American University of Armenia | Հայաստանի Ամերիկյան Համալսարան

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МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ
MINISTRY OF HEALTH

PREVALENCE & PREDICTORS OF UNDERNUTRITION & ANEMIA AMONG UNDER-5 CHILDREN IN TALIN REGION

AUA School of Public Health

Center for Health Services Research & Development

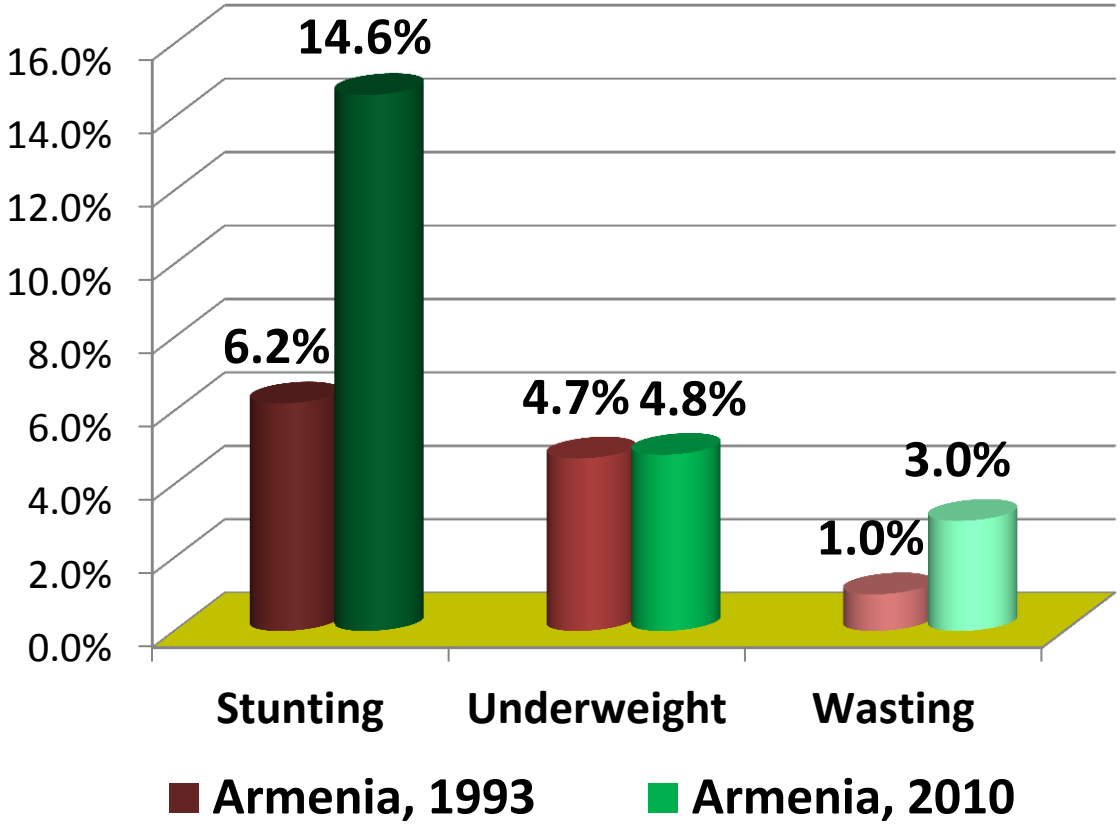
Anahit Demirchyan, MD, MPH

World Vision

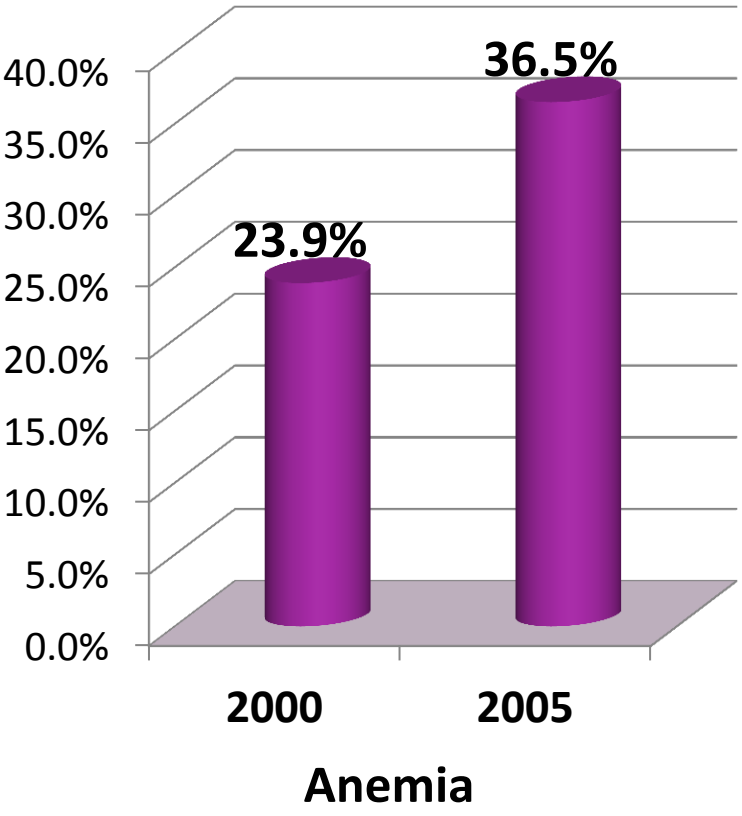
Yerevan, 2014

Health Learning Hub
Middle East Eastern Europe

Dynamics of Undernutrition & Anemia among Children Under-five in Armenia



Sources: WHO, 1993; ADHS, 2010 (US NCHS 2000 standards)



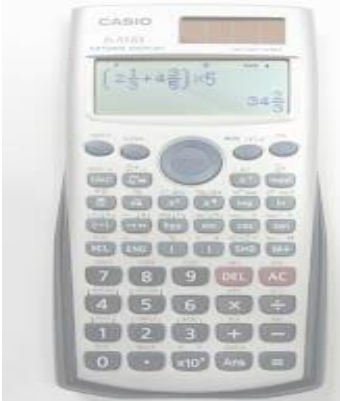
Source: ADHS, 2000 & 2005

Study Objectives

- Measure prevalence of undernutrition and anemia among children aged 0-5 years old in WV ADP communities of Talin region
- Explore predictors of undernutrition and anemia among these children
- Estimate the impact of WV ADP interventions on children's nutritional status in this region

