From research to policy –
The South African salt experience

Edelweiss Wentzel-Viljoen
Centre of Excellence for Nutrition
North-West University
Thanks to colleagues

Melvyn Freeman – DoH, NCDs
Krisela Steyn – UCT
Vash Singh – SAHSF
Karen Hofman – Wits
Many others
Overview

• Background
• Process followed
• Critical success factors
• Challenges
• Conclusion
Background
Background
Determinants of policy

Determinants of policy

- Social
- Economic
- Producer groups
- Consumer groups
- Scientific consensus evidence
- Political
- Retailers and trade associations

Salt Consultative Group
Chair: Chief Director at DoH, NCDs
Core group of people with different expertise
Expert opinion from UK

- Champion
- Salt Consultative Group – Oct 2010
- South African NCD Summit July 2011
- UN NCD meeting Sept 2011

Non-Communicable Disease Declaration
Sandringham, Gauteng
5th July 2011

We, the delegates of the Gauteng NCD¹ summit, request the South African Government to commit to:

By 2013, develop and implement regulatory measures to achieve substantial reductions in levels of saturated fats, trans-fats, salt and refined sugars in processed foods. Aim to reduce provincial salt intake to less than 5g/day per capita (2,000 mg sodium/day) by 2025.
Determinants of policy

Unhealthy Diet Enable implementation of the Global recommendation on Diet and Nutrition

- Reduce salt in common foods
- Implement measures to reduce obesity
- Implement & monitor regulations on trans fatty acids
Determinants of policy

Political

Policy

Scientific consensus evidence

Scientific Evidence

• Evidence about the scientific basis of the recommendation
  – High incidence of HT in SA and increasing
  – Link between sodium intake and HT
  – ? Sodium intake in SA
  – ? Foods contributing to sodium intake
## Sodium/Salt intake – urine

<table>
<thead>
<tr>
<th>Study</th>
<th>African Programme on Genes in Hypertension *</th>
<th>Charlton study** Cape Town (2002)</th>
<th>Assuring health for all in the FS (AHA-FS)# Mangaung (Bloemfontein) (2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gauteng</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>African ancestry</td>
<td>Black</td>
<td>White</td>
</tr>
<tr>
<td>Method</td>
<td>24-hour urinary excretion</td>
<td>Average of three 24-hour urinary excretions</td>
<td>Spot urine</td>
</tr>
<tr>
<td>N</td>
<td>640</td>
<td>110</td>
<td>103</td>
</tr>
<tr>
<td>Average Na intake (mg) ±SD</td>
<td>2415 ±1679</td>
<td>3112 ±1152</td>
<td>3790 ±2093</td>
</tr>
<tr>
<td>Average salt intake (g) ± SD</td>
<td>6.04 ±4.2</td>
<td>7.8 ±2.88</td>
<td>9.5 ±5.23</td>
</tr>
</tbody>
</table>

* Adapted from: Norton GR & Woodiwiss AJ. Hypertension in Africa: Redressing the burden of cardiovascular disease using cost-effective non-pharmacological approaches. SA Heart 2011;8:28-36
** Adapted from: Charlton KE, Steyn K, Levitt NS et al. Diet and blood pressure in South Africa: intake of foods containing sodium, potassium, calcium, in three ethnic groups
# Lategan R. PhD thesis. 2011
SD – Standard deviation
## African Predict study

### 24 – hour urine (2014)

<table>
<thead>
<tr>
<th></th>
<th>Whites</th>
<th></th>
<th>Blacks</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>n</td>
<td>70</td>
<td>98</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>Age year</td>
<td>19-30</td>
<td>19-30</td>
<td>24-29</td>
<td>21-30</td>
</tr>
<tr>
<td>Mean</td>
<td>10.03</td>
<td>7.81</td>
<td>9.23</td>
<td>6.86</td>
</tr>
<tr>
<td>SD</td>
<td>4.71</td>
<td>3.83</td>
<td>4.65</td>
<td>3.19</td>
</tr>
</tbody>
</table>

