



## Minimum Wage and Overweight and Obesity in Adult Women: A Multilevel Analysis of Low and Middle Income Countries

### Background

- Obesity poses one of the greatest public health challenges globally, contributing significantly to chronic diseases and conditions, premature deaths, and rising healthcare costs.
- While obesity has long been a concern in high-income countries, more recently, levels of obesity have been on the rise in low and middle-income countries (LMICs) that have fewer resources to prevent and address the burden.
- Previous research has shown that individual socio-economic status (SES) has a different relationship to obesity in countries at different levels of economic development. In high-income countries, obesity is associated with lower SES, while in low-income countries, obesity is associated with higher SES. Globally, the economic determinants of obesity appear stronger and more consistent in women.
- However, although there is consensus that economic resources constitute a critical determinant of disparities in overweight and obesity, evidence is lacking on the role of economic-related policies, such as the minimum wage.
- A higher minimum wage could affect women's body mass index (BMI) in several ways, including by:
  - lowering physiological stress, which is one of four biological factors linking economic disadvantage to obesity, and
  - increasing material resources needed to obtain more calories (in low-income countries) and better quality food (in higher-income countries).
- This study represents the first effort to examine across a range of LMICs whether minimum wage is indeed related to overweight or obesity prevalence and whether the direction of association differs by country development stage.



### Methods

- This study used data collected via the Demographic and Health Surveys (DHS) to assemble a panel of approximately 229,000 non-pregnant adult women across 34 low- and middle-income countries who were interviewed between 2004 and 2006; while more recent survey data is available, this time period was selected because of its greater global economic stability than after the financial crisis.
- Among other measures of health and well-being, DHS data contain information on the objectively measured BMI of women in the survey; for the purposes of this study, a BMI of 25 or above was considered overweight, while 30 and above was considered obese.
- DHS data were merged with longitudinal data collected by WORLD and MACHEquity on the legally mandated minimum wage applying to private sector workers, in purchasing power parity (PPP) adjusted dollars, which was available for 27 of the 34 countries, resulting in a sample of 190,892 women ages 25-49.
- This study first assessed the cross-sectional association of monthly minimum wage levels with the likelihood of being overweight/obese, using multivariable logistic regression with two-level random intercept models. Second, this study used regression coefficients from multilevel regression on pooled data to estimate the difference in probability of overweight and obesity for each 1% increase in minimum wage.

## Methods (continued)

- Models controlled for interview year and individual-level factors including age, marital status, number of children, tobacco consumption, education, occupational status, and urban location. In addition, models controlled for country-level factors likely to be related to differences in minimum wage levels, including market size, public sector health spending as a percentage of total health expenditure, and market-liberal regulatory structure (based on the Economic Freedom Index).

## Findings

- Across all countries, the average monthly minimum wage (PPP) was \$192. The average minimum wage in low-income countries was \$144, compared to \$295 in middle-income countries.

- Just over a third of the women in the sample were overweight/obese; proportions were higher in middle-income (56%) than in low-income (26%) countries.

- Across countries, minimum wage levels were significantly associated with overweight and obesity, independent of other confounders, and showed a reversed pattern by country development stage:

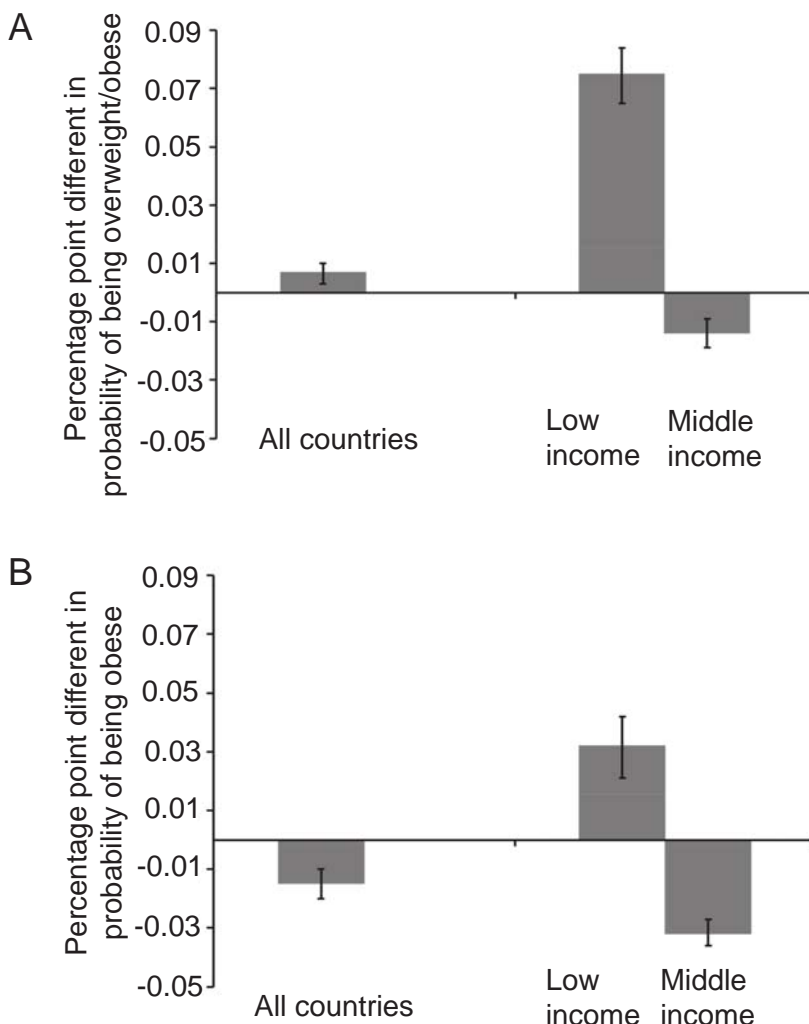
- o In middle-income countries, every one percent increase in the minimum wage was associated with an average decrease in the probability of obesity of 0.03 percentage points, as well as a decrease in probability of overweight of 0.01 percentage points.

- o In low-income countries, every one percent increase in the minimum wage was associated with an average increase in the probability of obesity of 0.03 percentage points, as well as an increase in probability of overweight of 0.1 percentage points.

## Discussion

- These findings suggest that a higher minimum wage could be protective

Fig. 2: Adjusted differences in probability of being overweight/obese (panel A) or being obese (panel B) associated with a 1% increase in monthly minimum wage using pooled data



## Discussion (continued)

against overweight and obesity among adult women living in middle-income countries.

- Because this study is cross-sectional, it can demonstrate association but not causation. However, the findings are consistent with previous research around other economic determinants of obesity in countries at different levels of development.

- Future work needs to use longitudinal analyses to show the potential impact of changing the minimum wage on prevalence of obesity. In addition, with better data on the informal economy, future analyses can provide a more comprehensive understanding of how wage policies affect women's BMI in all forms of employment.

*This research brief presents key findings from the following article: Conklin A, Ponce N, Frank J, Nandi A, and Heymann SJ. Minimum Wage and Overweight and Obesity in Adult Women: A Multilevel Analysis of Low and Middle Income Countries. PloS One. Published online before print March 2016. To access this and other WORLD publications, please visit <http://worldpolicycenter.org/publications>.*