Prevalence Study: Undernutrition & Anemia among Under-5 Children in Talin

- **Design:** Cross-sectional probability proportional to size cluster sampling
- **Eligibility:** 0-5 years old children residing in Talin ADP communities
- **Selection within a cluster:** From enumerated list of children using random number generator
- **Procedure:** Weight, height, blood Hb measurements & ambulatory chart review
- **Field team:** Pediatrician and nurse
- **Sample size:** 800 children



Measurements

- According to standard study protocols
- Blood Hb: HemoCue Hb 201+ Analyzer
- Weight: Electronic scales (Italy)
- Height: Height rods for child (Italy)

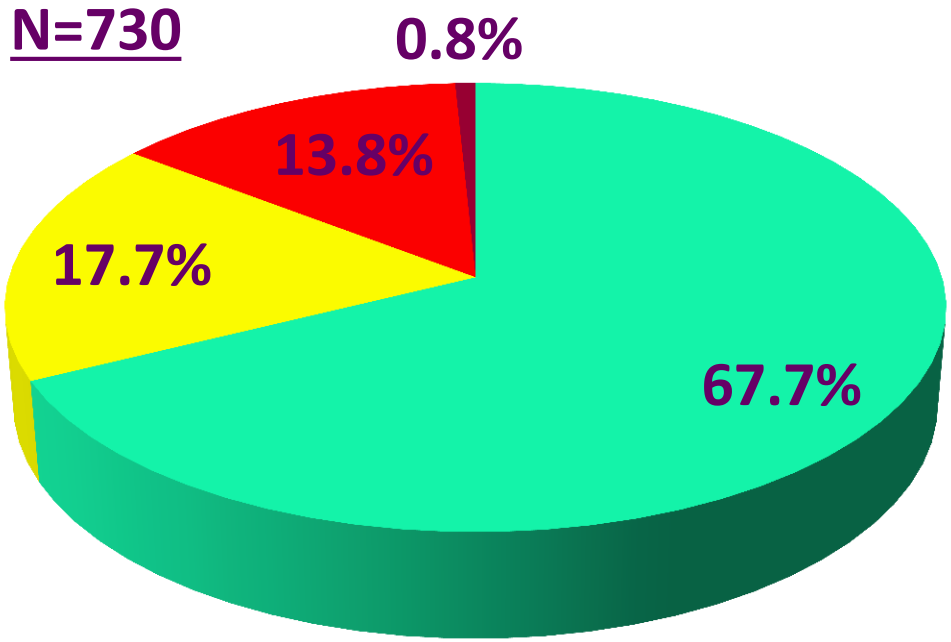
Study of Determinants of Undernutrition & Anemia

- **Design:** Case-control study
- **Undernutrition Cases:** All children with moderate/severe stunting, wasting, or underweight (n=100)
- **Anemia Cases:** All children with altitude-adjusted blood Hb levels less than 105g/l (n=101)
- **Controls:** Randomly selected children without undernutrition and anemia (n=100)
- **Style:** Survey among mothers/main caregivers of selected children

