

# FNH 355: INTERNATIONAL NUTRITION

## Putting it in Context: Malnutrition in Nepal

September 16, 2014



Map Source: Wikimedia Commons



Surkhet, Nepal, 15 August 2014: Though there have been laws and multiple campaigns against child marriage in Nepal, child marriages are still common, especially among Dalits (a historically marginalized population often living in extreme poverty; Dalits represent 13% of Nepal's population). The 2011 census reported that **>750,000 women** in Nepal today were married between 10 and 14 years of age. Living in poverty is the key risk factor for child marriage, and studies have shown that when girls marry at a young age, they are more likely to experience pregnancy-related complications, malnutrition, and infant and maternal mortality. Efforts to reduce child marriage need to include social, economic, and health approaches. (Source: "Analysis: Why child marriage persists in Nepal" IRIN news, <http://www.irinnews.org/report/100492/analysis-why-child-marriage-persists-in-nepal>) In the photo at right: Usha, 15 years old, participated in a leadership program for girls in Nepal and subsequently convinced her parents to delay the marriage they were planning for her. "I thought: 'I am the class leader. If I can't prevent my own marriage, who will speak up for my classmates?'" (Photo: UNFPA-Asia)

# Objectives for today

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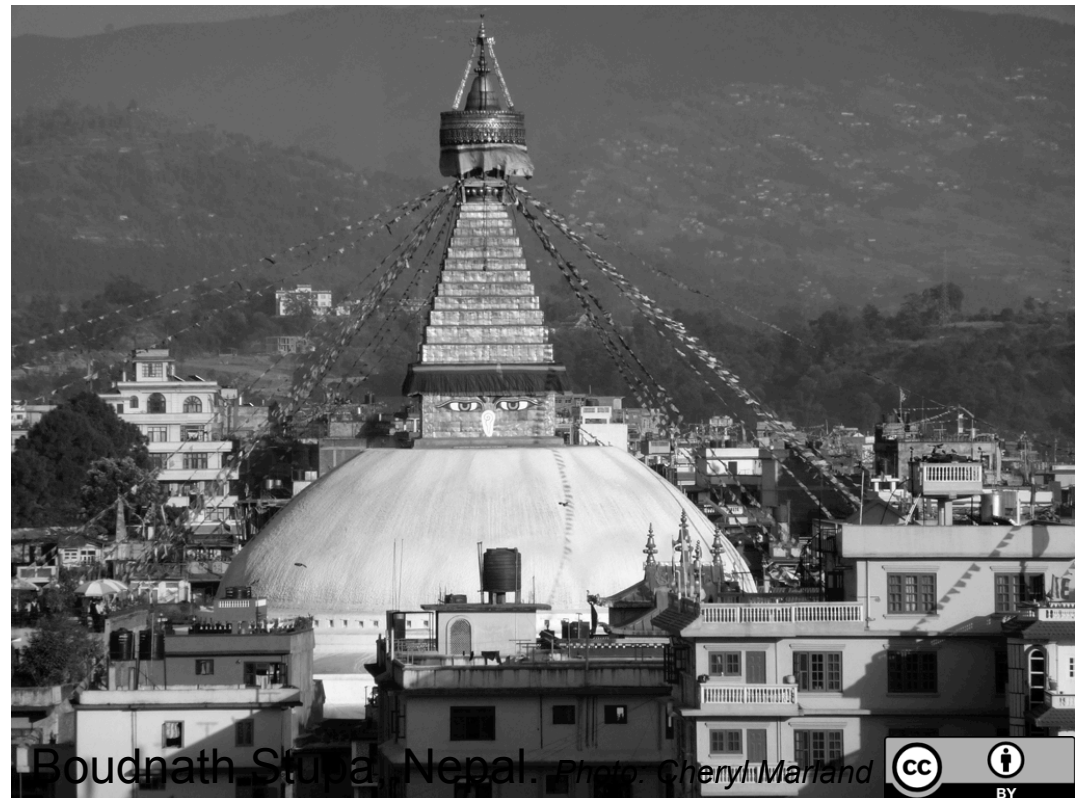
1. Based on the video documentary *A Fistful of Rice*,  
(A) identify and comment on various complex causes of malnutrition, and  
(B) identify consequences of undernutrition for children
2. Define and describe stunting, wasting, and underweight.
3. Based on information provided, deduce the severity of malnutrition among children <5 yrs in a country.
4. Describe the severity of malnutrition among Nepali children <5 yrs, and factors that increase and decrease risk for malnutrition in this group

# Nepal:

Population ~29 million, Life expectancy at birth: 65 y (male) 69 y (females),  
under-5 mortality rate: 48/1000 live births, gross national income per capita: \$1120  
Human Development Index (HDI) ranking: 145/187 countries

## Compared to Canada:

Population ~33.5 million, Life expectancy at birth: 79 y (male) 83 y (female),  
Under-5 mortality: 6/1000 live births, gross national income per capita: \$38,710  
Human Development Index (HDI) ranking: 8/187 countries



Boudnath Stupa, Nepal. Photo: Cheryl Marland



# “Fistful of Rice”

## *Malnutrition in Nepal*

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- What symptoms or consequences of malnutrition did you observe or hear discussed?

