Egypt Iodine Survey
2014 / 2015
Summary Report
ACKNOWLEDGMENT

The 2014-15 national iodine survey in Egypt was made possible by the commitment and contributions of national and international partners. Funding support was made available through the GAIN-UNICEF USI Partnership Project funded by the Bill and Melinda Gates Foundation. We would particularly like to acknowledge the support of the following:

- HE Prof. Dr. Ahmed Emad El-Din Rady the Minister of Health and Population, for his approval, input and continuous support in implementing this study.

- Ministry of Health and Population, Ministry of Education, National Nutrition Institute, UNICEF-GAIN, local field teams and Technical and Executive Committees, for their valuable contribution, input, support (financial, technical and logistical), and significant effort that made the study possible.

- Many thanks to the dedicated MOE, schools, field teams, Central Laboratories and Quality Assurance Team who worked hard under difficult and challenging circumstances.

We would like to express our sincerest gratitude to all the participants in the current survey including school children, their families and pregnant women. Without their contribution this effort would have been incomplete.

Dr. Emad Ezzat
Head of PHC and Nursing Sector
MOHP
Cairo, Egypt
Egypt Iodine Survey 2014-15

Background and Rationale

Iodine deficiency is the single greatest cause of preventable mental impairment globally and also causes many other adverse effects on growth and development due to inadequate thyroid hormone production\(^1,2\). Many of these iodine deficiency disorders (IDD) result from the effects of iodine deficiency on fetal brain development during early pregnancy\(^2,4\). Iodizing all salt for human and animal consumption, also known as Universal Salt Iodization (USI), can prevent iodine deficiency effectively and inexpensively\(^3,5,6\).

Iodine deficiency in Egypt has been reported over the past 90 years, starting with an observation of the high prevalence of goiter among Egyptian farmers in 1924\(^7\). A series of studies over the next 70 years revealed some level of iodine deficiency in different areas across the country\(^18,20,11\). The highest prevalence of goiter (82.3\%) and lowest urinary iodine concentrations (UIC) were found in Upper Egypt and the New Valley Governorate.\(^12,13,14\).

Egypt was one of six countries that initiated the World Summit for Children in 1990 and one of at least 167 signatories of the overall Declaration and Plan of Action on behalf of the World’s Children in which this IDD elimination goal was included\(^15\). In 1996, Egypt passed legislation for the mandatory iodization of table and cooking salt as its main strategy to achieve this goal. Substantial efforts and progress have been made by the Ministry of Health and Population (MOHP) and supporting partners to establish and implement quality-assured USI to prevent the adverse effects of iodine deficiency among the population\(^16\).

In 2003, the Ministry of Industry issued another ministerial decree (Resolution No. 41) that regulated the sale of non-iodized salt and stated that salt for use in households and bakeries should be iodized. This included the requirement for local Baladi bread to be made with iodized salt. Salt used for the animal food industry was exempt from iodization.

The Egyptian Organization for Standardization and Quality updated the Egyptian standards for table salt in 2005 and again in 2015 to include salt characteristics, specifications and potassium iodate content (30-70 ppm\(^1\)). The standard now addresses packing, labelling (producer/packer information, iodine logo and potassium iodate level), storage and transport requirements\(^17\).

In 2005 a national study was carried that included examination of the relationship between socio-economic characteristics and health status with identified nutritional deficiencies, IQ and scholastic achievement (Ministry of Health and Population Egypt, 2005). The prevalence of goiter was 36.7\% and the median urinary iodine concentration (UIC) was 86 µg/L denoting iodine deficiency. 43.1\% of households in rural areas were using salt that contained no iodine. This indicated that non-iodized salt continued to be available in spite of the legislation requiring all salt to be iodized. Positive correlation was found between urinary iodine concentration and IQ (\(r = 0.10, P<0.10\)).