Survey Instrument

- Main domains:
  - socio-demographic characteristics
  - pregnancy with the child
  - child's characteristics at birth
  - breastfeeding and nutrition
  - mother's exposure to WV ADP activities
  - child's health status
  - hygiene and environment
  - mother's knowledge on childcare
  - family living standards

Prevalence Study Results: Anemia

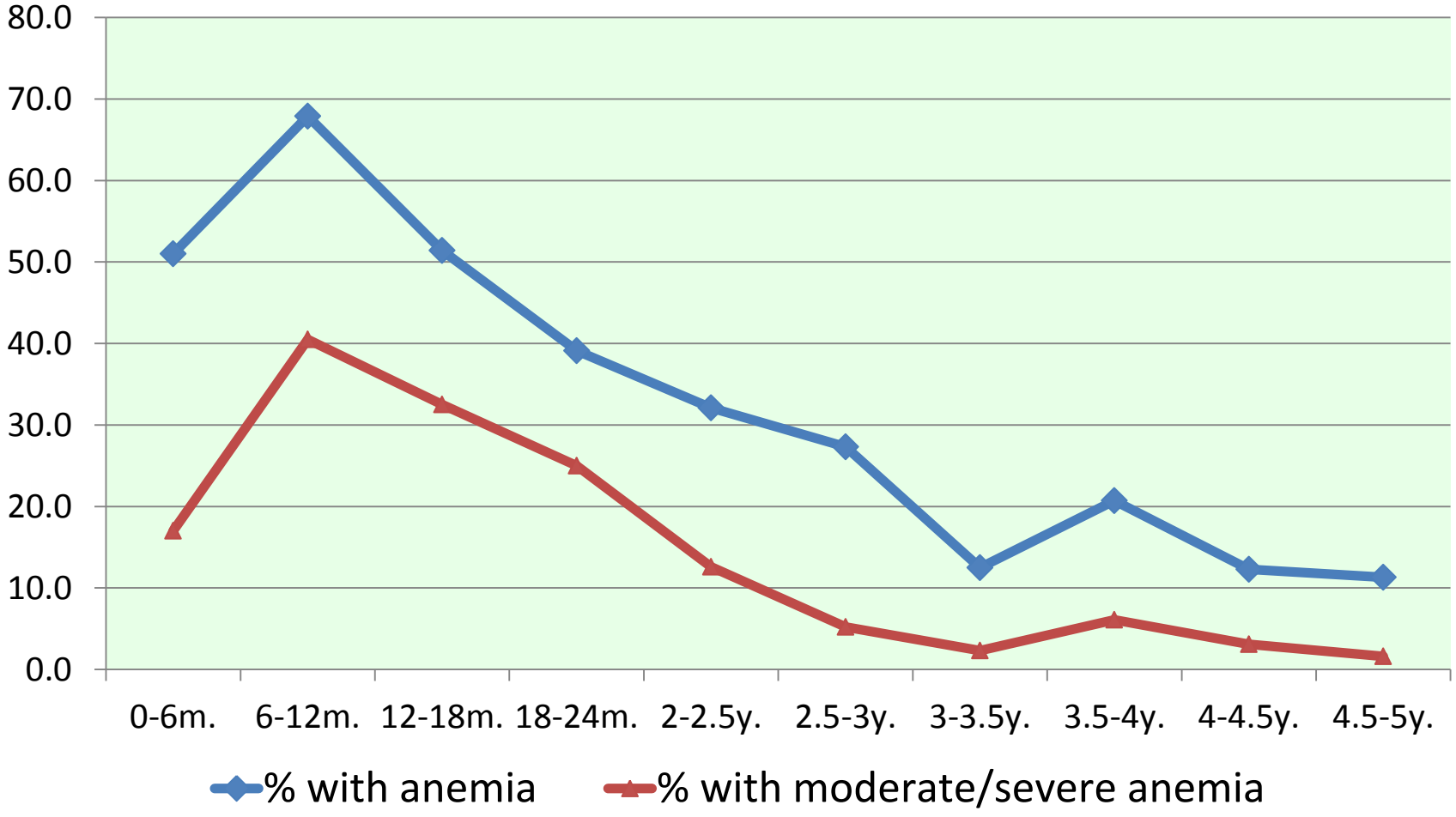


ADHS 2005 data for Aragatsotn marz (n=43)

