Knowledge of dietary iodine and KIO₃ concentration in household iodized salt in rural and urban Jalisco, Mexico

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Introduction

• Iodine is one of the 4 major nutritional deficiencies worldwide, and the most common cause of preventable mental retardation & brain damage
• Mexico dramatically reduced goiter incidence by after implementing salt iodization
• However, in the last year the incidence of goiter tripled in the state of Jalisco

Graph: KIO₃ concentration (mg/kg) of salt samples from rural and urban homes, and retail level

<table>
<thead>
<tr>
<th>KIO₃ concentration (mg/kg)</th>
<th>Rural</th>
<th>Urban</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>zero (mg/kg)</td>
<td>32</td>
<td>22</td>
<td>11</td>
</tr>
<tr>
<td>low (0-15)</td>
<td>4</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>adequate (16-40)</td>
<td>24</td>
<td>28</td>
<td>24</td>
</tr>
<tr>
<td>high (&gt;40)</td>
<td>40</td>
<td>36</td>
<td>37</td>
</tr>
</tbody>
</table>

Graph: Average KIO₃ concentration (mg/kg) in salt samples

- Rural: 30.1 mg/kg
- Urban: 33.0 mg/kg
- Freshly purchased: 36.2 mg/kg

Purpose

Assess iodine knowledge and KIO₃ concentration in salt samples in rural and urban areas of Jalisco, Mexico to explain the rise in goiter incidence

Methods

- IRB approval was granted for this cross-sectional study
- 50 individuals, men and women older than 18, were selected from a rural and urban locality of Jalisco
  - Knowledge survey 50 from each locality
  - Salt analysis for KIO₃ concentration 50 from each locality & 30 newly purchased samples
- “Kit supplied by Boiteccsa Laboratorios was used to calculate KIO₃ concentration
- SPSS was used to conduct T-tests

Results

- Only 53% of rural and 56% of urban residents know that a lack of iodine can cause goiter
- 88.1% of rural and 81.6% of urban residents did not know that pregnant women have higher iodine needs
- 78% of urban and 48% of rural residents used non-iodized sea salt
- Education levels varied between rural and urban areas; however, education did not determine iodine knowledge (p value ≥ 0.5)

Conclusions

Even when Mexico mandates the iodization of salt:
- Most salt samples did not meet the recommended iodate concentration levels and many had no iodine at all
- Non-iodized sea salt is still available and preferred in both locations
- KIO₃ concentration in iodized salt differed from the label information
- Most people know very little about iodine and its importance

The increase in goiter is likely due to ~50-80% of the population using non-iodized sea salt. In addition, residents do not understand the importance of iodine. Iodizing sea salt might be a solution.

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