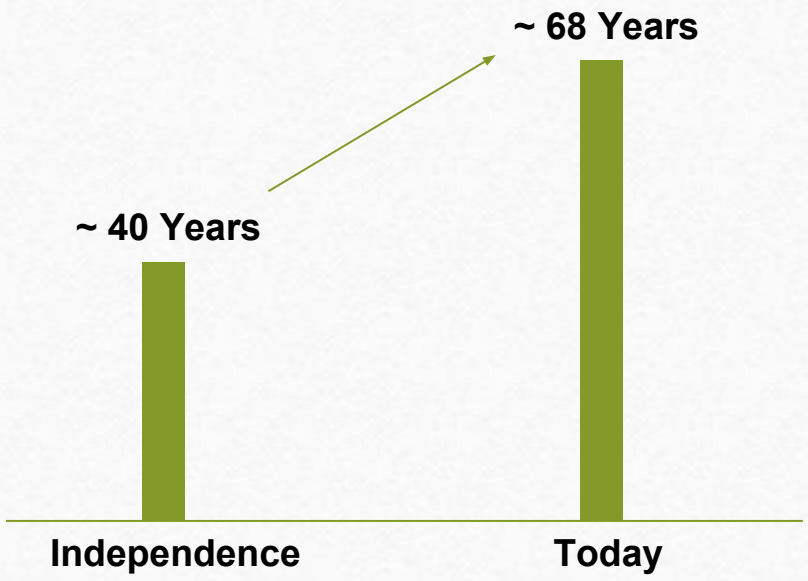
IMPORTANCE OF SUPPLEMENTATION & POSSIBLE ECONOMIC IMPACT

By Abhinav Srivastava
Amway
4 September 2019

Contents

- How well we Live?
- Possible reasons
- Global Reading (Economic Value of Supplementation) & Indian Perspective
- Way Forward

Life should be Lived Well



= **28** Years Added

Life Expectancy ↑

Quality of Life ↓

At what age do you feel 65?

Lancet Study: Measured Age Related Disease Burden against the Global Average of 65 Years Old

45 Years

76 Years

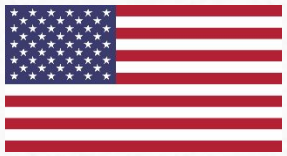
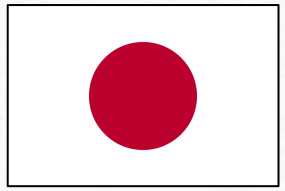
Papua New Guinea

India 58 Years

Global Average 65 Years

Japan

Health Life Expectancy

		Life Expectancy	Ill health life years	Healthy life expectancy
	Men	78.2	10.1	68.3
	Women	83.0	12.2	70.8
	Men	67.8	8.5	59.3
	Women	70.2	10.5	59.5
	Men	76.1	10.8	65.3
	Women	81.1	13.2	67.9
	Men	81.1	9.7	71.4
	Women	87.2	12.6	74.6

http://www.healthda

https://www.thelancet.com/action/showPdf?pii=S0140-6736%2818%2932335-3

NCDs - 10 Years Early Onset for Indians (Lancet Study)

India's escalating burden of non-communicable diseases

India's burden of non-communicable diseases (NCDs) is escalating. NCDs typically present in individuals aged 55 years or older in many developed countries, but their onset occurs in India a decade earlier (≥45 years of age).[1,2] Exacerbating this problem are the issues of multiple chronic conditions and the fact many remain undiagnosed due to lack of awareness and insufficient health-care access. At the same time, infectious and parasitic diseases still pose substantial challenges to the public health system in India, resulting in a double burden of disease and an important share of the global burden of disease.

Although the NCD burden has grown, India still does not have sufficiently detailed data on NCDs for

What new insights do these papers report on the mortality burden of India and its states? They offer a more fine-grained picture of long-term trends of cardiovascular diseases, respiratory diseases, and diabetes mortality in India. The India GBD Collaborators found that leading cardiovascular diseases—ischaemic heart disease and stroke—made the largest contribution to the total burden of mortality in India in 2016, at 28·1% (95% uncertainty interval [UI] 26·5–29·1).[3] Furthermore, the contribution of cardiovascular diseases to mortality increased by 34·3% (26·6–43·7) from 1990 to 2016, which is not surprising given rapid population ageing and significantly increasing levels of the main risk factors for cardiovascular diseases—high systolic

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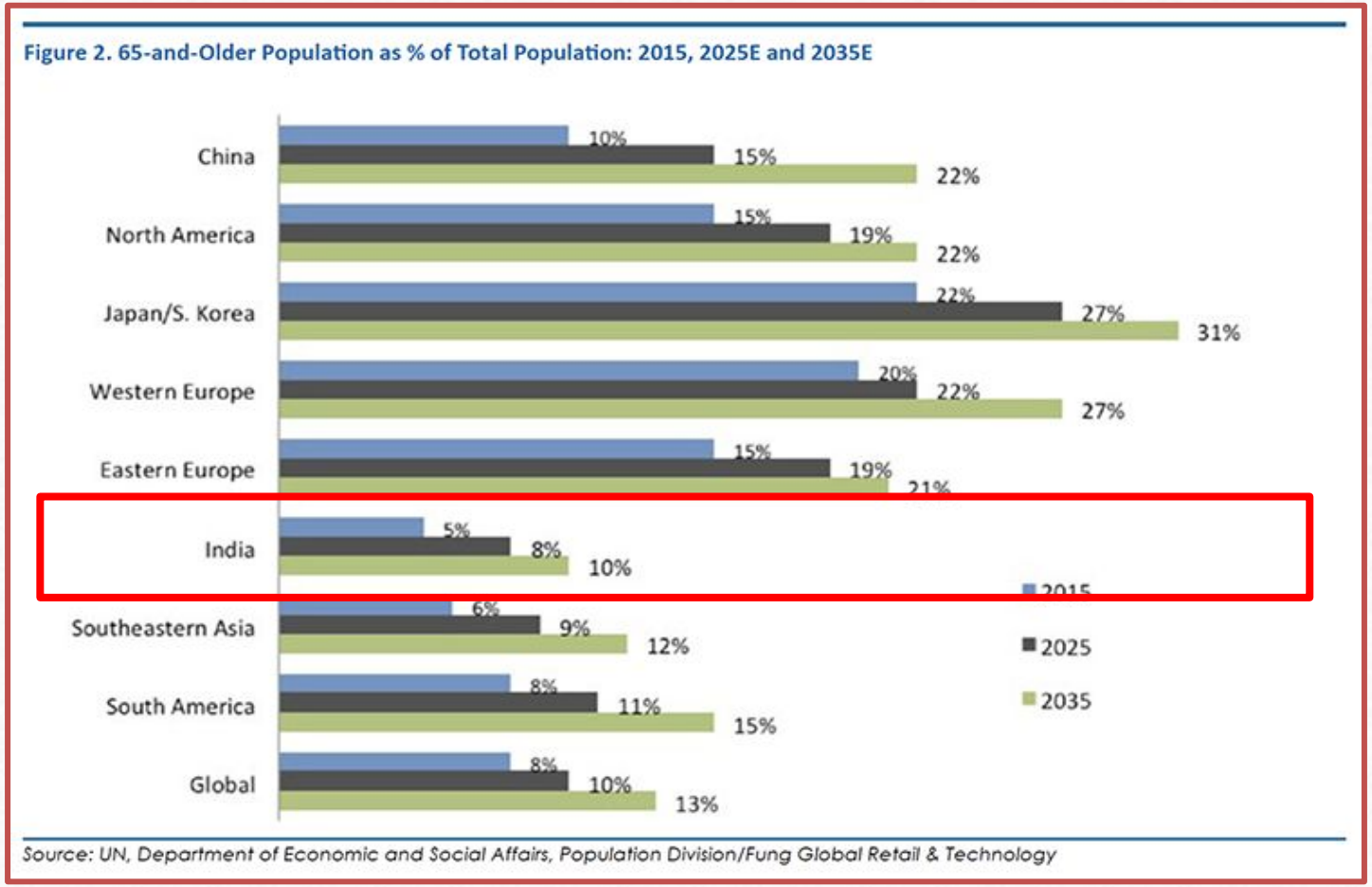
http://dx.doi.org/10.1016/S2214-109X(18)30448-0

