

Prevalence of Eczema in the children of Kirkuk city

Asal Aziz Tawfeeq , Sundus M. Taifoor

Medical Laboratory Technique Dep., Technical College, Kirkuk, Iraq

E mail:dr.asal_asis@yahoo.com

Background: Eczema is a multi-factorial inflammatory skin disease, arising from the interplay of both genetic pre-disposition and environmental exposures; it is a form of dermatitis which constitutes a local inflammation of the skin characterized by itching and redness often associated with children.

Objective: Investigate the prevalence of eczema in the children of Kirkuk city and the evaluation of the effect of individual, environmental and demographical factors on increasing the rate of eczema in children.

Patients & Methods: A total of (142 patients) with atopic dermatitis (eczema) of both sexes in the age range from (1 to 12) years old from Kirkuk city were included in the study during the period from August 2011 to March 2012. Data used in the research were collected using a questionnaire designed for this study.

Results: From a total of (142) patient with atopic dermatitis (eczema), about (59.86 %) were males, and (40.14%) were females. Besides, eczema occurrence diverted with the age of patients where, infants (1-2) years old, recorded highly prevalence ratio of eczema of about (19.72% and 17.60%) respectively than the older children. Moreover, it was found that, breast-feeding increased the risk of eczema in infants in a percentage of (67.92%) compared to the percentage of (32.07%) of eczema cases in infants fed on formulated milk. Furthermore, atopic mothers increased the risk for eczema for their children in percentage of (61.28%) rather than atopic fathers that recorded the percentage of (10.56%). Additionally highest eczema records were at summer scoring a percentage of (39.44%) followed by spring season records having the percentage of (35.21%). Besides, eczema cases recorded higher rates of (47.88%) in the south of Kirkuk and the middle of Kirkuk that recorded the percentage of (34.51%) respectively.

Conclusions: In Kirkuk city it was found that, atopic dermatitis (eczema) was prevalent among the infants (1-2) years old and in males more than females. In addition, breast feeding and atopic mothers and grandmothers increased the risk for eczema incidence in their children. Moreover, summer and spring seasons increased eczema rate than winter. Furthermore, south and middle of Kirkuk recorded higher percentages of eczema than the north of Kirkuk respectively.

Key words: atopic dermatitis, eczema, prevalence, children, Kirkuk.

Introduction

Eczema is a multi-factorial inflammatory skin disease, arising from the interplay of both genetic pre-disposition and environmental exposures; it is a form of dermatitis which constitutes a local inflammation of the skin characterized by itching and redness (1&2). This chronic skin disorder is often associated with children and its development has been described in three distinct stages defined as; infancy, childhood, and adolescence/ adulthood (1). However, Sixty percent of all eczema cases appear during the first year of life (infantile eczema) and a total of 45% of all eczema develops in infants from (2 to 6) months of age (3). In addition, it has been recognized in the last three decades that, the prevalence of eczema in different nations have increased to as much as (15% to 30%) in the children and (2% to 10%) in the adults (4). However, it was argued that, these substantial differences in eczema prevalence between different nations were due to environmental factors and genetic predisposition that represent the key players for eczema development worldwide and especially in Iraq (5, 6, &7). Furthermore, atopic eczema (infantile e. or called, atopic dermatitis) is believed to have the higher percentage of incidence than the other types of eczema due to a hereditary component, that often runs in families whose members also have hay fever and asthma. And it is very common in developed countries, and rising (6&7).

Patients and Methods:

Patients: A total of (142 patients) with atopic dermatitis of both sexes were included in this study. Their ages ranged from (1 to 12) years old. Patients were recruited from the outpatient clinic of the Department of Dermatology of the main hospitals in Kirkuk providence (Azadi Teaching Hospital, Kirkuk General Hospital and The Allergy Center in the Pediatric Hospital). All of the patients were recruited after diagnosis by a specialized dermatologist where Iraq atopic dermatitis diagnosis is based on the criteria of (6, 7&8). This study was carried out during the period from August 2011 to March 2012.

