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ORIGINAL ARTICLE

Influence of the Mediterranean diet during pregnancy in the development of wheezing and eczema in infants in Pamplona, Spain

N. Alvarez Zallo^{a,*}, I. Aguinaga-Ontoso^b, I. Alvarez-Alvarez^b, B. Marin-Fernandez^b,
F. Guillén-Grima^{b,c,d}, C. Azcona-San Julián^{d,e}

^a Extrahospitalary Paediatric Emergency Service, Osasunbidea, Pamplona, Navarra, Spain

^b Department of Health Sciences, Public University of Navarra, Spain

^c Preventive Medicine, Clínica Universidad de Navarra, Pamplona, Navarra, Spain

^d Navarra Institute for Health Research (IdiSNA), Spain

^e Paediatric Endocrinology Unit, Department of Pediatrics, Clínica Universidad de Navarra, Pamplona, Navarra, Spain

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KEYWORDS

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Eczema;
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Abstract

Background: This study examined the relationship between different food groups and the adherence to a Mediterranean diet during pregnancy and the risk of wheezing and eczema in children aged 12–15 months.

Methods: The study involves 1087 Spanish infants from the International Study of Wheezing in Infants (Estudio Internacional de Sibilancias en Lactantes, EISL). The study of the association of the different food consumption and Mediterranean diet with wheezing, recurrent wheezing and eczema was performed using different models of unconditional logistic regression to obtain adjusted prevalence odds ratios (OR) and 95% confidence intervals (95% CI).

Results: No association was found between a good adherence to the Mediterranean diet during pregnancy and the development of wheezing ($p=0.372$), recurrent wheezing ($p=0.118$) and eczema ($p=0.315$). The consumption once or twice a week of white fish (OR: 1.95[1.01–3.75]), cooked potatoes (OR: 1.75[1.22–2.51]) and industrial pastry (OR: 1.59[1.13–2.24]), and the consumption more than three times a week of industrial pastry (OR: 1.47 [1.01–2.13]) during pregnancy increases the risk of “wheezing” at 12 months. Instead, high fruit consumption during the pregnancy has a protective effect against “wheezing” in 12-month-old infants (OR: 0.44 [0.20–0.99]). No statistically significant differences were observed between food intake during pregnancy and “recurrent wheezing”. No statistically significant differences were observed between the consumption of any food during pregnancy and the presence of eczema at 12 months.

* Corresponding author.

E-mail address: noealza@gmail.com (N. Alvarez Zallo).

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Conclusions The present study showed that the consumption of Mediterranean diet during pregnancy did not have a protective effect for wheezing, recurrent wheezing or eczema.
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Introduction

Wheezing and atopic dermatitis are two frequent disorders in the first years of life. Wheezing is one of the most frequent causes of primary care and emergency attendance in toddlers.¹ Atopic dermatitis is common in the first two years of life with a decrease in prevalence afterwards.² Both diseases have a great impact in the life of the child and its family.

It has been suggested that maternal diet during pregnancy may impact foetal immune development and subsequently alter the allergic responses in the child.^{3,4} The identification of which dietary pattern or nutrients during pregnancy affect the incidence of wheezing and eczema in toddlers is relevant to primary prevention of these common diseases.

There are few studies that evaluate the dietary patterns in the pregnant population in association with wheezing and eczema in early childhood with inconsistent or non-statistically evidence.⁴⁻⁶ The Greek-Spanish study concluded that Mediterranean diet adherence was not associated with the risk of wheezing and eczema.⁵ In a recent Spanish study, a significant association was not observed between Mediterranean diet and a protective effect on wheezing or eczema, while maternal consumption during pregnancy of meat one or two times/week and pasta never or occasionally remained as protective factors of wheezing.⁴ In a previous study, there was no relationship between the adherence to Mediterranean diet during pregnancy and wheezing in the first year of life, however they found a protective effect of olive oil use during pregnancy on wheezing during the first year of the offspring's life.⁶

In the current study we examined the relationship between different food groups and the adherence to a Mediterranean diet during pregnancy and the risk of wheezing and eczema in children aged 12–15 months.

Materials and methods

This study was part of the International Study of Wheezing in Infants (EISL), a multicentre, cross-sectional, international study conducted in countries of Europe and Latin America. A standardised, validated written questionnaire was used in all participating centres.⁷ The EISL questionnaire is based on that of the International Study of Asthma and Allergies in Childhood (ISAAC).⁸

The questionnaires were filled out by parents in 20 primary care centres in the region of Pamplona, in the health check-up at 12–15 months of age. Paediatric nurses of the primary health centres explained the study to parents or guardians.

The questionnaire includes questions on wheezing in the first year of life and possible associated risk and protective factors. It also includes demographic data such as age, sex, race, weight and length at birth, current weight and height, premature birth, duration of exclusive breastfeeding, the presence or absence of asthma, rhinitis or eczema in parents, age and education of the mother.

For the purposes of this study, 'wheezing' was defined as a positive answer to the question 'Has your child wheeze in the first 12 months of his/her life'. 'Recurrent wheezing' was defined as three or more episodes of wheezing in the first year of life.⁸

The child was considered to have eczema when parents or guardians answered affirmatively to the following question: 'Has your child had an itchy rash (eczema) which was coming and going in any part of his/her body, except around the eyes, nose, mouth and in the diaper area, during his/her first 12 months of life?'.⁹

The EISL questionnaire also includes questions about eating certain foods during pregnancy (never or occasionally, once or twice a week and three or more times a week). The score of the Mediterranean diet used in this study is based on the score previously constructed by Psaltopoulou¹⁰ and previously used in other EISL^{4,6} and ISAAC studies.¹¹⁻¹³ Fruit, fish, vegetables, cereals, pasta, rice and potatoes are considered 'pro-Mediterranean' food components and are classified according to the frequency of their intake; 0 points: never or occasionally, 1 point: 1 or 2 times per week and 2 points: almost every day. Meat, milk and fast food are considered 'anti-Mediterranean' food components and are scored inversely. Mothers with a higher score had a higher adherence to the Mediterranean diet.¹¹

As olive oil was not included in the above-mentioned food-frequency questionnaire, its consumption was assessed with the question 'What is usually used in the household for frying?' (olive oil, butter, margarine, other oil).

A sensitivity analysis was conducted excluding those subjects with six or more missing values in the food frequency questionnaire during pregnancy to assess the robustness of the findings. Mothers who did not answer or did not know the consumption frequency were considered missing.

The study of the association of the different food consumption and Mediterranean diet with wheezing, recurrent wheezing and eczema was performed using different models of unconditional logistic regression to obtain adjusted prevalence odds ratios (OR) and 95% confidence intervals (95% CI).

The statistical analyses were performed with the software SPSS 20.0 (IBM Corp.) and STATA version 13.0 (StataCorp LP).

The study was approved by the Management of Primary Care of Navarre's Health Service and the Scientific Ethic Committee of University of Murcia.

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