See Articles page e1339, e1352, and e1363

NCDs - 10 Years Early Onset for Indians (Lancet Study)



We live longer, but less healthy

A new LANCET paper states
(Nov 10, 2018 Volume 392 Number 10159 pg. 1683-2138)

- Life expectance is increasing worldwide
- Still a difference in life expectancy for man and women of five years
- Despite increasing life expectancy health in older age did not improve
- There is even the risk that life expectancy may go down

The Loss

8 – 10 Years of Life

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Risk Factors Driving the most death and disability in India

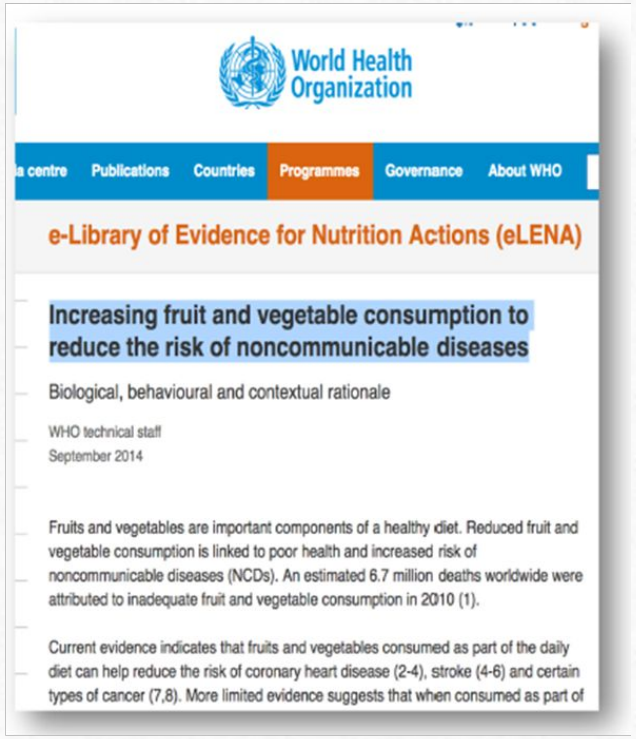
Top 10 Causes of Death 2017 Ranking

Ischemic heart disease
COPD
Stroke
Diarrheal diseases
Lower respiratory infect
Tuberculosis
Neonatal disorders
Asthma
Diabetes
Chronic kidney disease

Top 10 Risk Factors 2017 Ranking

Malnutrition
Dietary risks
Air pollution
High blood pressure
Tobacco
High fasting plasma glucose
WaSH
Alcohol use
High body-mass index
High LDL

WHO proposes to act and UN declared the decade of Action on Nutrition



- Approximately one third of cancers can be prevented.
- Up to 80% of heart disease, stroke and diabetes type 2 deaths are preventable.

Let's Further Assess

DO WE EAT SUFFICIENT

?

DO WE GET ENOUGH FROM WHAT WE EAT

?

DOES IT IMPACT US

?

Lacking Diets – Globally

World Health Organization

a centre | Publications | Countries | Programmes | Governance | About WHO

e-Library of Evidence for Nutrition Actions (eLENA)

Increasing fruit and vegetable consumption to reduce the risk of noncommunicable diseases

Biological, behavioural and contextual rationale

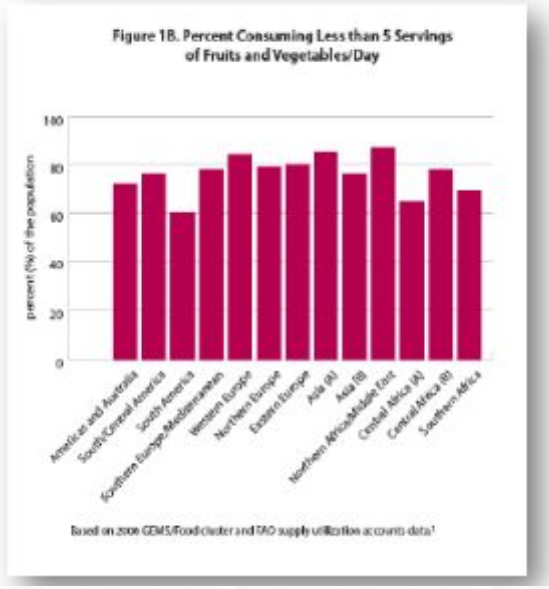
WHO technical staff
September 2014

Fruits and vegetables are important components of a healthy diet. Reduced fruit and vegetable consumption is linked to poor health and increased risk of noncommunicable diseases (NCDs). An estimated 6.7 million deaths worldwide were attributed to inadequate fruit and vegetable consumption in 2010 (1).

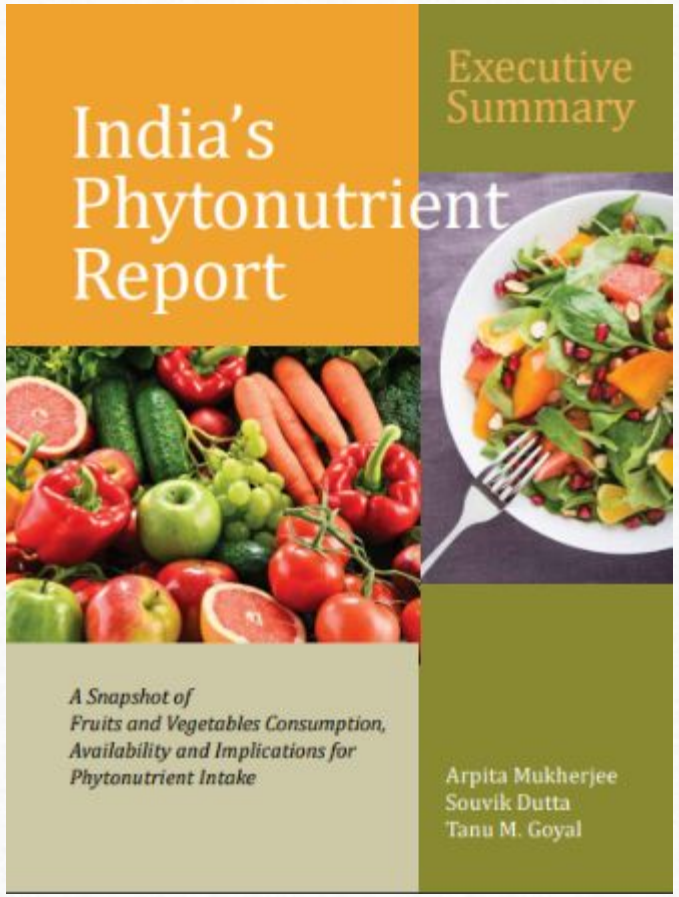
Current evidence indicates that fruits and vegetables consumed as part of the daily diet can help reduce the risk of coronary heart disease (2-4), stroke (4-6) and certain types of cancer (7,8). More limited evidence suggests that when consumed as part of

