

THE EVIDENCE FOR VEGETABLES & FRUIT

**in the prevention of micronutrient
deficiencies and non-communicable
diseases**

PROFAV 2011 - Tanzania



Jane Badham
Registered Dietitian & Nutritionist



“Too many greens cause ‘vegetable dyspepsia’ - they fill the stomach with carbonic acid gas, sugar, alcohol, acid and alcoholic and acid yeast plants. The products of fermentation soon begin to paralyse the follicles and muscular walls of the stomach, so that it becomes flabby and baggy, and will hold an unusual amount of trashy foods and fluids. The organ has been turned into a veritable sour ‘yeast pot’. Vegetables should be forbidden to invalids and strictly controlled for everyone else.”

James Salisbury : The Relation of Alimentation and Disease

1888



2011

"It's hard to argue with the evidence showing the health benefits of eating much in

vegetables and fruits, which in

vegetables and fruits, which in turn lower the risk of

Vegetables & Health :
32 million websites

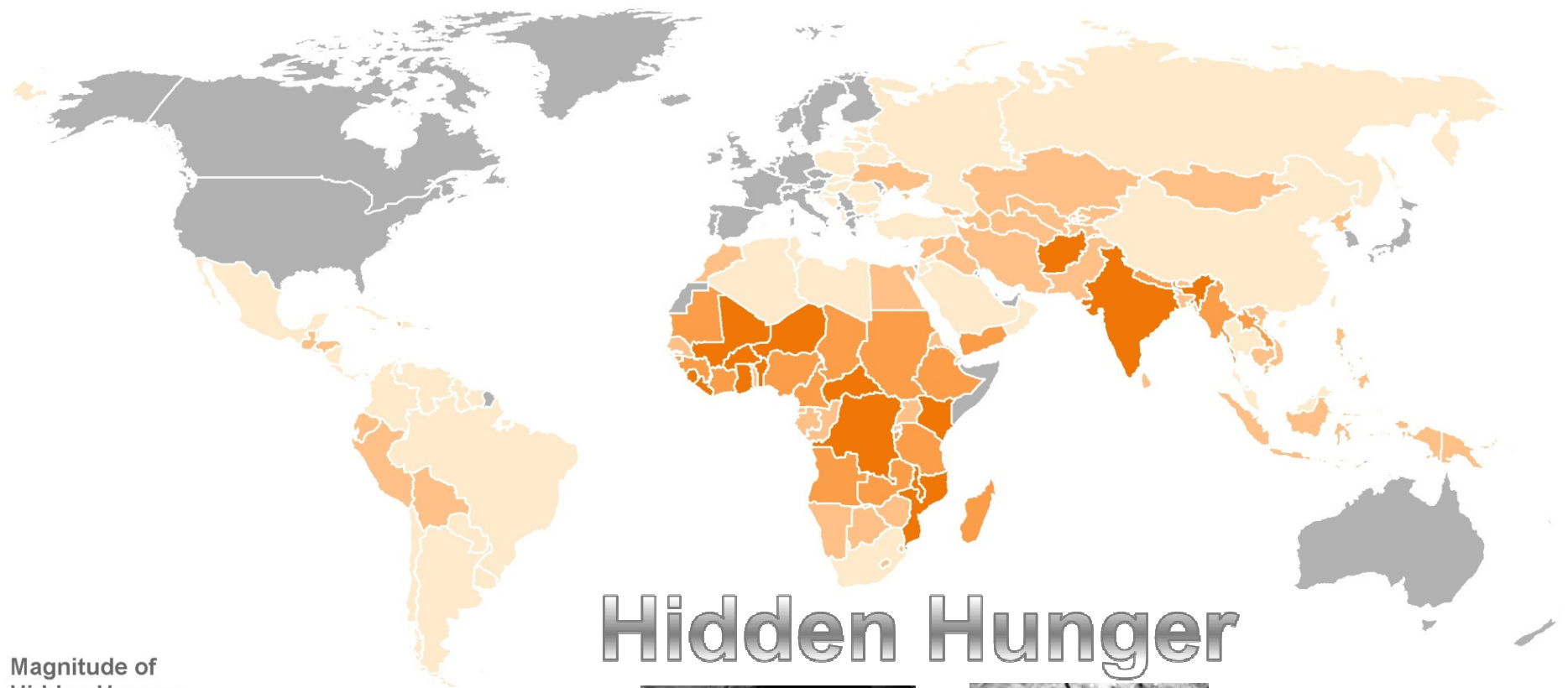


Fruit & Health :
77 million websites

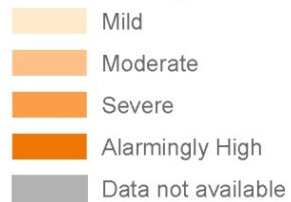
eat more fruit and vegetables can help keep your heart in check."

Harvard School of Public Health





**Magnitude of
Hidden Hunger**



Hidden Hunger

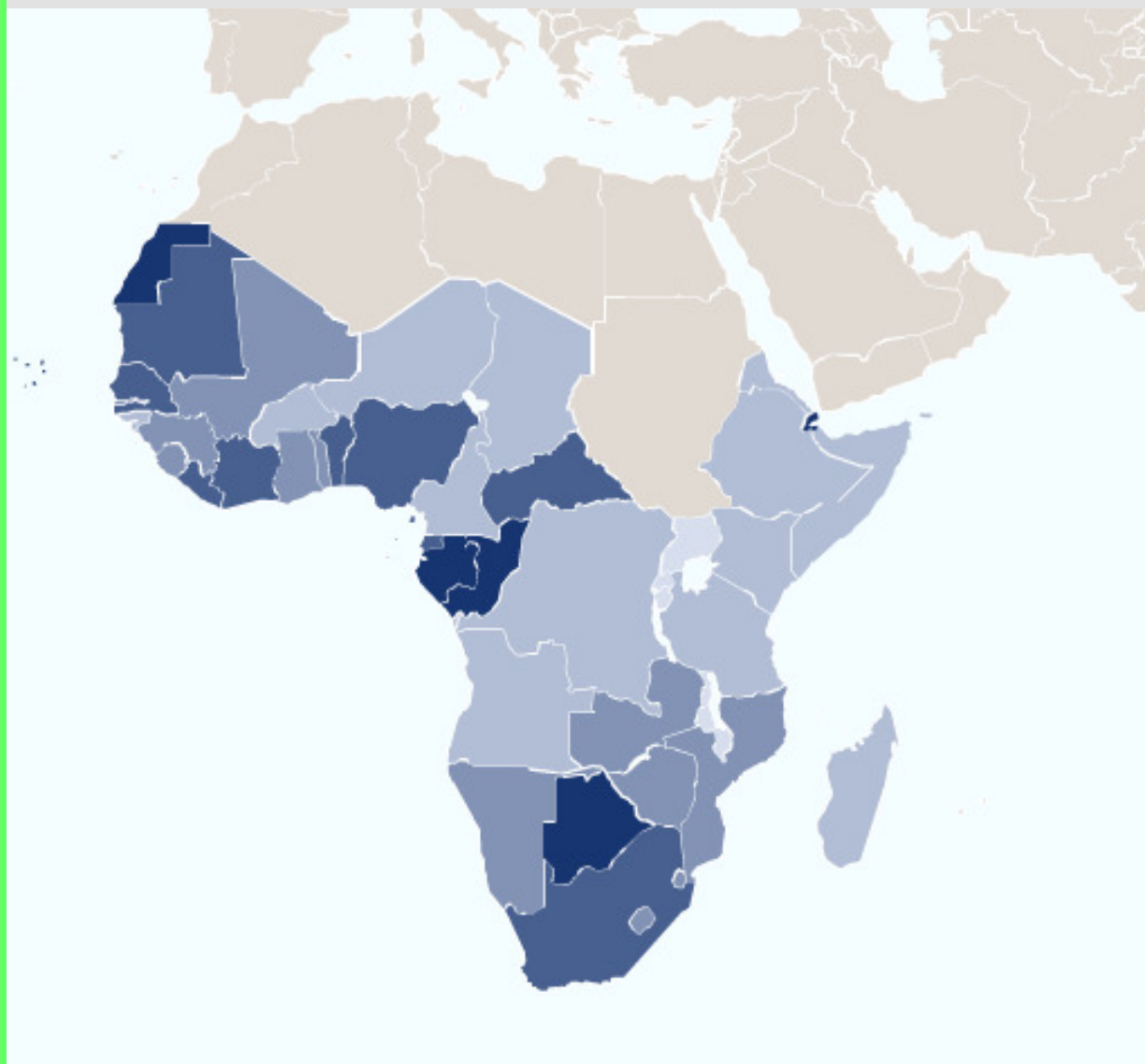


Africa region: proportion of people with diabetes (20-79 years), 2010 (Comparative prevalence)

