Anemia in women of reproductive age, household food insecurity, food consumption and household food production practices in southwestern Bangladesh

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Background

- Anemia is a significant problem among women and young children in Bangladesh. According to the 2011 DHS survey, 42% of women age 15-49 are anemic.[1]
- Anemia causes productivity losses of 1.9% of GDP[2] and is an underlying cause of maternal mortality, spontaneous abortions, premature births, and low birth weight.

Objectives and Methods

- The Bangladesh Aquaculture and Horticulture Nutrition Research study is a longitudinal observation study taking place in Dhaka, Barisal, and Khulna divisions in Bangladesh. The study includes 3060 households in the 102 unions of the Feed the Future (FtF) baseline survey, and is representative of the FtF Zone of Influence.

- The objective of this analysis was to assess the prevalence of anemia among non-pregnant women of reproductive age (15-49 years), and examine relationships with household food production practices.

- Data collected were used to compute food consumption by non-pregnant women of reproductive age (WRA), household food production (including food crops, fish, and livestock), household food purchasing, household food security, education level of WRA, and household wealth index.

- Anthropometry and hemoglobin levels were measured in WRA. Anemia was defined as hemoglobin (Hb) level less than 12.0 g/dL, and was categorized into mild anemia (Hb=11.0-11.9 g/dL), moderate anemia (Hb=8.0-10.9 g/dL), and severe anemia (Hb<8.0 g/dL).