**Team at North-West University**

Alta Schutte – HART  
Edelweiss Wentzel-Viljoen - CEN  
Bianca Swanepoel – PhD (Nutrition) student  
Marina Visser – MSc (Nutrition) student
<table>
<thead>
<tr>
<th>Salt intake source</th>
<th>% contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UK study</strong>*</td>
<td></td>
</tr>
<tr>
<td>Table salt / cooking / salty condiments (discretionary salt)</td>
<td>15%</td>
</tr>
<tr>
<td>Natural</td>
<td>5%</td>
</tr>
<tr>
<td>Food industry</td>
<td>80%</td>
</tr>
<tr>
<td><strong>Europe</strong></td>
<td></td>
</tr>
<tr>
<td>Table salt / cooking / salty condiments (discretionary salt)</td>
<td>15%</td>
</tr>
<tr>
<td>Natural</td>
<td>10-11%</td>
</tr>
<tr>
<td>Food industry</td>
<td>75%</td>
</tr>
<tr>
<td><strong>SA study</strong></td>
<td></td>
</tr>
<tr>
<td>Table salt / cooking / salty condiments (discretionary salt)</td>
<td></td>
</tr>
<tr>
<td>• Black</td>
<td>45.5%</td>
</tr>
<tr>
<td>• Mixed ancestry</td>
<td>32.8%</td>
</tr>
<tr>
<td>• White</td>
<td>42.2%</td>
</tr>
<tr>
<td>Natural</td>
<td>5%</td>
</tr>
<tr>
<td>Food industry</td>
<td>55%</td>
</tr>
</tbody>
</table>


# Summary of food items commonly consumed by children in South Africa

<table>
<thead>
<tr>
<th>Items consumed by at least 3% of the age group</th>
<th>Average portion (g)</th>
<th>Average portion (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Per capita portion (g)</td>
<td>Per capita portion (g)</td>
</tr>
<tr>
<td></td>
<td>1 - 5 years (NFCS)</td>
<td>6 - 9 years (NFCS)</td>
</tr>
<tr>
<td>Brown bread</td>
<td>90</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>53</td>
</tr>
<tr>
<td>White bread</td>
<td>83</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>39</td>
</tr>
<tr>
<td>NFCS (ave portion in gram) Hard margarine intake</td>
<td>9 (all age groups)</td>
<td></td>
</tr>
<tr>
<td>NFCS (ave portion in gram) Chicken intake</td>
<td>67 (all age groups)</td>
<td></td>
</tr>
<tr>
<td>NFCS (ave portion in gram) Salty snacks</td>
<td>27 (all age groups)</td>
<td></td>
</tr>
<tr>
<td>NFCS (ave portion in gram) Breakfast cereals</td>
<td>36 (all age groups)</td>
<td></td>
</tr>
</tbody>
</table>

## Potential salt intake by children

<table>
<thead>
<tr>
<th>Food</th>
<th>Gram per day</th>
<th>Sodium mg/d</th>
<th>Salt gram/d</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children 1 – 5 years of age (based on per capita intake)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown bread</td>
<td>32</td>
<td>209</td>
<td>0.52</td>
</tr>
<tr>
<td>White bread</td>
<td>20</td>
<td>131</td>
<td>0.33</td>
</tr>
<tr>
<td>Hard margarine</td>
<td>9</td>
<td>63</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>1.01</strong></td>
</tr>
<tr>
<td><strong>Children 6 – 9 years of age (based on per capita intake)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown bread</td>
<td>52</td>
<td>337</td>
<td>0.84</td>
</tr>
<tr>
<td>White bread</td>
<td>39</td>
<td>253</td>
<td>0.63</td>
</tr>
<tr>
<td>Hard Margarine</td>
<td>9</td>
<td>63</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>1.63</strong></td>
</tr>
<tr>
<td><strong>Children 6 – 9 years of age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salty snacks</td>
<td>27 (1067 - Niknaks)</td>
<td>288</td>
<td>0.72</td>
</tr>
<tr>
<td>Breakfast cereal</td>
<td>36 (898 - cornflakes)</td>
<td>323</td>
<td>0.81</td>
</tr>
<tr>
<td><strong>TOTAL (6-9 yrs)</strong></td>
<td></td>
<td></td>
<td><strong>3.16g/day</strong></td>
</tr>
</tbody>
</table>
Na intake Adults – 24h/QFFQ

• CORIS – Coronary risk factor study (1983)
• CRISIC – Coronary risk factor study (1982)
• BRISK – Coronary risk factor study (1990)
• Charlton study – Sodium and salt (2002)
• PURE – Prospective Urban & Rural Epidemiology Study (2005)
• INDIAN - Prevalence of selected risk markers for NCDs & associations with lifestyle behaviors (2009)
• CRIBSA - Cardiovascular Risk in Black SA (2010)
% contribution of foods to total Na intake
Top 5 foods contributing to sodium intake

- **Children**
  - White bread
  - Brown bread
  - Hard margarine
  - Salty snacks
  - Breakfast cereals

- **Adults**
  - White bread
  - Brown bread
  - Hard margarine
  - Soup/gravy powder
  - Atchaar
Determinants of policy

Policy

- Social
- Economic
- Producer groups
- Consumer groups
- Political
- Scientific consensus evidence
- Retailers and trade associations