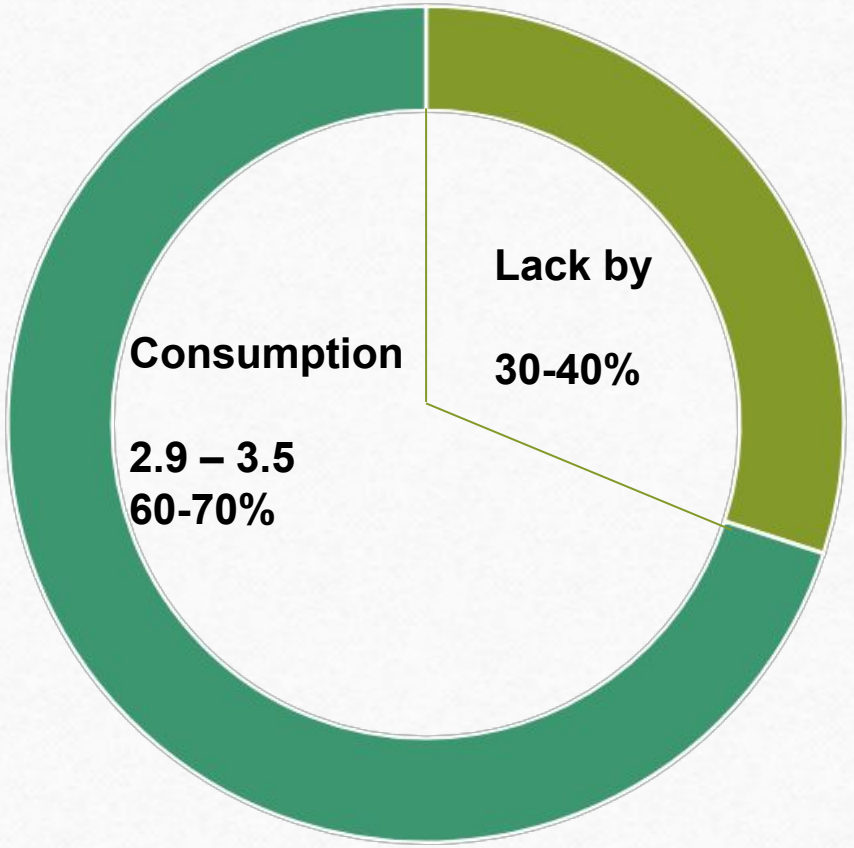
75%

people globally that fall short of WHO Fruit & Vegetable recommendation



India is No Different - ICRIER Survey

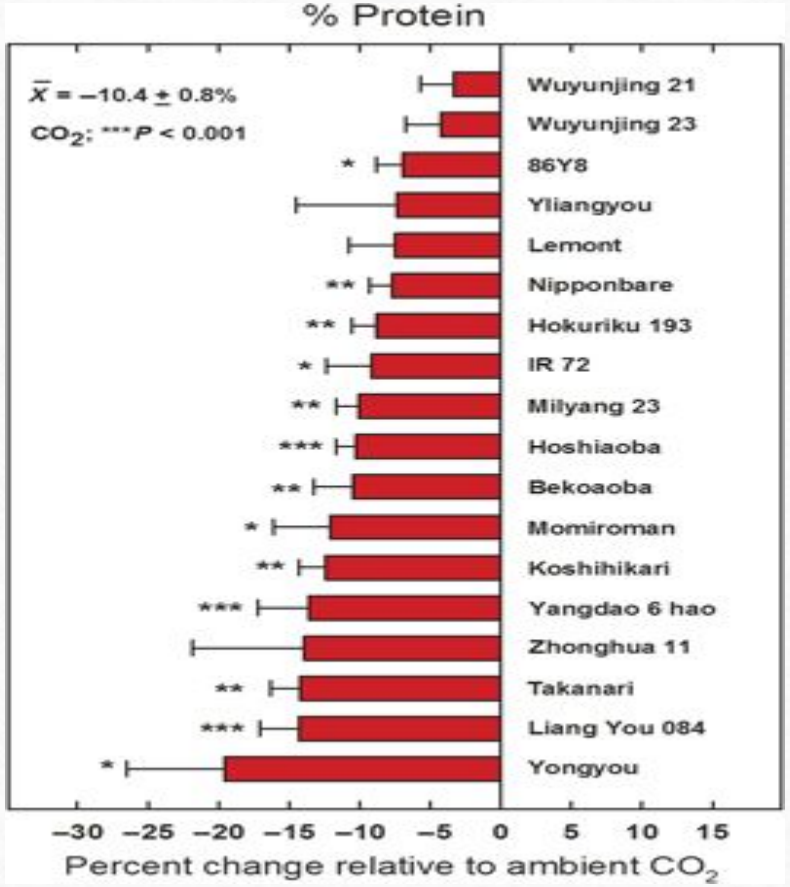




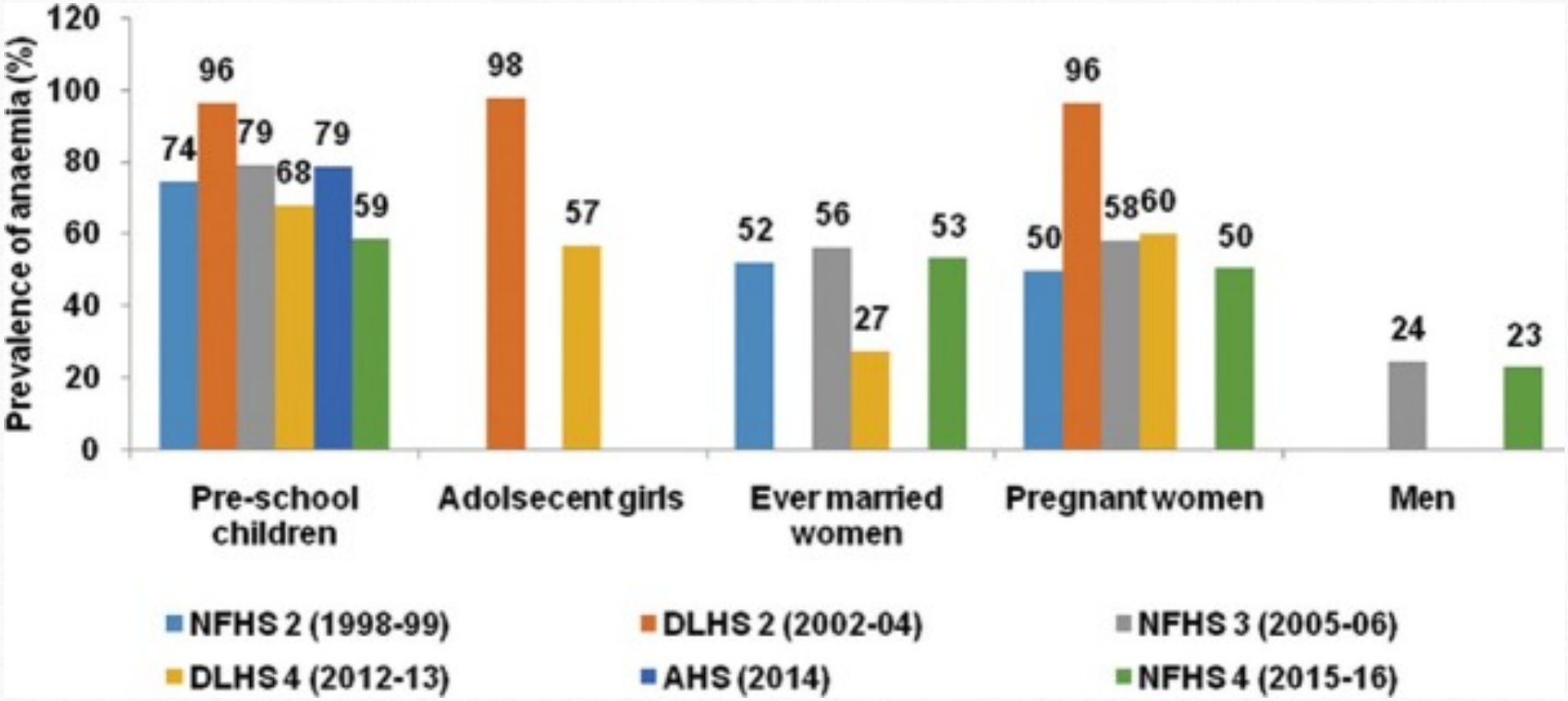
Nutrient Loss – Global Warming

RICE SUPPLIES ~25% OF
ALL GLOBAL CALORIES
(2 Bn People)

(-) 10% Protein	(-) 8% Iron	(-) 5% Zinc	(-) 13 to 30% Vitamins B



Impact - Anemia Still Affects over 50% of School Children in India



Impact - Vitamin B 12 Deficiency

Some recent surveys carried out in India to assess the prevalence of vitamin B_{12} deficiency

Study	Study area	Study design	Cut-off used for serum vitamin B_{12}	Prevalence (%)
Chakraborty *et al*, 2018[21]	NCR Region and Haryana	Community-based cross-sectional study: School-going adolescents (*n*=2602) (11-17 yr)	<148 pmol/l	32.4 Rural: 42.9; Urban: 20.1
Gomnci *et al*, 2018[22]	New Delhi	Community-based cross-sectional study: Elderly aged 60 and above (*n*=77) residing in slums	<203 pg/ml	36.4
Gupta *et al*, 2017[23]	Himachal Pradesh	Community-based cross-sectional study: Schoolchildren (*n*=415) aged 6-18 yr	<203 pg/ml	7.4
Verma 2017[24]	Maharashtra	School-based cross-sectional study: Adolescents (*n*=372) aged 11-18 yr	<200 pg/ml	72.7
Mittal *et al*, 2017[25]	New Delhi	Hospital-based cross-sectional study: Term exclusively breastfed infants (*n*=100) aged 1-6 months	<200 pg/ml	Infants-67.0 Mothers-66.0
Goyal *et al*, 2017[26]	Rajasthan	Hospital-based descriptive study: SAM children (*n*=80)	<100 pg/ml	37.5
Surana *et al*, 2017[27]	Gujarat	Hospital-based cross-sectional study: Adolescents (*n*=411) aged 11-18 yr	<160 pg/ml	69.8
Gomnci *et al*, 2017[28]	New Delhi	Community-based cross-sectional study: Women (*n*=60) aged 60 and above residing in slums	<203 pg/ml	38.0
Sivaprasad *et al*, 2016[29]	Telangana	Community-based cross-sectional study: Adults (*n*=600) aged 21-65 yr	<203 pg/ml	25.0
Garima *et al*, 2016[30]	-	Pregnant anaemic women (*n*=267)	<200 pg/ml	67.0
Gupta Bansal *et al*, 2015[31]	New Delhi	Community-based study: Adolescents (*n*=794) aged 11-18 yr	<203 pg/ml	Anaemia-58.7, 62.3 among anaemic adolescents
Parmar *et al*, 2015[32]	Gujarat	Hospital-based cross-sectional study: Individuals (*n*=2660) aged 0-96 yr	<200 pg/ml	66.6 <40 yr - 31.5 30 to 60 yr - 29.3 >60 yr - 62.5
Kagil *et al*, 2015[33]	NCT Delhi	Community-based cross-sectional study: Children (*n*=470) aged 12-59 months	<203 pg/ml	28.4
Chakal *et al*, 2014[34]	Himachal Pradesh	Observational study: Adults (*n*=152) aged 18-60 yr	<200 pg/ml	63.6
Kagil and Bhadoria 2014[35]	NCT Delhi	School-based cross-sectional study: Adolescents (*n*=247) aged 11-18 yr	<200 pg/ml	72.5
Bhardwaj *et al*, 2013[36]	Himachal Pradesh	Community-based cross-sectional study: Adolescents (*n*=885) aged 11-19 yr (*n*=200 for blood sample)	<200 pg/ml	100.0
Shobha *et al*, 2013[37]	Karnataka	Elderly (*n*=175) aged 60 and above	-	16.0
Menon *et al*, 2013[38]	Maharashtra	Community-based cross-sectional study: Tribal and rural women of reproductive age (*n*=109)	<148 pmol/l	34.0

SAM, severe acute malnutrition; NCT, National Capital Territory

With respect to vitamin B_{12} deficiency, studies have indicated deficiency as high as 70-100 per cent.