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\(^1\) Equivalent to 18-41.5ppm iodine
In 2006-2007, ten years after initiation of USI, the MOHP in collaboration with UNICEF-Egypt implemented the first national school-based iodine survey to evaluate household coverage with iodized salt and iodine nutrition, with regionally-representative data. The results revealed that iodine nutrition status was at optimum levels among school-age children in all four regions and that 68.3% of households with primary school-age children were using adequately iodized salt (>15ppm), indicating that Egypt was on track to achieve the goal of sustained IDD elimination through salt iodization18.

In summary, through widespread implementation of USI with good compliance by the major salt producers, Egypt made considerable progress from a country with pockets of severe iodine deficiency, affecting all population groups, to a state of adequate iodine status among PSC at the regional and national levels. However, a study by UNICEF found that, among countries with relatively high overall coverage, Egypt was one of four countries showing the most pronounced disparities in access to quality iodized salt based on wealth. The analysis recommended increased attention to the identification of barriers to the equitable use of adequately iodized salt19.

In 2014-2015, the Egyptian MOHP, in collaboration with GAIN and UNICEF-Egypt, decided to conduct another national survey of household iodized salt coverage and iodine status; to determine progress made since the previous survey towards sustained elimination of IDD among primary school age children (PSC); to verify iodine nutrition among pregnant women (PW), the group most vulnerable to the effect of iodine deficiency; and to determine current household use of adequately iodized salt. This report presents the findings of the most recent 2014-15 survey.

Survey Objectives

1. To assess iodine status in PSC (6 to 12 years of age) through measurement of population median UIC.

2. To assess iodine status among pregnant women (PW) registered within the PHC units/MCH of the MOHP through measurement of population median UIC.

3. To determine household use of iodized and adequately iodized salt through quantitative assessment of the iodine content of salt for PSC and PW included in the survey.

4. To determine the relationship between household salt iodine levels and urinary iodine concentrations in both PSC and PW.

5. To investigate changes in iodine status in PSC and in household use of iodized salt since the 2006/2007 survey.

6. To assess knowledge, attitude, and practices of the caretakers of the PSC and of PW regarding iodine deficiency and the benefits of iodized salt use.

Methods

The survey was a cross sectional multi-stage cluster survey stratified by five regions: Metropolitan, urban Lower Egypt, rural Lower Egypt, urban Upper Egypt and rural Upper Egypt2. Separate survey sampling procedures were developed to be representative of the two different target populations: primary school children in Egypt, and pregnant women who had registered for antenatal care at a Government primary health care facility. The main outcomes were household salt iodine content assessed by titration and iodine nutrition assessed by median urinary iodine concentration of the population. National results for both indicators were adjusted to account for differences in the proportion of the population in each region.
The target sample size consisted of:

i. 3,600 urine samples from primary school children (PSC) 6-12 years of age, together with care-giver completed interviews and salt sample collection conducted at their households;

ii. 1,500 urine samples from pregnant women (PW) in their 2nd or 3rd trimester, with associated completed interviews and collection of household salt samples.

In depth training was provided for all field and laboratory staff, including a pilot survey to check all procedures and understanding of the survey teams.

Salt and urinary iodine were assessed using quantitative methods with external quality assurance of the laboratory performance. A quality control process was established to check all field work procedures. Double data entry was used with independent review and verification of any discrepancies observed.

The Research Ethics Committee of the Ministry of Health and Population approved the study.
Key Findings

Characteristics of the survey population -- Primary School Aged Children (PSC)

- There was an even distribution of children by sex and school grade.

- The majority (80%) of children attended public primary schools, with the remainder split evenly between private and religious (Al Azhar) schools at the national level. At the stratum level, the percent of children attending private schools was highest in Metropolitan areas and Urban Upper Egypt and the percent attending Al Azhar schools was highest in Rural Lower Egypt and lowest in Metropolitan areas.

