectancy, morbidity, and quality of life. This report has also concluded that severity and morbidity of the disease also varies with age, sex, socio-economic characteristics, geographical location, and ethnicity [(19)].

For incidence data, a research performed in Swede and Denmark reported that the incidence rate of AD is unchanging among Swedish and Danish children. Furthermore, another comprehensive study on the incidence rate of AD in the United Kingdom (UK) also reported a stable incidence rate among children between 1997 to 2015 [(20).] However, the incidence rate showed marked differences based on the several socio-demographic factors through the duration of the 18-year study period [(21).]

Aim of current study :

1. Identify the prevalence of atopic dermatitis.
2. Recognize the association between family history of atopic diseases and atopic dermatitis.
3. Study the association between some demographical factors and the occurrence of atopic dermatitis.

Subjects and methods:

We used an observational, descriptive, cross-sectional design involving schoolchildren to study the prevalence of AD. The study was approved by the scientific committee in the Salah Al-Din Health Department, and the study was obtained at Al-Alam General Hospital by the hospital administration. The study population was composed of school students aged 6 to 18 years visiting Al-Alam general hospital. The consent of the parents of each case sample in each age group was obtained. It was agreed the results would be made available to the parents once the study had finished. Sample size was 530 students (undifferentiated by sex) and aged 6 to 18 (target age groups for study) diagnosed with AD in the dermatology department of our hospital. the study was carried out from first of January through30th of April 2022. The chief instrument was the questionnaire on atopic dermatitis. The questionnaire was completed by the doctor.

Diagnosis of Atopic Dermatitis

criteria used to diagnose AD include those of Hannifin and Rajka, the UK Working Party, and the American Academy of Dermatology's Consensus Conference on Pediatric Atopic Dermatitis, these criteria have specificity at or above 90%, but have much lower sensitivity (40–100%). Therefore, they are useful for enrolling patients in studies and insuring that they have AD, but are not so useful in diagnosing a specific patient with AD.

The diagnosis of AD was made according to the clinical presentation and history of dermatitis at any time (especially during the last 12 months), typical site of the lesions, age onset, resolve of symptoms during the last 12 months, night awakenings because of itching (with exclusion of other erythematous or eczematous conditions). we ask about family history

of AD and educational level (for the both parents) to search if there is any association with AD, also we ask about area of living (if rural or urban).

Statistical analysis: Our data were analyzed by using Windows program for the Statistical Program for the Social Sciences (SPSS 7.5). Analysis of variance (ANOVA) was used to determine whether significant differences occurred among the groups and where they occurred.

Results:

Figure (1): the study shows that the prevalence of atopic dermatitis among school-aged group was 27.92%.

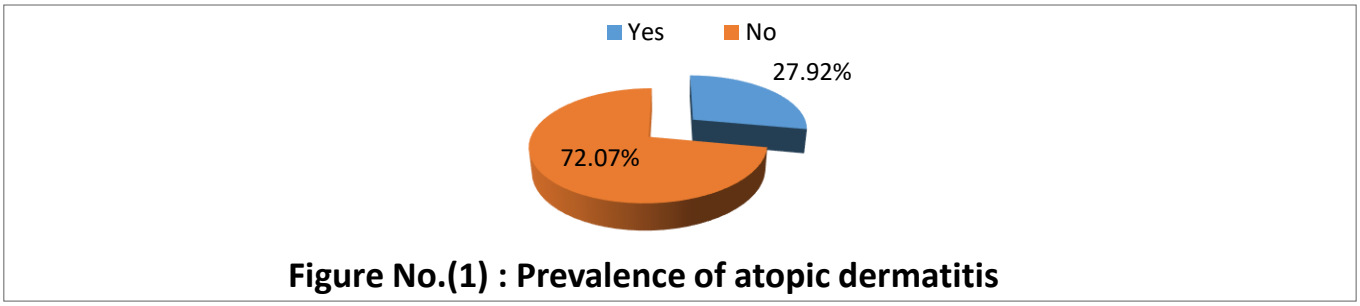

Figure No.(1) : Prevalence of atopic dermatitis

In Figure (2): we found that about 37.73% of our study population have a positive family history of atopic disease.