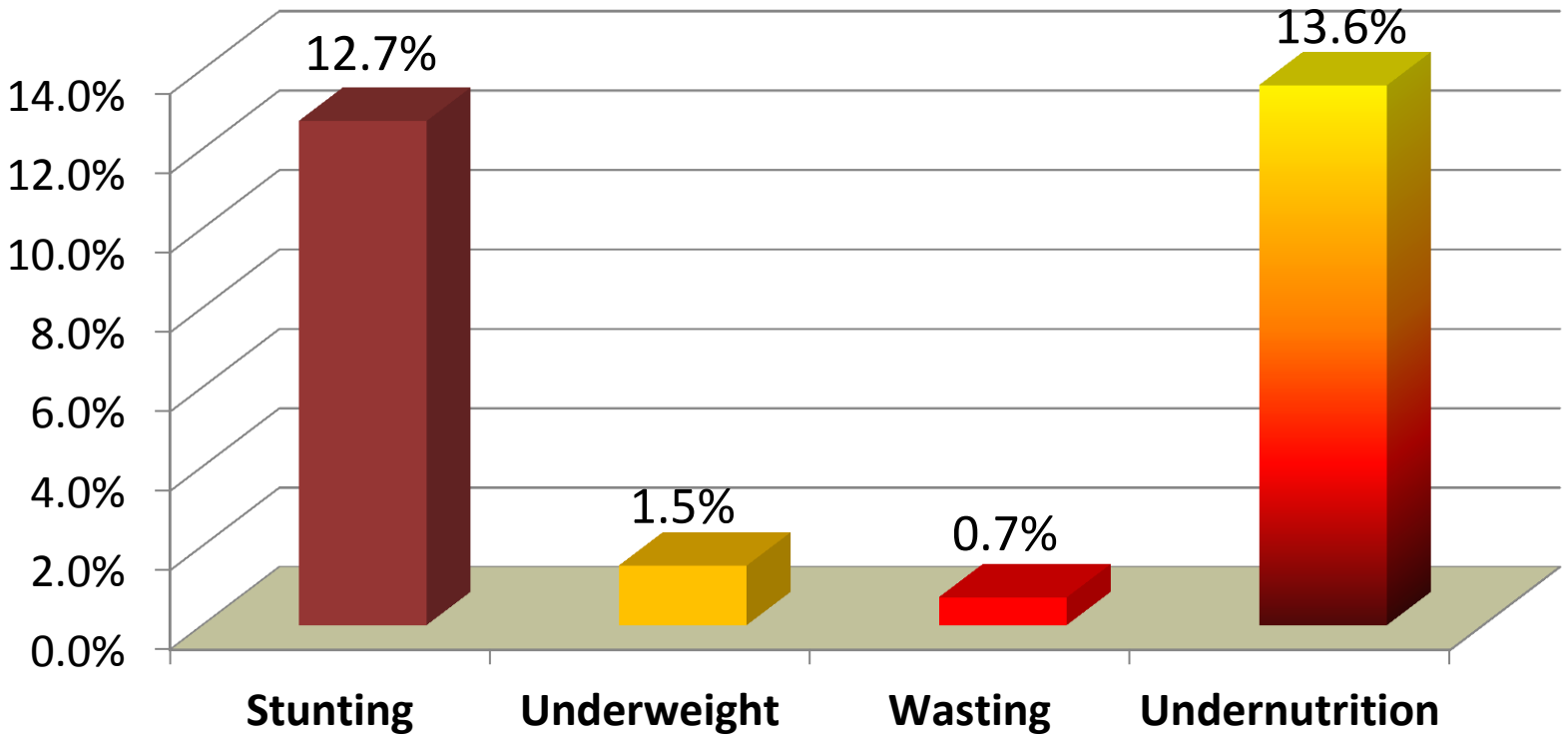
- 16.3% mild anemia
- 3.1% moderate anemia
-7.1% severe anemia