- Descriptive statistics, bivariate correlation analyses, and multivariate logistic regression analyses were conducted. All analyses were conducted with Stata® SE version 14.
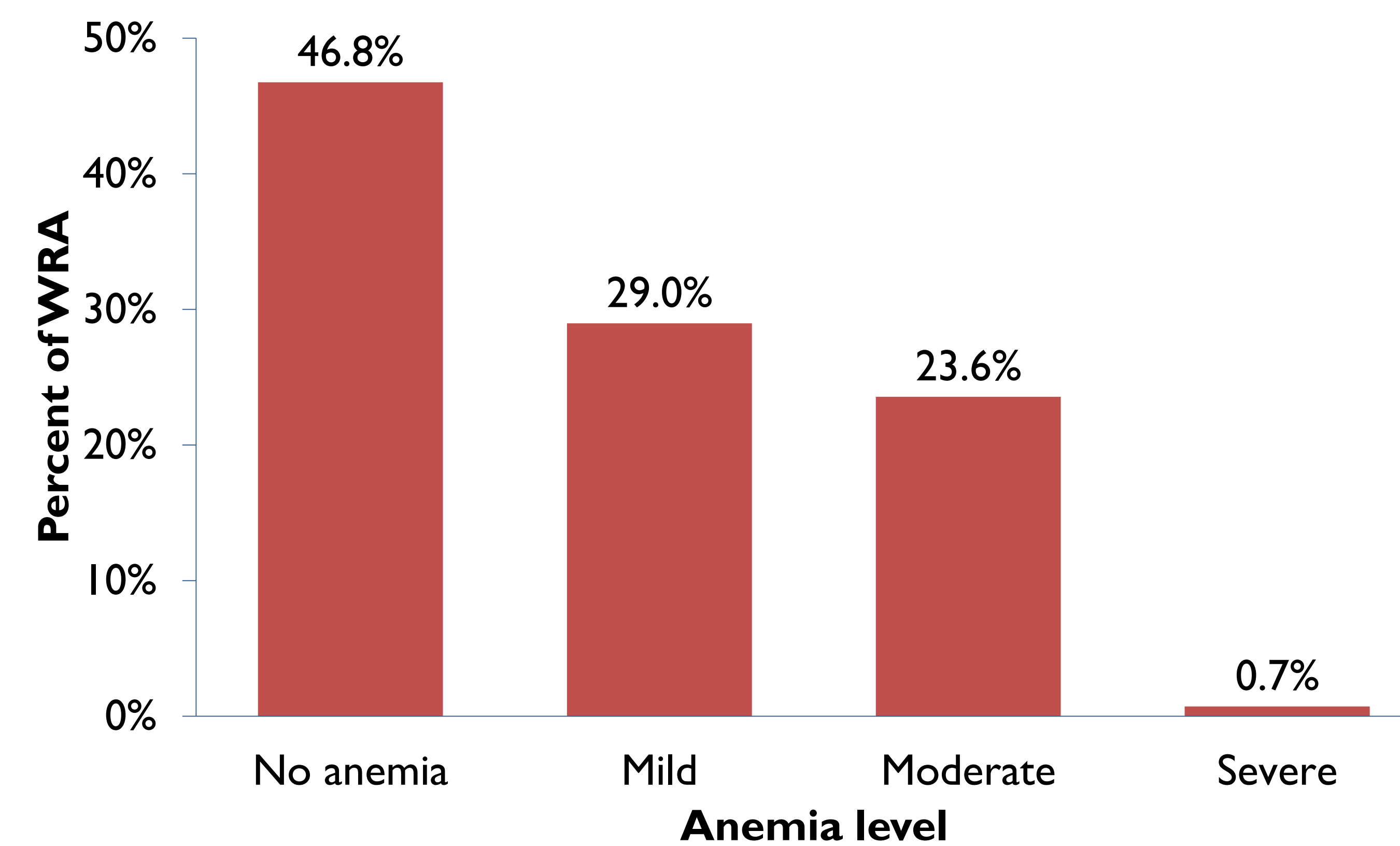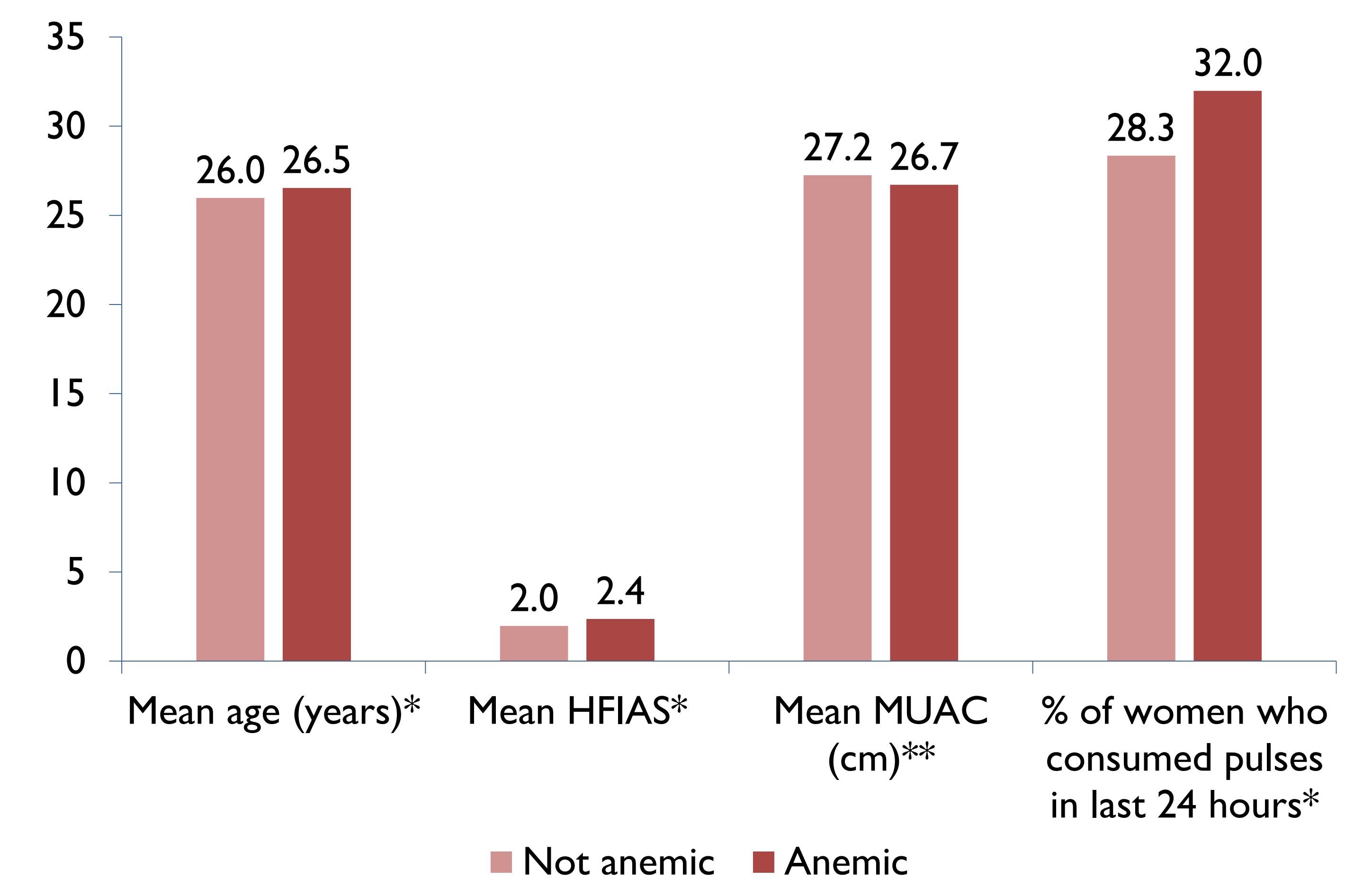
Results

