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CASE AND RESEARCH LETTER

# [Translated article] Association Between Siblings and Atopic Dermatitis in a Tertiary Care Hospital

## Asociación entre presencia de hermanos y dermatitis atópica en un hospital de tercer nivel de atención

*To the Editor:*

Atopic dermatitis (AD) is a relapsing and remitting inflammatory skin disease characterized by flares. It appears in childhood and is caused by skin barrier defects predisposing to an increased susceptibility to allergens and irritants.[1] Contradictory findings have been published on the association between having siblings and AD, with some studies reporting a protective effect and others finding no significant association.[2–7] We designed a study to evaluate this association in our setting.

We performed a secondary analysis of a case-control study that analyzed 520 children (260 cases and 260 controls) under 7 years of age between May 2016 and April 2018. The children's parents or legal guardians were interviewed in a pediatric dermatology clinic at a public tertiary care hospital in the city of Chiclayo in north Peru.[8] We accessed the data collected to evaluate sibship and diagnose AD using the UK Diagnostic Criteria.[9]

We analyzed crude and adjusted associations using the $\chi^2$ test and forward stepwise logistic regression, respectively. Qualitative variables are expressed as absolute and relative frequencies, while quantitative variables are expressed as median and interquartile range (IQR). Odds ratios (ORs) with 95% CIs and 5% *P* values were calculated. The analyses were performed in STATA version 14. The study was approved by the Research Ethics Committee of Hospital Regional Lambayeque.

The median age of the children was 28 months (IQR, 13–54 months); 50.4% were girls, 66.1% had at least 1 sibling, and 53.3% had a family history of allergy. The parents mostly had a high level of education (63.1% of cases) and lived in an urban environment (89.2%). In the bivariate analysis, 155 cases (59.6%) and 189 controls (72.7%) had a sibling ($P = .002$) (Table 1). In the logistic regression analysis, having a sibling was associated with a 44% reduced odds of having AD compared with having no siblings (OR, 0.56; 95% CI, 0.37–0.85) (Table 2).

Conflicting findings have been described for the association between sibship and AD. One possible reason is the use of different definitions of AD. Gibbs,[4] for example, used the same criteria as us to diagnose AD and reported similar findings. Criteria-based assessment of AD has been found to offer greater diagnostic certainty compared with questionnaire-based measures.[10]

Contradictory results might also be due to population differences, as other hospital-based studies have also found sibship to exert a protective effect against AD.[4,5] A similar effect has been found in population studies. In a cross-sectional study of 24,999 schoolchildren aged between 6 and 8 years in Taipei, Taiwan, Ho et al.,[6] found that having older siblings reduced the odds of AD (OR, 0.83; 95% CI: 0.76–0.92; $P < .001$), while Ohfuji et al.,[2] in a similar study of children aged 6 to 15 years in Japan, found a significant inverse relationship between number of siblings and presence of AD. Sacchetti et al.,[7] by contrast, did not detect a significant association between number of siblings and presence of AD in schoolchildren aged 5 to 8 years in Italy, but they evaluated AD under the umbrella of allergic disease. Finally, Benn et al.,[3] in a cohort study of newborns, found that children with siblings had a higher risk of AD. The follow-up time, however, was just 18 months, which represents a limitation as AD can develop up to the age of 5 years.

Our findings should be interpreted with caution as we did not analyze variables related to sibship, such as number of siblings or birth order. Another limitation is that we performed a secondary analysis of data from a study designed to evaluate the protective effect of exclusive breastfeeding on the development of AD. More studies analyzing the association between sibship and AD, with consideration of related variables, are needed. Despite its limitations, the current study sheds some light on the association between sibship and AD in Peru and Latin America.

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**Table 1** Characteristics of Children With and Without Atopic Dermatitis Seen at a Tertiary Care Hospital Between 2016 and 2018.

