



شبكة المعلومات الجامعية  
التوثيق الإلكتروني والميكروفيلم

# بسم الله الرحمن الرحيم



**MONA MAGHRABY**



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التوثيق الإلكتروني والميكرو فيلم



# شبكة المعلومات الجامعية التوثيق الإلكتروني والميكرو فيلم



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التوثيق الإلكتروني والميكروفيلم

# جامعة عين شمس

## التوثيق الإلكتروني والميكروفيلم

### قسم

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علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



### يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



**MONA MAGHRABY**

# **Racial Differences in Food Allergy Phenotype and Health Care Utilization among Egyptian & USA Patients**

*A Thesis*

Submitted for partial fulfilment of M.D. degree  
in Internal Medicine

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# قالوا

سببنا انك لا تعلم لنا  
إلا ما علمتنا إنك أنت  
العليم العظيم

صدق الله العظيم

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## List of Abbreviations

| <i>Abbr.</i>           | <i>Full-term</i>                                       |
|------------------------|--|
| <b>AA</b> .....        | : African American.                                    |
| <b>AAP</b> .....       | : American Academy of Pediatrics.                      |
| <b>AD</b> .....        | : Atopic Dermatitis.                                   |
| <b>alpha-gal</b> ..... | : Galactose Alpha.                                     |
| <b>AR</b> .....        | : Allergic Rhinitis.                                   |
| <b>BAT</b> .....       | : Basophil Activation Test.                            |
| <b>B-reg</b> .....     | : B-regulatory.  |
| <b>CCL18</b> .....     | : Chemokine Chemotaxis Ligand 18.                      |
| <b>CCR6</b> .....      | : Chemokine Cognate Receptor 6.                        |
| <b>CD</b> .....        | : Cluster of Differentiation.                          |
| <b>CoFAR</b> .....     | : Consortium of Food Allergy Research.                 |
| <b>CRD</b> .....       | : Component-resolved Diagnostics.                      |
| <b>CpG</b> .....       | : Cytosine-phosphate-Guanine.                          |
| <b>DC</b> .....        | : Dendritic Cells.                                     |
| <b>EAACI</b> .....     | : European Academy of Allergy and Clinical Immunology. |
| <b>ECs</b> .....       | : Epithelial Cells.                                    |
| <b>ED</b> .....        | : Emergency Department.                                |
| <b>EIA</b> .....       | : Enzyme Immunoassay.                                  |
| <b>EPIT</b> .....      | : Epicutaneous Immunotherapy.                          |
| <b>FA</b> .....        | : Food Allergy.  |
| <b>FDA</b> .....       | : Food and Drug Administration.                        |
| <b>FPIES</b> .....     | : Food Protein Induced Enterocolitis Syndrome.         |
| <b>GM-CSF</b> .....    | : Granulocyte Macrophage-Colony Stimulating Factor.    |
| <b>IL</b> .....        | : Interleukin.   |
| <b>ILCs</b> .....      | : Innate Lymphoid Cells.                               |
| <b>ILC2s</b> .....     | : Innate Lymphoid Cells type 2.                        |
| <b>ILC3s</b> .....     | : Innate Lymphoid Cells type 3.                        |
| <b>IgE</b> .....       | : Immunoglobulin E.                                    |