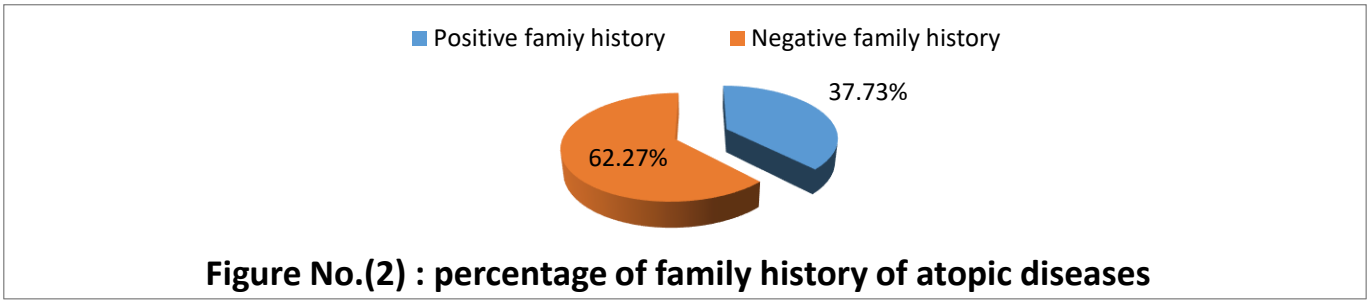

Figure No.(2) : percentage of family history of atopic diseases

Figure (3): in this study we found that atopic dermatitis was more obvious in families with positive history of atopic diseases, existence of atopic dermatitis was about 64.5% in such group while its existence was only 5.75% in group of negative family history. The value of Chi square X^2 is 213. 5003.This is more than 3.48 (confidence 95% a=0.05) which mean that there is difference. Result: Significant

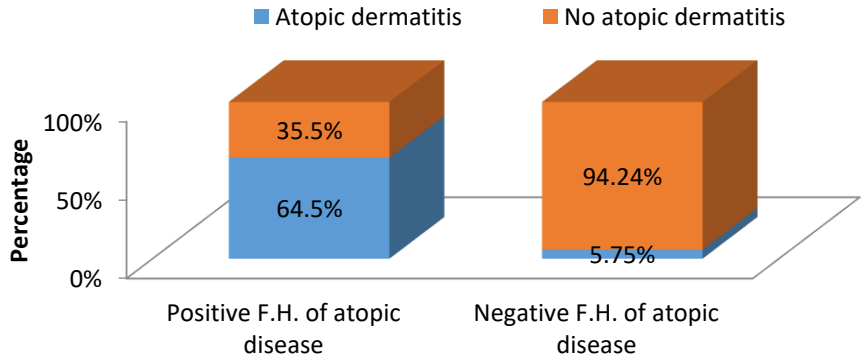

Figure No.(3) : existence of atopic dermatisis according to family history of atopic diseases.

Figure (4): age group of this study was arranged between 6-18 years old (school aged group), the study classify this population to sub-division groups, group of (10-) was the largest one and occupy 30.01% of study population. while group of (16-18) was occupy only 1.13% of study population.

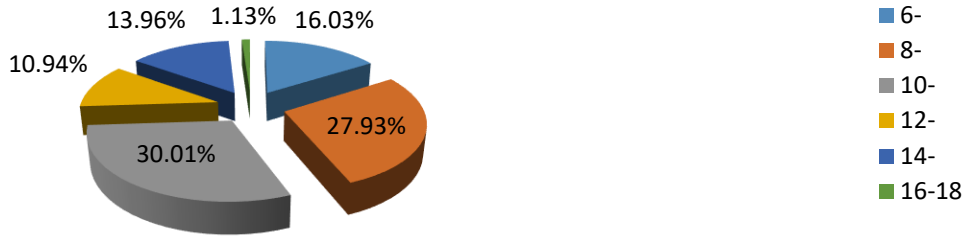

Figure No.(4) : percentage of population according to age groups.

Figure (5): atopic dermatitis existence was more in specific aged groups; 8- , 10- , 12- and 14- , the atopic dermatitis existence at these groups was 32.43%, 29.55%, 25.86% and 25. 67% respectively. The value of chi square test X^2 is 4.315

This is less than 11.07 (confidence 95% a=0.05) which mean that there is No statistically significant difference.
Result: Not significant.