Consultation meetings

More than one meeting

• Food industry
• Consumer groups
• Medical Research Council
• Professional Associations
• Other scientists
• Food regulators
• Etc
Determinants of policy

Policy

- Social
- Economic
- Producer groups
- Consumer groups
- Scientific consensus evidence
- Retailers and trade associations

Economic implications


Health and economic benefits of salt reduction in South African food

Steyn K¹, Mungal-Singh V², Wentzel-Viljoen E³, Hoffman K⁴, Freeman M⁵
1 Chronic Disease Initiative for Africa, CIO Department of Medicine, University of Cape Town, Private Bag x3, Observatory 7925.
2 Heart and Stroke Foundation of South Africa, Cape Town.
3 Centre of Excellence for Nutrition, North West University, Potchefstroom.
4 School of Public Health, School of Public Health, University of Witwatersrand, Johannesburg.
5 Noncommunicable Diseases. National Department of Health, South Africa
Economic implications

Our research suggests that by decreasing daily salt intake by 0.85 g per person, mostly by reducing salt in bread, South Africa could avert 7400 cardiovascular deaths (2900 from stroke) and save 4300 lives from non-fatal stroke. The savings from reduced numbers of hospital admissions of patients with non-fatal strokes alone could save ZAR300 million per year (+-US$ 33 million)
Salt targets

Process

– Expert opinion
– Salt intake and contribution of foods to salt intake
– Consultation with stakeholders
– Comparison with targets in other countries
– Draft regulations – 6 months for comments
– Comments
– Consultation with stakeholders

REGULATION R214 – 20 March 2013
<table>
<thead>
<tr>
<th>Food item</th>
<th>Target /100g 30 June 2016</th>
<th>Target /100g 30 June 2019</th>
<th>Currently on labels March 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread</td>
<td>400</td>
<td>380</td>
<td>400-618 (white)</td>
</tr>
<tr>
<td>All breakfast cereals &amp; porridges</td>
<td>500</td>
<td>400</td>
<td>628-898</td>
</tr>
<tr>
<td>All fat spreads and butter spreads</td>
<td>550</td>
<td>450</td>
<td>Butter:360; Spreads: 407-826</td>
</tr>
<tr>
<td>Ready-to-eat savoury snacks, excluding salt-and-vinegar flavoured snacks</td>
<td>800</td>
<td>700</td>
<td>666-1020</td>
</tr>
<tr>
<td>Flavoured potato crisps, excluding salt-and-vinegar flavoured crisps</td>
<td>650</td>
<td>550</td>
<td>455-793</td>
</tr>
<tr>
<td>Flavoured ready-to-eat savoury snacks and potato crisps: salt-and-vinegar</td>
<td>1000</td>
<td>850</td>
<td>655-1440</td>
</tr>
<tr>
<td>Processed meats - uncured</td>
<td>850</td>
<td>650</td>
<td>908-1215</td>
</tr>
<tr>
<td>Processed meat - cured</td>
<td>950</td>
<td>850</td>
<td></td>
</tr>
<tr>
<td>Raw-processed meat sausages and similar products</td>
<td>800</td>
<td>600</td>
<td>-</td>
</tr>
<tr>
<td>Dry soup powder</td>
<td>5500</td>
<td>3500</td>
<td>7435-8469</td>
</tr>
<tr>
<td>Dry gravy powders &amp; dry instant savoury sauces</td>
<td>3500</td>
<td>1500</td>
<td>2237-5658</td>
</tr>
<tr>
<td>Dry savoury powders with dry instant noodles</td>
<td>1500</td>
<td>800</td>
<td>902-1969</td>
</tr>
<tr>
<td>Stock cubes, powders, granules, emulsions, etc</td>
<td>18000</td>
<td>13000</td>
<td>13000-22631</td>
</tr>
</tbody>
</table>
Success factors for legislation

- Significant political will
- Designated person to drive the process
- Small consultative group representing different stakeholders
- Know each other
- Consultation meetings with all stakeholders
- Multi-disciplinary + from the beginning
  - DoH: NCDs, Nutrition, FC, Health promotion
  - Agriculture
  - Stakeholders
- Dedicated individuals
- In-line with iodine fortification of salt
Challenges for legislation

• Meetings with Stakeholders (Food industry)
  – Background information of situation
  – Bigger representation in smaller group
  – Earlier
  – Threads

• High discretionary salt usage

Evidence-based approach to identifying problems

Revision

Evaluation

Implementation

Programme of work

Set Goals

Define objectives

Revision

Co-ordinate across sectors

Set Goals

Define objectives

Programme of work

Implementation

Evaluation

Revision

Policy Cycle
Other Challenges

• Comprehensive strategy
  – Reduction of salt content of certain foods
  – Mass communication strategy
  – FBDGs
  – Other food products?
  – Fast food industry?