<table>
<thead>
<tr>
<th>Variable</th>
<th>National n = 3284</th>
<th>Metropolitan n = 595</th>
<th>Lower Egypt n = 1383</th>
<th>Upper Egypt n = 1306</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Urban n = 682</td>
<td>Rural n = 701</td>
<td>Urban n = 591</td>
</tr>
<tr>
<td>Sex Male</td>
<td>53.0%</td>
<td>56.8%</td>
<td>51.3%</td>
<td>47.4%</td>
</tr>
<tr>
<td>Sex Female</td>
<td>47.0%</td>
<td>43.2%</td>
<td>48.7%</td>
<td>52.6%</td>
</tr>
<tr>
<td>School Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>33.4%</td>
<td>32.9%</td>
<td>34.0%</td>
<td>33.0%</td>
</tr>
<tr>
<td>4th</td>
<td>33.5%</td>
<td>34.8%</td>
<td>32.1%</td>
<td>34.2%</td>
</tr>
<tr>
<td>5th</td>
<td>33.1%</td>
<td>32.2%</td>
<td>33.9%</td>
<td>32.8%</td>
</tr>
<tr>
<td>School Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>80.1%</td>
<td>71.1%</td>
<td>87.1%</td>
<td>77.5%</td>
</tr>
<tr>
<td>Private</td>
<td>8.8%</td>
<td>25.9%</td>
<td>4.3%</td>
<td>14.2%</td>
</tr>
<tr>
<td>Al Azhar</td>
<td>11.2%</td>
<td>3.0%</td>
<td>8.7%</td>
<td>8.3%</td>
</tr>
</tbody>
</table>

Weighted numbers by strata: Metropolitan 612; Lower Egypt: urban 468, rural 1084; Upper Egypt: urban 486, rural 950
The household response rate for completed interviews was 83.5%, for households with analysed salt samples 81.0%, and for urine samples 90.2%. Approximately one-third of primary school children nationally had mothers who were illiterate, one-third had mothers who had intermediate to post-intermediate education and the remainder had mothers who had less than secondary education (15%) or higher education (9%).

By strata (not including metropolitan due to high missing rate), the highest level of illiteracy among mothers was in Rural Upper Egypt, which also had the lowest percent of mothers reaching higher education.

The median household durable goods score was lowest (indicating poorer household wealth) in Rural Upper Egypt and highest in Metropolitan areas and Urban Upper Egypt.

<table>
<thead>
<tr>
<th>Variable</th>
<th>National n = 3284</th>
<th>Metropolitan n = 595</th>
<th>Lower Egypt n = 1383</th>
<th>Upper Egypt n = 1306</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Level of Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>33.7%</td>
<td>17.6%</td>
<td>26.1%</td>
<td>27.1%</td>
</tr>
<tr>
<td>&lt; Secondary</td>
<td>15.7%</td>
<td>17.6%</td>
<td>13.3%</td>
<td>18.4%</td>
</tr>
<tr>
<td>Intermediate to Post Intermediate</td>
<td>32.7%</td>
<td>23.2%</td>
<td>42.3%</td>
<td>34.8%</td>
</tr>
<tr>
<td>Higher</td>
<td>9.1%</td>
<td>9.7%</td>
<td>10.4%</td>
<td>16.1%</td>
</tr>
<tr>
<td>Household Durable Goods Score^2</td>
<td>Median 6.0</td>
<td>8.0</td>
<td>7.0</td>
<td>8.0</td>
</tr>
</tbody>
</table>

^1 Education level information was missing for 31.8% of all mothers/caretakers in Metropolitan areas. In all other strata it was less than 10%.

^2 Durable goods score is a proxy for household wealth, scored 0-14 from a list of household items

All further tables present weighted numbers and estimates.
### Characteristics of the survey population – Pregnant Women (PW)

- The majority (>50%) of PW were in the age group 20-29 years. At the national level approximately 60 of PW were in their 3rd trimester and this was the same in all regions except for Metropolitan where just over 60% of PW were in their 2nd trimester.

- The mean household size, which correlated closely with the durable goods score (a proxy measure of wealth) was lowest in Metropolitan regions and highest in Rural Upper Egypt.

