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# Correlates of Increased Risk of Eating Disorders in Irish School Children

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## Abstract

Currently there are no large-scale data on the prevalence of disordered eating behaviours in Irish children and adolescents. We examined the 2002 Health Behaviour in School Aged Children (HBSC) study to estimate those Irish children who are potentially at risk of developing an eating disorder. Body Mass Index (BMI) data, based on self-reported height and weight were available for 2,469 pupils (29% of all participants). This analysis showed that 32.2% of adolescents were underweight ( $BMI < 18.5 \text{ kg m}^{-2}$ ) and 10.7% of this group 'thought they were too fat'. These latter (n=86) were identified as the 'risk' group and compared with group 2 (n=717) who reported they were underweight and had indeed a low BMI and group 3, (n=856) those with a normal range BMI ( $18.5\text{-}25\text{Kg/m}^2$ ). Those at risk were significantly more likely to choose a large silhouette, be unhappy, poorly satisfied with life and perceive themselves as not good looking, to have diet concerns, be bullied at least twice per month and feel they were average/below average in their academic work (all  $p < 0.001$ ). These data indicate psycho-social associations with an important potentially pathological population sub-group of at risk children.

## Introduction

Previous studies have indicated that disordered eating behaviour may be increasing in prevalence<sup>1</sup>. Of equal concern is the fact that the age of onset of these disorders may be decreasing<sup>2</sup>. This behaviour is an inherent problem in Western societies, particularly among adolescent girls. Disordered eating attitudes and behaviours are associated with increased rates of smoking, alcohol and drug use, and of depression and suicide<sup>3</sup>. The medical and psychological consequences of eating disorders can persist throughout life.

By contrast with the other prevalent diet-related disorder, obesity, evidence to date has shown that eating disorders affect only a small percentage of children. However there is an association between Body Mass Index and eating disturbances which suggests a potential link between disordered eating and overweight<sup>2</sup>. The prevalence of anorexia nervosa and bulimia nervosa, estimated at 0.5 to 1% worldwide, makes these disorders the third commonest chronic illness of adolescence<sup>4</sup>. Currently there are no estimates for Irish children. The aim of this paper was to profile Irish children who are potentially at risk of developing an eating disorder using the rich dataset from the HBSC 2002 study of over eight thousand Irish children.

## Methods

The participants in this analysis are from the Health Behaviour in School-Aged children (HBSC), a World Health Organisation (European) Collaborative Study which is conducted on a 4 year cycle. The 2002 study was comprised of Irish primary and post-primary students aged 10-18. The respondents (N = 8,424) completed a health and life-style questionnaire in schools and the sampling and methodology have been described elsewhere<sup>5,6,7</sup>.

Participants were categorized according to their Body Mass Index (Weight/Height<sup>2</sup>) and their perceived body size ("Do you think your body is too thin/ about the right size/ too fat?"). Those who were thought to be at risk of an eating disorder were identified as those who were both underweight ( $BMI < 18.5\text{kg/m}^2$ ) and thought they were too fat (group 1). This group was compared to group 2 who were underweight and felt they were too thin or about the right size and group 3 who were normal weight ( $18.5\text{-}25\text{kg/m}^2$ ) and felt the right size.

Chi-Square statistical analysis was carried out to describe the groups. A binary logistic regression model was used to examine the influence on social and lifestyle factors on the 'at risk' group compared to those not at risk. The following variables were entered together into the model: age, gender, perceived shape/silhouette, looks, diet concerns, happiness, life satisfaction, academic achievement, bullying, and exercise.

## Results

BMI data based on self-reported height and weight were available

for 2,469 pupils. Among this sample 32.2% were categorised as underweight, 60.3% were normal weight and 7.5% were overweight or obese. Of those who were underweight, 10.7% thought they were too fat. These (n=86) were identified as 'risk' group 1 and compared to group 2 (n=717) and group 3 (n=856). A greater percentage of the 'at risk' group (77.9%) were girls; 14% were aged 10 to 11, 53.5% aged 12 to 14 and 32.6% aged 15 to 17 (see Table 1). Those at risk were significantly more likely to choose a large silhouette, report that they were unhappy, poorly satisfied with life and perceive themselves as not good looking ( $p < 0.001$ ), to have diet concerns ( $p < 0.001$ ), be bullied at least twice per month ( $p < 0.001$ ) and feel they were average/below average in their academic work ( $p = 0.013$ ). Reported levels of physical activity did not vary significantly between groups.

In the regression model (Table 2) those more likely to be at risk were girls, aged 10-11, and 12-14 years, who thought they were not good looking, with poor or average life satisfaction and with diet concerns. Those choosing normal silhouettes and who had not been bullied were less likely to be in the high risk group.

## Discussion

The results from this study indicate that there is a distinguishable group of Irish adolescents who are at the lower end of the weight spectrum and have a poor self-image and are unhappy with life. Fear of being or becoming overweight and body image dissatisfaction have been shown to be longitudinally related to the onset of an eating disorder<sup>8</sup>. Bullying has been shown to be associated with obesity but only one other study found an association between those at risk of an eating disorder and those who had experienced bullying<sup>9</sup>, though it should be noted that this study also employs HBSC 2002 data and thus is not independent. Other variables such as dieting and low self-esteem have also individually been regarded as risk factors but by themselves are insufficient for predicting the development of eating disorders<sup>10</sup>. Disordered eating behaviours are complex and the application of multivariate models may be more appropriate to understand the factors which may influence their development<sup>11</sup>.

Since the HBSC survey is a general health survey, measures specifically relating to eating disorders were not included. Yet it can identify those adolescents who have a distinguishable profile of poor body image and general dissatisfaction with life and who are potentially at risk of developing an eating disorder.