Methods:

1-Data collection: The data were collected using a questionnaire designed for this investigation according to (5, 6 & 8) with the following questions:

- An insight to family history
- Dietary habits
- Lifestyle habits
- Allergic tendencies
- Any prescribed drug intake
- Any chemical or material exposure at home or workplace

2- Study protocol: Data collected from the patients history was divided into three cohorts according to the factors being in evaluation according to (5 &6) as follows:

• **Cohort (1): Individual Factors**

Included studying the effect of gender, age, nutrition and genetic background on eczema prevalence in the children of Kirkuk city from August 2011 to May 2012.

• **Cohort (2): Environmental Factors**

Included the investigation of eczema predominance during the months of the study period and studying the effect of climate changes on eczema prevalence.

• **Cohort (3): Demographical Factors**

Included the assessment of locality effect on eczema prevalence in different areas in Kirkuk city.

Results:

A total of (142) children ranging in age between (1-12) years old from both sexes were selected during the period from August 2011 to May 2012. Data collected from the questionnaire were divided into three cohorts. The first cohort (the individual factors cohort) included evaluating the effect of patient's sex, age, nutrition and genetic background on the prevalence of eczema in the children of Kirkuk city.

The first evaluated factor was the distribution of eczema according to patient sex in different age group and results were shown in figure (1).

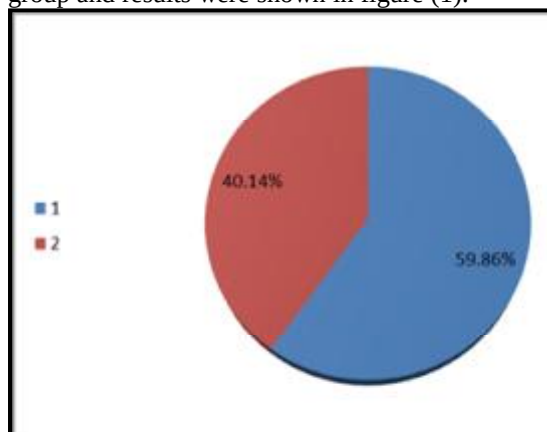


Figure (1): Distribution of eczema according to sex in different ages; where 1= Males, 2= Females
In addition, figure (2) showed the predominance of eczema correlated with the age of the patients.

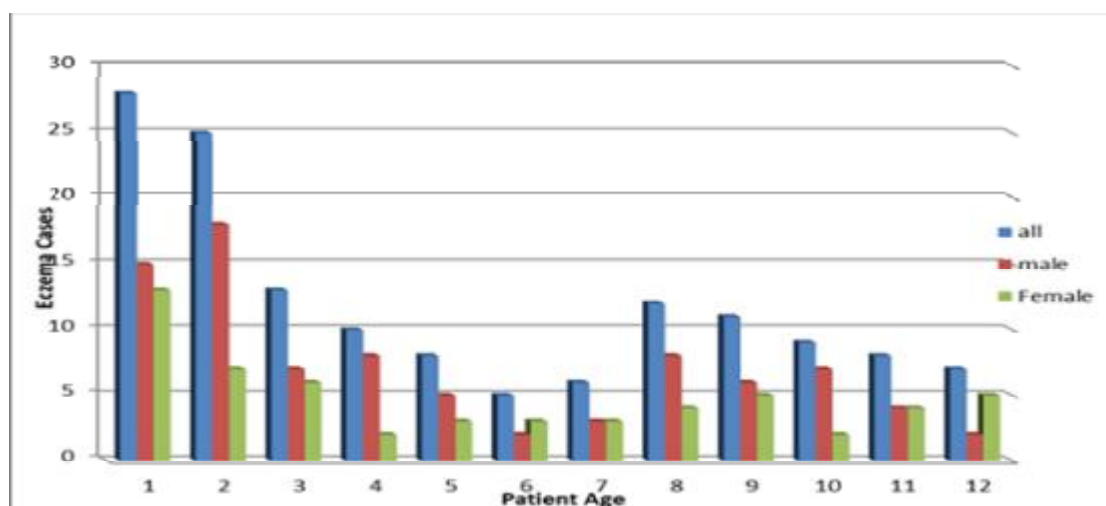


Figure (2): Shows Distribution of eczema with age

On the other hand, nutritional effect on the prevalence of eczema was also evaluated and a comparison was estimated between breast milk

feeding and formula milk of different types as demonstrated in the table (1) below.

