Is there a link between the increasing use of inhaled corticosteroids to treat asthma and increasing obesity prevalence in children?

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Is there a link between the increasing use of inhaled corticosteroids to treat asthma and increasing obesity prevalence in children? By J. GANDY[1], V. TUFFREY[2] and S. MUKHOPADHYAY[3], [1]*Research Centre for Health Studies, Buckinghamshire Chilterns University College, Chalfont St Giles HP8 4AD,* [2]*School of Integrated Health, University of Westminster, London W1W 6UW and* [3]*Division of Maternal and Child Health Sciences, Ninewells Hospital and Medical School, Dundee DD1 9SY*

Over the last 10 years the prevalence of obesity has doubled to 8.5% in 6-year-olds and trebled in 15-year-olds to 15%. The prevalence of childhood asthma diagnosis and symptoms has also increased especially in pre-school children (Kuehni *et al.* 2001). This has resulted in the increased use of inhaled corticosteroids and the introduction of higher potency inhaled steroids for general use. Concerns are being increasingly expressed about possible links between these two phenomena. While the increased risk of developing asthma in obese children has received much attention, the effect of steroid inhalation on body weight has not been investigated. Hedberg & Rössner (2000) used self-reported asthma, medication (use but not type of medication was recorded), height and weight of over 8000 adults in the Sweden Living Condition Surveys. They concluded that there was no strong evidence to suggest that asthma medication contributes significantly to the development of obesity. No similar information is available for children.

Data from the 2001 Health Survey for England (Data Archive, University of Essex) were analysed, which included complete information on prevalence of asthma, asthma medication, and anthropometry for 3222 children aged 2 to 16 years of age. The characteristics of the three groups of children; non-asthmatics, asthmatics receiving inhaled corticosteroids and asthmatics not receiving corticosteroid medication are shown in the Table. The data were normalised for sex and age using the international cut-off points in BMI for overweight and obesity (Cole *et al.* 2000). A new variable, the percentage of the age- and sex-specific value of BMI equivalent to a BMI of 25 at age 18, was derived from the Health Survey data.

The data were transformed by taking reciprocals, to adjust for their severe positive skewness. A significant difference was found between the asthmatics (n 712; mean 94.2% of BMI cut-off) and non-asthmatics (n 2510; mean 92.8% of BMI cut-off) in the means of the reciprocal of percentage BMI cut-off (F 5.0; P=0.026) by two-way ANOVA with sex as the other independent variable (F 10.0; P=0.002) and age as covariate (F 35.3; P<0.001). However, there was no significant difference between the means of the transformed percentage of BMI cut-off in asthmatics using inhaled corticosteroids (n 233) and those not using these drugs (n 479) by two-way ANOVA (F 0.6, P=0.45, with F 3.8, P=0.05 for sex and F 9.1, P=0.003 for age as covariate).

		Age (years)			BMI (kg/m^2)		Percent of BMI cut-off		
Group	n	Mean	SD	Male : female	Mean	SD	Mean	SD	Median
Non-asthmatic children	2510	9.01	4.24	1196 : 1314	18.60	3.67	92.77	14.11	90.63
Asthmatic children not receiving inhaled corticosteroids	479	10.19	3.96	265 : 214	19.51	4.11	94.43	16.57	91.13
Asthmatic children receiving inhaled corticosteroids	233	9.12	3.99	129 : 104	18.74	3.85	93.70	15.74	91.14

The findings of the present study are in agreement with other studies in that asthmatic children tend to have higher BMI than non-asthmatic children. However, in this sample of English children the use of inhaled corticosteroids for the treatment of asthma does not appear to be associated with overweight or obesity. Further studies using longitudinal data are required to provide a more definitive answer to this question.

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