APPENDICES

APPENDIX I: QUESTIONNAIRE FOR CONDUCTING IDD SURVEY IN GOITRE ENDEMIC DISTRICT IN MAINLAND TANZANIA (1999) AND IN ZANZIBAR (2001)


4. Location of village: 1 = Urban  2 = Urban  [ ]

5. Geographical location: Highland =2, Lowlands =3, Township =3  [ ]

6. Class ----- (I-VII)  [ ]

7. Date of interview dd/mm/yy [ ] [ ] [ ] [ ] [ ]  8. Name of interviewer ……..  Signature ……..

<table>
<thead>
<tr>
<th>Child no.</th>
<th>Age (complete years)</th>
<th>Sex</th>
<th>Ever heard of iodated salt</th>
<th>Can you identify iodated salt</th>
<th>Goitre grade</th>
<th>Salt test for iodine</th>
<th>Urinary iodine conc. (μg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1=Yes 2=No</td>
<td>1=Yes 2=No</td>
<td>Old =0,1a,1b,2,3. New=(0,1, 2)</td>
<td>+ve=1 -ve = 2</td>
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</tbody>
</table>
APPENDIX II: QUESTIONNAIRE FOR SALT TRADERS USED FOR PAPER I&II

1. Region ..................................................

2. District and code number

<table>
<thead>
<tr>
<th>Region</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zanzibar North</td>
<td>01</td>
</tr>
<tr>
<td>Zanzibar Central</td>
<td>03</td>
</tr>
<tr>
<td>Zanzibar Town</td>
<td>05</td>
</tr>
<tr>
<td>Wete-Pemba North</td>
<td>07</td>
</tr>
<tr>
<td>Micheweni-Pemba North</td>
<td>08</td>
</tr>
<tr>
<td>Chakechake-Pemba</td>
<td>09</td>
</tr>
<tr>
<td>Mkoani-Pemba</td>
<td>10</td>
</tr>
</tbody>
</table>

3. (i) Ward............... (ii) Village..................

4. Location

<table>
<thead>
<tr>
<th>Location</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>1</td>
</tr>
<tr>
<td>Rural</td>
<td>2</td>
</tr>
</tbody>
</table>

5. Geographical features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highland</td>
<td>1</td>
</tr>
<tr>
<td>Lowland</td>
<td>2</td>
</tr>
<tr>
<td>Township</td>
<td>3</td>
</tr>
</tbody>
</table>

6. Date of interview (dd/mm/yy) [][][][][]

7. How old are you (completed years)?

<table>
<thead>
<tr>
<th>Age</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don’t know</td>
<td>99</td>
</tr>
<tr>
<td>Above 90</td>
<td>98</td>
</tr>
</tbody>
</table>

8. What is the highest formal school you completed?

<table>
<thead>
<tr>
<th>School Level</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>No education</td>
<td>1</td>
</tr>
<tr>
<td>Less than 1 year</td>
<td>2</td>
</tr>
<tr>
<td>Standard 1-4</td>
<td>3</td>
</tr>
<tr>
<td>Standard 5-8</td>
<td>4</td>
</tr>
<tr>
<td>Form 1-2</td>
<td>5</td>
</tr>
<tr>
<td>Form 3-4</td>
<td>6</td>
</tr>
<tr>
<td>Form 5-6</td>
<td>7</td>
</tr>
<tr>
<td>More than secondary school</td>
<td>8</td>
</tr>
<tr>
<td>Adult Education</td>
<td>9</td>
</tr>
</tbody>
</table>

9. Have you heard of IDD?

<table>
<thead>
<tr>
<th>Response</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
</tr>
</tbody>
</table>

If No go to Question 12

10. If yes, how did you learn about the IDD?

<table>
<thead>
<tr>
<th>Method</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posters/Billboards</td>
<td>1</td>
</tr>
<tr>
<td>Leaflets</td>
<td>2</td>
</tr>
<tr>
<td>Radio</td>
<td>3</td>
</tr>
<tr>
<td>Newspapers</td>
<td>4</td>
</tr>
<tr>
<td>Others (specify)</td>
<td>5</td>
</tr>
</tbody>
</table>

11. Have you ever seen a person with Goitre

<table>
<thead>
<tr>
<th>Response</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
</tr>
<tr>
<td>Not sure</td>
<td>3</td>
</tr>
</tbody>
</table>