<table>
<thead>
<tr>
<th>Variable</th>
<th>National n = 1500</th>
<th>Strata n = completed interviews (unweighted)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metropolitan n = 300</td>
<td>Lower Egypt n = 600</td>
</tr>
<tr>
<td></td>
<td>Urban n = 300</td>
<td>Rural n = 300</td>
</tr>
<tr>
<td>Age Group¹ (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19</td>
<td>14.5%</td>
<td>11.0%</td>
</tr>
<tr>
<td>20-24</td>
<td>38.7%</td>
<td>27.0%</td>
</tr>
<tr>
<td>25-29</td>
<td>26.9%</td>
<td>29.3%</td>
</tr>
<tr>
<td>30-34</td>
<td>13.1%</td>
<td>19.7%</td>
</tr>
<tr>
<td>35-44</td>
<td>6.6%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Pregnancy Trimester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>39.3%</td>
<td>66.0%</td>
</tr>
<tr>
<td>3rd</td>
<td>59.4%</td>
<td>34.3%</td>
</tr>
<tr>
<td>Household Size</td>
<td>Mean</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Weighted numbers by strata: Metropolitan 82; Lower Egypt: urban 132, rural 599; Upper Egypt: urban 120, rural 567

¹ Missing percent at the national level: Age group 0.2%, Pregnancy trimester 1.2%
The response rate for completed interviews (replacements used) was 100.0%, households with analyzed salt samples 98.0%, and urine samples 99.9%.

- The level of education varied significantly between strata, with highest levels of education among PW in Lower Egypt.
- Over 89% of women from all regions reported that they were not in paid employment.

<table>
<thead>
<tr>
<th>Variable</th>
<th>National n = 1500</th>
<th>Strata n = completed interviews (unweighted)</th>
<th>Metropolitan n = 300</th>
<th>Lower Egypt n = 600</th>
<th>Upper Egypt n = 600</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Metropolitan Urban n = 300</td>
<td>Metropolitan Rural n = 300</td>
<td>Lower Egypt Urban n = 300</td>
<td>Lower Egypt Rural n = 300</td>
</tr>
<tr>
<td>Illiterate</td>
<td>15.8%</td>
<td>24.3%</td>
<td>10.3%</td>
<td>9.7%</td>
<td>16.0%</td>
</tr>
<tr>
<td>&lt; Secondary</td>
<td>22.0%</td>
<td>32.4%</td>
<td>21.9%</td>
<td>16.9%</td>
<td>23.7%</td>
</tr>
<tr>
<td>Intermediate to Post Intermediate</td>
<td>51.3%</td>
<td>33.6%</td>
<td>55.4%</td>
<td>58.3%</td>
<td>49.0%</td>
</tr>
<tr>
<td>Higher</td>
<td>10.8%</td>
<td>9.7%</td>
<td>12.3%</td>
<td>15.0%</td>
<td>11.3%</td>
</tr>
<tr>
<td>2nd Employment Status¹</td>
<td>93.2%</td>
<td>92.0%</td>
<td>93.2%</td>
<td>92.0%</td>
<td>89.3%</td>
</tr>
<tr>
<td>3rd Employment Status¹</td>
<td>6.6%</td>
<td>7.7%</td>
<td>6.3%</td>
<td>7.7%</td>
<td>10.3%</td>
</tr>
</tbody>
</table>

¹ Missing percent at the national level: Employment status 0.2%,
Findings for Iodine Status – Primary School Aged Children (PSC)

- Iodine status among PSC in the 2014-15 survey in Egypt was in the optimal range, indicating adequate iodine intake nationally and in all strata (median Urinary Iodine Concentration (UIC) between 100 and 299µg/L).

- Adequate iodine intake has been maintained among PSC since the previous survey (2006-7).

- There was a significant association between PSC household salt iodine category and median UIC. The median UIC among PSC from households using non-iodized salt (<5ppm iodine) was 110µg/L, compared with a median of 180µg/L among PSC living in households where the salt was adequately iodized (>15ppm iodine).
  - When data were disaggregated by urban and rural areas, the median UIC among PSC from households using non-iodized salt was below optimal (90µg/L) in rural areas, indicating inadequate iodine intake among PSC in this region.

- The median UIC was higher among PSC attending private schools and among PSC whose mothers had a higher educational level; however, adequate intake was found in all of these sub-groups of type of school and maternal education.
Findings for Iodine Status – Pregnant Women (PW)

Iodine status was assessed nationally among pregnant women for the first time in the 2014-15 survey. The sample represents women who had registered for antenatal care at a Government primary health care facility and were in the 2nd or 3rd trimester of pregnancy.