Stunting

Underweight, low fat on  
body

Measles, pneumonia, Protein Energy  
Malnutrition

Infectious Diarrhea, lower immune function

Women marry young and are pregnant  
young -> they continue to be  
malnourished and work up until their due  
date -> babies born underweight and  
susceptible to disease -> mom has no  
resources or education -> CYCLE

Cognitive stunting - brain development  
issues

Undernourishment = lower appetite  
and fatigue in children

# “Fistful of Rice”

## *Malnutrition in Nepal*

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- What are the causes of malnutrition in this area?

Water shortage,  
overcrowding

Poverty

Teenage Pregnancy + malnutrition = lower  
birth rate and high susceptibility to PEM

Socioeconomic - being able to afford food,  
find jobs, hygiene problems

Marrying young

Oppression of women, low education,  
inequality

No time to feed the children, too much work

Uneducated men, leaving the household to the  
women, not sending home enough/any money

Having many children in order to have  
a son, baby girls are low  
priority/condemned

Women may not have control over resources and  
finances - when they do, and when they're educated  
, the children are better nourished - when men are  
in charge of the money, household and children  
needs are an afterthought and they often spend it on  
disposable items like drinking and smoking

Not making the children  
eat

Political unrest, lack of sanitation - clean  
water - toilets

Rural areas more at risk

# “Fistful of Rice”

## *Malnutrition in Nepal*

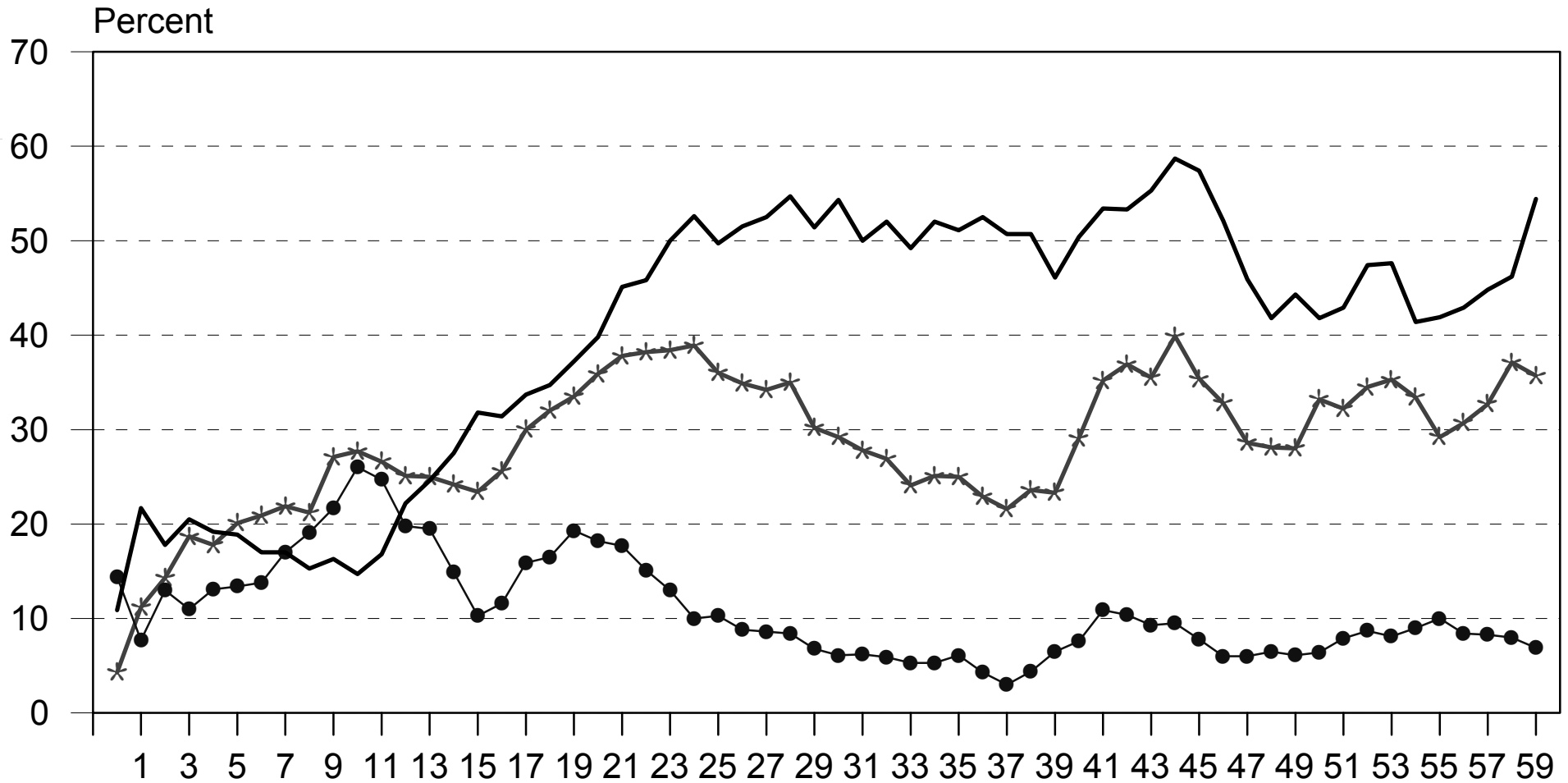
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- What are main foods consumed? How does this relate to macronutrient needs?