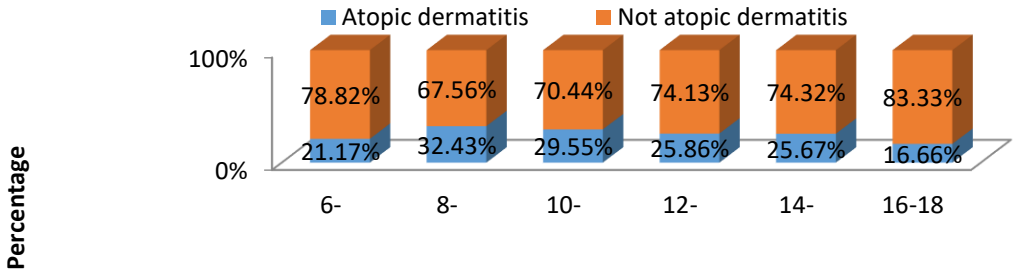

Figure No.(5) : Prevalence of atopic dermatitis according to age groups

Figure (6): according to the study data, the male gender occupies 42.07% while female gender occupies 57.93%.

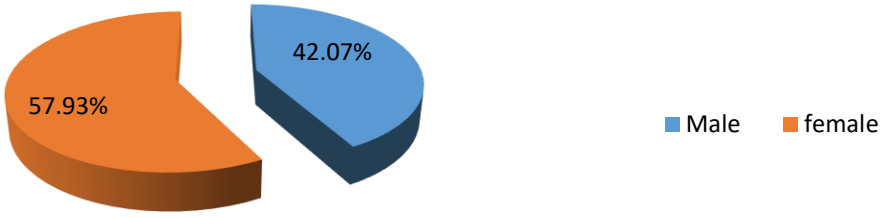

Figure No.(6) :percentage of population according to gender groups.

Figure (7): the study shows that there is no great difference of atopic dermatitis occurrence according to the gender groups. the atopic dermatitis was present at 23.76% of male gender group, while in female gender group it was represent 30.94%. The value of chi square test X^2 is 3.306. This is less than 3.48 (confidence 95% a=0.05) which mean that, there is No statistically significant difference. Result: Not significant

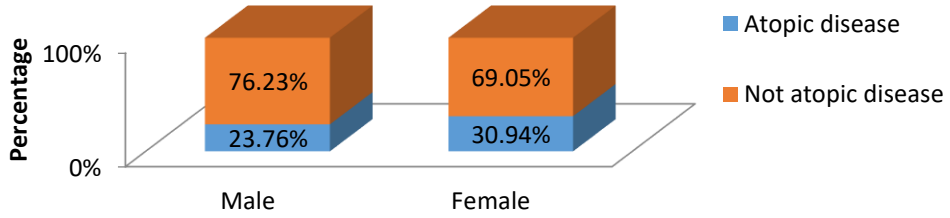

Figure No.(7) : existence of atopic dermatitis according to the gender groups.

Figure (8): our population classified in to two groups (urban and rural) according to them location, we found that most of the population was living in urban area (62.08%) while the other was living in rural area (37.92%).

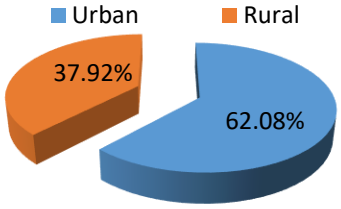

Figure No.(8) : Percentage of population according to the location.

figure (9): according to our study, there was significant correlation between atopic dermatitis and the location factor. the atopic dermatitis was present in 32,21% of urban population while in rural area it presents in 20.89%. The value of chi square test X^2 is 7.948. This is more than 3.48 (confidence 95% a=0.05) which mean that, there is a difference. Result: Significant.

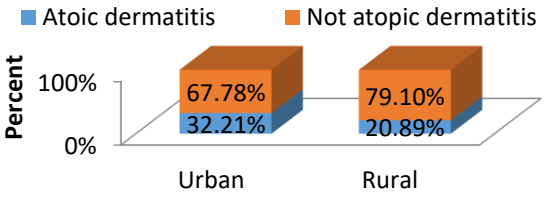

Figure No.(9) : Existence of atopic dermatitis according to location.

Figure (10): our population study (school-aged group) targeting students and not students, about 7.92% of our study were not students.