Table (1): The effect of feeding milk type on the predominance of Eczema in infants.

Infantile cohort / Y	No. of Breast Milk- fed patients	% of Breast Milk- fed patients	No. of Formula Milk- fed patients	% of Formula Milk- fed patients	Total eczema cases
1	17	60.71	11	39.28	28
2	19	76	6	24	25
Total	36	67.92	17	32.07	53

Moreover, the relationship between parental atopy, parental history of allergic disease and the child's eczema was assessed in the result of table (2)

Table (2): The relationship between parental atopy and eczema Predominance in children.

Family Member	No. of Eczema cases	% of Eczema cases
Atopy Mother	87	61.28
Atopy Father	15	10.56
Atopy Grand Mother	38	26.76
Atopy Grand Father	2	1.41

In accordance, distribution of eczema was evaluated within months and the obtained results showed that, eczema was prevalent in Kirkuk city scoring the rate

of 142 cases within 9 months signifying the higher rate between October 2011 and March 2012 as shown in figure (3).

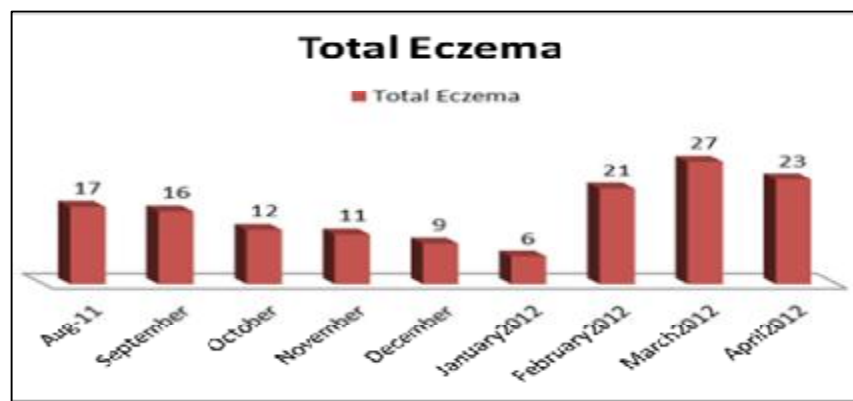


Figure (3): Distribution of Eczema in Kirkuk city within the period Of the study from August 2011 to May 2012.

However, results obtained from figure (3) were more clarified when the distribution of eczema in Kirkuk city was evaluated seasonally as shown in table (3). However, figure (4), showed that in spring, eczema cases are higher than those numbers recorded at

winter probably due to the presence of pollen grains, dust, insects and many factors that might lead to a general condition of hypersensitivity that might increase the prevalence of eczema

Table (3): Seasonal distribution of eczema in Kirkuk city from August 2011 to April 2012.

Seasons	Total Eczema Cases	% Of Eczema Cases	No. Of Eczema Males	% Of Eczema Males	No. Of Eczema Females	% Of Eczema Females
Summer	56	39.44	37	66.08	19	33.92
Winter	36	25.35	20	55.56	16	44.44
Spring	50	35.21	28	56	22	44
Total	142	100	85	59.86	57	40.14%

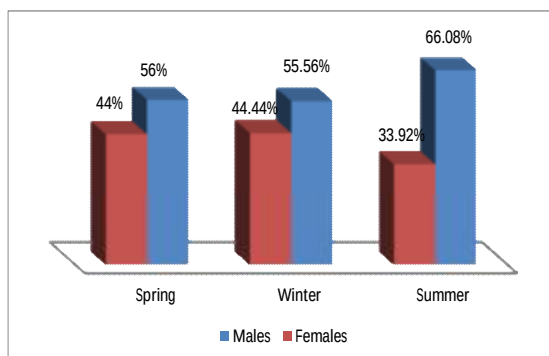
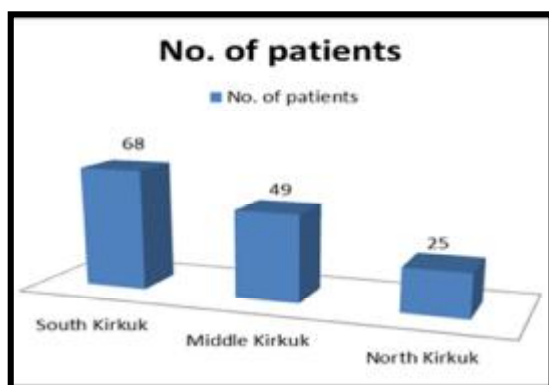


