

Assessing household use of adequately iodized salt: a methodology that combines use of rapid test kits and quantitative assessment

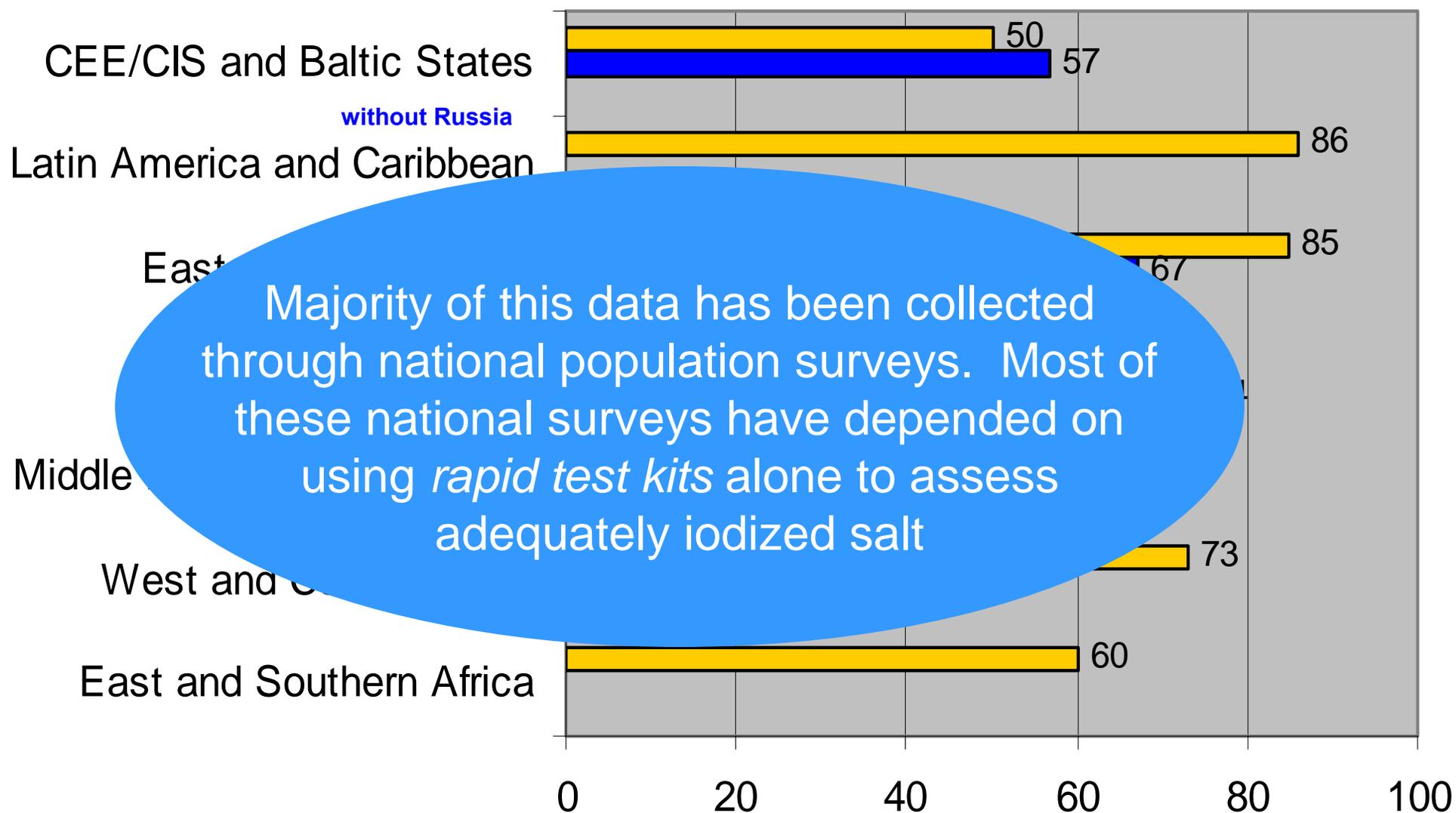
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Background