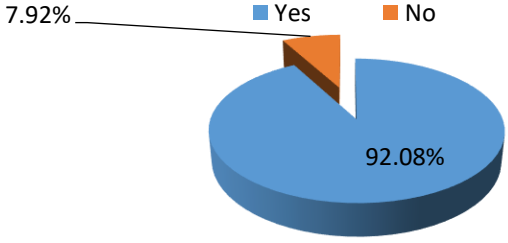

Figure No.(10) : percentage of population according to study status.

Figure (11): our study show that atopic dermatitis was more common in not student group, atopic dermatitis was appeared in 50% of not student group, while in student group the atopic

dermatitis represents only 26.02%. The value of chi square test X^2 is 11.044. This is more than 3.48 (confidence 95% a=0.05) which mean that, there is a difference.
Result: Significant.

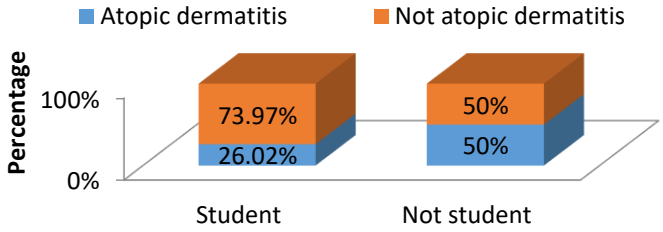

Figure No.(11) : Existence of atopic dermatitis according to study status.

Figure (12): according to the father education level in this study, the most dominant group was primary school education which occupy about 74.55% of study population.

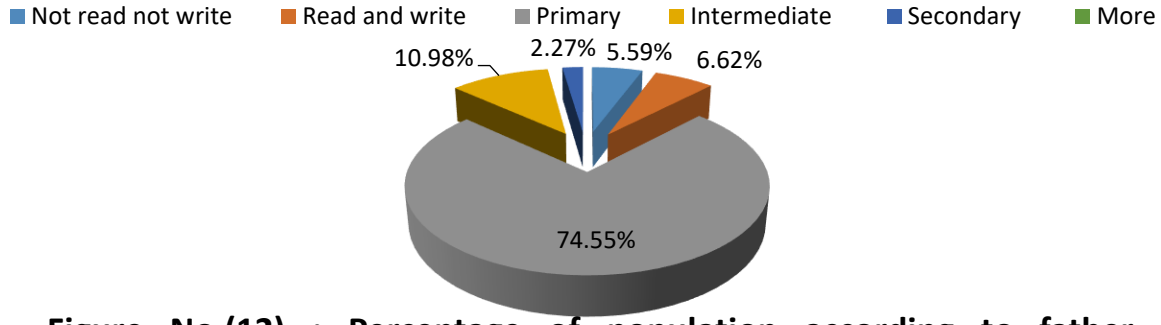

Figure No.(12) : Percentage of population according to father education level groups.

Figure (13): there was a significant correlation between father education level and the existence of atopic dermatitis. Atopic dermatitis mostly appears (78.72%) at collage group of father education level, while in secondary group of father education level the atopic dermatitis represent 45.45%. The value of chi square test X^2 is 70. 214.This is more than 11.07(confidence 95% a=0.05) which mean that, there is a difference. Result: Significant.