Figure (4): Seasonal Distribution of eczema among males and Females in Kirkuk city.

Further, demographic effects were also studied and results were shown in figure (5) below:



Discussion:

No previous study evaluated individual, environmental and demographical screening of atopic dermatitis/ eczema in Kirkuk city, so, the present investigation was found necessary to determine the role of these factors on the prevalence ratio and status of atopic dermatitis / eczema.

Results of figure (1) showed that, from a total of (142) patient with atopic dermatitis (eczema) about (59.86 %) of the patients were males, and (40.14%) were females. These results however, disagree with the results obtained by (5&6) where the female children in Basrah providence showed more prevalence of eczema than males were the recorded percentages were (56.4%) females and (43.6%) males respectively.

Results of figure (2) showed that, patients of infantile cohort (1-2) years old, recorded highly prevalence ratio of eczema of about (19.72% and 17.60%) respectively than child hood cohort (3-10) years old that recorded the ratio of (9.16%, 7.0%, 5.63%, 3.5%, 4.22%, 8.45%, 7.75%, and 6.34%) respectively and from the adulthood cohort (11-12) years old that recorded the ratio of (5.63% and 4.93%) respectively. The obtained results however, came in agreement with the results obtained by (5- 15) where, eczema patients of early age stage (1 and 2) recorded highly prevalence ratio of atopic eczema than

childhood stage patients probably due to the weakness of the infants immune system compared to that of the older ones(6). On the other hand, Breast-feeding significantly increased the risk of eczema in infants at ages (1 and 2) years old in percentages of (60.71% and 76%) respectively where the total eczema ratios scored for the infantile age was (67.92%) for the breast milk- fed eczematous infants correlated to the percentage of (39.62% and 24%) respectively and a total of (32.07%) for the formula milk-fed eczematous infants. However, total eczema percentage recorded in the infantile cohort was (67.92%) in the breast milk- fed group correlated with a percentage of (32.07%) for the formula milk-fed group leading to the conclusion that, the risk of eczema was increased in infants with increasing duration of breast-feeding. In contrast, the risk of eczema was reduced in infants fed on formula milk. Yet, these results were in agreement with results obtained by (16&17) where they assessed that breast milk increase the risk for eczema and reduce the risk for asthma. Moreover, results of table (2) strongly suggested that, atopic mothers increased the risk for eczema for their children rather than atopic fathers where atopic mothers recorded a percentage of (61.28%) eczematous children compared to the percentage of (10.56%). On the other, in the cases where their mothers did not show any signs of atopy, their grand mothers showed an effect on increasing the risk of eczema in about (26.76%) correlated to the percentage of atopic fathers and grand fathers (10.56% and 1.41%) respectively suggesting a maternal inheritance type of genes and probably mitochondrial since both atopic mothers and grand mothers associated in increasing the risk of eczema in their children. The same results were obtained by (11, 18 &19) where atopic mother showed an impact on increasing the risk for eczema consistently stronger than the fathers. Results of figure (3) showed that, eczema incidence was high at August and September 2011 (11.97 % and 11.27%) respectively. While, the higher rates were scored at February, March and April 2012 (14.79%, 19.01% and 16.2%) respectively. On the other hand, lower rates of eczema incidence were recorded at January 2011(4.22 %).