- The median UIC for PW was slightly below optimum iodine status nationally (median below 150µg/L\(^2\)).
- In Metropolitan areas and Urban Upper Egypt however, the median UIC indicated that PW in these areas have adequate iodine intake.
- Sub-optimum iodine status was found for PW in the remaining three regions, with lowest status among PW in Rural Upper Egypt.
- There was a significant association between PW household salt iodine category and median UIC. PW from households using non- or inadequately iodized salt (<15ppm iodine) had below-optimal iodine status, while PW from households where the salt iodine content was 15ppm and above had adequate iodine status.

- The median UIC among PW was higher in the second (150.0µg/L) than the third (137.0µg/L) trimester and increased slightly with improved educational level; however when investigated by education level, the median UIC did not reach 150 µg/L even among PW with higher education.

- PW in formal employment had optimal iodine status (median UIC 180µg/L); however, the numbers in this group were very small.
Findings for Household Salt Iodine – Primary School Age Children (PSC)

Results are only presented here for household salt iodine for PSC since this sample was more fully representative of the national population than the sample of pregnant women. Findings for household salt for PW were, overall, very similar to those shown here for PSC.

- Nationally, 74.7% of PSC households were using adequately iodized salt (≥15ppm).
- Only 7.5% of households were using salt with no added iodine (<5ppm).
- There was a significant difference in the distribution of household salt with different iodine levels between strata: Metropolitan areas had the highest household coverage of adequately iodized salt (82.9%), while Rural Upper Egypt had the lowest coverage (69.6%).

### Household coverage iodized salt in Egypt 2014-15 by region

<table>
<thead>
<tr>
<th>Region</th>
<th>Non-iodized (&lt;5ppm)</th>
<th>Inadequately iodized (5-14.9ppm)</th>
<th>Adequately Iodized (≥15ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>7.5%</td>
<td>17.8%</td>
<td>74.7%</td>
</tr>
<tr>
<td>Rural Upper Egypt</td>
<td>3.8%</td>
<td>20.5%</td>
<td>69.6%</td>
</tr>
<tr>
<td>Urban Upper Egypt</td>
<td>4.7%</td>
<td>17.6%</td>
<td>78.6%</td>
</tr>
<tr>
<td>Rural Lower Egypt</td>
<td>4.6%</td>
<td>18.0%</td>
<td>72.8%</td>
</tr>
<tr>
<td>Urban Lower Egypt</td>
<td>4.7%</td>
<td>16.3%</td>
<td>79.0%</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>12.4%</td>
<td>9.2%</td>
<td>82.9%</td>
</tr>
</tbody>
</table>

- Results suggest that household use of adequately iodized salt has increased from 69.1% to 74.7% over 8 years since the 2006-7 survey.
- A particular improvement in household coverage with adequately iodized salt was observed for Lower Egypt as a whole, from 58.2% in 2006-7 to 74.6% in 2014-15.
- At the national level, the proportion of salt with iodine in the recommended range (15-40ppm) has increased from 31.1% in 2006-7 to 69.5% in 2014-15.
Analysis of key factors associated with iodine status and household salt iodine level

A correlation analysis indicated that urinary iodine concentration was strongly influenced by household salt iodine level among both population groups (correlation coefficient 0.265 among PSC and 0.212 among PW). Other factors significantly associated with iodine status among PSC were durable goods score and maternal years of schooling. These factors (durable goods score and woman’s own educational level) did not quite reach the level of significance when correlated with UIC among PW.

The factor found to be most significantly associated with household salt iodine in PSC households was the durable goods score (correlation coefficient 0.223). Maternal education was also a significantly associated factor, but less strongly.

