**BACKGROUND**

- There is an increasing international interest in the causal role of nutrition and other dietary factors in the development of asthma and allergic diseases (Narramore V 2012).
- Asthma and allergic manifestations are increasing, especially early in life, in both developed and developing countries (Elizabeth CM et al 2009).
- Obesity has been widely recognized to be more common among children with asthma and the association between BMI and overweight were found in many countries like UK, Japan and Taiwan (Fujigawa-Manos J 2001, Okabe Y 2012, Yao TC 2001).
- However, very little evidence exists on the potential association between undernutrition and current wheezing/asthma and allergic diseases.

**PURPOSE**

To investigate the association between current childhood nutritional status on current wheezing among pre-school children in rural Bangladesh.

**METHODS**

- This is a cross-sectional study nested into a large-scale randomized clinical trial of nutrition interventions in pregnancy; the Maternal and Infant Nutrition Intervention in Matlab (MINIMat), rural Bangladesh.
- The 4,436 mothers in MINIMat were followed during pregnancy, data on socio-economic status (SES) and morbidity of mothers were collected.
- A total of 1,303 children were eligible for this cross-sectional study when they reached to 4.5 years of age.
- Total IgE was measured by human IgE quantitative ELISA.
- Specific IgE level against house dust mites (Dermatophagoides pteronyssinus) was measured by the CAP-PEIA system.
- Anti-DP IgE: >0.70 UA/ml was considered positive.
- Immediate hypersensitivity reaction was tested by a skin prick test using mite allergen (DP).
- Children’s weight was measured to the nearest 100g with a TANITA digital scale.
- Height was measured to the nearest 0.1cm with a Holtain Stadiometer.
- Stunting, wasting and underweight were calculated using the WHO Anthro.
- Stunting was defined as height-for-age z-score < -2, wasting as weight-for-height z-score < -2, and underweight as weight-for-age z-score < -2.
- Current wheezing, ever wheezing and ever asthma were identified using the International Study on Asthma and Allergies in Childhood (ISAAC) questionnaire.

**RESULTS**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (males)</td>
<td>480</td>
<td>52.6</td>
</tr>
<tr>
<td>Low birth weight (&gt;2500gm)</td>
<td>241</td>
<td>26.4</td>
</tr>
<tr>
<td>Premature (GA &gt;37week)</td>
<td>125</td>
<td>13.9</td>
</tr>
<tr>
<td>Stunting (height-for-age Z-score &lt; -2)</td>
<td>289</td>
<td>31.7</td>
</tr>
<tr>
<td>Wasting (weight-for-height Z-score &lt; -2)</td>
<td>158</td>
<td>17.3</td>
</tr>
<tr>
<td>Underweight (weight-for-age Z-score &lt; -2)</td>
<td>371</td>
<td>40.7</td>
</tr>
<tr>
<td>Ever wheezing (yes)</td>
<td>412</td>
<td>45.2</td>
</tr>
<tr>
<td>Current wheezing (yes)</td>
<td>180</td>
<td>19.7</td>
</tr>
<tr>
<td>Ever asthma (yes)</td>
<td>164</td>
<td>18.0</td>
</tr>
<tr>
<td>Age of the children (month)</td>
<td>54.4 ± 0.7*</td>
<td></td>
</tr>
<tr>
<td>Mother’s BMI</td>
<td>21.0 ± 3.5*</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1: Characteristics of the study children (n=912)**

- Total IgE (IU/ml) = 526.44 (172.93 - 3039.15)*
- Anti-DP IgE (UA/ml) = 44.3
- Mite antigen skin prick test (>5mm) = 15.2
- Ascaris lumbricoides eggs (159/912) = 17.4
- Trichuris trichura eggs (160/912) = 17.5

**Table 2: Geometric mean of serum total IgE and positivity of anti-DP IgE, mite antigen skin prick test and helminthes eggs**

**Table 3 Association between current wheezing and different parameters**

**Table 4 Univariate and multivariate logistic regression analyses with current wheezing as dependent variable**

**CONCLUSIONS**

- In conclusion, our data suggest that chronic undernutrition and other dietary factors are associated with higher occurrence of asthma symptoms.
- Previous study has also shown that overweight children had lower lung function, and lower body fat was associated with higher occurrence of asthma symptoms.
- Earlier study suggested that there was a defective T cell response in malnourished children, and that the proportion of total B cells, and those bearing the low-affinity IgE receptor (CD23+) increased in moderately malnourished children.

**ACKNOWLEDGEMENT**

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