From the results of table (3), it could be noticed that, the highest eczema records were at summer scoring a percentage of (39.44%) followed by spring season

records having the percentage of (35.21%). While, the number of eczema cases was lower at the winter season accounting for the percentage of (22.35%). Sequentially, these results came in accordance of the previously obtained results by (18), where they suggested that, hot, humid conditions can worsen a variety of skin diseases among which is atopic dermatitis/ eczema, bacterial and fungal infections, friction blisters. Frequently, wet clothing with sweat is also contributing factors to increase the incidence of eczema at summer season. However, the exact etiology of summer eczema is unknown but some investigators believe that tropical environments, considerable stress and profuse sweating; regardless of the exact etiology, they are prime candidates for increasing the risk of eczema condition. Therefore, it was found that, the combination of extreme heat and nervous tension could be largely responsible for the large number of eczema cases seen in summer season (18&19). On the other hand, eczema cases were less at winter and these cases might be due to the dryness, roughness, and less flexibility of skin than normal where these conditions are more aggravated by cold whether.

From figure (5), it could be concluded that, eczema was prevalent in the south of Kirkuk (47.88%) than its north (17.6%), probably due to environmental difference between the two areas where, there are many trees and less dust in the north of Kirkuk city while, there are almost no trees in the south region of Kirkuk with the presence of the cement factory, sewage treatment and recycle locality along with the presence of a lot of grime, manure and dung of animals all over the roads. While, the middle of Kirkuk also recorded high levels of eczema probably due to the traffic jam inside the city and the presence of many reconstruction exertion in different regions. Accordingly, these results agree with results obtained by (5, 6, 11 and 15) where they suggested that, occupational, environmental and lifestyle factors, all together might increase the prevalence of eczema around the world.

Still, many drugs were used by the physicians for the treatment of different kinds of eczema all of them are used to ease the symptoms of eczema but they cannot treat it. However, other researchers recommend the application of dietary restriction and herbal medicines for the treatment of atopic dermatitis/ eczema (20, 21 &22).

References

1. Bieber, T., Atopic dermatitis, *N Engl J Med* 2008; 3(358):1483- 94.
2. Cork, M.J., Robinson, D.A., Vasilopoulos, Y., Ferguson, A., Moustafa, M., McGowan, A., New perspectives on epidermal barrier dysfunction in atopic dermatitis: gene-environment interactions. *J Allergy Clin Immunol* 2006; 118:3-21.
3. Jocelyn, M., Biagini, M., Gurjit, K., and Khurana, H., Eczema in Early Life: Genetics, the Skin Barrier, and Lessons Learned from Birth Cohort Studies, *The Journal of Pediatrics*, 2010; 157(5):704-714.
4. Williams, H., and Flohr, C., How epidemiology has challenged 3 prevailing concepts about atopic dermatitis. *J Allergy Clin Immunol* 2006; 118:209-13.
5. Al- Saimary, Ihsan, Bakr, S., and Al-Hamdi, Serum Immunoglobulin and complement components levels in patients with atopic