Awareness of iodine deficiency and the National Salt Iodization Program. And household salt purchasing practice

- At the national level, only a minority of mothers of PSC (11.2%) and PW (9.0%) reported to have heard about iodine deficiency as a problem.
- The level of awareness varied significantly between strata. For mothers of PSC, highest awareness was in Metropolitan regions (19.4%) and lowest in Rural Upper Egypt (5.2%). In contrast, among pregnant women awareness was lowest in Metropolitan regions (5.2%) and highest (about 12%) in both Rural areas.
- Awareness varied significantly according to educational level and was highest among women with higher education for both PSC mothers (31.8%) and PW (22.2%), and lowest among illiterate women in both groups (<3.5%).
- At the national level, only 21.4% of PSC mothers and 19.8% of PW were aware that salt has been iodized by governmental decree.
- Awareness was significantly different by strata. For mothers of PSC, awareness was lowest in Rural Upper Egypt at 10.4%. For PW, awareness was similar among all strata except Metropolitan, where it was at 6.3%.
- Awareness of government decreed salt iodization increased with increasing educational level from just under 6% for illiterate women (both mothers of PSC and PW) to 43% among mothers of PSC, and 45% among PW with higher education.
- For mothers of PSC and PW, the main source of information about Government-decreed salt iodization was television (44.0% and 39.5% respectively) followed by health care facilities (13.3% and 22.2% respectively) then statements on salt packages (13.1% and 11.3% respectively).
- Nationally, 86.7% of PW reported using packaged salt for cooking, with 8.1% using loose salt and 5.2% using both packaged and loose. Similarly, 85.6% of mothers of PSC reported to use packaged salt for cooking.
- Results for the use of packaged cooking salt in households of PW varied significantly across the strata and by education level. By strata: the highest use of packaged salt was reported in Metropolitan areas (95.3%) and lowest use in Rural Upper Egypt (81.7%). By education level: the highest use of packaged salt was reported by PW with higher education (96.9%), with the lowest use in PW who reported they were illiterate (83.5%).

Note: the survey technical advisory group has some reservations about the reliability of the resulting data for the knowledge and awareness questions.
Egypt has made significant progress towards achieving optimal iodine status through universal salt iodization, as shown by the optimal iodine status among primary school children nationally and in all five regions (sustained since the 2006-7 survey). Although iodine intake appears to be just below optimal among the surveyed group of pregnant women at the national level, the fact that intake was adequate in the two most urbanized regions of Egypt indicates that it is possible to achieve adequacy among this most vulnerable group of the population. Of particular note is the fact that adequate intake was achieved among pregnant women living in households that were using adequately iodized salt.

The global target for USI, > 90% households using adequately iodized salt, has not yet been achieved, however all regions in the current survey had household coverage rates for adequately iodized salt of at least 70% and less than 5% of households in urban areas were using salt with no added iodine, rising to 10% in the two rural regions. An analysis of the distribution of salt iodine levels indicated large improvements in production quality control since 2006/2007, as well as an apparent overall increase in household use of adequately iodized salt, especially in Upper and Lower Egypt. The household iodized salt coverage results from this survey were in line with results from the 2014 DHS which reported that 90.9% of households were using salt with some iodine (compared with 92.5% in this survey).

Despite this progress towards achieving optimal iodine nutrition through USI in Egypt, there remains room for improvement in achieving the goal of at least 90% household coverage of adequately iodized salt and adequate iodine nutrition among all population groups, especially in rural areas.
Iodine Status

Cross tabulation and regression analyses of the current survey data show the association between iodine status and household salt iodine content. This association was found to be stronger in rural than in urban areas. The regression analysis suggests that, after controlling for the influence of household salt iodine level, the most important factors related to iodine status are those related with residence (urban/rural) and socioeconomic status (e.g. household durable goods score). These findings of higher overall iodine intake that is less strongly associated with household salt iodine among PSC from wealthier urban households suggests that these children may have more diverse diets and be obtaining dietary salt, potentially iodized, and other sources of dietary iodine, from a wider variety of sources than just household salt. This is a pattern that has been observed globally, especially in urban and wealthier areas.

Potential sources of additional dietary iodine in Egypt may include the use of iodized salt in certain processed foods (which may be produced using iodized salt even without specific regulations requiring this) and dairy products, which are key sources of iodine in some countries due to iodine-supplementation of dairy herds.

