STATUS OF SALT IODIZATION IN THE NCD & OTHER CITIES IN PNG: 20 YRS AFTER PNG SALT LEGISLATION

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RUNNING TITLE: IODINE DEFICIENCY IN PNG

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INTRODUCTION

• Real and effective development in a society can occur if sustainable development is aimed at supporting the “whole child” [UNICEF 2013]:

• By promoting and safeguarding the child’s emotional, social, physical, cognitive development and basic livelihood needs,

• According to the Lancet group, Adequate nutrition is “a quintessential sustainable development goal” [Lancet 2013]
Micronutrient deficiency “Hidden Hunger” is a major obstacle to sustainable development in a community;

Impact of Hidden Hunger is multifaceted:

It increases the risk factors for disease burden, economic and social deprivation, because of its long ranging negative effects on the health of affected individuals and the community as a whole [UNICEF/WHO 2012];

Iodine deficiency is an example of Hidden Hunger,
Introduction cont…

• Iodine is required for biosynthesis of Thyroid Hormones: Thyroxine (T4), Triiodothyronine (T3);
• Low dietary intake and utilization of iodine can cause the spectrum of diseases, called “Iodine Deficiency Disorders (IDD)”;
• Iodine deficiency (ID) is the world’s greatest single cause of preventable mental retardation [WHO/ICCIDD/UNICEF 2007, 2010]
Mild to moderate ID in “apparently” healthy children can cause:

- Stunted growth,
- Impaired learning ability,
- Underperformance in school,
- Poor performance in psychometric tests,
- Impaired physical and cognitive function,
- Reduced capacity for critical thinking,

[WHO/UNICEF/ICCIDD 2007]
In adults, **low intake of iodine** can cause:

- **Hypothyroidism**, which may be characterized by:
  - Low work capacity,
  - Reduced productivity,
  - Dry scaly skin,
  - Tingling and numbness in extremities,
  - Forgetfulness,
  - Personality changes,
  - Depression,
  - Anemia,
  - High blood cholesterol, etc [WHO, ICCIDD 2010]
Universal Salt Iodization (USI) is the most effective and sustainable intervention strategy for prevention, control, and elimination of ID in a population [WHO/UNICEF/ICCIDD 2007];

USI strategy was implemented in PNG in June 1995 with the enactment of PNG Salt Legislation, which banned importation, production and sale of non-iodised salt. [P. Barter, 1995, Gazette G 47]

PNG Food Sanitation Regulation (PNFSR) states that iodine content in all salt used in PNG should not be less than 30.0ppm [NDOH 2007];
JUSTIFICATION

• One of the nutritional objectives in the current PNG National Health Plan (2011 – 2030) is to eliminate IDD and to monitor the availability and utilization of iodized salt at district and provincial levels [NDOH 2010];

• This is important to improve the health and life of all Papua New Guineans so as to be a “Smart, Wise, Fair, Healthy and Happy Society” [Vision 2050]
Major Aim of this project:

• The major aim of our project was to monitor iodine content in various brands of salt sold in NCD and other cities in PNG;
MATERIALS & METHODS

• **Study Sites:**
  - Retail stores in NCD, Lufa district (EHP), Wewak (ESP), Manus and Lae,

• **Assay Method:**
  - WYD Iodine Checker for Assay of Iodine content in salt samples; [WYD CHECKER, 2005]
  - Internal QC Monitoring was by “Westgard” Rules using Levy-Jennings Charts;

• **Samples:** Some brands of salt used in PNG
Some brands of salt in retail shops in various cities in PNG
RESULTS
CRITERIA FOR INTERPRETATION OF RESULTS

• **MAJOR CRITERIA USED:**

• PNG Food Sanitation Regulations (PNG Salt Legislation):

• **Iodine content of salt should not be less than 30ppm** (NDOH, 1995, 2007)
  • (That is: 30mg iodine per kilogram of salt)

• Use of Potassium Iodate is mandatory for iodization of all salt in PNG
  • NB: ppm = mg/kg
• Less than 30 ppm in a brand:
• Indicates failure in implementation of PNG Food Sanitation Regulation (PNG Salt Legislation);
• NB:
  • In order to avoid any legal complications salt brand names are not used in our presentation
  • ID codes are used to indicate the brands
Iodine content (ppm) in different brands of salt sold in NCD: 15 Brands of salt in 2009

Total of 7 (46.7%) brands with iodine content <30.0ppm

Total of 8 (53.3%) brands with iodine content ≥30.0ppm
Iodine content (ppm) in different brands of salt sold in NCD:

12 Brands of salt in 2010

Total of 6 (50%) brands with iodine content <30.0ppm

Total of 6 (50%) brands with iodine content ≥30.0ppm
Iodine content (ppm) in different brands of salt sold in NCD:

14 Brands of salt in 2013

Total of 10 (71.4%) brands with iodine content <30.0ppm

Total of 4 (28.6%) brands with iodine content ≥30.0ppm
Iodine content (ppm) in different brands of salt sold in NCD:

**16 Brands of salt in 2014**

Total of 11 (68.8%) brands with iodine content <30.0ppm

Total of 5 (31.2%) brands with iodine content ≥30.0ppm
Comparison of % distribution of brands in 2013 & 2014 in NCD according to iodine content

<table>
<thead>
<tr>
<th>Brands in 2013</th>
<th>Brands in 2014</th>
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<tbody>
<tr>
<td>Brands &lt; 30.0ppm</td>
<td>71.4%</td>
</tr>
<tr>
<td>Brands ≥ 30.0ppm</td>
<td>28.6%</td>
</tr>
<tr>
<td>Brands &lt; 30.0ppm</td>
<td>68.8%</td>
</tr>
<tr>
<td>Brands ≥ 30.0ppm</td>
<td>31.2%</td>
</tr>
</tbody>
</table>
OTHER CITIES
Iodine content (ppm) in different brands of salt sold in Lufa district EHP in 2012

4 brands of salt:
2 (50%) brands with iodine content < 30.0 ppm

2 (50%) brands with iodine content ≥ 30.0 ppm
Iodine content (ppm) in different brands of salt sold in Wewak in 2013

8 brands of salt:
Total of 7 (87.5%) brands with iodine <30.0ppm

Only 1 (12.5%) brand with iodine content ≥ 30.0ppm
Iodine content (ppm) in different brands of salt sold in Manus in 2014

6 brands of salt:

2 (33.3%) brands with iodine content <30.0ppm

4 (66.7%) brands with iodine content ≥30.0ppm
Iodine content (ppm) in different brands of salt sold in Lae city in 2014

8 brands of salt:

5 (62.5%) brands with iodine content <30.0ppm

3 (37.5%) brands with iodine content ≥30.0ppm
Comparison of % distribution of brands of salt according to iodine content

- **Brands < 30.0ppm**
- **Brands ≥ 30.0ppm**
Results cont....

• Our results indicated that almost 20 years after enactment of the PNG Salt Legislation about 70% of the various brands of salt sold in NCD are in violation of the Legislation:

• This indicates failure in the implementation of PNG Food Sanitation Regulation;
CONCLUSION

• National policies and strategies recognize the importance of salt iodization as a strategy to eliminate IDD;

• However more efforts are needed from all national stakeholders to actively implement it;

• Current status of salt iodization program in NCD can be characterized as “existent but needing strengthening”
Conclusion cont.....

- Sustaining progress requires greater political commitment to USI, regular and routine reviews of the strategy, more systematic monitoring, and active enforcement of the PNG Food Sanitation Regulation to ensure that salt iodization becomes truly universal in PNG.
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THANK YOU