Figure 1: Prevalence of anemia in WRA

Figure 1: Prevalence of anemia in WRA — No anemia 46.8%, Mild 29.0%, Moderate 23.6%, Severe 0.7%

Figure 2: Bivariate association of variables with anemia status of WRA

Figure 2: Bivariate association of variables with anemia status of WRA. Not anemic / Anemic: Mean age (years)* 26.0 / 26.5; Mean HFIAS* 2.0 / 2.4; Mean MUAC (cm)** 27.2 / 26.7; % of women who consumed pulses in last 24 hours* 28.3 / 32.0

Note: All significance levels are indicated as ** p<0.01 and * p<0.05

Table 1: Anemia status of WRA: Association with household and individual-level variables

	Odds ratio (SE)
Household geographic location (division)	
Barisal (reference)	-
Dhaka	0.828 (0.11)
Khulna	1.071 (0.14)
Age of woman (years)	**1.024** (0.01)
Education level of woman	
None (reference)	-
Primary incomplete	1.025 (0.18)
Primary complete	1.080 (0.18)
Secondary incomplete	0.998 (0.15)
Secondary complete or higher	0.979 (0.16)
Woman's MUAC (cm)	**0.995** (0.00)
Household wealth index score	0.994 (0.02)
Household HFIAS score (0-27)	1.023 (0.01)
Household agriculture production in past 12 months	
Cereals	0.920 (0.10)
Pulses/oil seeds	0.965 (0.12)
Vegetables	1.052 (0.10)
Fruit	0.984 (0.12)
Animal source foods	1.034 (0.10)
Household purchased food group in past 7 days	
Cereals	0.922 (0.10)
Pulses/oil seeds	0.963 (0.08)
Vegetables	1.047 (0.16)
Fruit	1.030 (0.08)
Animal source foods	1.074 (0.13)

Conclusions

- Bivariate analysis found significant associations between anemia and age, mid-upper arm circumference (MUAC), household food insecurity (HFIAS), household production of cereals, and individual consumption of pulses by WRA.

- There were no significant differences in presence or absence of anemia by education, wealth status, or main source of income for the household.

- However, multivariate analysis found that none of these factors were significant other than women's age and MUAC. Further, while statistically significant, the associations are nevertheless small.

- New emerging literature indicates that anemia may be modulated by factors not linked to diet, in certain parts of Bangladesh and under certain conditions.[3] Further analysis will examine the potential role of infections and of ground water iron levels.

- Iron deficiency anemia, one of the most common causes of anemia, remains poorly understood. This requires not just more research on causes, but a better understanding of the cost-effectiveness of multi-sectoral integrated solutions.

References

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