SESSION 1: IMPROVING QUALITY of LIFE

PANEL 1.1A: Essential elements of well-being

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Ricardo Uauy has served as an expert on multiple WHO/FAO committees, and has received several awards, including the McCollum Lecture award ASN (USA) in 2000, the National Applied Science Award from the Government of Chile in 2012, and the Doctor Honoris Causa by the University of Granada in 2014; he has written more than 350 scientific journal publications and has edited 10 books.
Nutrition – the role of nuclear techniques for health and disease

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WHERE?

MALNUTRITION AFFECTS ALL REGIONS WORLDWIDE

1.9 BILLION ADULTS, 18 years and older, are overweight

>600 MILLION of these are OBESE

264 MILLION WOMEN of reproductive age are affected by iron-amenable anaemia

462 MILLION ADULTS are underweight

155 MILLION children are stunted (too short for age)

41 MILLION children under the age of 5 years are overweight or obese

52 MILLION children are wasted (too thin for height)

WHAT?

THE DOUBLE BURDEN OF MALNUTRITION IS CHARACTERIZED BY THE COEXISTENCE OF:

- Undernutrition (wasting, stunting and micronutrient deficiencies) along with overweight and obesity
- and diet-related noncommunicable diseases
- within individuals, households and populations
- throughout life

Regional perspective

In three sub-regions, at least one in every ten children under five is overweight. Percentage of overweight children under 5, by United Nations sub-region, 2017.

- **Northern America**: 7.9%
- **Central America**: 6.4%
- **Caribbean**: 7.2%
- **Southern America**: 7.7%
- **North Africa**: 7.9%
- **Western Africa**: 2.4%
- **Middle Africa**: 4.7%
- **Eastern Africa**: 4.4%
- **Southern Africa**: 13.7%
- **Central Asia**: 10.7%
- **Eastern Asia**: 5.2%
- **South-eastern Asia**: 7.3%
- **Oceania**: 8.7%

Global: 5.6%

Source: UNICEF, WHO, World Bank Group joint malnutrition estimates, 2018 edition. Note: *Eastern Asia excluding Japan; **Oceania excluding Australia and New Zealand. There is no estimate available for the sub-regions of Europe or Australia and New Zealand. These maps are stylized and not to scale and do not reflect a position by UNICEF, WHO or World Bank Group on the legal status of any country or territory or the delimitation of any frontiers. The legend contains a category for >15 per cent (pink) but there is no sub-region with a rate this high.
Nuclear techniques are needed to address the double burden of malnutrition

Measuring Fat and Fat free mass

BMI ≠ fatness!

- Big and muscular
- Thin and fat

Fat Free Mass:
- Organs
- **Muscles**
- Bone
- Fluids

Fat

Mineral

Protein

Water

Courtesy: SJRI, Bangalore, India
Example from Chile: How the IAEA contributed to address the challenges and inform the actions

1997
IAEA started working with University of Chile, Institute of Nutrition and Food Technology (INTA) to address malnutrition

1998
Energy Metabolism and Stable Isotopes Laboratory (EMSIL) was established with support from IAEA

1999 – 2004
• Impact of iron fortified food on anaemia in children (RLA7008)
• Body composition and energy expenditure in children attending day care centres (RLA7008)

2005 – 2009
• Reduction of childhood malnutrition (RLA6052)
• Early diagnosis of Helicobacter pylori infection (RLA6054)

2009 – 2015
Double burden of malnutrition (RLA6064)

2007 – 2012
Prevent and control obesity in Latin America (RLA6059)

2012 – 2015
Breast milk intake and body composition (RLA6071)

2012 – 2015
Early diagnosis of sarcopenia (RLA6073)

2014 (ongoing)
Early diagnosis of sarcopenia (RLA6073)
Day Care Centres for pre-school children

- IAEA nuclear techniques identify high energy intake and physical inactivity
- Provision of nutritious foods and early stimulation
- Physical activity programme was designed and included into the curriculum
- Obesity rate in preschool children was reduced from 10.7% in 2001 to 8.4% in 2009
Thank you