< 2.5
2.5 -
4 -

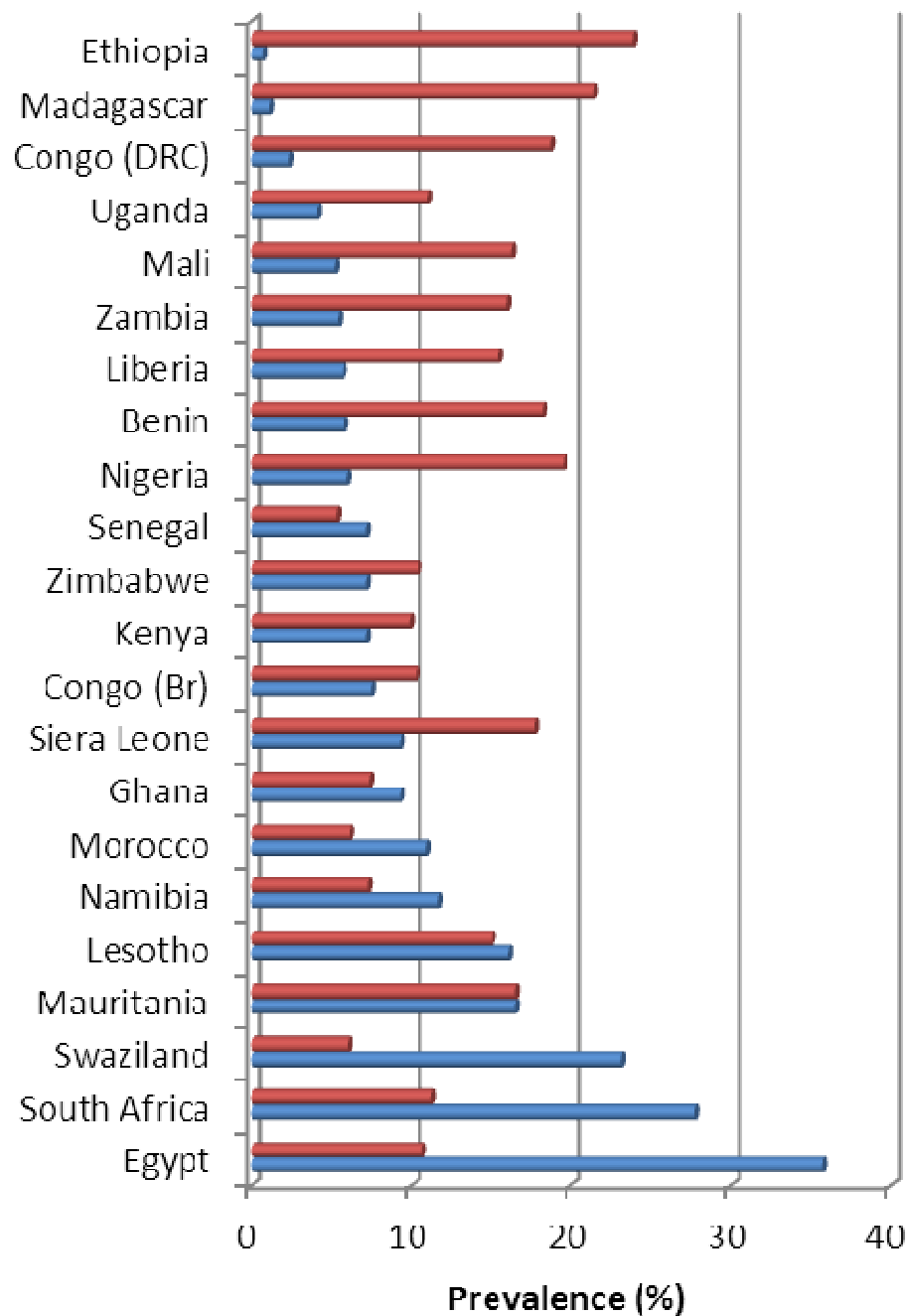
4.5 -
5 -
≥ 6

Diabetes



**366 million
by 2030**





■ Children ≤ 5 years (z scores $\geq -3SD$)