} **26.5% vs. 32.3%**

Anemia Rates among Children by Age Group, Talin



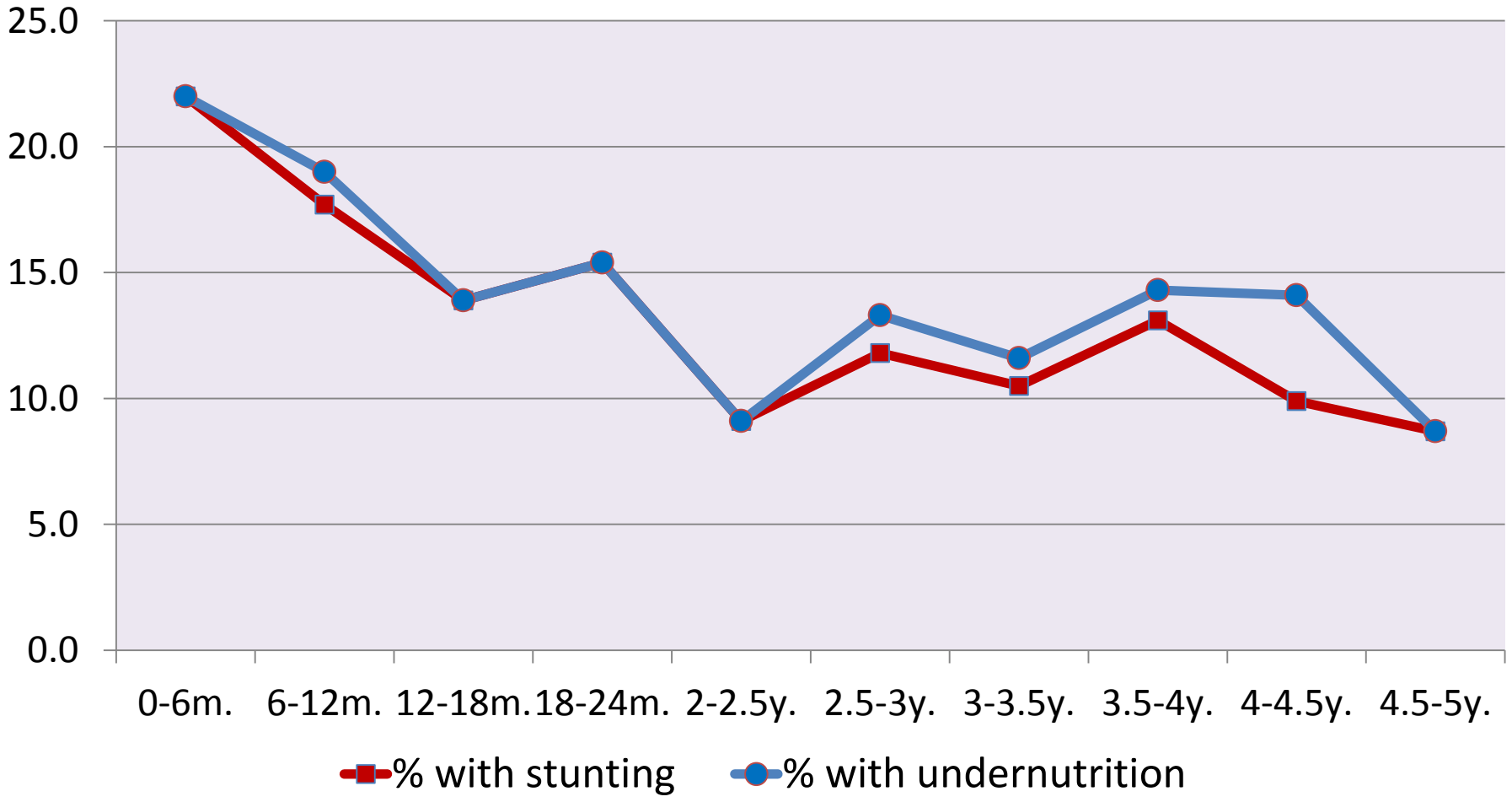
Prevalence Study Results: Underweight



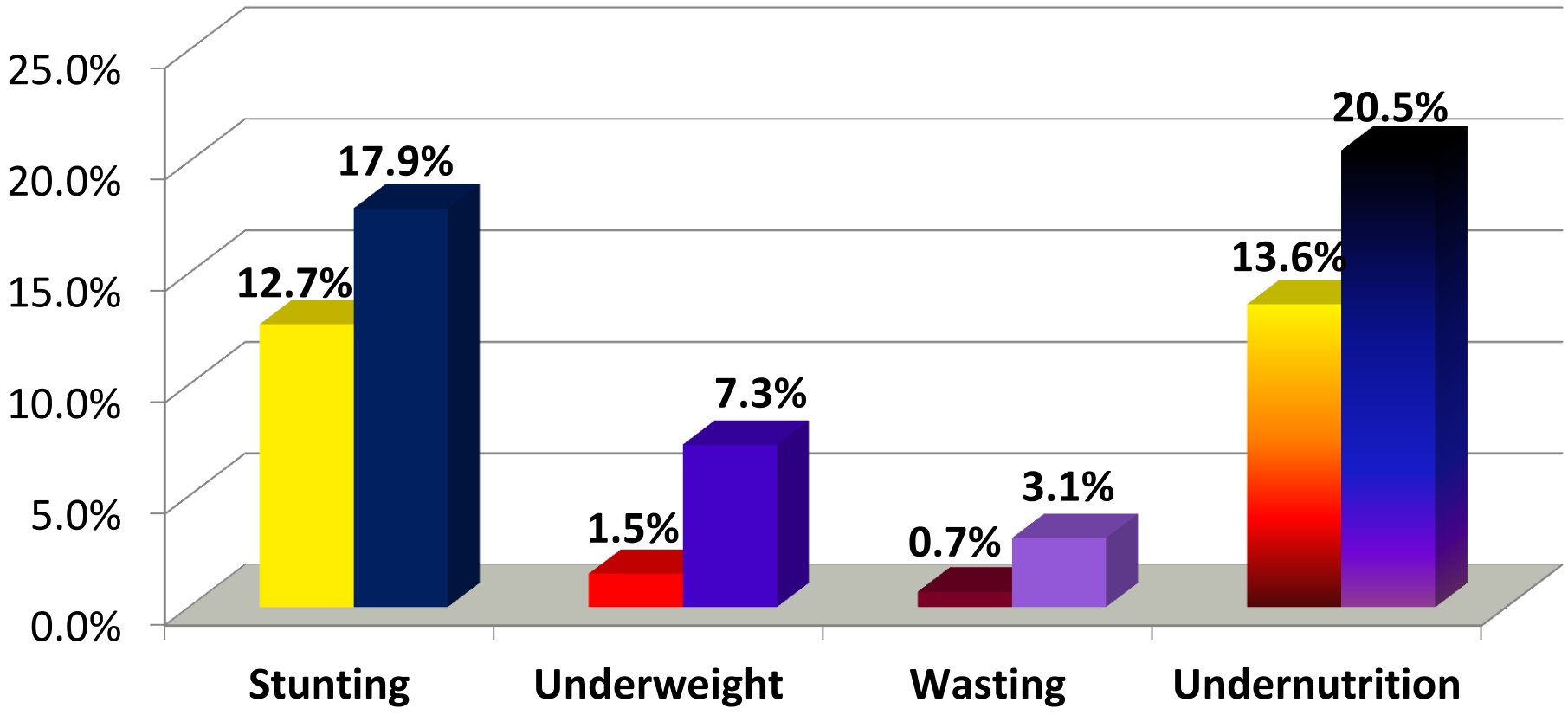
ADHS 2010 data for Aragatsotn marz (n=56)*