| Variable | No. | % | Controls | | Cases | | *P* Value |
|---|---|---|---|---|---|---|---|
| | | | No. | % | No. | % | |
| *Age, mo*[a] | 28 (13–54) | 31.5 (13–55.5) | 27 (13.5–52.5) | 0.395 | | | |
| *Presence of siblings* | | | | | | | |
| No | 176 | 33.9 | 71 | 27.3 | 105 | 40.4 | .002 |
| Yes | 344 | 66.1 | 189 | 72.7 | 155 | 59.6 | |
| *Exclusive breastfeeding* | | | | | | | |
| No | 295 | 56.7 | 128 | 49.2 | 167 | 64.2 | .001 |
| Yes | 225 | 43.3 | 132 | 50.8 | 93 | 35.8 | |
| *Sex* | | | | | | | |
| Male | 258 | 49.6 | 138 | 53.1 | 120 | 46.1 | .114 |
| Female | 262 | 50.4 | 122 | 46.9 | 140 | 53.9 | |
| *Level of education (parents)* | | | | | | | |
| Basic | 192 | 36.9 | 131 | 50.4 | 61 | 23.5 | <.001 |
| Higher | 328 | 63.1 | 129 | 49.6 | 199 | 76.5 | |
| *Initiation of complementary feeding* | | | | | | | |
| Early | 70 | 13.5 | 39 | 15.0 | 31 | 11.9 | .304 |
| Adequate | 450 | 86.5 | 221 | 85.0 | 229.00 | 88.1 | |
| *Smoking in presence of child* | | | | | | | |
| No | 446 | 85.8 | 234 | 90.0 | 212 | 81.5 | .006 |
| Yes | 74 | 14.2 | 26 | 10.0 | 48 | 18.5 | |
| *Place of residence* | | | | | | | |
| Rural | 56 | 10.8 | 39 | 15.0 | 17 | 6.5 | .002 |
| Urban | 464 | 89.2 | 221 | 85.0 | 243 | 93.5 | |
| *Family history of allergy* | | | | | | | |
| No | 243 | 46.7 | 171 | 65.8 | 72 | 27.7 | <.001 |
| Yes | 277 | 53.3 | 89 | 34.2 | 188 | 72.3 | |
| *History of allergy (father)* | | | | | | | |
| No | 382 | 73.5 | 225 | 86.5 | 157 | 60.4 | <.001 |
| Yes | 138 | 26.5 | 35 | 13.5 | 103 | 39.60 | |
| *History of allergy (mother)* | | | | | | | |
| No | 379 | 72.9 | 223 | 85.8 | 156 | 60.0 | <.001 |
| Yes | 141 | 27.1 | 37 | 14.2 | 104 | 40.0 | |
| *Age, mo*[a] | 1.00 | 0.99–1.00 | .255 | 0.99 | 0.99–1.00 | .143 | |

[a] Median (interquartile range).

**Table 2** Association Between Atopic Dermatitis and Sibship Among Children Seen at a Tertiary Care Hospital Between 2016 and 2018.

| Variable | Crude | | | Adjusted | | |
|---|---|---|---|---|---|---|
| | OR | 95% CI | *P* Value | OR | 95% CI | *P* Value |
| *Age, mo*[a] | 1.00 | 0.99–1.00 | .255 | 0.99 | 0.99–1.00 | .143 |
| *Older siblings* | | | | | | |
| No | 1 | | .002 | 1 | | .007 |
| Yes | 0.55 | 0.38–0.80 | | 0.56 | 0.37–0.85 | |
| *Exclusive breastfeeding* | | | | | | |
| No | 1 | | .001 | | | |
| Yes | 0.54 | 0.38–0.77 | | | | |

Table 2 (*Continued*)

| Variable | Crude | | | Adjusted | | |
|---|---|---|---|---|---|---|
| | OR | 95% CI | *P* Value | OR | 95% CI | *P* Value |
| *Sex* | | | | | | |
| Male | 1 | | .115 | 1 | | .159 |
| Female | 1.32 | 0.93–1.86 | | 1.32 | 0.90–1.96 | |
| *Level of education (parents)* | | | | | | |
| Basic | 1 | | <.001 | 1 | | <.001 |
| Higher | 3.31 | 2.27–4.83 | | 2.37 | 1.54–3.63 | |
| *Initiation of complementary feeding* | | | | | | |
| Early | 1 | | .305 | | | |
| Adequate | 1.30 | 0.79–2.16 | | | | |
| *Smoking in presence of child* | | | | | | |
| No | 1 | | .006 | 1 | | .046 |
| Yes | 2.04 | 1.22–3.40 | | 1.79 | 1.01–3.18 | |
| *Place of residence* | | | | | | |
| Rural | 1 | | 0.002 | 1 | | 0.953 |
| Urban | 2.52 | 1.39–4.59 | | 1.02 | 0.52–2.01 | |
| *Family history of allergy* | | | | | | |
| No | 1 | | <.001 | 1 | | <.001 |
| Yes | 5.01 | 3.45–7.29 | | 4.65 | 3.11–6.95 | |
| *History of allergy (father)* | | | | | | |
| No | 1 | | <.001 | | | |
| Yes | 4.22 | 2.73–6.51 | | | | |
| *History of allergy (mother)* | | | | | | |
| No | 1 | | <.001 | | | |
| Yes | 4.02 | 2.62–6.16 | | | | |

Abbreviation: OR, odds ratio.
[a] Adjusted for history of allergy in direct relative, maximum level of education of parents, smoking in presence of child, age, sex, and place of residence.

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## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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