Rodi = flour based flatbread, Dal = legume based mush, Rice (not a good source of protein), not many fresh vegetables or fruit

Food access is an issue, can sometimes buy biscuits (nutrient dense) but maybe cannot afford them for all children

# Figure 11.1 Nutritional Status of Children by Age



Chronic undernutrition more prevalent than acute

Age (months)

Most notable changes from 0-2 yrs old then plateaus

— Stunted   ● Wasted   \* Underweight

Note: *Stunting* reflects chronic malnutrition; *wasting* reflects acute malnutrition; *underweight* reflects chronic or acute malnutrition or a combination of both. Plotted values are smoothed by a five-month moving average.

41% Stunted  
11% Wasted  
29% Underweight

NDHS 2011

# Important terms

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- Stunting : low height for age Cognitive issue-  
brain is not  
growing
  - Failure to reach linear growth potential
  - Reflects chronic malnutrition (sustained and cumulative episodes of undernutrition)
- Wasting : low weight for height
  - Reflects acute malnutrition
  - Generally result of weight loss due to recent period of starvation or severe disease
- Underweight : low weight for age in children
  - Influenced by both height-for-age and weight-for-height, so interpretation can be difficult
  - Reflects chronic or acute malnutrition (or combination)

# “Failing to grow” vs. “having failed to grow”



Boy in Changu Narayan, Nepal.

*Photo: Jean-Marie Hullot*

3 months - 3 yrs - low height for age -  
'stunting'



Dalit girls in Kanakpur Village, Nepal.

*Photo: Heather Webb, 2012 Advocacy Project Peace Fellow, WRRP, Nepal.*

'Being stunted', did not experience necessary growth at a young age, new growth starting from a lower starting point, irreversible-stunted throughout life even proper growth begins to happen

# The prevalence of stunting, wasting, and underweight can be used to assess the severity of malnutrition from a public health perspective

World Health Organization (WHO) classification of severity of malnutrition based on prevalence ranges for children under 5 years of age:

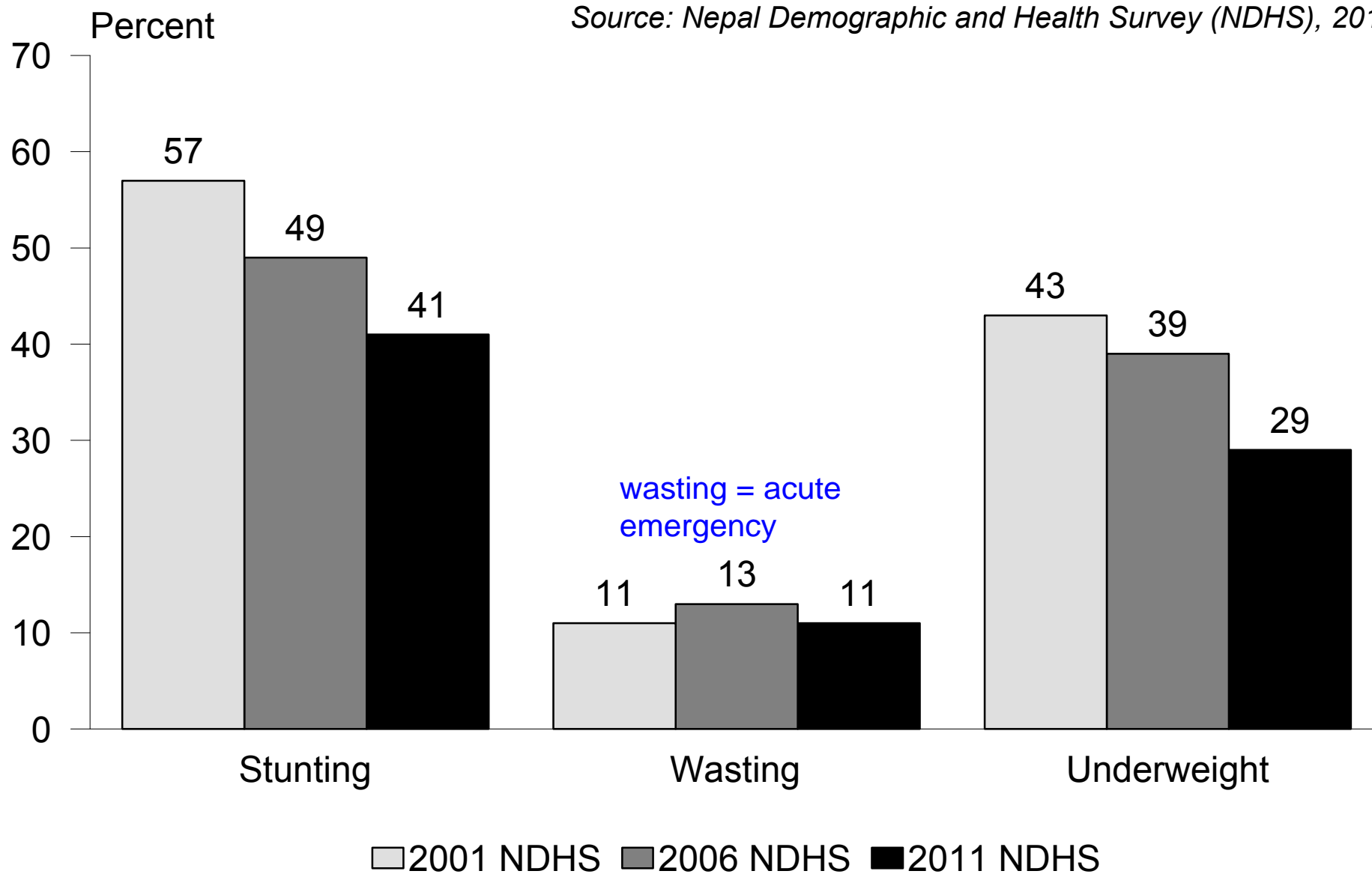
Indicator	Severity of malnutrition by prevalence range (%)			
	Low	Medium	High	Very high
Stunting	<20	20 – 29	30 – 39	≥40
Underweight	<10	10 – 19	20 – 29	≥30
Wasting	<5	5 – 9	10 – 14	≥15

Source: WHO Global Database on Child Growth and Malnutrition: Cut-off Points and Summary Statistics  
<http://www.who.int/nutgrowthdb/about/introduction/en/index5.html>

Stunting at or more than 40% of the population = very high severity

## Figure 11.2 Trends in Nutritional Status of Children under Five Years

Source: Nepal Demographic and Health Survey (NDHS), 2011



Longitudinal data = done over time

# Factors Associated With Underweight and Stunting Among Children in Rural Terai of Eastern Nepal

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Malnutrition continues to affect a large proportion of children in the developing world. The authors undertook this study to identify biologic, socioeconomic, and health care factors associated with underweight and stunting in young children in an the eastern Terai (plains) district of Nepal. Data were collected via questionnaires from mothers of 443 children aged 6 to 36 months in Sunsari district. Multistage cluster sampling was used to select villages and children. Anthropometric measurements were made on both children and their mothers. Logistic regression was used to measure the independent (adjusted) effect of risk and protective factors on the odds of underweight or stunting. More than half (53.3%) of the children were found to be underweight (<2 standard deviations weight for age below reference median) and more than one third (36.6%) had stunting (<2 standard deviations height for age below reference median). Low maternal body mass index, child's age, higher birth order, and lower standard of living score were strong predictors of underweight, whereas mother's education >5 years and participation in vitamin A and nutritional programs were protective. Infant age, low maternal body mass index, and low standard of living score were significant risk factors for stunting, whereas mother's education >5 years was strongly protective. These results suggest that underweight and stunting are the result of a nexus of biological, socioeconomic, and health care factors.

# Factors that put children at risk for malnutrition

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- Low weight (BMI) of mother
- Child's age
- Higher birth order = children #4 or 5, basically younger newer children
- Lower standard of living

Older children only had to share the food with 1 or 2 other kids but children number 6, 7, and 8 have to share the food during their key yrs with 5 or 6 other children = spreading resources even thinner

## Factors that are protective: = helping ward off malnutrition

- Mother's education > or = 5yrs
- Participation in vitamin A or nutrition program

“Act as if what you do makes a difference.  
It does.”

- William James, Psychologist (1842–1910)



Nepali mothers who have participated in nutrition education sessions to promote optimal health for their children and themselves. *Photo: Valerie Caldas, Suaahara project (July 2013)*

Next Class:  
Nutritional Assessment