- dermatitis. *The Internet Journal of Dermatology*. 2006; 3 (2).
6. Al- Saimary, Ihsan, Bakr, S., and Al-Hamdi, The Prevalence Of Atopic Eczema / Dermatitis Syndrome (AEDS) In Basrah Providence, IRAQ, *The Internet Journal of Dermatology*. 2006; 4 (2).
 7. Ali, A., Sallam, M.M., Fathy, G.A., Mohy el din, O., Awad, S.A., and Ahmed, A., Epidemiological study of the prevalence of bronchial asthma and other atopic diseases among school children in Egypt, *International Journal of Academic Research*, 2010; 2(4):209-217.
 8. Hanifin, J.M. and Rajka, G., Diagnostic features of atopic dermatitis, *Acta Derm. Venereol*. 1980; 92(suppl): 44-47.
 9. Spergel, J.M., and Schneider, L.C., Atopic dermatitis. *Inter. J.Asthma Allergy Immunol*.1999;1(1):1-16.
 10. Stanway, A., Atopic dermatitis. Available from <http://DermNetNZ.bookstore.Net>.2005.
 11. Herd, R.M., Tidman, M.J., Prescott, R.J., and Hunter, J.A.A. Prevalence of atopic eczema in the community: the Lothian atopic dermatitis study. *Br.J.Dermatology*, 1996; 135:18-19.
 12. Nishioka, K., Atopic eczema of the adult type in Japan. *Australas J.Dermatol.*, 1996;37:57-59.
 13. Charman, C.R., and Williams, H.C., Epidemiology. In: Bieber, T., and Leung, D.Y.M., Atopic dermatitis. Marcel Dekker., Inc. New York, 2002:21-42.
 14. Najim, R. A., Al-Waiz' M.M., and Al-Razuqi' A.M., Acetylator phenotype in Iraqi patients with atopic dermatitis, *Dermatology Online Journal* 12 (7): 1.
 15. Al- Rubiay, K.K., and Al- Rubiay, L.K., Dermatoepidermiology: A Household Survey among Two Urban areas in Basrah city, Iraq. *The Internet Journal of Dermatology* ISSN: 1531-3018.
 16. Giwercman, C., Halkjaer, L B., Jensen, S.M., Bønnelykke, K., Lauritzen, Lotte and Bisgaard, Hans., Increased risk of eczema but reduced risk of early wheezy disorder from exclusive breast-feeding in high-risk infants. *Journal of Allergy and Clinical Immunology*, 2010; 125(4):866-871.
 17. Oddy, W.H., Pal, S., Kusel, M.M.H., Vine, D., de Klerk, N.H., Hartmann, P., Holt, P.G., Sly, P.D., Burton, P.R., Stanley, .F.J, and Landau, L.I, Atopy, eczema and breast milk fatty acids in a high-risk cohort of children followed from birth to 5 yr.*Pediatr Allergy Immunol* 2006; 17: 4–10.
 18. Harris, J.M., Cullinan, P., Williams, H.C., Mills, P., Moffat, S., White, C. and Newman Taylor, A.J., Environmental associations with eczema in early life. *British Journal of Dermatology*, 144: 795–802.
 19. Beijsterveldt, C.E.M. van and Boomsma, D.I., Genetics of parentally reported asthma, eczema and rhinitis in 5-yr-old twins, *Eur Respir J* 2007; 29: 516–521.
 20. Yates, J.F., Phifer, J.B., and Flake, D., Do nonmedicated topicals relieve childhood eczema? *THE JOURNAL OF FAMILY PRACTICE*, 2009, 58(5).
 21. Ross, T., Ross, G., and Varigos, G., Eczema: Practical management issue, *Australian Family Physician*, 2005, 34(5).
 22. Hoare, C., Li Wan Po, A., and Williams, H., Systematic review of treatments of atopic eczema, *Health Technol Assess* 2000; 4(37).

Appendix

Questionnaire used for data collection for the investigation of Prevalence of Eczema in the children of Kirkuk city

- Case No. -----
- Patient name -----
- Patient gender -----
- Age -----
- Living area -----
- Birth order among his family -----
- Delivery type -----
- Drug intake by mother during pregnancy ----

- Feeding type during infancy -----
- Atopic parents or grandparents-----
- Symptoms -----
- Drug prescription -----

انتشار الأكزيما بين الاطفال في مدينة كركوك

أسل عزيز توفيق ، سندس محمد طيفور

قسم تقنيات التحليلات المرضية، الكلية التقنية، كركوك، العراق

المقدمة: الأكزيما هو مرض جلدي التهابي متعدد العوامل، ناشئ عن تفاعل كل من الجينات والعوامل البيئية، و هو شكل من أشكال التهاب الجلد و الذي يتميز بالحكة والاحمرار وغالبا ما يرتبط هذا المرض مع الأطفال.

الهدف من البحث: للتحقق من نسبة انتشار الأكزيما في الأطفال من مدينة كركوك وتقييم تأثير العوامل الفردية والبيئية والديموغرافية على زيادة معدل الأكزيما عند الأطفال.

المرضى وطرق العمل: تضمنت الدراسة ما مجموعه (142 مريضا) بالتهاب الجلد التأتبي (الأكزيما) ومن كلا الجنسين في الفئة العمرية من (1 إلى 12) سنة من مدينة كركوك خلال الفترة من أغسطس 2011 إلى مارس 2012 وقد تم جمع البيانات المستخدمة في البحث من خلال استبيان صمم لهذه الدراسة.

