

# **Age at childbirth and change in BMI across the life-course: Evidence from the INCAP Longitudinal Study**

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## ABSTRACT

**Background:** Parity has been associated with both short- and long-term weight gain in women. However, it is not clear if timing of parity across the reproductive age has different associations with BMI.

**Methods:** To prospectively assess the association between age at childbirth and maternal change in BMI, we analyzed data from the ongoing INCAP Longitudinal Study, which started in 1969 in four villages in Guatemala. Cohort women (n=778) provided information on reproductive history and anthropometric measures were measured in 1988-89 (adolescence, 15 to 25y), 2002-04 (early adulthood, 26 to 36y) and 2015-17 (mid adulthood, 37 to 55y). We evaluated the associations of number of live births in the period preceding each study wave (1969-77 to 1988-89, 1988-89 to 2002-04 and 2002-04 to 2015-17) with BMI change in the same period using multivariable linear regression models.

**Results:** Number of live births between 1988-89 and 2002-04 was positively associated with increased BMI, while there was not an association between number of live births and BMI in the other intervals. Women who had one, two, or three or more children between 1988-89 and 2002-04 had 0.90 (kg/m<sup>2</sup>, 95% CI: -0.55, 2.35), 2.39 (kg/m<sup>2</sup>, 95% CI: 1.09, 3.70) and 2.54 (kg/m<sup>2</sup>, 95% CI: 1.26, 3.82) higher BMI, respectively, than women who did not give birth in the same period.

**Conclusions:** Our findings suggest that women who had three or more children during early adulthood gained more weight compared to women who had no children in the same period. In contrast, women who had children earlier or later in their reproductive lives did not gain additional weight compared to those who did not have children during that period. Childbirth may have different associations with BMI based on the mother's age.

**KEY WORDS:** parity, childbirth, obesity, BMI, timing, reproductive age