This may also be because about 29 per cent of the Indian population is vegetarian.

Impact - Folate Deficiency

Surveys carried out in India to assess the prevalence of folate deficiency

Study	Study area	Study design	Cut-off used for serum folic acid	Prevalence (%)
Bhide and Kar 2018[40]	Maharashtra	Hospital-based study Women (n=584) in early pregnancy	<3 ng/ml	24.0
Verma 2017[24]	Maharashtra	School-based cross-sectional study Adolescents (n=373) aged 11-18 yr	<3 ng/ml	40.2
Goyal *et al*, 2017[26]	Rajasthan	Hospital-based descriptive study SAM children (n=80)	<3 ng/ml	8.8
Gonmei *et al*, 2017[28]	New Delhi	Community-based cross-sectional study Women (n=60) aged 60 and above residing in slums	<4 pg/ml	12.0
Gupta *et al*, 2017[23]	Himachal Pradesh	Community-based cross-sectional study Schoolchildren (n=215) aged 6-18 yr	<4 ng/ml	1.5
Sivaprasad *et al*, 2016[29]	Telangana	Community-based cross-sectional study Adults (n=630) aged 21-85 yr	<3 ng/ml	12.0
Gupta Bansal *et al*, 2015[31]	New Delhi	Community-based study Adolescents (n=794) aged 11-18 yr	<4 ng/ml	Anaemia - 58.7 5 among anaemic adolescents
Kapil *et al*, 2015[33]	NCT Delhi	Community-based cross-sectional study Children (n=470) aged 12-59 months	<4 ng/ml	63.2
Kapil and Bhadoria 2014[35]	NCT Delhi	School-based cross-sectional study Adolescents (n=347) aged 11-18 yr	<3 ng/ml	39.8
Bhardwaj *et al*, 2013[36]	Himachal Pradesh	Community-based cross-sectional study Adolescents (n=885) aged 11-19 yr (n=200 for blood sample)	<2.7 ng/ml	0
Menon *et al*, 2011[38]	Maharashtra	Community-based cross-sectional study Tribal and rural women (n=109) of reproductive age	<6.8 nmol/l	2.0

The prevalence of folate deficiency is not high as compared to vitamin B12 deficiency; however, studies carried out in New Delhi and Maharashtra among preschool children and adolescents have indicated deficiency of around 40 to 60 per cent

Impact - Vitamin D Deficiency

Vitamin D deficiency in India

P Aparna,[1] S Muthathal,[1] Baridalyne Nongkynrih,[1] and Sanjeev Kumar Gupta[1]

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Abstract

Vitamin D is a fat-soluble vitamin playing a vital role in human physiology. Vitamin D deficiency is prevalent worldwide. This deficiency has many consequences which are still being explored, apart from the well-known skeletal complications. With this review, we aim to summarize the existing literature on Vitamin D status in India and understand the enormity of the problem. The prevalence of Vitamin D deficiency ranged from 40% to 99%, with most of the studies reporting a prevalence of 80%–90%. It was prevalent in all the age groups and high-risk groups alike. With the consequences of Vitamin D deficiency, namely, autoimmune diseases, cardiovascular diseases, cancer, and tuberculosis being explored, we can imagine the burden it would cause in our country. We need to create awareness among the public and healthcare providers about the importance of Vitamin D and the consequences of deficiency. Our Indian diet generally fails to satisfy the daily requirement of Vitamin D for a normal adult. This stresses on the need for fortifying various food with Vitamin D, through the national programs. This silent epidemic should be addressed appropriately with concrete public health action.