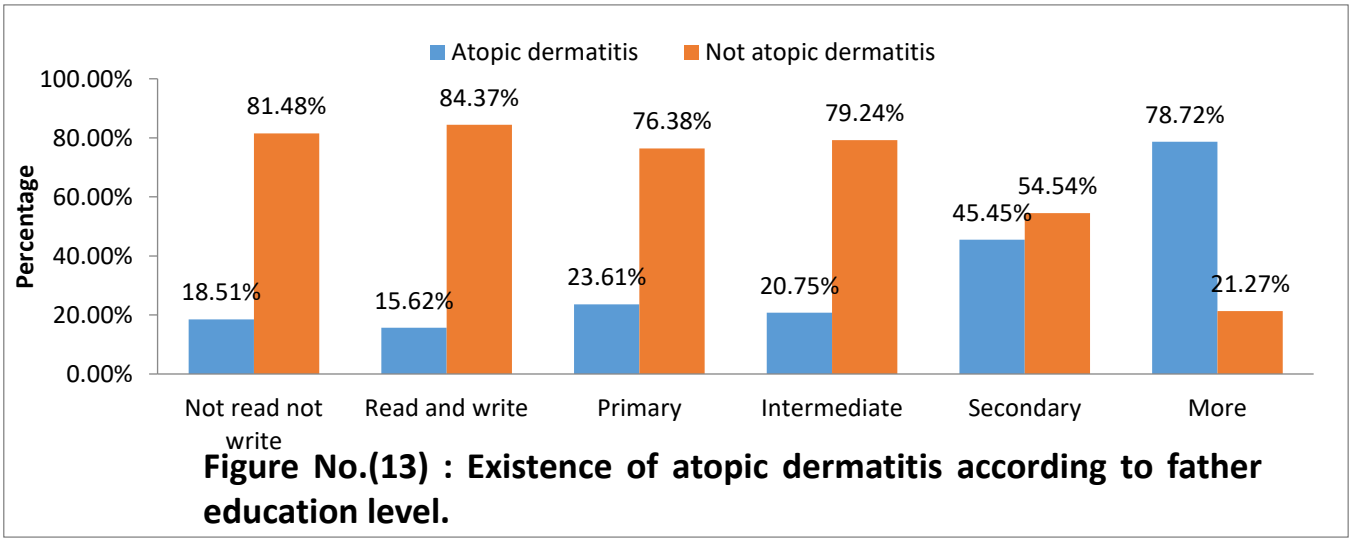

Figure No.(13) : Existence of atopic dermatitis according to father education level.

Figure (14): according to the mother education level in this study, the most dominant group was primary school education which occupy about 43.97% of study population.

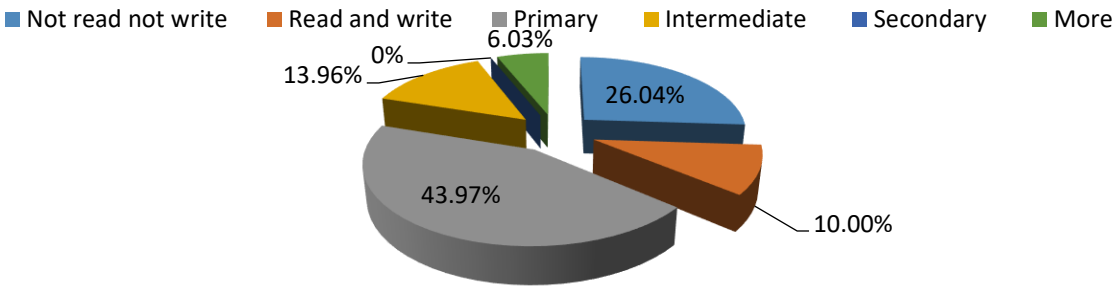

Figure No.(14) : Percentage of population according to mother education level groups.

Figure (15): there was a significant correlation between mother education level and the existence of atopic dermatitis. Atopic dermatitis mostly appears (59.37%) at collage group of mother education level, while in read and write group of mother education level the atopic dermatitis represent 43.39%. The value of chi square test X^2 is 51.039. This is more than 11.07(confidence 95% a=0.05) which mean that, there a difference. Result: Significant.

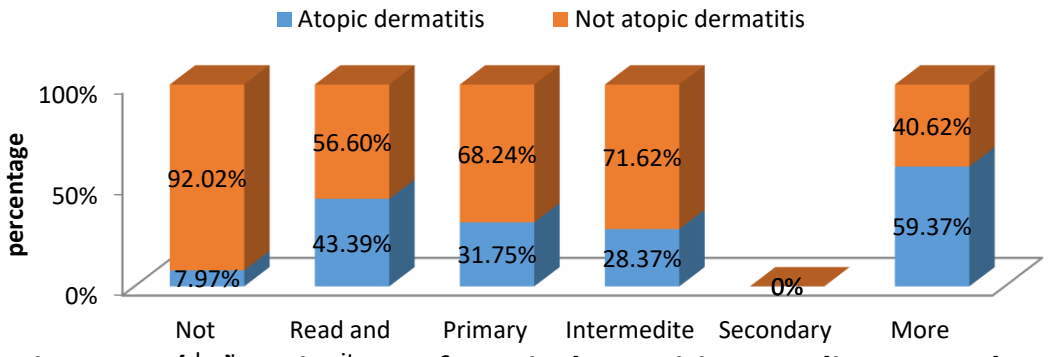

Figure No.(15) : Existence of atopic dermatitis according to mother education level.