- Stunting 32.3%
- Underweight 6.2%
- Wasting 6.0%

Stunting & Undernutrition Rates among Children by Age Group, Talin



Prevalence of Undernutrition in Talin ADP Communities vs. Yerevan



Yellow to brown columns (I): Under-five children in Talin, 2013

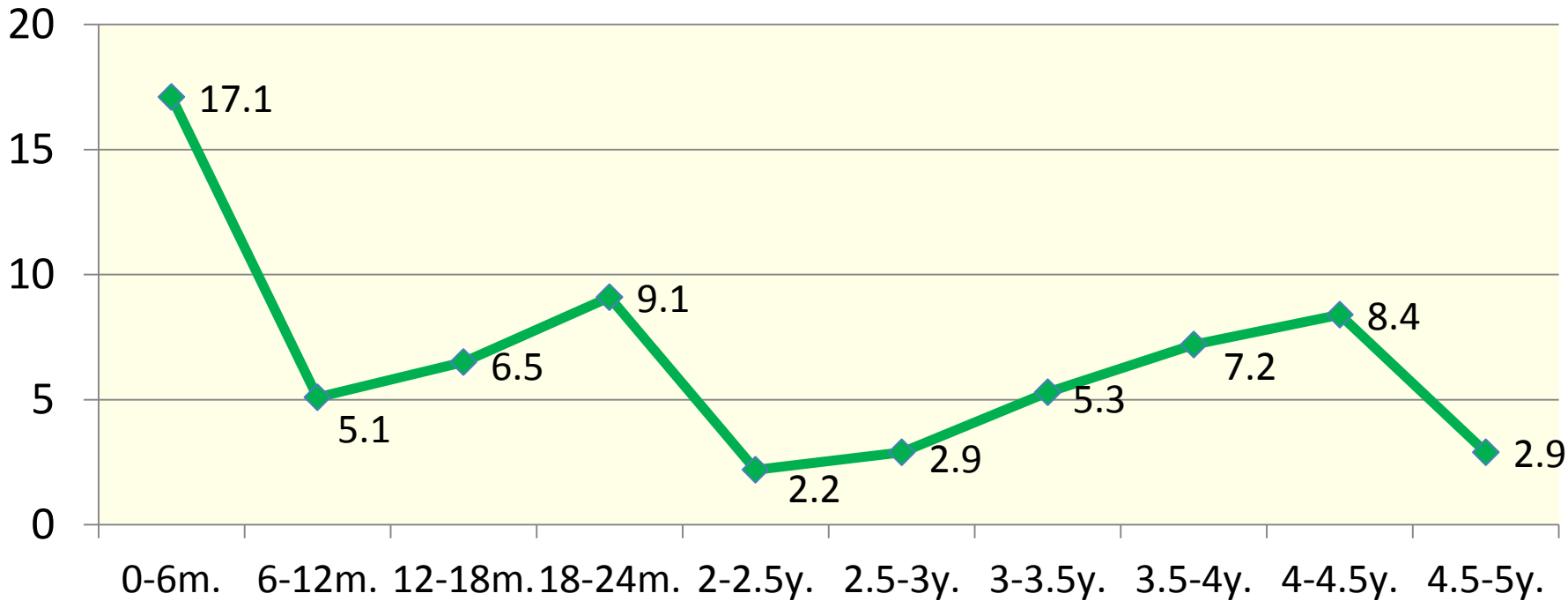
Black to violet columns (II) : 5-17 months old children in Yerevan, 2011