• Implementation
• Monitoring – App Georges Institute
• Evaluation
Salt Watch Group

• Mass media communication
• Research
Salt Watch Group

Behaviour change communication

Research report

Barriers for progress in salt reduction in the general population. An international study

There was a significant difference across the countries in the distribution of the stages of change ($\chi^2 = 495.3, p < .001$). Simple planned analyses to determine where the significances lay were conducted between the overall distribution for all countries and the distribution per individual country showed significant differences between every country and the total distribution ($p < .001$).

Fig. 2. Stages of change: intention to reduce salt intake.
Cultural beliefs

Cultural beliefs on salt & health in peri-urban and rural communities

- Widely held belief in traditional communities that salt has significant health benefits
- Common practice of drinking salted water/salt-water enemas
  - Recommended by Zionist church
- Encouraged by traditional doctors for cleansing purposes, treating health complaints
- Food left unsalted will be eaten by the Tokolosh
- Salt mixed with water is often sprinkled around homes to remove evil spirits
Salt Watch

Behaviour change communication

- Radio adverts
- TV adverts
- Target – low and middle income groups
- Resources – DoH
Salt Watch - Research

- Completed baseline
- Follow-up later in the year

**Project title:** Evaluating the effectiveness of the South African public awareness campaign for salt reduction

**Project Leader:** Prof E Wentzel-Viljoen

**Ethics number:** NWU - 00097 - 14 - A1

**Status:**
- S = Submission
- R = Re-Submission
- P = Provisional Authorisation
- A = Authorisation

**Approval date:** 2014-08-01

**Expiry date:** 2019-07-31
Research - NWU

SALT REDUCTION STRATEGY RESEARCH FRAMEWORK

PROBLEM STATEMENT
Hypertension in South Africa and the link with high sodium use

OUTCOME
Successful implementation of a National salt reduction strategy

SODIUM INTAKE
Baseline sodium intake of the South African population using data of:
- African PREDICT study – 2013 to 2015
- Indian population (KZN) – 2014 (Jul)
- BMI study (black women) – 2014 (Aug)
- Kidney disease patients (JHB) – 2014 (Oct)
- Consumer study (students from 3 population groups: Indians, black and white populations) – 2015 (Feb)

Iodine will also be measured in all these studies for monitoring purposes

Methodology comparison:
- 24-hour urine vs. spot urine collection
- This comparison will also be done in all the mentioned studies

Investigation of Na/K ratio in all these studies

Sodium intake and blood pressure (Predict study):
- 24-hour urine samples
- Salt frequency questionnaire
- Salt behavior questionnaire

Monitoring sodium intake over 10 years in South Africa:
- PURE study – 2015 (Aug) looking at Na/K ratio and change in blood pressure over a 10 year period

SODIUM CONTENT IN FOOD
Salt regulations – 2016/2019
- Monitor sodium content in certain foodstuffs as on their labels according to the 2016 and 2019 targets
- Use the 11 food categories as in the regulation (released in March 2013) to monitor sodium content every 6 months:
  - April 2014
  - Nov 2014
  - May 2015
- Development of criteria for a food product to carry a 'low salt logo'
- Validation of the current nutrient profile model
- Continuous monitoring of sodium content of food products depending on securing of the equipment

MONITORING AND EVALUATION
- Development of an evaluation framework for the awareness campaign
- Monitoring and evaluation of the awareness campaign

CONSUMERS
- Investigate cultural beliefs in different population groups in South Africa regarding salt use – 2014-2015
- Investigate how different population groups read and understand labels / logos, focusing on sodium – 2014-2015
- Potential barriers to successful salt reduction education of consumers
  - Consumer acceptability study:
    - Test the acceptability of lower sodium alternatives of bread, margarine and soup on young adults from 3 different populations (Indians, black and white populations) – 2015 (Feb)
  - Consumer acceptability study:
    - Test the acceptability of lower sodium chicken stew with rice dish in 400 consumers
      - In collaboration with UP and Unilever
      - Completed (December 2013)

E: Blanca Swanepoel PhD
M: Marina Visser MSc
H: Hanlie van Staden MSc
O: Odette Hattingh MSc
E: Edelweiss Wentzel-Vijoen & Krisna Steyn
Conclusion

• Regulations in place
• Dedicated Group - Salt Watch
  • Mass media campaign
• Research - Resources
• Challenges remain
• Comprehensive strategy
  • Monitoring
  • Evaluation
Thank you

LEAD FROM WHERE YOU ARE