Overweight and obesity in women of reproductive age, household food consumption and production practices in southwestern Bangladesh

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Background

- The Bangladesh Demographic and Health Survey (DHS) 2014 reports that 39% of Women of Reproductive Age (WRA) are over BMI of 23 kg/m^2 while 24% are classified as overweight and obese (1).
- This an alarming rise from 2011 when 17% were classified as overweight and obese (14% overweight, 3% obese), indicating a rapid epidemiological transition while underweight prevalence still remains high (31% in 2014). (DHS 2014)

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 is to assess the prevalence of overweight and obesity among WRA in Dhaka, Barisal and Khulna divisions in the Feed the future Zone of influence (ZOI) in Bangladesh and examine its relationship with household food consumption and production practices and child nutritional status
- The study included 3060 households in the 102 unions of the FtF baseline survey in Khulna, Barisal and Dhaka divisions in southwest Bangladesh. Three rounds of data collection (R1, R2, and R3) occurred at six months intervals.
- For this analysis, data used include the 24 hour qualitative dietary survey data, household food production data, anthropometric data and socio-demographic variables to compute the wealth index.
- Household dietary diversity (HDDS) was computed as a total count of food groups consumed while WDDS was per the definition of the FAO (computation of minimum dietary diversity in women- MDDW) (FAO and FHI360 2016). Household food production variables were coded binary while household head and WRA education were coded as categorical variables. Wealth index was computed using principal components analysis methodology as described by the DHS (DHS 2014).
- Anthropometric outcomes were computed for both WRA and all children under five years of age. (using WHO reference cutoffs (WHO 2006). Overweight or obese WRA were computed into one category as the outcome of interest with the cut off of >=25 kg/m2 being used to classify WRA as overweight and/or obese.
- Data were analyzed in SAS and SPSS including descriptive statistics with bi-variate statistics and multi-variate logistic regression analyses.

Results

Figure 1: Prevalence of overweight/obese WRA by wealth quintile across three survey rounds

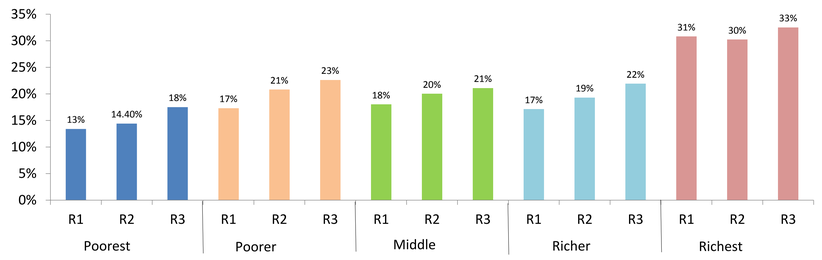

Table 1: Nutritional status of WRA in BAHNR survey

	Round 1 (Dry)		Round 2 (Monsoon)		Round 3 (Dry)	
Sample size	n=3057		n=2988		n=2967	
Mean BMI ± SE of WRA	21.95	0.07	22.09	0.07	22.41	0.07
BMI category	n	%	n	%	n	%
Underweight	533	17.44	505	16.9	402	13.55
Normal	1923	62.9	1850	61.91	1881	63.4
Overweight	512	16.75	541	18.11	579	19.51
Obese	89	2.91	92	3.08	105	3.54
Sample size	n=3057		n=2989		n=2967	
Mean MUAC ± SE of WRA (cm)	26.88	0.62	26.64	0.06	27.01	0.06

Table 2: Association between WRA being overweight/obese, household production and different measures of dietary diversity

	Model 1(Round 2 and 3 only)			Model 2 (Rounds 1, 2 and 3)			Model 3 (Rounds 1, 2 and 3)		
	Odds Ratio (SE)	95% CI		Odds Ratio	95% CI		Odds Ratio	95% CI	
Age of WRA									
20-29	2.19 (0.36)***	1.59	3.03	2.24 (0.34)***	1.81	3.15	2.41 (0.34) ***	1.83	3.19
30-39	3.32 (0.57)***	2.37	4.66	3.66 (0.54)***	2.74	4.88	3.71(0.55)***	2.78	4.96
40-49	2.48 (0.65)***	1.49	4.13	3.98 (2.99)***	1.95	4.57	3.07 (0.66)***	2.01	4.71
Women's Dietary Diversity	1.037 (0.031)	0.978	1.098						
Household Dietary Diversity				1.07 (0.018)	1.03	1.11			
Food Groups (Women's Diet)									
Legumes							1.109 (0.06)	0.99	1.24
Eggs							1.02 (0.06)	0.91	1.16
Fish							1.069 (0.06)	0.96	1.19
Meat and Poultry							1.191 (0.08)**	1.03	1.37
Dairy							0.839 (0.06)**	0.73	0.96
Fruit							1.11 (0.06)	0.99	1.25
Vegetables							0.984 (0.15)	0.72	1.34
Oils anf Fat							0.68 (0.13)*	0.48	0.99
Sugar							1.12 (0.07)	0.99	1.26
Horticulture Production	1.012 (0.09)	0.836	1.225	0.94 (0.075)	0.80	1.10	0.948 (0.07)	0.81	1.11
Fish production	0.856 (0.06)*	0.749	0.979	0.814 (0.046)***	0.73	0.91	0.818 (0.046)***	0.73	0.92
Constant	0.071 (0.02)***	0.042	0.12	0.044 (0.01)***	0.03	0.07	0.086 (0.026)***	0.05	0.16

adjusted for clustering, survey round, geographic location, wealth index. * p<0.05, ** p,0.01 and *** p<0.001

Key findings and Conclusions

- The BAHNR Study found similar rates of overweight and obesity as DHS 2014. The prevalence increased by survey round, age and by socio-economic status (Figure 1 and Table 1)
- Logistic regressions show a significantly higher risk of overweight in older women of reproductive age (compared to younger). Neither women's nor household dietary diversity was associated with being overweight or obese (Table 2)
- Assessing by food group, women who consumed dairy were less likely to be overweight/obese while those who consumed meat and poultry were more likely to be overweight/obese.
- Households producing fish were less likely to have overweight/obese women than those that were not (Table 2) in all models
- Further, women who were overweight/obese were less likely to live in households with children that were stunted, wasted or underweight (Table 3).
- Further understanding is needed of the protective (or not) relationship of different food groups.

Table 3: Association between WRA being overweight/obese and child nutritional status

	Odds Ratio (SE)	95% CI	
Model 1 (Stunting)			
Moderately Stunted	0.79 (0.05)***	0.69	0.92
Severely Stunted	0.659 (0.091)***	0.50	0.86
Constant	0.08 (0.018)***	0.06	0.13
Model 2 (Wasting)			
Moderately Wasted	0.658 (0.06)***	0.53	0.80
Severely Wasted	0.591(0.17)	0.33	1.03
Constant	0.08 (0.017)***	0.05	0.12
Model 3 (Underweight)			
Moderately Underweight	0.61 (0.048)***	0.53	0.72
Severely Underweight	0.56 (0.09)***	0.41	0.78
Constant	0.08 (0.019)***	0.05	0.13

adjusted for clustering, survey round, geographic location, wealth index and age . * p<0.05, ** p,0.01 and *** p<0.001

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