12. Have you heard about iodated salt?
**Controlling iodine deficiency disorders through salt iodation**

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. How do you identify iodated salt?</td>
<td>1= Iodated salt emblem 3= Test kit</td>
</tr>
<tr>
<td></td>
<td>2= Written on the packet/bag 4= Others</td>
</tr>
<tr>
<td>14. Is the salt you are currently selling iodinated?</td>
<td>1= Yes  2= No  3= Not sure</td>
</tr>
<tr>
<td>15. Did you ever sell salt which is not iodinated?</td>
<td>1= Yes  2= No  3= Not sure</td>
</tr>
<tr>
<td>16. Are you still selling non iodated salt?</td>
<td>1=Yes  2= No  3= Not sure</td>
</tr>
<tr>
<td>17. Why are you currently still selling non iodated salt?</td>
<td>1=Peoples preference 3= Easy to handle</td>
</tr>
<tr>
<td></td>
<td>2= Easy to sell 4= Others (specify)</td>
</tr>
<tr>
<td></td>
<td>5=Not applicable</td>
</tr>
<tr>
<td>18. Why did you stop selling non iodated salt?</td>
<td>1=Legislation 4=Not available</td>
</tr>
<tr>
<td></td>
<td>2=Advised by health personnel 5=Others (specify)</td>
</tr>
<tr>
<td></td>
<td>3= Not good for health</td>
</tr>
</tbody>
</table>

**FOR INTERVIEWER ONLY**

20 (a) Non iodized salt available in shop?  
1= Yes  2= No

20 (b) Price in Tshs/Kg:  
1) Fine salt  2) Coarse

20 (c) Is iodized salt available in shop?  
1=Yes  2= No

20 (d) Price in Tshs/Kg:  
1) Fine salt  2) Coarse
QUESTIONNAIRE FOR CONDUCTING NATIONAL IDD SURVEY 2003/4


4. Geographical location: Highland =   1    Lowlands =   2    Township =  3                 [      ]

5. Name of interviewer …………  6. Date of interview ------------

<table>
<thead>
<tr>
<th>No.</th>
<th>Child name</th>
<th>Age (years)</th>
<th>Sex</th>
<th>Class (I-VII)</th>
<th>Goitre grade (0,1,2)</th>
<th>Salt test for iodine (+ve = 1, -ve = 2)</th>
<th>Urinary iodine (µg/l)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
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<td>2.</td>
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<td>3.</td>
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<td>4.</td>
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<tr>
<td>5.</td>
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<tr>
<td>etc.</td>
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</tbody>
</table>
APPENDIX IV: GUIDE QUESTIONNAIRE FOR SALT IODATION MONITORING AT FACTORY LEVEL IN MAINLAND TANZANIA (Paper IV)

Region: ___________  District: ___________  Name of Factory: ___________
Owner: ____________  Location: __________
Date of inspection: ____________    Name of inspector:_______________

1. Mode/mechanism of salt production
   - Solar
   - Thermal
   - Both

2. Mode of iodation
   - machine spray
   - Hand spray
   - Dripping
   - Dusting (Dry-mixing).

3. (a) Type of iodation machine (if Q.2=a)
   - large (16 tons and above per hour)
   - medium (5-15 tons per hour)
   - small (less than 5 tons per hour)
   - others:______________________

(b) What is the state of the machine?
   - working
   - not working

4. Packaging:
   (a) Type of material:-
      - jute bags
      - sisal bags
      - polythene bags
      - others

   (b) Quality of packaging materials
      - lined
      - not lined
      - specially lined material

   (c ) Type of sealing
- threading
- glue
- tie
- others (specify)_____________________

(d) Labelling (multiple answers)
(Tick if the item is shown✓)
- address
- batch No.
- IDD logo
- date of production
- date of expiry
- quality specifications (ingredients):
  • amount of iodine (in ppm) __________
  • % moisture content
  • % impurities

5. Storage:
(a) Exposure to sun
  - shaded
  - not shaded
(b) If shaded
  - walled
  - not walled
(c) Type of floor
  - earthen
  - concrete
  - brick
  - wooden
  - others____________________

6. Quality control
(a) Is there a mini-lab?
  - Yes
  - No
(b) Is there an internal quality control mechanism?
  - Yes
  - No
(c) If yes, what are the elements?
Controlling iodine deficiency disorders through salt iodation