The 2007 Joint Statement from WHO and UNICEF on: Reaching Optimal Iodine Nutrition in Pregnant and Lactating women recommended that women living in a population with 50-90% household coverage with adequately iodized salt and a median UIC at or above 100 µg/l in other PSC (which has been sustained for at least two years), are not in need of iodine supplementation in pregnancy. Evidence from this survey indicates that this is the situation applying in most of Egypt, however there may be small sub-national areas this is not the case and it should be considered that this survey did not include any information from four frontier governorates.

It is currently not common practice in Egypt for Government antenatal facilities to routinely prescribe iodine-containing supplements, most pre-natal supplements do not contain iodine, and women tend to register for antenatal care when already in their second trimester. A recent paper agreeing with the WHO/UNICEF recommendation above provides information which suggests that for the majority of the Egyptian population, the emphasis should be on improving access to adequately iodized salt and on a review of national legislation to consider regulating for iodized salt in a wider variety of food products than bread, to ensure that all major sources of dietary salt are contributing to iodine intake.

Iodized Salt

The survey illustrated that despite the many changes in Egypt over the past five years, iodized salt producers should be credited with maintaining a consistent supply of quality-assured iodized salt. The high proportion of iodized salt within the nationally regulated range of 15-40ppm iodine represents a significant improvement in production quality control over the past eight years.

Despite this, certain supply-related factors remain that are preventing achievement of 90% household coverage with adequately iodized salt. Results from this survey confirm that inequitable access continues however the gap is decreasing. Further strengthening regulatory monitoring, including of salt re-packers, will help to further improve the iodization quality and packaging of salt supplied to remaining areas with lowest coverage to address this gap.

If, as mentioned above, the national legislation is changed to mandate the use of iodized salt iodization in a wider variety of food products, then regulatory monitoring will
need to expand to cover food industries. A monitoring system for Baladi bread bakeries piloted by the Ministry of Supply and Internal Trade, with support from WFP and GAIN, found that most bakeries were using adequately iodized salt, indicating the feasibility of iodized salt use and monitoring of relatively small food production units. If other widely consumed food products also included quality controlled iodized salt in their production, the potential iodine intake of the population, including PW, would be expected to increase.

**Awareness of Iodine Deficiency and Iodized Salt**

The survey results indicate surprisingly low awareness of iodine deficiency and iodized salt among women in Egypt. As noted in the results, there are some technical concerns about the questions employed and further qualitative research is recommended to verify the findings.

In Egypt, women are usually the decision makers when it comes to the selection of food products for their families. Improving their awareness about the impact of iodine deficiency and of its prevention through selection of quality iodized salt is one step towards raising the proportion of HH using iodized salt and achieving the goal of sustained optimal iodine nutrition among all population groups. Since salt is a low cost commodity used on a daily basis, an approach based on long-term, multi-channel information is recommended. Information to all age groups via well-informed education personnel, health personnel and retailers, together with appropriate messages on salt packets can be a sustained source of awareness raising about iodine deficiency and the benefits of choosing iodized over non-iodized salt.

**Summary Recommendations**

The survey technical advisory group along with the IDD committee made the following recommendations based on the survey results:

1. Ensure sustainability of optimal iodine nutrition and current progress towards USI through a continued multi sector approach and development of a sustainability action plan

2. Review national legislation and standards (use of iodized salt for all human and animal consumption, which would include its use in the processed food industry)

3. Ensure continued quality control and regulatory monitoring of salt iodization and periodic assessments of iodine nutrition. A mechanism of ongoing surveillance should be implemented to identify pockets of low access to adequately iodized salt and of sub-optimal iodine status (particularly among pregnant women), with a plan for follow up action where identified.

4. Assess the impact of community awareness on consumer choice, in the context of lower availability of adequately iodized salt, especially in rural areas. Implement a sustainable (long term) awareness raising strategy through working with the education and health systems and with retailers, in areas where considered appropriate.

5. Further mobilize private sector salt industry (including salt re-packers) and food producers to support, implement and quality-assure any strengthened legislation/standards.
References