All differences are statistically significant ($p<0.01$)

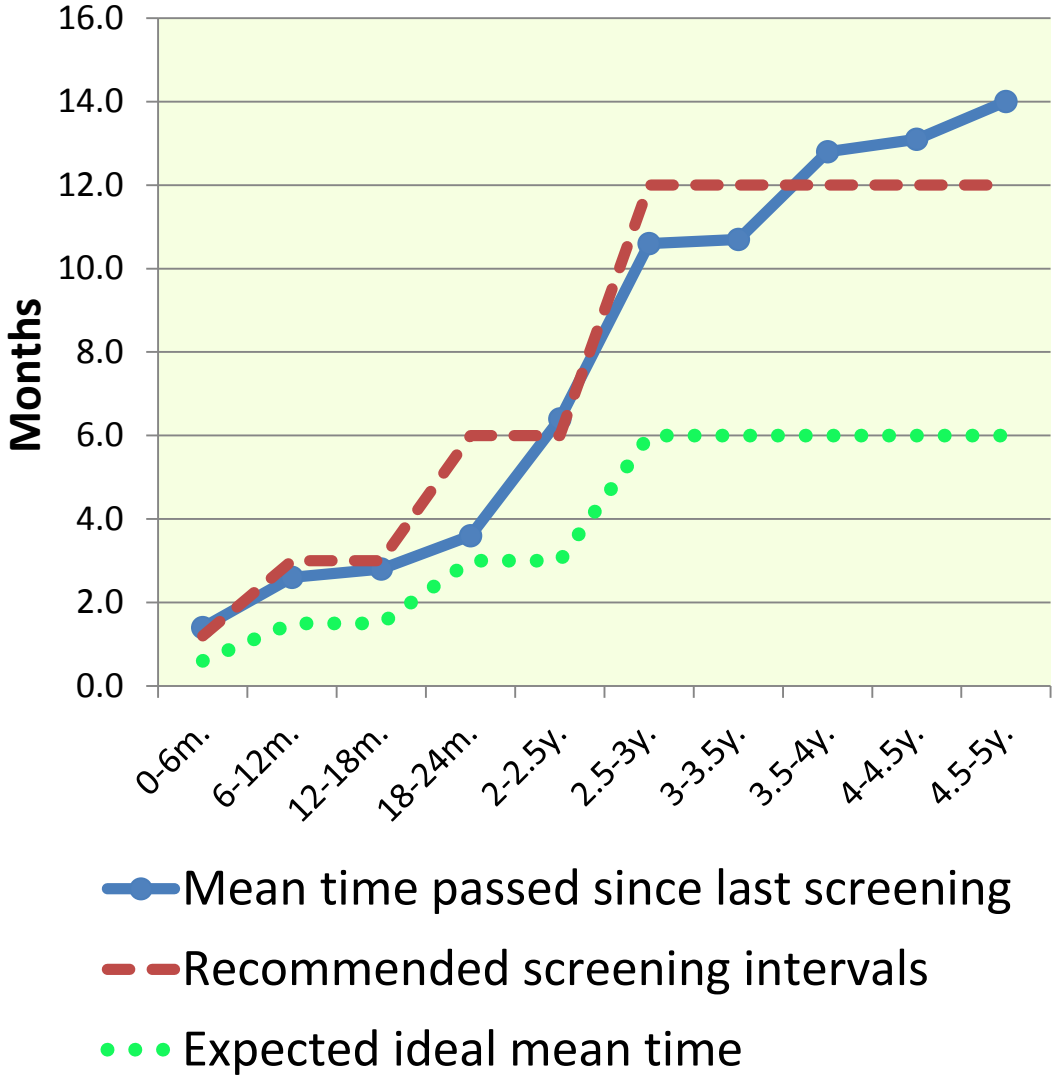
Prevalence of Overweight, Talin

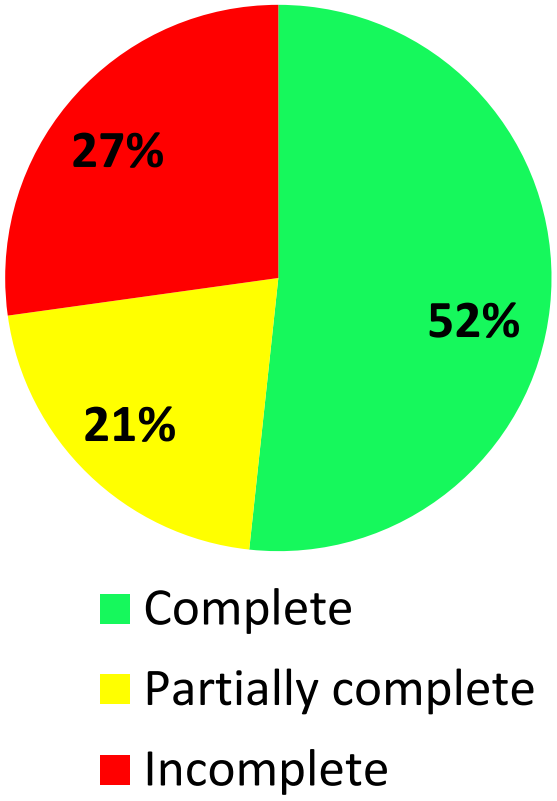
- Moderate/severe overweight: **6.0%**
- ADHS 2010 data for Aragatsotn marz: **8.9%**