One limitation of this study is the use of adult BMI cut-offs for categorising those underweight which will lead to an overestimation of those underweight. These results however are exploratory and future research should use age and gender specific BMI centiles to assess body weight in children and adolescents. A BMI lower than the 5<sup>th</sup> centile defines underweight, lower than the 2<sup>nd</sup> centile

Table 1 Descriptive factors of 'at risk' group (n=86)

Variable	Category	Sex	Age group (Years)		
			M/F	10 to 11 n (%)	12 to 14 n (%)
Looks	Good looking	M	1 (16.7)	4 (66.7)	1 (16.7)
		F	4 (28.6)	7 (50.0)	3 (21.4)
	Average	M	3 (50.0)	2 (33.3)	1 (16.7)
		F	3 (10.3)	16 (55.2)	10 (34.5)
	Not good looking	M	0	3 (60.0)	2 (40.0)
		F	1 (4.3)	12 (52.2)	10 (43.5)
	Don't think about looks	M	0	1 (50.0)	1 (50.0)
		F	0	1 (100)	0
Life satisfaction	Poor	M	0	0	1 (100)
		F	1 (6.7)	6 (40)	8 (53.3)
	Average	M	2 (18.2)	6 (54.5)	3 (27.3)
		F	4 (13.8)	16 (55.2)	9 (31.0)
	High	M	2 (28.6)	4 (57.1)	1 (14.3)
		F	3 (13.0)	14 (60.9)	6 (26.1)
Diet concerns	Yes	M	4 (44.4)	4 (44.4)	1 (11.1)
		F	7 (14.3)	24 (49.0)	18 (36.7)
	No	M	0	6 (60.0)	4 (40.0)
		F	1 (5.6)	12 (66.7)	5 (27.8)
Silhouettes	Large	M	2 (40.0)	2 (40.0)	1 (20.0)
		F	4 (25.0)	7 (43.8)	5 (31.3)
	Normal	M	2 (15.4)	8 (61.5)	3 (23.1)
		F	4 (9.1)	26 (59.1)	14 (31.8)
	Thin	M	0	0	1 (100)
		F	0	3 (42.9)	4 (57.1)
Bullied	Not recently	M	2 (16.7)	6 (50.0)	4 (33.3)
		F	5 (10.0)	25 (50.0)	20 (40.0)
	Once or twice last month	M	0	2 (100)	0
		F	1 (10.0)	7 (70.0)	2 (20.0)
	More than twice a month	M	2 (40.0)	2 (40.0)	1 (20.0)
		F	2 (33.3)	3 (50.0)	1 (16.7)
Happiness	Happy	M	4 (22.2)	10 (55.6)	4 (22.2)
		F	8 (15.1)	28 (52.8)	17 (32.1)
	Not happy	M	0	0	1
		F	0	8 (57.1)	6 (42.9)
Academic achievement	Good/Very good	M	3 (25.0)	8 (66.7)	1 (8.3)
		F	3 (9.1)	19 (57.6)	11 (33.3)
	Average/below average	M	1 (14.3)	2 (28.6)	4 (57.1)
		F	5 (15.2)	16 (48.5)	12 (36.4)
Exercise	Twice or less/week	M	0	0	1 (100)
		F	1 (5.0)	10 (50.0)	9 (45.0)
	Three or more times/ week	M	4 (23.5)	9 (52.9)	4 (23.5)
		F	7 (14.9)	26 (55.3)	14 (29.8)

indicates serious underweight.

Another limitation is the high rate of under-reporting of height and weight in the Irish HBSC participants – it is not clear why this should be the case, it may be explained by the fact that children simply do not know their own height and weight, or to more systematic bias, such as sensitivity around the issue but our pilot data did not provide any helpful information on this point.

There has been a general acceptance that while treatment of eating disorders is necessary there should be a shift in focus to prevent the onset of these disorders. However, like the obesity epidemic very little empirical research on prevention has been reported. The majority of programs which have been established consist of providing information about eating disorders, the dangers of

unhealthy weight loss and encouraging healthy eating and exercise. Most of these do little to change or prevent unhealthy attitudes and behaviours<sup>12</sup>. One school-based intervention was successful in improving body image satisfaction and global self-esteem and in reducing dieting attitude scores at post intervention<sup>13</sup>. However, the gains were not maintained at the 12-month follow-up<sup>14</sup>. The introduction of the Social Personal and Health Education into schools may go some way to improving self-image and self-esteem among Irish children. Health professionals can also play a role in the prevention and detection of unhealthy eating attitudes and behaviours. Non-judgemental questions regarding body image and eating attitudes and behaviour can bring these issues to light in the primary care setting<sup>2</sup>.

Table 2 Factors associated with risk of disordered eating behaviours: Binary Regressing Mode

Covariates		Estimates	S.E.	df	P	OR
Gender	Girls	0.775	0.310	1	0.012	2.170
	Boys					
Age	10-11	1.215	0.444	1	0.006	3.369
	12-14	1.179	0.299	1	<0.001	3.250
	15-17					
Looks	Not Good looking	1.432	0.697	1	0.040	4.186
	Don't think about looks					
Life satisfaction	Poor	2.199	0.433	1	<0.001	9.018
	Average	0.608	0.289	1	0.036	1.837
	High					
Diet Concerns	2.298	2.298	.281	1	<0.001	9.959
Silhouettes	Large	-0.604	0.573	1	0.292	0.547
	Normal	-1.243	0.499	1	0.013	0.289
	Thin					
Bullied	Not recently	-0.817	0.432	1	0.059	0.442
	1/2 last month	-1.615	0.538	1	0.003	0.199
	> 2 month					

The results from this study support the consensus that all childhood-onset eating disorders must be considered using a multidimensional model that takes into account physical, psychological, social and family factors in origin, assessment, treatment and prevention.

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