

Associations between socio-economic status and body composition in an Irish maternal cohort

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Low socio-economic status (SES) has been identified as a significant predictor of poor dietary behaviours amongst young Irish women⁽¹⁾. These sub-optimal dietary behaviours are thought to contribute to adverse anthropometric status and poorer health outcomes among low SES women when compared with their more affluent peers⁽²⁾. Maternal obesity during gestation is a particular concern, as unfavourable body composition at this time has been shown to promote the development of obesity and chronic disease in the offspring⁽³⁾. This cross-sectional study aimed to investigate the relationship between low SES and sub-optimal anthropometric status in an Irish obstetric cohort.

Anthropometric data were collected using 8-lead, multi-frequency bio-electrical impedance analysis (BIA), while dietary data were simultaneously collected using the validated Willet food frequency questionnaire (WFFQ). All data were gathered at the initial maternal dating scan in the first trimester of pregnancy, at which time body composition remains unchanged⁽⁴⁾. Social class was divided according to occupation, following classifications set out by the central statistics office. *Four hundred and three* plausible dietary reporters were used in the final analyses. Independent samples t-tests and Mann Whitney U tests were utilised, depending on the normality of distribution of the body composition parameters being tested.

Physical Parameter	Low Social Class	High Social Class	Probability
	<i>Mean</i>	<i>Mean</i>	<i>P Value</i>
Body Mass Index (Kg/M ²)*	25.00	24.1	0.08
Fat Mass Index(Kg/M ²)*	7.87	7.26	0.11
Fat Free Mass Index (Kg/M ²)*	17.20	16.8	0.04
Body Fat Percentage (%)	30.30	29.3	0.14
Visceral Fat*	3.89	3.35	0.03
Waist Circumference (cm)	89.50	86.2	0.01
Waist height Ratio*	0.54	0.52	0.01

Social class was divided by occupation using classifications produced by the Central Statistics Office. Social Classes comprised the high social class group and classes 3 to 6 made up the low group. *Mann Whitney U Test used.

Social class had an inverse relationship with fat mass, particularly visceral fat mass, where adiposity is most strongly associated with adverse metabolic health outcomes. Unexpectedly, the fat free mass index of those in the lower social class grouping was significantly higher than that of their more affluent peers.

In conclusion, lower social class is associated with adverse body composition in the first trimester of pregnancy, most notably increased visceral adiposity. This may contribute to less favourable long-term health outcomes in the off-spring of these low-SES women, and represents an important intervention target to tackle socio-economic health inequalities⁽⁵⁾.

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