■ Women ≥ 15 years (BMI $\geq 30kg/m^2$)



SINGLE FAMILY

- Child with 'hidden hunger'
- Mother obese
- Father dead from heart attack

In 2008 36 million deaths were
Due to NCDs and nearly
80% of these were in
developing countries





The diagram illustrates the cycle of maternal and child undernutrition. At the center is a green oval labeled 'MATERNAL & CHILD UNDERNUTRITION'. To its left is a green rounded rectangle labeled 'INADEQUATE DIETARY INTAKE', and to its right is a green rounded rectangle labeled 'DISEASE'. Below these two is a green rounded rectangle labeled 'POVERTY'. Arrows show a clockwise cycle: from 'INADEQUATE DIETARY INTAKE' to the central oval, from the central oval to 'DISEASE', from 'DISEASE' to 'POVERTY', and from 'POVERTY' back to 'INADEQUATE DIETARY INTAKE'. Additionally, a vertical double-headed arrow connects the central oval and 'POVERTY'. Above the central oval are two green boxes: 'SHORT TERM CONSEQUENCES' (Mortality, Morbidity, Disability) on the left and 'LONG TERM CONSEQUENCES' (Adult size, Intellectual ability, Economic productivity, Reproductive performance, Metabolic and cardiovascular disease) on the right. Arrows point from the central oval to both of these boxes.

SHORT TERM CONSEQUENCES

Mortality, Morbidity,
Disability

LONG TERM CONSEQUENCES

Adult size, Intellectual ability, Economic
productivity, Reproductive
performance, Metabolic and
cardiovascular disease

MATERNAL & CHILD UNDERNUTRITION

**INADEQUATE
DIETARY INTAKE**

DISEASE

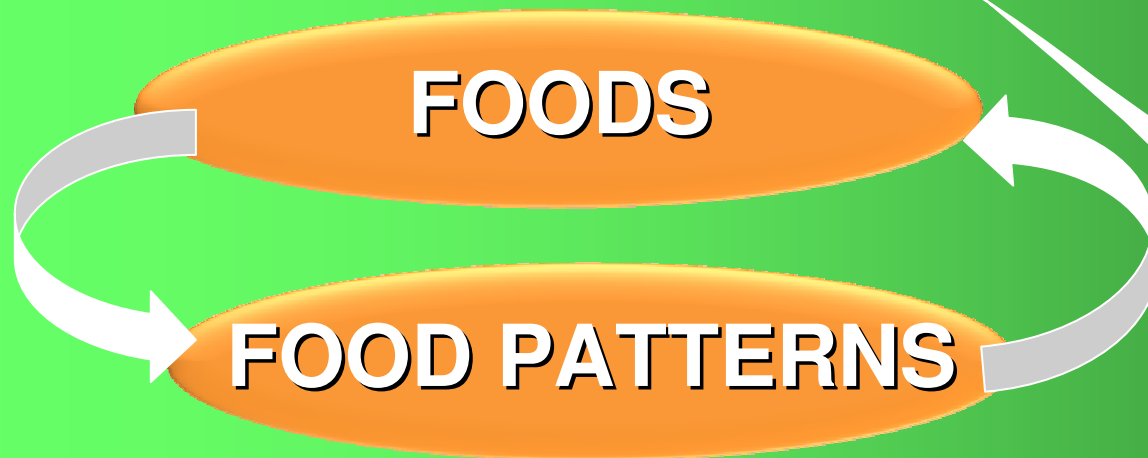
POVERTY

THE EVIDENCE FOR VEGETABLES & FRUIT

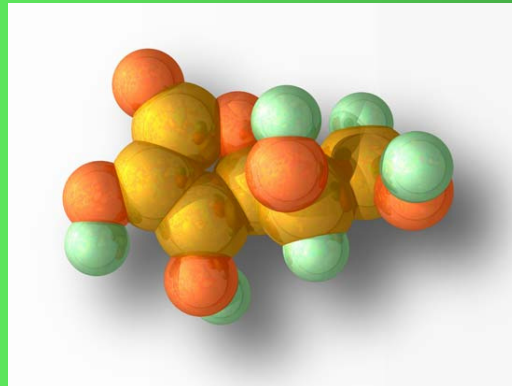
- Rapidly expanding.
- Understanding of the complex interactions continually evolving.
- The whole is probably more important than the sum of the parts.