Rate of Overweight by Age Group (%)



Growth Screening & Growth Chart Completion, Talin





Yerevan study (2011)

Growth chart completion rate among 5-17 months old:

60.7% ($p<0.01$)

Determinants of Undernutrition, Talin

Characteristics	Cases	Controls	OR*	p-value
Mother's height (cm)	159.0	164.1	0.87	0.000
Child's birth length (cm)	49.3	51.6	0.74	0.000
Being forth/later child,%	16.0	3.0	29.6	0.004
# of household members	6.8	6.2	1.37	0.008
# of child's hand washings	4.4	5.4	0.77	0.008
Never/rarely using soap,%	22.2	13.0	3.27	0.025
Five ADP interventions,%	46.0	74.0	0.28	0.002

**ORs and p-values from the fully adjusted logistic regression model*

Nutrition-related Risk Factors of Undernutrition, Talin

Characteristics	Cases	Controls	OR	p-value
Food diversity score	8.1	7.1	0.86”	0.068”
Among 0-24 months old (n=66)				
Breast milk, %	32.5	46.2	0.21*	0.025*
Cow milk, %	42.5	19.2	3.46*	0.042*
Age of cow milk start~	7.9	11.6	0.90*	0.089*
Breastfeeding duration~	5.7	9.9	0.85”	0.026”

**Odd Ratios and p-values adjusted for age*
“ Odd Ratios and p-values adjusted for other significant variables
~ In months

Predictors of Undernutrition among 5-17 Months Old Children in Yerevan (n=178)

Characteristics	OR	p-value
Child's birth length (cm)	0.50	0.027
Family's SES score	0.55	0.030
Child's food diversity score	0.37	0.039
Predominant BF duration (months)	0.60	0.046
Father's height (cm)	0.89	0.099

Source: Hovhannisyan L, Demirchyan A, Petrosyan V. Estimated Prevalence and Predictors of Undernutrition among Children Aged 5-17 Months in Yerevan, Armenia. *Public Health Nutrition* 2014; 17(5): 1046-1053.

Determinants of Anemia, Talin

Characteristics	Cases	Controls	OR*	p-value
Child's age (months)	16.9	36.3	0.90	0.000
Male gender	64.0	51.7	3.22	0.011
Child's birth length (cm)	50.1	51.6	0.82	0.022
Mother's preg. anemia,%	27.3	17.4	4.60	0.008
Five ADP interventions,%	42.6	75.9	0.19	0.001
# of feedings per day	3.9	3.4	0.60	0.009
Food diversity score	6.7	8.3	0.85	0.094

**ORs and p-values from the fully adjusted logistic regression model*

Other Nutrition-related Risk Factors of Anemia, Talin

Characteristics	Cases	Controls	OR*	p-value
Meat in the diet, %	43.6	64.4	0.48”	0.088
Among 0-24 months old				
Cow milk, %	51.4	22.2	3.63*	0.042
Meat, %	43.6	64.4	0.44*	0.033
Breast milk, %^	34.7	46.2	0.29*	0.028
Duration of exclusive BF^	2.6	3.9	0.78”	0.031

**Odd Ratios and p-values adjusted for age & gender*
“ Odd Ratios and p-values adjusted for all other significant variables
^Extended dataset

Talin Study Strengths & Limitations

- Usage of objective outcome measures
- Large sample size of the prevalence study
- Inclusion of a census of children with the outcomes of interest in the case-control study

- Limited generalizability of the findings
- Lack of appropriate baseline data and comparison group
- Small sample size of the case-control study and those aged 0-24 months old
- Possible reporting/recall bias during the interviews with mothers

Recommendations - 1

- Provide optimal care for pregnant women
- Screen pregnant women and children for timely detection of anemia
- Promote correct child feeding practices: 6 months of exclusive BF and adequate complementary feeding thereafter with continued breastfeeding
- Discourage the use of cow milk in infancy
- Encourage inclusion of meet into child's diet

Recommendations - 2

- Conduct child growth screening with universal completion of growth charts
- Enhance the hygiene in target communities with a special emphasis on hand washing and soap use
- Prioritize needs of children from larger families and those born from higher sequential number of delivery

- Expand complete coverage of ADP interventions to include small and hard-to-reach communities

Thank You!