Keywords: Fortification, India, prevalence, Vitamin D deficiency

Sources of Vitamin D3

Go to:

The major source of Vitamin D is the endogenous synthesis in skin on exposure to sunlight, namely, ultraviolet B (UV-B) radiation of wavelength 290–320 nm. Main dietary sources are fish, fortified food, and supplements. Vegetables and grains are poor sources.

Synthesis of vitamin in skin on exposure to UV-B is also affected by latitude, solar zenith angle, atmospheric pollution, ozone layer, and melanin pigmentation.[6]

Vitamin D status	The serum level of Vitamin D in ng/ml
Deficiency	<20
Insufficiency	21-29
Sufficiency	>30
Toxicity	>150

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6060930/

Result

DO WE EAT SUFFICIENT?

NO

DO WE GET ENOUGH FROM WHAT WE EAT?

NO

DOES IT IMPACT US?

YES

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- How well we Live? **Not so well seems**
- Possible reasons – **We eat Less; We get Less, Insufficient Nutrients**
- Global Reading (Economic Value of Supplementation) & Indian Perspective
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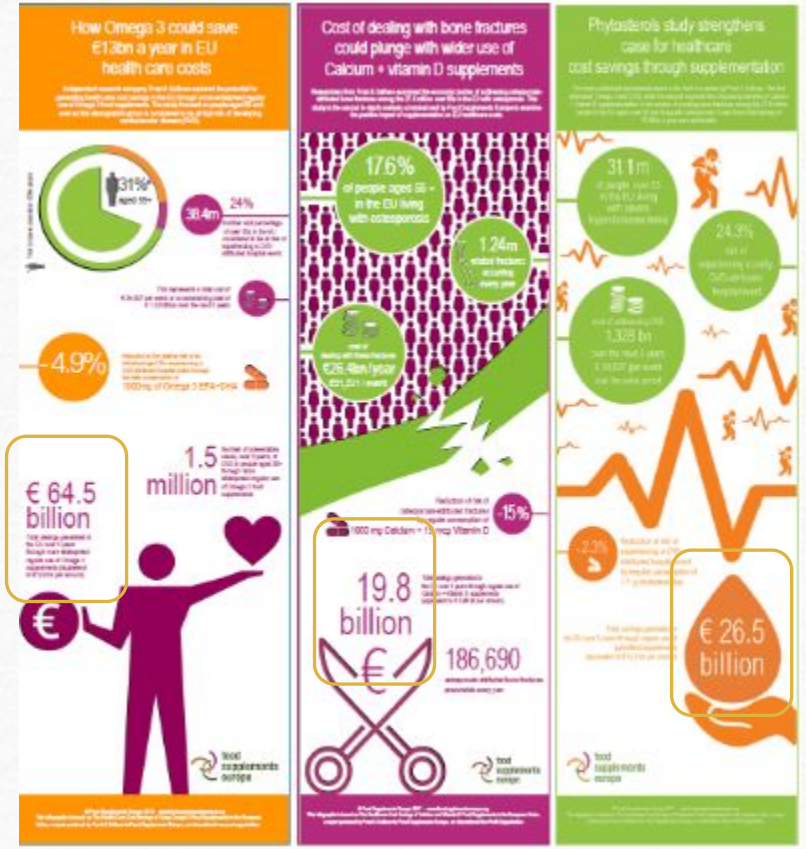
Health Care Cost Saving Studies

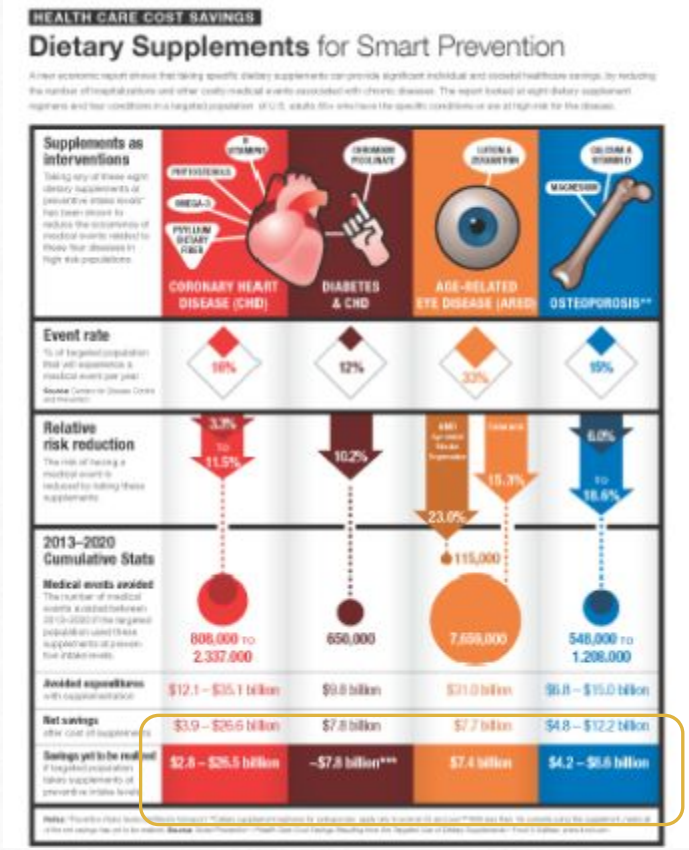
Studies have been conducted in several countries to investigate if use of targeted food supplements among consumers at a high risk of experiencing a costly disease related
event could reduce risks and health care cost