THE IDEAL...



**Act synergistically –
Influence of each are additive**



DIABETES AND CARDIOVASCULAR DISEASE

- Fibre
- Folate
- Antioxidants
- Potassium
- magnesium
- Fructose
- Glycaemic load
- Obesity
- Lipids
- Hypertension

**8000 CVD deaths
annually (Netherlands).
26 000 deaths before
65 years annually (EU).**



DIABETES AND CARDIOVASCULAR DISEASE

Strongly
suggestive of a
causal effect of
fruit and
vegetable intake
in the primary
prevention

Dietary intake of fruit and vegetables and
risk of diabetes mellitus and
cardiovascular diseases

Lydia A. Bazzano, MD, PhD,
Department of Medicine,
Beth Israel Deaconess Hospital,
Boston, Massachusetts, USA



BODY WEIGHT

- Energy density
- Fibre
- Glycaemic response
- Satiety



**Given increasing
prevalence dietary
strategies
are necessary**



BODY WEIGHT

Although data limited – fruit and vegetables may play an important role in weight management

Dietary intake of fruit and vegetables and management of body weight

Dr Beth Carlton Tohill,
Centers for Disease Control and Prevention, Atlanta, USA



CANCER

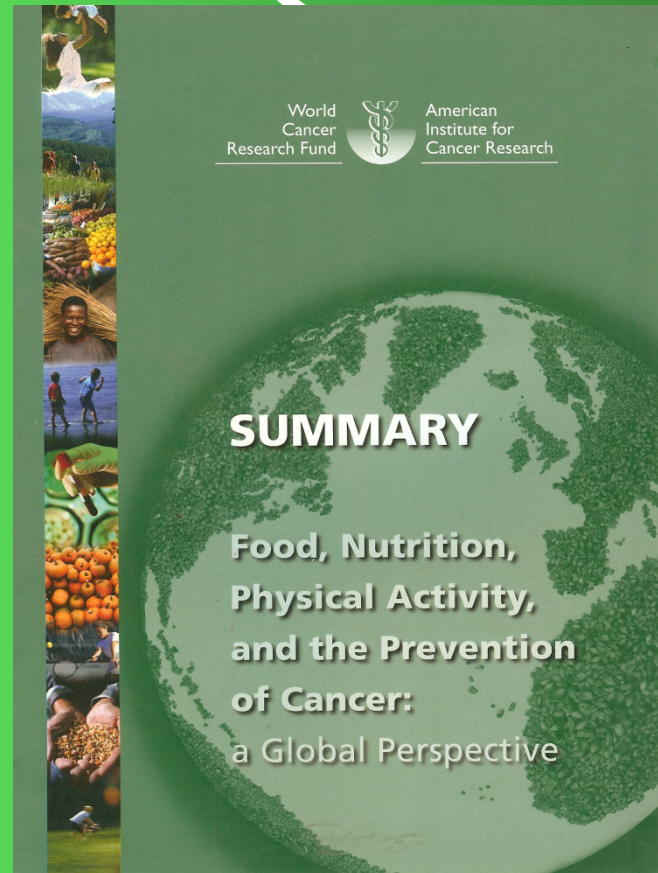
- Nutrients
- Fibre (non-starch polysaccharides)
- Low energy density

An integrated approach to the evidence shows that most diets that are protective against cancer are mainly made up from food of plant origin