- Salt iodization – the most effective, inexpensive and safe way to ensure adequate iodine nutrition
- Universal salt iodization adopted by at least 119 countries
- Globally more than 70% of HHs are consuming iodized salt (country data of 1998-2005) and more than 30 countries have achieved universal iodization
- International indicator for universal salt iodization:
Proportion of households using adequately iodized salt >90%
- Adequately iodized salt: international norm is 15ppm iodine but several countries have different national standards

Global progress by UNICEF region: SOWC 2007 (1998-2005 data)





IODINA TEST
Uji garam periodium

Cara penggunaan:
1. Ambil 1/2 sendok teh garam yang akan diuji
2. Taburkan larutan iodua Test 2 - 3 tetes pada garam tersebut
3. Amati perubahan warna yang terjadi
- bila tidak berwarna berarti garam tidak mengandung iodua
- bila berwarna ungu iodua 10 ppm
- bila berwarna kuning berarti 20 ppm
- bila berwarna merah berarti 30 ppm

ชุดทดสอบไอโอดีนในเกลือเสริมไอโอดีน ไอ-คิท (I-KIT)

ใช้สำหรับทดสอบเกลือที่เสริมด้วยโปแตสเซียมไอโอดेटเท่านั้น

Field Test Kit for (I-KIT)

เกลือเสริมไอโอดีน

ชุดทดสอบไอโอดีนในเกลือเสริมไอโอดีน ไอ-คิท (I-KIT)

TEST SOLUTION FOR IODATE

IODINA TEST

B. NO. 001
NO. 148
EX. 148
1999
2001
STK - KIT - KI

TEST SOLUTION - 2 Nos
RECHECK SOLUTION - 1
STOCK NO. 1

3. SHAKE WELL BEFORE USE
4. FOR PRECISE ANALYTICAL RECOMMENDED
5. NOT FOR ORAL

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Ukraine MICS 2005

- Ukraine MICS 2005 used MBI RTK to assess adequately iodized salt (as is the norm)
- In addition, 8 salt samples randomly collected from each of the 100 clusters in the MICS sampling frame
- These were titrated and results were used to assess the performance of the RTK in identifying adequately iodized salt
- Results of the sub-sample, for which both RTK and titration results are available, were presented as a 3x3 table

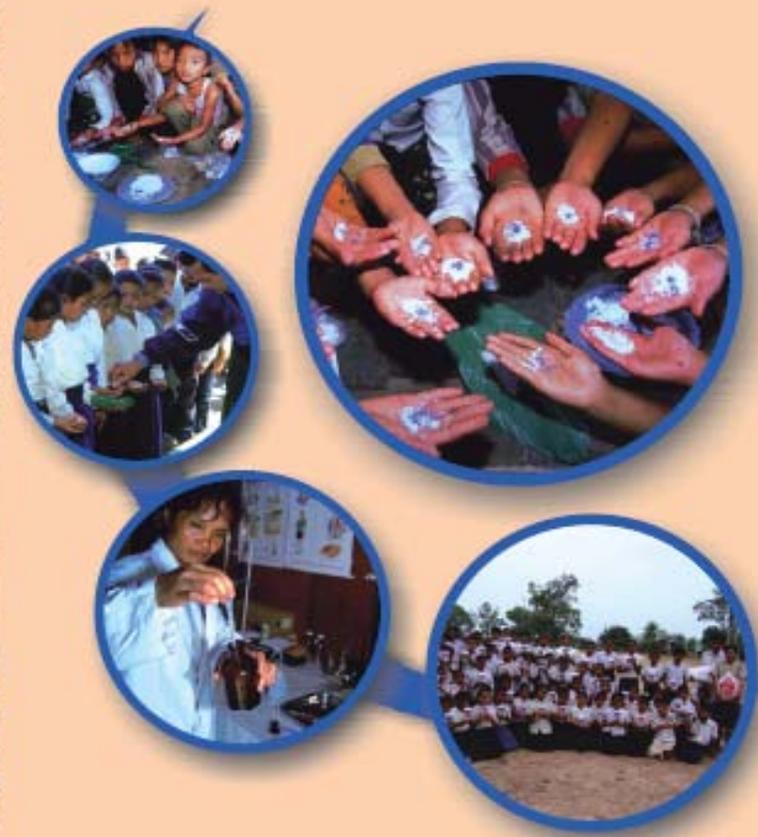
Performance of the RTK during the Ukraine MICS 2005