SOURCE: FROST & SULLIVAN

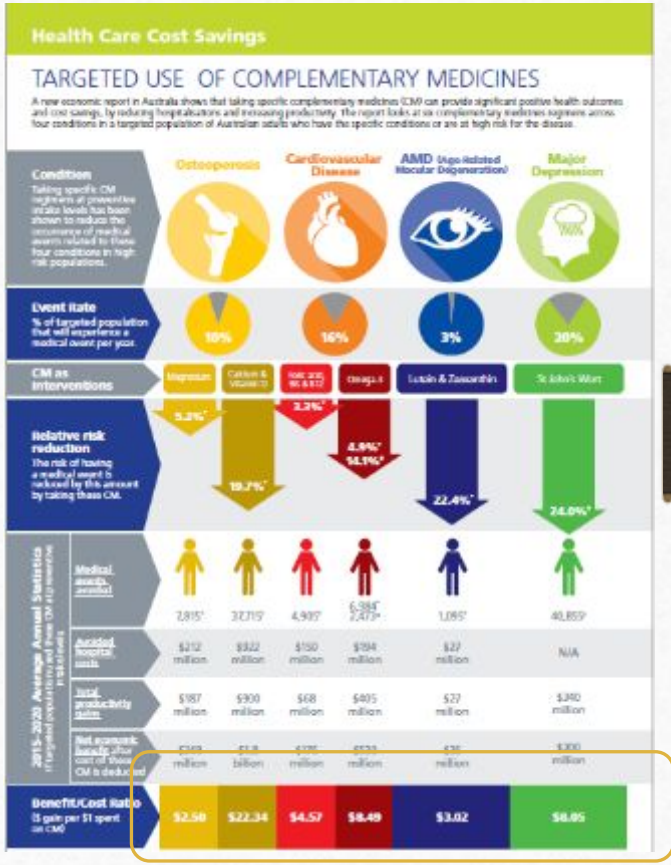
Infographics – EU, USA, Australia



Over 5 Years

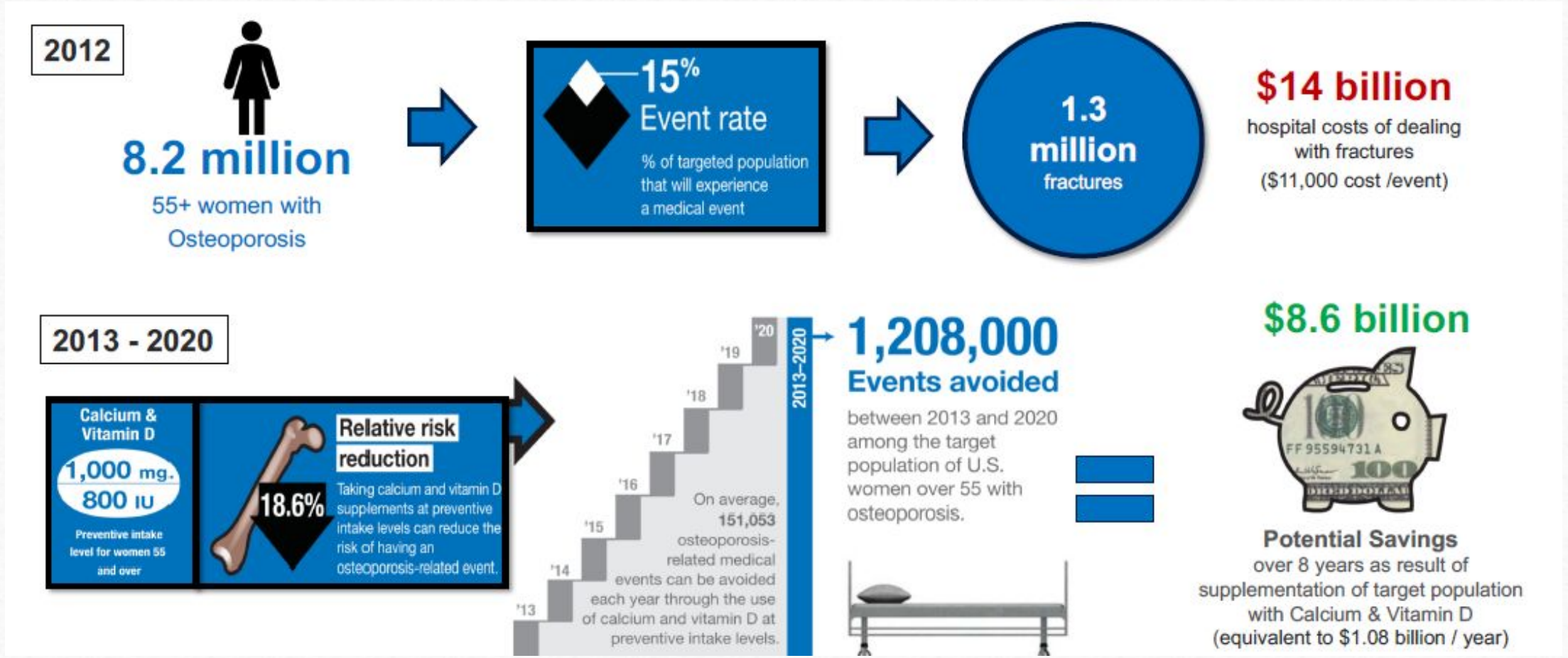


Over 8 Years



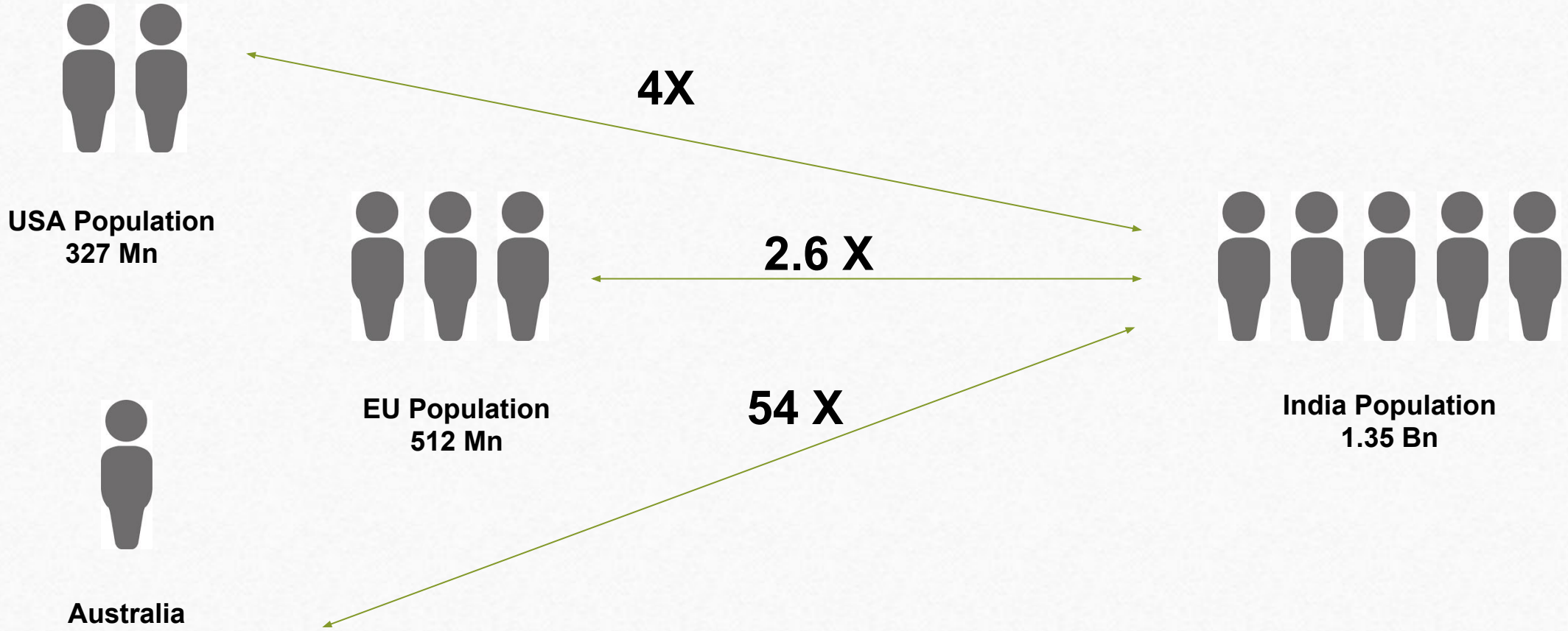
Over 6 Years

USA: Calcium and Vitamin D Supplementation and Osteoporosis

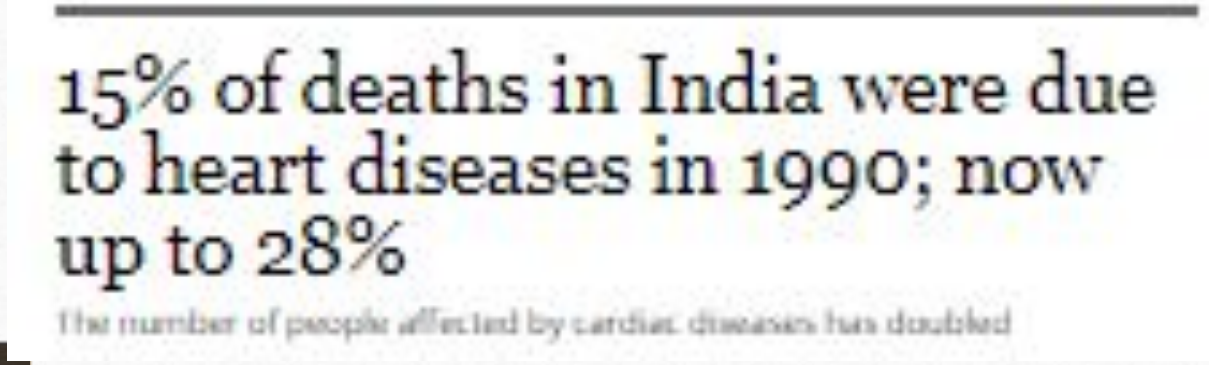


EU: The Effect of Calcium and Vitamin D Supplementation

India Perspective: Cost Saving Potential – Much Higher



Rising Cases of NCDs – Bigger Possibilities for Us



15% of deaths in India were due to heart diseases in 1990; now up to 28%

The number of people affected by cardiac diseases has doubled