|  |  |
|--|--|
| <b>JPGFA</b> .....                             | : Japanese Pediatric Guideline for Food Allergy.                 |
| <b>JSPACI</b> .....                            | : Japanese Society of Pediatric Allergy and Clinical Immunology. |
| <b>LEAP</b> .....                              | : Learning Early about Peanut.                                   |
| <b>mAb</b> .....                               | : Monoclonal Antibody.   |
| <b>MHC</b> .....                               | : Major Histocompatibility.                                      |
| <b>NAS</b> .....                               | : National Allergy Strategy.                                     |
| <b>NIID</b> .....                              | : National Institute of Allergy and Infectious Diseases.         |
| <b>OECD</b> .....                              | : Organization for Economic Co-operation and Development.        |
| <b>OFCs</b> .....                              | : Oral Food Challenges.  |
| <b>OIT</b> .....                               | : Oral Immunotherapy.  |
| <b>QOL</b> .....                               | : Quality Of Life.   |
| <b>RR</b> .....                                | : Relative Risk.   |
| <b>SD</b> .....                                | : Standard Deviation.  |
| <b>SES</b> .....                               | : Socio-economic Status.   |
| <b>SLIT</b> .....                              | : Sublingual Immunotherapy.                                      |
| <b>SPT</b> .....                               | : Skin Prick Test.   |
| <b>STAT4</b> .....                             | : Signal transducer and activator of transcription 4.            |
| <b>SU</b> .....                                | : Sustained Unresponsiveness.                                    |
| <b>TGF</b> .....                               | : Tumor Growth Factor.   |
| <b>TH</b> .....                                | : T- Helper.   |
| <b>TLR</b> .....                               | : Toll-like Receptor.  |
| <b>T-reg</b> .....                             | : T-regulatory.  |
| <b>TSLP</b> .....                              | : Thymic Stromal Lymphopoietin.                                  |
| <b>UK</b> .....                                | : United Kingdom.  |
| <b>USA</b> .....                               | : United States of America.                                      |
| <b><math>\gamma\delta</math> T cells</b> ..... | : Gamma Delta T cells.   |

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## **Impact of Socio-economic Status on IgE-mediated Food Allergy in Egyptian Children**

**Rationale:** Egyptian children have different socio-economic statuses (SES). We examined differences between two groups of children from high (H) and low (L) SES with food allergy (FA).

**Methods:** We administered a questionnaire to caregivers of children up to 12 years of age with FA from two groups of 25 seen at allergists' private offices (H-SES) and a public hospital (L-SES).

**Results:** L-SES and H-SES had similar male predominance, age of weaning, and having only one FA (68% and 64%) (11 (IQR 7–15) and 12 (IQR 10–12) months) (64% and 92%), respectively, and in the symptom being cutaneous (100% and 84%) and gastrointestinal (52% and 48%), being severe (48% and 44%) and in emergency room care (40% and 28%). There were statistically significant differences in L-SES group being older (134.4  $\pm$  8.64 months) than H-SES (91.44  $\pm$  26.64 months), born vaginally (76% vs 64%) and having milk allergy (60% vs 16%), respectively, and in H-SES group compared to L-SES having egg as the commonest allergen (56% vs 36%), being on dietary elimination (52% vs 12%) and on sublingual immunotherapy (44% vs 36%), in earlier symptom onset, earlier age at diagnosis and higher IgE (18 (IQR 12–24) vs 96 (48–96) months), (36 (IQR 24–48) vs 96 (IQR 48–102) months), (421 (IQR 237–504) vs 214 (IQR 124–319) IU/dl), respectively. No children were prescribed epinephrine auto-injector.

**Conclusion:** FA presents and is managed differently among Egyptian children based on SES, highlighting disparities and suggesting environmental factors play a role.

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**Keywords:** Children, Egyptian, food allergy, IgE, socio-economic status, milk, egg, epinephrine, emergency room.

# Introduction

Allergic disorders are thought to be influenced by two distinct factors that interact at various levels. The first is the genetic composition and the second is the environment.

Because allergic disorders are multifactorial syndromes, a different approach to get to the environmental basis is a comparison of the social status as reflected by the location of health care, public or private clinics. This aspect brings in the environment in the equation because of the differences in the home environments between the patients who seek health care in public and private clinics.

Families caring for children with FA experience significant impairments in psychosocial outcomes, including FA-related quality of life (**FAQoL**); however, these data come primarily from White, privately insured families, and little is known about psychosocial outcomes in families with low socio-economic class.

Being geographically located in North Africa, the Egyptian population is expected to be ancestrally closer to the African American (**AA**) population than to the Caucasian population of the United States of America (**USA**).



The Egyptian population also has a clear social distinction between patients who attend the public hospitals and those who attend private practices offices. This would reflect a difference in the home environment, the feeding habits and the diet.