Discussion:

This study showed a high prevalence of atopic dermatitis among school-aged group compared to other studies. This could belong to the variances in equally environmental and genetic factors. A study conducted in Singapore at 2003, to determine the prevalence of AD among school-age group found that the prevalence of atopic dermatitis was 20·8% [22]. In Western European countries, AD prevalence was 6-16% in children aged 6-7 years and 4-11% in adolescents aged 13-14 years. In another large study from the USA, the overall prevalence of 10% and 8.5% were reported in year 2003 in the 9-12 and 13-17 age groups, respectively [23].

Italian study revealed that AD was estimated between 15-17% in schoolchildren and between 8-13% in adolescents [24]. another study appears that The prevalence of AD in Korean children and adolescents aged under 18 years decrease slightly from 7.2% (in 2003) to 6.9%

(in 2008) [25]. the depicted prevalence of eczema in young adults (age: 13–14 years) from Syria, Iran, Kuwait, and Oman is 3.9%,10.1%, 11.3%, and 14.4%, respectively [26].

Family history appear as the strongest risk factor for AD. about 64.5% OF OUR POPULATION WITH POSITIVE FAMILY History of atopic disease (37.73%)have AD, this agree with Aya A. Al-Rubaye and Asaad Q. Al-Yassen who found that A positive family history of atopy in the first-degree relatives of the participants under 16 years of age was 69(90.8%) in a study conducted in the outpatient Alfayhaa Teaching hospital in Basrah [27]. This result agrees also with another one which was done on pediatric patients attending Dermatology and Allergy Center in Tikrit Teaching Hospital (from March 2007 to August 2007) exposed that most of the patients had positive (positive, strong positive) family history, 84 cases (84%) while, 16 cases (16%) with negative family history [28], while our study appears the existence was only 5.75% in group of negative family history. It also agrees with a study in Saudi Arabia found more than 56% of patients had a positive family history of atopy [29].

About the age as a factor affecting AD, the study show decline in prevalence of AD with increase age (from32.43% at age 10 to 16.66% at 18), and this agree with another studies in Korea [30], United Arab Emirates [31], and Italia [24].

In this study AD appears more in female than male (30.94 And 23.76 Respectively), while in Al-Imamain-Alkadimain teaching hospital, another study revealed that Atopic dermatitis affect males more than females (53.7% and 46.3% Respectively) [32]. Another studies similarly demonstrate a male predominance (65% males versus 35% females) in India [33], 51.4% males versus 48.6% females in China [34], one study in Ethiopia appears no significant difference between both sex (50.4% males versus 49.6% females) [35]. AD in this study appeared higher in urban population (32,21%) than rural (20.89), and this agree with a previous study of AD in Basrah revealed higher prevalence in urban than periphery (59.1% vs40.9% respectively) [36]. In Iran, prevalence of AD is higher in Tehran and Kerman (17.6% ,9.1% respectively) than in Shahr Kord (2.1%), a city where a greater population have rural lifestyles [37]. A study in the USA found a significant association between prevalence of AD and living in densely populated urban regions [23].

our study show that atopic dermatitis was more common in not student group. This might be explained by the tendency of educated person to adapt AD protective practices such as wearing cotton clothes, application of emollients, use of non-irritant shampoo, and ensuring less contact to smoking. In our study high prevalence of AD was associated with higher education levels, and this agree with studies conducted in basrah-iraq, Europe and USA [23,27,38]. In contrast, A Korean study revealed that low incidence of AD was associated with advanced educational level for both parents [39]. Additionally, statistics from Central America show that a high educational level of mother was related with a reduced prevalence of AD [40].

Conclusion

This study exposed that there is a significant prevalence of atopic dermatitis among the school-age population, which is the highest in comparison with the rest of the surrounding countries, and there is a close association between the low level of education of the parents and AD. In addition, AD appeared in this study higher in the urban population than it in the rural. The

focus should be on improving the educational level of society in general and the family in particular, and educating them to take preventive measures and appropriate health habits. Such studies should also be expanded for the purpose of seeing the true extent of the disease in Iraqi society and revealing the factors that led to an increase in the spread of the disease in the community, as well as starting to draw up appropriate plans for it by the responsible health institutions.

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