Diabetes is India's fastest growing disease: 72 million cases recorded in 2017, figure expected to nearly double by 2025

IndiaSpend Apr 17, 2018 16:10:11 IST

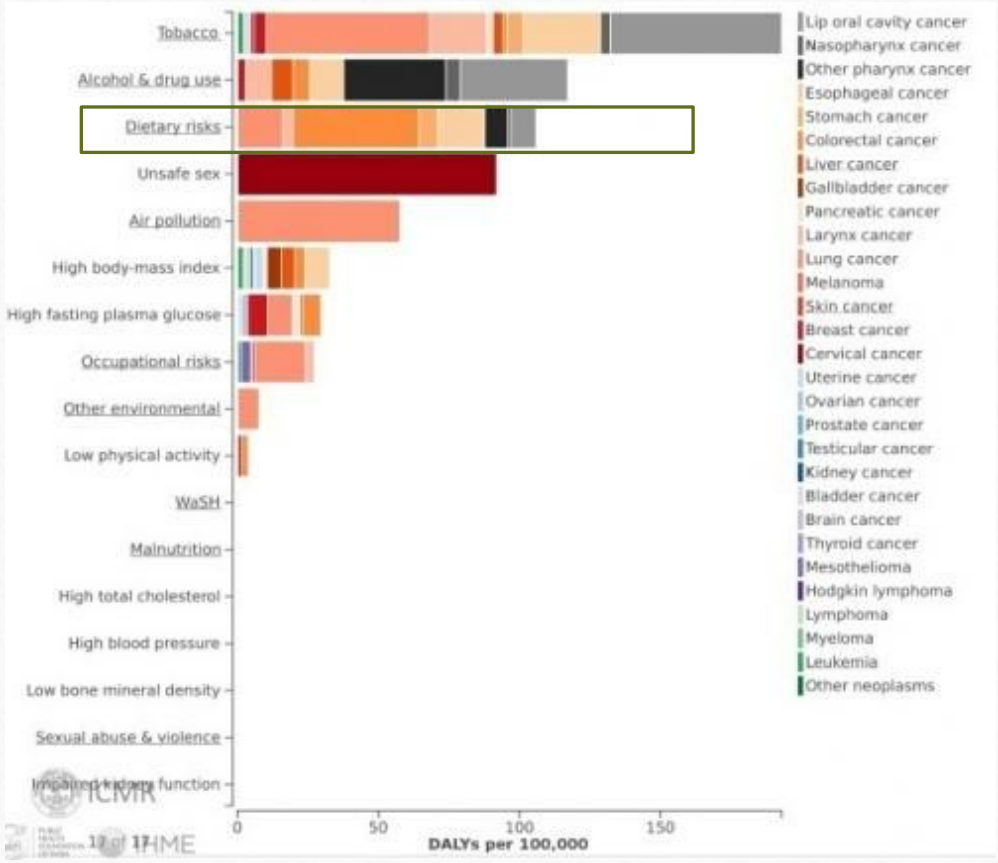
Rising Cases of NCDs – Bigger Possibilities for Us

HEALTH

9.6 million people will die of cancer this year

Two reports released on the same day say that cancer is the second biggest killer in India, while cancer deaths in the world this year

Risk Factors for Cancer - Lancet



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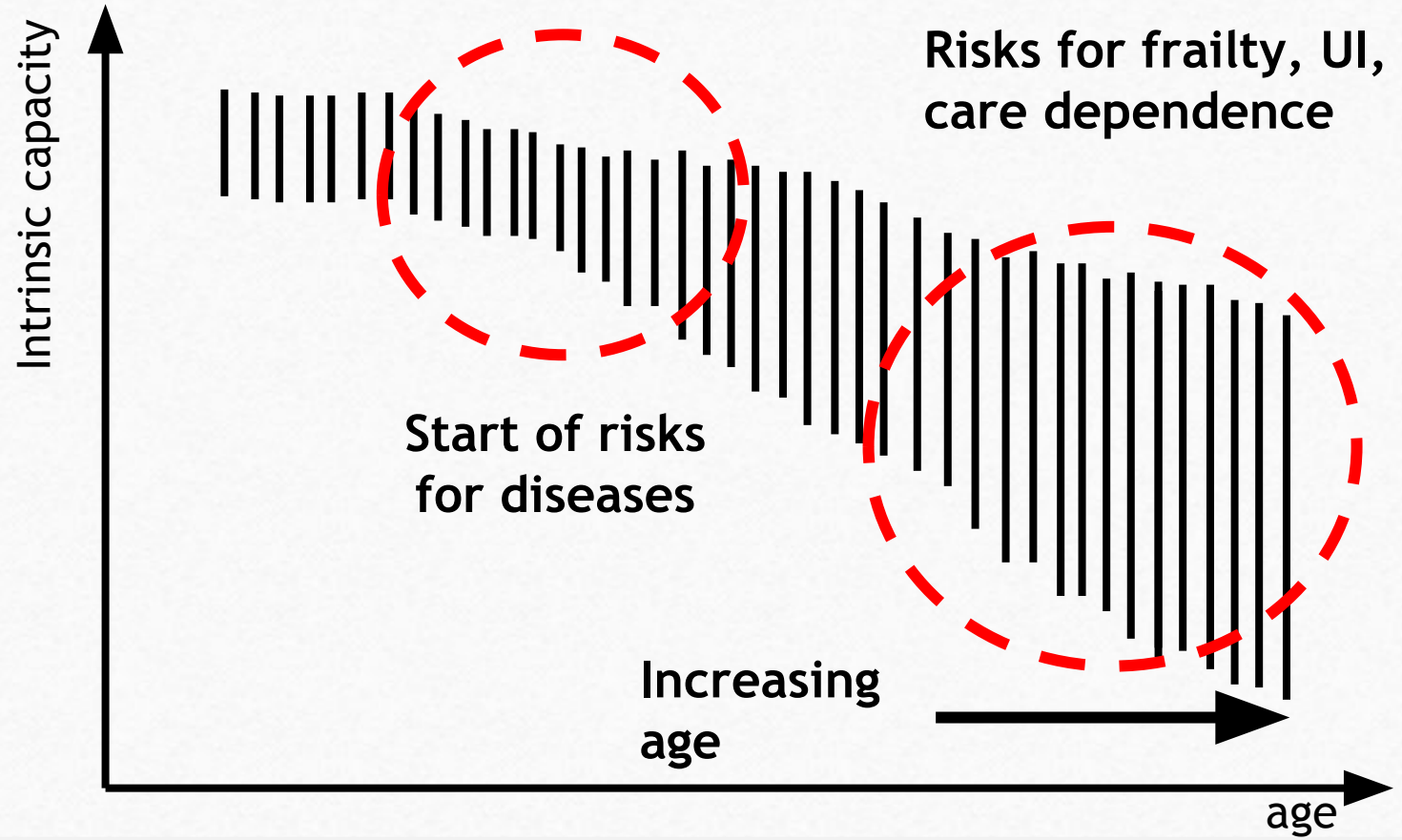
- Possible reasons – **We eat Less; We get Less, Not so positive impact**
- Global Reading (Economic Value of Supplementation) & Indian Perspective **– Big Possibilities**
- Way Forward