- spray nozzle checking
- speed checking (conveyor, mixer etc)
- precision in the preparation of KIO₃ solution
- testing of iodine level
  - Qualitative
  - Quantitative

If quantitative testing is done, is standard QC material used?
- Yes
- No

7. **Record keeping**
   (a) Is there record keeping for iodine content?
      - Yes
      - No
   (b) If yes, the iodation levels ranged from---------to --------ppm

8. **Mention three major constraints you are facing**
   (1) ________________________________
   (2) ________________________________
   (3) ________________________________

9. **Three samples collected for testing at TFNC (Tick ✔)**
   - before iodization [   ]
   - after iodization [   ]
   - stored salt (iodinated) [   ]
APPENDIX V: CHECKLIST FOR FOCUS GROUP DISCUSSIONS FOR IDD SURVEY IN MAINLAND TANZANIA AND ZANZIBAR

1. Introduction of visitors and group members and statement on the purpose of the study.
2. Find out if the group has heard of IDD problem.
3. (a) Find out if the group knows the health effects of iodine deficiency
    (b) If they know, ask them to mention the disorders
4. Ask the group members if they have ever seen a person with goitre
5. Probe if they know the cause of goitre
6. Find out if the group members know how to prevent/treat goitre (Probe) on the ways of preventing goitre).
7. Ask them if they have ever seen iodinated oil capsules (IOCs)
8. (a) Ask them if they have swallowed the IOCs
    (b) Probe on when and where
9. Probe on their compliance to IOC
10. Ask them the source of salt used at their homes (within their locality).
11. Ask them if they know whether the salt they use at home is iodated or not.
12. Probe how they know that the salt is iodinated
13. Ask them on their compliance opinion in using iodated salt
14. (a) Find out whether they prefer coarse or fine salt
    (b) Probe the reasons for their preference
15. Find out how they store their salt at home.
## Results by region

<table>
<thead>
<tr>
<th>Region</th>
<th>Districts (318)</th>
<th>Number of districts examined</th>
<th>Total goitre prevalence</th>
<th>Median UIC (μg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kagera</td>
<td></td>
<td>679</td>
<td>35 (0.8)</td>
<td>816</td>
</tr>
<tr>
<td>Kigoma</td>
<td></td>
<td>690</td>
<td>109 (2.4)</td>
<td>1426</td>
</tr>
<tr>
<td>Mara</td>
<td></td>
<td>576</td>
<td>623 (14.4)</td>
<td>1514</td>
</tr>
<tr>
<td>Mwanza</td>
<td></td>
<td>1249</td>
<td>24 (0.3)</td>
<td>1406</td>
</tr>
<tr>
<td>Tabora</td>
<td></td>
<td>788</td>
<td>116 (1.9)</td>
<td>926</td>
</tr>
<tr>
<td>Arusha</td>
<td></td>
<td>854</td>
<td>576 (9.0)</td>
<td>1051</td>
</tr>
<tr>
<td>Morogoro</td>
<td></td>
<td>536</td>
<td>92 (1.4)</td>
<td>917</td>
</tr>
<tr>
<td>Dodoma</td>
<td></td>
<td>692</td>
<td>166 (3.8)</td>
<td>2299</td>
</tr>
<tr>
<td>Mbeya</td>
<td></td>
<td>735</td>
<td>956 (70.7)</td>
<td>1055</td>
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<tr>
<td>Shinyanga</td>
<td></td>
<td>916</td>
<td>66 (1.1)</td>
<td>939</td>
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<tr>
<td>Dar es Salaam</td>
<td></td>
<td>204</td>
<td>8 (0.3)</td>
<td>663</td>
</tr>
<tr>
<td>Ruvuma</td>
<td></td>
<td>4175</td>
<td>46 (1.7)</td>
<td>494</td>
</tr>
<tr>
<td>Singida</td>
<td></td>
<td>4172</td>
<td>56 (2.4)</td>
<td>791</td>
</tr>
<tr>
<td>Kilimanjaro</td>
<td></td>
<td>5927</td>
<td>184 (4.0)</td>
<td>1215</td>
</tr>
<tr>
<td>Pwani</td>
<td></td>
<td>491</td>
<td>10 (0.3)</td>
<td>971</td>
</tr>
<tr>
<td>Tanga</td>
<td></td>
<td>6125</td>
<td>215 (3.9)</td>
<td>485</td>
</tr>
<tr>
<td>Manyara</td>
<td></td>
<td>764</td>
<td>541 (11.1)</td>
<td>1184</td>
</tr>
<tr>
<td>Mtwara</td>
<td></td>
<td>5217</td>
<td>1 (0.0)</td>
<td>1326</td>
</tr>
<tr>
<td>Rulwa</td>
<td></td>
<td>3979</td>
<td>307 (14.1)</td>
<td>789</td>
</tr>
<tr>
<td>Iringa</td>
<td></td>
<td>671</td>
<td>838 (19.6)</td>
<td>238</td>
</tr>
<tr>
<td>Lindi</td>
<td></td>
<td>1421</td>
<td>21 (0.9)</td>
<td>307</td>
</tr>
</tbody>
</table>