RTK result	Titration results		
	0mg/kg	0.1-14.9mg/kg	≥15mg/kg
0ppm	71.9%	24.1%	4.0%
1-14ppm	27.6%	29.9%	42.5%
≥ 15ppm	7.2%	14.0%	78.8%

- For non-iodized salt, the sensitivity of the RTK was 89% and the specificity 70%
- For iodized salt, the RTK has sensitivity 78% and specificity 90%
- Positive predictive value for non iodized salt was 71.9% and for adequately iodized salt was 78.8%

- 1st phase: RTK assessment of ALL salt samples for iodized and not iodized
- 2nd phase: WYD checker analysis of SUB-SAMPLE of salt
- Presented as 2x3 table

Usage of Iodized Salt in Lao People's Democratic Republic Results of 2005 Nationwide School-based Survey



Vientiane, November 2006



unicef 

Co-operation between Ministry of Health, Ministry of Education and UNICEF

Extrapolation of Quantitative Analysis from a Sub Sample to Full Sample: Laos experience

	WYD Checker results		
RTK result	0-4.9mg/kg	5-14.9mg/kg	≥15mg/kg
Negative (no iodine)	61.6%	38.4%	0%
Positive (some iodine)	0.3%	19.3%	80.4%

- Very few false positives, but significant number of false negatives, though none of the samples were adequately iodized.
- And of the samples that were positive ie, iodized by RTK, 80.4% were found to be adequately iodized = ***multiplier***

Extrapolation of Quantitative Analysis from a Sub Sample to Full Sample: Myanmar experience

	Titration results		
RTK result	0-4.9mg/kg	5-14.9mg/kg	≥15mg/kg
Negative (no iodine)	75.0%	25%	0
Positive (some iodine)	7.8%	31.5%	60.6%

- Both false positives and false negatives
- Only 60.6% of positive RTK results were adequately iodized in the sub sample.

Application of the ‘multiplier’

- Proportion of salt that tested positive (ie. some iodine) by RTK was multiplied by the proportion of positive salt that was actually adequately iodized (the ‘multiplier’) to give an estimate of “adequately iodized salt”.

	RTK results	Multiplier	Extrapolated result
Laos	85.4	80.4	68.3
Myanmar	85	60.6	51.8

- Multipliers differ based upon the iodization situation; highest in Laos where iodized salt is of good quality; lowest in Myanmar where quality is very poor

Recommendation: Revised Survey Protocol

Current practice

1. Test salt in all surveyed households with RTK.
2. Report results as non iodized, inadequately iodized and adequately iodized

Suggested revised protocol

1. Test salt in all surveyed households with RTK.
2. Collect random sub-sample of salt for assessment by quantitative method
3. Apply a multiplier derived from the quantitative results to the RTK results to obtain “true” estimates for adequately iodized
4. Report results as non iodized, inadequately iodized and adequately iodized.

Final Points

- Suggested quantitative testing of a sub-sample would provide more accurate and detailed information on this important international goal
- Methodology is feasible, even in resource poor settings
- Necessary because results of RTKs are not as accurate as found in laboratory settings
- In particular, RTKs probably have poor accuracy in differentiating between iodized and adequately iodized salt
- In addition standardized training on RTKs is needed
- Also increased supervision of RTK use (random checks on field teams' recordings)