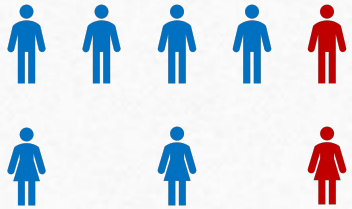
Experts advocate for a shift of focus from disease to capacity



Instead diagnosing diseases on a point in time to monitoring trajectories across the life course

Araujo de Carvalho,WHO

Strengthening intrinsic capacity for a healthy life and ageing



50+ Years I Global Osteoporotic fracture

India 36 Mn Cases of Osteoporosis

1 € spent on Vit D Supplementation In EU Supports health Savings of 4.36 €

Finland Case Study

Every Second Someone has Heart Attack

Every Minute 30 people die due to Heart Related Issues

Indian CVD rate = 272 deaths per 1 Lac
Global CVD rate = 235 per 1 Lac

In India, CVD rate increased by 59% from 1990 to 2010 (37 Mn Cases)

In India 52% of CVD deaths occur before 70 years; in Western populations only 23%

VITAL (20,000 persons) and REDUCE IT - Omega 3

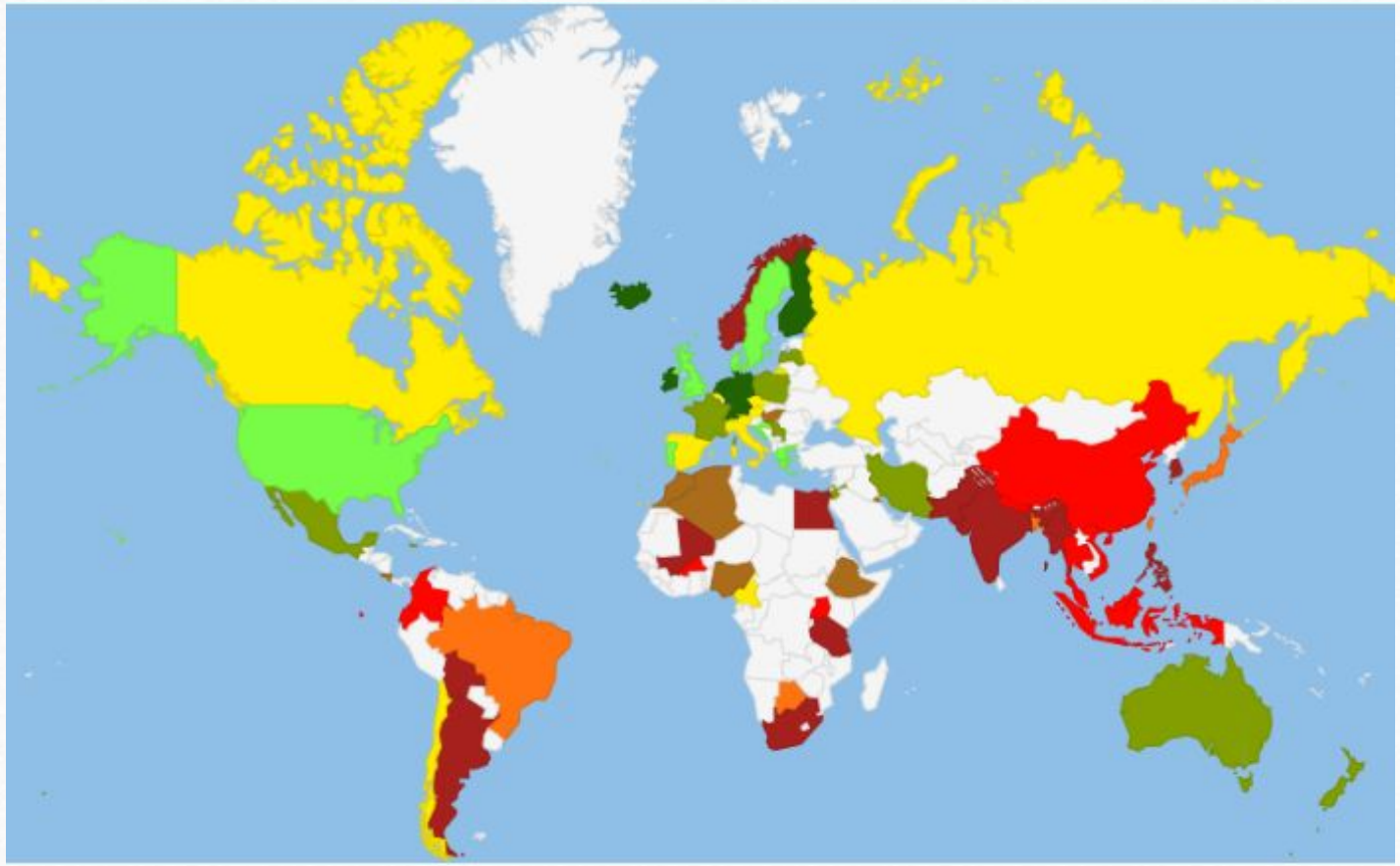
1 Case of Dementia every 4 Second Globally

Doubling every 20 years. 44 Mn in 2013 to 135 Mn in 2050

India 4 Mn – Alzheimer or Other forms of Dementia

VITACOG - Omega 3

RDA 400 IU (Vitamin D 10 mg / Day)



Average dietary calcium intake (mg/d)

< 400 | 400-500 | 500-600 | 600-700 | 700-800 | 800-900 | 900-1000 | > 1000

India

Calcium intake (mg/d): 429
Country color:
Population group: adult
National representativeness: Yes

United States

Calcium intake (mg/d): 934
Country color:
Population group: adult
National representativeness: Yes

Canada

Calcium intake (mg/d): 787
Country color:
Population group: adult
National representativeness: Yes

Finland

Calcium intake (mg/d): 1098
Country color:
Population group: adult
National representativeness: No (age)

Solutions are Available – Let’s make it happen

Thank You