النتائج: تم اختيار ما مجموعه (142) طفل تتراوح أعمارهم بين (1-12) سنة من كلا الجنسين للتحقيق في انتشار الأكزيما (التهاب الجلد التأتبي) في مدينة كركوك خلال الفترة من أغسطس 2011 إلى مايو 2012. حيث شملت الدراسة كل المرضى من الاطفال الذين يحضرون أقسام الأمراض الجلدية في المستشفيات الرئيسية في مدينة كركوك وتظهر عليهم الأعراض الرئيسية للأكزيما (التهاب الجلد التأتبي) والتي شملت، احمرار، وطفح جلدي وحكة في الوجه واليدين والظهر والساقين. تم تسجيل تاريخ مفصل من المرضى وفقا لاستبيان صمم لهذه الدراسة. وبناء على ذلك، تم تقسيم البيانات التي تم الحصول عليها من تاريخ المريض إلى ثلاثة مجاميع حيث شملت: العوامل الفردية، والعوامل البيئية والعوامل الديموغرافية. وقد أظهرت النتائج أنه، من إجمالي (142) مريض الأكزيما، سجلت نسبة إصابة (59,86%) من الذكور، و نسبة (40,14%) من الإناث. الى جانب ذلك، ارتفعت معدلات الإصابة بالأكزيما عكسيا مع الانخفاض في سن المرضى حيث ارتفعت الاصابات بين الرضع (2-1) سنة، وكانت اقل منها عند الاطفال الاكبر سنا.

وبالإضافة إلى ذلك، تم أيضا تقييم تأثير التغذية على انتشار الأكزيما ووجد أنه، الرضاعة الطبيعية سببت زيادة في نسبة حدوث الأكزيما عند الأطفال في سن (1 و 2) سنة بنسبة (67,92%) مقابل نسبة (32,07%) من حالات الإكزيما في الأطفال الرضع الذين يعتمدون على الحليب الصناعي.

وعلاوة على ذلك، تم تقييم العلاقة بين تاريخ الوالدين من أمراض الحساسية والأكزيما عند الطفل ووجد أن للأمهات و اللواتي لهن تاريخ بالإصابة بالأكزيما زيادة نسبة الإصابة بنسبة (61,28%) لأطفالهم مقارنة بنسبة الآباء و التي سجلت نسبة (10,56%) وعلاوة على ذلك، أظهرت نتائج دراسة الآثار البيئية على ارتفاع نسبة حدوث الأكزيما و التي سجلت أعلى معدلات في أشهر شباط وآذار ونيسان لعام 2012 بنسبة (14,79% و 19,01% و 16,2% على التوالي. من جهة أخرى سجلت أعلى نسبة للإصابة بالأكزيما في فصل الصيف حيث سجلت نسبة (39,4%) ثلثه نسبة الإصابة في فصل الربيع حيث سجلت نسبة (35,21%). أما بالنسبة لدراسة التأثيرات الديموغرافية على حدوث الأكزيما فقد سجلت أعلى نسبة للإصابة في مناطق جنوب كركوك (47,88%) وكذلك سجلت مناطق وسط كركوك نسبة (34,51%) مقارنة بشمال المدينة.

الاستنتاجات: لقد تبين من خلال نتائج البحث في مدينة كركوك انتشار مرض التهاب الجلد التأتبي (الأكزيما) بين الأطفال الرضع (1-2) سنة تحديدا وبالاخص عند الذكور أكثر من الإناث. وبالإضافة إلى ذلك، زادت الرضاعة الطبيعية من معدلات الإصابة بالأكزيما وكذلك فقد وجد أن الإصابة السابقة للأمهات والجذات بالأكزيما يزيد من معدل الإصابة بالأكزيما في أطفالهم. وعلاوة على ذلك، زادت مواسم الصيف والربيع من معدل الإصابة بالأكزيما. بالإضافة الى ذلك فقد سجلت مناطق جنوب ووسط كركوك نسب أعلى من الأكزيما من شمال المدينة على التوالي.

الكلمات المفتاحية: التهاب الجلد التأتبي، الأكزيما، انتشار، الاطفال، كركوك.