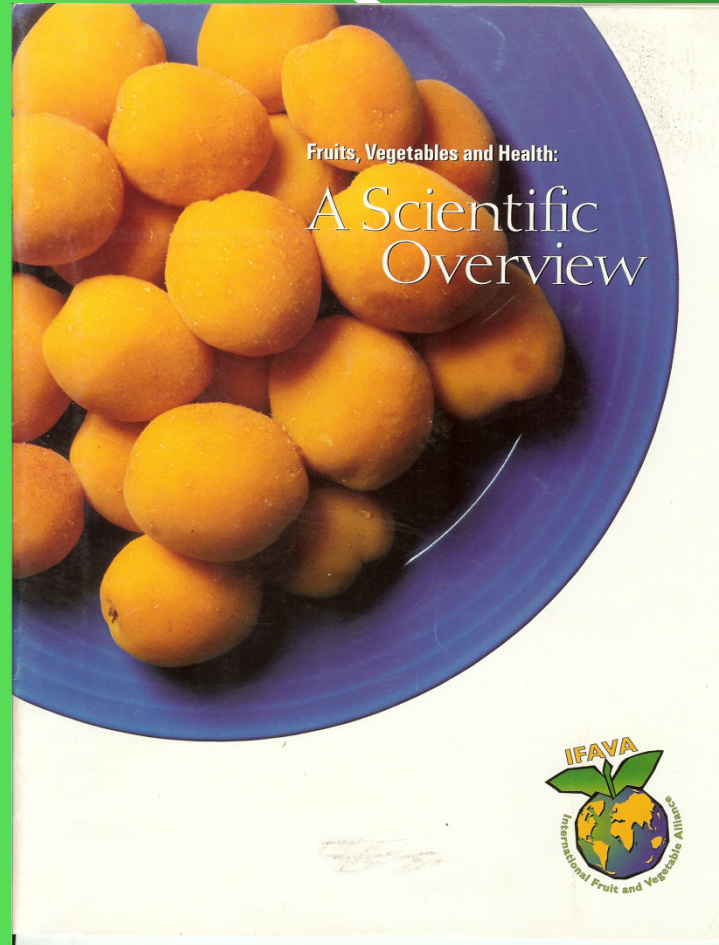
CANCER

Higher
consumption of
several plant
based foods
probably
protects against
various cancers



POSSIBLE OTHER CONDITIONS

- Pulmonary Health
- Bone Health
- Aging and Cognition
- Cataracts and Eye health
- Arthritis
- Diverticulosis
- Birth Defects



RISK ASSESSMENT

South African MRC



- Sexual & reproductive health
- Violence
- Alcohol
- Tobacco
- Excess body weight
- High BP
- Diabetes
- High cholesterol
- **Low vegetable & fruit intake**
- Physical inactivity

- Undernutrition
- Iron
- Vitamin A
- Unsafe water sanitation & hygiene
- Indoor air pollution
- Urban air pollution
- Lead





South African MEDICAL
RESEARCH COUNCIL



DEATHS & DALYS

- 35% Ischaemic heart disease
- 22% Ischaemic stroke
- 24% oesophageal & gastric cancer





Eat at least
400g of
vegetables &
fruit daily

- Fully supports, encourage and drives the global initiative of increasing the amount of fresh fruit & vegetables in the diet.
- For counteracting micronutrient malnutrition to heart disease, cancer, diabetes and obesity.



Nutrition Direct Interventions:

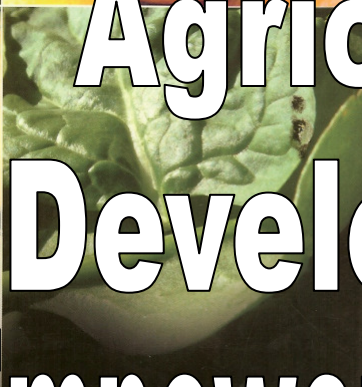
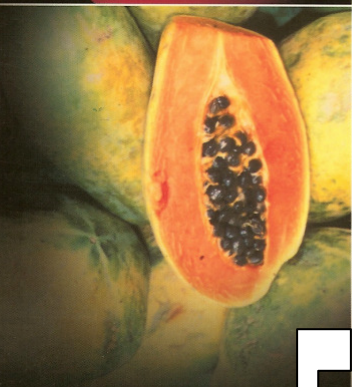
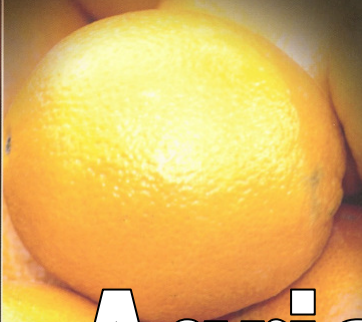
**Promotion of breastfeeding
Vitamin A supplementation
Iron/Folate supplementation
Zinc supplementation
Universal salt iodisation
Treatment of severe acute
malnutrition**

