

The association between childcare attendance and risk of childhood obesity in two year old children

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Rapid weight gain in the first two years of life has been shown to increase the risk of co-morbidities such as hypertension, sleep apnoea, hyperlipidaemia, asthma and type II diabetes mellitus in childhood as well as in adulthood⁽¹⁾. The early-life environment, including adult-child relationships and childcare, have been shown play a role in shaping a child's nutritional and physical behaviours⁽²⁾. Previously published literature has demonstrated associations between various childcare settings and childhood overweight and obesity⁽³⁾, however, detailed anthropometric measurements have not been available. Furthermore, attendance in childcare has been associated with shorter breastfeeding duration and early introduction to solids⁽¹⁾, which may impact on the child's weight status. The objective of this research was to examine anthropometric measures among children in and out of childcare in order to determine the association between childcare attendance and adiposity.

Children born to mothers who participated in the ROLO study⁽⁴⁾ (Randomised cOntrol trial of LOw GI diet in pregnancy) were recruited to a longitudinal follow-up study with data collection at two years of age. Details of childcare attendance were reported by mothers through questionnaires and the following anthropometric measurements were performed by the research dietitian at the two year follow-up appointment: Weight, height, abdominal circumference, mid-upper arm circumference and skinfold thickness measurements. Waist-hip ratio, waist-height ratio, body mass index centile, as per WHO child growth standards, and sum of skinfold thickness were calculated. Associations between childcare attendance and childhood anthropometric measures were analysed using ANCOVA, adjusting for mother's age and education level, as these factors differed at baseline.

Variables	Attended Childcare (N = 136)		Did Not Attend Childcare (N = 129)		P-value
	Mean	SD	Mean	SD	
Abdominal Circumference (cm)	51.14	3.51	50.02	3.24	0.029
Mid-upper Arm Circumference (cm)	16.73	1.22	16.71	0.91	0.827
Body Mass Index Centile	59.91	49.8	62.9	50.6	0.853
Waist-Hip Ratio	1.03	0.06	1.01	0.06	0.100
Waist-Height Ratio	0.57	0.04	0.56	0.04	0.035
Sum of all Skinfolts (cm)	41.79	7.27	39.2	6.81	0.012

For waist:hip ratio $n = 98$ for attended childcare and $n = 95$ for did not attend childcare. For sum of all skinfolts $n = 104$ for attended childcare and $n = 95$ did not attend childcare.

Despite similar BMI centiles between the two groups of children, attendance in childcare was associated with greater childhood adiposity, particularly central adiposity, as indicated by a significantly higher abdominal circumference, waist-height ratio and sum of all skinfolts. Central adiposity is a risk factor for future metabolic disorders and obesity among these children. Implementation and close monitoring of healthy eating and physical activity policies in childcare settings may play an important role in attenuating childhood obesity rates.

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