**NB:** Overall coverage (national) for iodated salt* = 83.6% (95% CI: 83.4, 83.8), Total goitre prevalence** = 5.5% (95% CI: 5.3, 5.6), Overall median UIC = 203.6 (95% CI: 192.0, 215.2) μg/L.

Key to traffic light alphabetical colour codes (according to WHO *(i)* except for iodated salt, where two more categories were added): I-salt coverage: 0 - 49.9% (very poor) = red (R), 50 - 89.9% (poor/un satisfactory) = yellow (Y), >90% (adequate) = green (G). TGP: 0 - 4.9% (not of public health significance) = green (G), 5 - 19.9% (mild) = yellow (Y), 20 - 29.9% (moderate) = orange (O), ≥30% (severe) = red (R).

Median urinary iodine: 0 - 49.9 μg/L (very insufficient) = red (R), 50-99.9 μg/L (insufficient) = yellow (Y), 100 - 299.9 μg/L adequate = green (G), ≥300 μg/L (excessive intake) = pink (P).
APPENDIX VII: PUBLICATIONS/BOOKS BY VINCENT ASSEY


REPORTS


11. **Assey V**, Lyamuya V. The IDD situation in Mbinga district: Increased goitre prevalence is alarming. Tanzania Food and Nutrition Centre; Dar es Salaam TFNC Report June 1995


13. Peterson S, **Assey V**. Proposal for national IDD monitoring and evaluation system for Tanzania ICH, Uppsala University, Sweden; Tanzania Food and Nutrition Centre, 1994


Appendix VIII: Thematic focus group discussion - a tool used for Paper V

1 **Introductory part:** Who are we and the purpose of our visit in the salt factories

2 **Knowledge of salt workers about iodine deficiency and prevention**
   a. Ever heard or seen a person with goitre?
   b. What do you think are the causes of goitre?
   c. Probe if they can list other examples of iodine deficiency disorders
   d. Is there any disabled subject in your area suspected to be due to iodine deficiency?
   e. How do you normally treat subjects with goitre in your families?

3 **Type and source of salt commonly used at home**
   a. What type of salt commonly used at home?
   b. Source of salt?

4 **Awareness on salt iodation**
   a. Time period they have been working in the salt factories
   b. Have you heard of iodated salt?
   c. How do you know if the salt is iodated?
   d. Have you ever had training regarding salt quality and iodation

5 **Information about the procedures for salt iodation**
   a. Who is responsible for salt iodation?
   b. Deduce if there is any guideline for salt iodation
   c. Probe them to describe procedures for salt iodation?
   d. Probe on the weighing instruments and their working status
   e. Probe on amount of potassium iodate used and for what quantities of salt is/are iodated
   f. Observe on the iodation procedures and relate with discussion
   g. Probe on the salt packaging and storage
   h. Source of potassium iodate and price kilogram
   i. Probe if they have enough supplies for salt iodation and testing iodine

6 **Information about supervision during salt production and salt iodation**
   a. Who does supervision to ensure salt is adequately iodated?
   b. What is used to measure or test salt for adequate iodine?
   c. If there is any penalty given to workers found not iodating the salt properly?
   d. How often the salt factory is visited by external authority to check the salt if it iodated within a week or/and months
   e. If yes; is there any penalty given if the salt was found not adequately iodated?
   f. At the end give brief talk on the IDD problem, effects and its prevention and control using iodated salt.

7 **Workers’ opinion regarding knowledge gained on the importance of iodine in salt**