**Agriculture
Social Protection
Public Health
Education
Water
Sanitation
Gender Equality
Governance
State Fragility**

Nutrition & Gender Sensitive Interventions



Fruit and Vegetables for Health
Report of a Joint FAO/WHO Workshop



Agriculture Development Empowering Women



1. **Support** of the farming sector to provide accessible vegetables & fruit at reasonable prices.
2. **Stimulation** of the small-scale, community agricultural sector.
3. **Development** of plant breeding through conventional or bio-fortification.
4. **Examine** the food chain from farm to fork to ensure that vegetables & fruit are affordable and available.
5. **Support of educational and awareness** programmes that encourage all to increase their consumption of vegetables & fruit.



Markinor Consumer Research

Admit they
don't eat
enough



**'GOODIES' FOR A
HEALTHY DIET**



I want to be healthy

ATTITUDE

I intend to eat more veges & fruit

INTENTION

**INTENTION / BEHAVIOUR
GAP**

I select a fast food option

BEHAVIOUR





BARRIERS TO CONSUMPTION...

- **Affordability**
- **Availability**
- **Seasonal Fluctuations**
- **Taste Preferences**
 - Children and men



*“Food choices are **highly sensitive to price**. The first items to drop out of the diet are usually the healthy foods – **fruit, vegetables**, and high-quality sources of protein, which are nearly always more expensive. Fatty processed foods or low energy nutrient-poor staples are often the cheapest way to fill hungry stomachs.”*

Dr Margaret Chan : Director General of the WHO



“200 million children under the age of 5 years, mostly living in sub-Saharan Africa and South Asia, fail to reach their cognitive, motor and social-emotional potential because of micronutrient deficiencies. These children will probably fail at school, fail to achieve their income potential and remain trapped in the poverty cycle.”

Dr Klaus Kraemer : Director – Sight & Life



THE CHALLENGE...



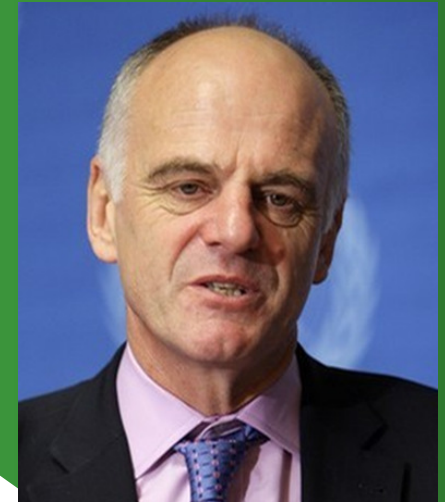
**We know vegetables & fruit
are good for us & vital for
addressing the health
challenges of Africa**

BUT

**We need to get people
eating enough to have a
positive health impact?**



Scaling Up Nutrition: Framework For Action



1. What ultimately matters is what happens at the **country level**.
2. Sharply scale up evidence-based cost-effective interventions.
 - Priority: **minus 9 to 24 month** highest-return and window of opportunity.
3. Take a **multi-sectoral approach** that includes mainstreaming nutrition in related sectors.
4. Provide substantially **scaled up domestic and external assistance** for country-owned nutrition programmes and capacity.

www.scalingupnutrition.org





“WHO urges **all stakeholders** to play a role in addressing the alarming diet related health trends and thereby contribute to major and sustained improvements in people’s health around the world.”



“Investment in nutrition is an excellent investment now and into the future. It however requires political will. We in Tanzania are determined to overcome the challenges of malnutrition and to ensure co-ordination of nutrition activities that include multi-stakeholder efforts and interventions. We are pleased to be a SUN Early Riser country.”

President Jakaya Kikwete - Tanzania



THANK YOU

