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# Eating disorders: the young male side

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## **Disordered eating: the young male side**

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## ABSTRACT

**Background.** Disordered eating is recognized to be predominant among girls and, historically, studies have focused primarily on them.

**Aim.** To investigate the characteristics of adolescent and young adult (AYA) males at risk of disordered eating.

**Design and setting.** Cross-sectional survey of post-mandatory education students.

**Method.** AYA (15-24 years) from post-mandatory education in Switzerland (N=5179) participated in a study assessing their lifestyles. Only males (n=2269) were included in the study and divided in two groups based on the SCOFF questionnaire. Participants answering positively to at least two questions were included in the SCOFF[+] group (n=230, 10.1%) and the rest were the SCOFF[-] group (n=2039, 89.9%). All variables significant at the bivariate level were included in a logistic regression. Data are presented as adjusted odds ratios (aOR) with 95% confidence interval.

**Results.** At the multivariate level, SCOFF[+] were more likely to be overweight (aOR: 2.58 [1.78:3.75]) and obese (aOR: 3.12 [1.70:5.71]), have a lower socio-economic status (aOR: 2.20 [1.39:3.48]) and non-Swiss parents (aOR: 1.66 [1.19:2.31]); have faced weight issues (aOR: 5.79 [2.98:11.27]); report a chronic condition (aOR: 1.63 [1.11:2.40]), a poorer emotional well-being (aOR: 1.79 [1.19:2.69]) and a less positive attitude towards life (aOR: 0.95 [0.93:0.98]).

**Conclusion.** As 10% of males are at risk of disordered eating, clinicians should be aware of their specificities and consider these as red flags. Disordered eating is no longer a specific female issue and tends to become a male issue too.

**Keywords.** Male; Disordered Eating; Adolescent; Young Adult; Cross-Sectional Study

**WHAT'S ALREADY KNOWN ABOUT THIS TOPIC?**

- Adolescence is a time of risk for disordered eating.
- Disordered eating is recognized to be predominant among girls and studies have focused primarily on them.
- Early detection of disturbed eating is important because its treatment tends to be more successful.

**WHAT DOES THIS ARTICLE ADD**

- One adolescent/young adult male in ten is at risk for disordered eating.
- Disordered eating is not a specific female issue but tends to move toward democratization.
- Young males at risk for disordered eating are significantly more likely to be overweight or obese.

## INTRODUCTION

Adolescence is the time of rising incidence of eating disorders (ED). A study carried out in six different European countries analyzed lifetime prevalence and showed that the majority of ED cases had their beginning between ten and twenty years of age (1). ED, a definite disturbance of eating habits or weight-control behavior (2), are complex issues linked to predisposing biological, psychological and social factors. Different hypotheses that could influence the onset of ED during adolescence have been postulated such as increase of adipose tissue in girls, importance of peer influence on one's body image, or difficulty to gain independence from parents (3).

ED are recognized to be predominant among girls and historically studies have focused primarily on them. However, research on this topic in males is growing lately because they are not spared and also suffer from this condition more frequently than usually thought. The usually accepted male vs. female ratio of 1:10 among adults shows less disparities among adolescents (4). Actually the gender ratio seems to be an increasing function of age as it is 1:4 in childhood (5-13 years) (5). Moreover, ED are even less gendered when partial eating disorders are included (6). Depending on the age and the criteria used, ED prevalence among males varies greatly from 0.5% to 16.6% (7, 8).

Males encounter difficulty to identify themselves as having an ED and are reluctant to see their doctor because of the gender stereotype associated to this illness (9, 10). They are under-diagnosed and therefore the prevalence is likely underestimated (11). Nevertheless, there is still a need for improvement both in the detection of ED in males and in the awareness of that topic among health providers (9). Studies on ED that exclusively include males are scarce and the sample size is often small (12). Furthermore, there are even fewer studies specifically on adolescent and young adult (AYA) males. One of them analyzed disordered eating among adolescent males in Switzerland (13): they were more likely to be overweight or obese, to report depression, a history of sexual or physical abuse and delinquent behavior. In this paper we will take the research of Dominé et al. (13) a step further by also assessing the associations with socioeconomic status, self-perceived school performance or relationship with both the

father and the mother. Disordered eating and ED result from a complex interaction of biological processes, sociocultural factors as well as psychological and individual traits like low self-esteem, perfectionism and negative affect (14, 15). Other evidence suggest that the life context of AYA's, be it their family or their scholar environment, might act as a potential correlate of disordered eating (16, 17).

Most studies analyze boys suffering from ED through the prism of girls with ED which would imply that both genders present the same kind of symptoms. Nevertheless, males seem to present different criteria regarding ED. Body concern among adolescent males tends to focus more on muscularity than on drive for thinness which is characteristic among girls (18, 19). Males before presenting ED tend to be overweight which can be overlooked by clinicians as a sign of being at risk of ED (19, 20). In fact, males can be motivated to lose weight and to gain muscle to attain their ideal body: large chest and shoulders and a slim waist (11, 21). Although some studies show that athletes from both genders are a group at risk of ED, male athletes are more likely to exhibit disturbed eating at sub-threshold levels of diagnosis (22).

Early detection of disturbed eating is important because its treatment tends to be more successful when initiated early and can prevent harmful consequences in the long run (23). For that reason, being aware of the distinguishing characteristics of males who are at risk of developing disordered eating could help clinicians identify them and offer a targeted prevention. The aim of this study is to describe the characteristics of males at risk of disordered eating controlling for potential confounding factors.

## **METHOD**

Data were drawn from the baseline wave of the GenerationFRee study which aims to assess the lifestyles of AYA in the canton of Fribourg in the French-speaking part of Switzerland. Data used for this study were collected during the 2014-2015 school year. AYA in the eleven post-mandatory schools (five high-schools and six professional schools) of the canton completed an anonymous web-based self-administrated questionnaire. In Switzerland mandatory school goes up to age 16 and afterwards, about one third of adolescents follow high-school and two thirds vocational education. The latter are enrolled by companies to train for their future profession and attend class at vocational school only 1-2 days a week. Questionnaires were filled in online in the school's computer room.

Out of 5 834 AYA, 200 did not want to participate, 211 were not in the target age-group and 244 did not complete the questionnaire reliably and were excluded. The final sample consisted of 5 179 AYA from which only male respondents were included in the analysis (n= 2 269).

#### Dependent variable

We divided the surveyed males into two groups by using the SCOFF questionnaire, a validated screening tool to identify subjects at-risk of disordered eating (24). The five items of the questionnaire (*Do you make yourself sick because you feel uncomfortably full?* / *Do you worry you have lost control over how much you eat?* / *Have you recently lost more than 14 pounds in a three-month period?* / *Do you believe yourself to be fat when others say you are too thin?* / *Would you say that food dominates your life?*) are each answered as “yes” or “no”. The cut-off point for the SCOFF is set at two or more positive answers, with a sensitivity of 85% and a specificity of 90%. Regarding eating disorders, the SCOFF is excellent at detecting all true cases of anorexia nervosa and bulimia nervosa and most cases of eating disorders non otherwise specified (EDNOS) (24). The SCOFF questionnaire has been translated into French and validated among adolescents (25).

We included subjects who answered positively to at least two of the five questions in the group with a positive SCOFF (SCOFF[+]; n=230, 10.1%); and all other participants in the group with a negative SCOFF (SCOFF[-]; n=2 039, 89.9%)

#### Independent variables

Personal variables included age, height, weight, pubertal timing, AYA's birthplace (Switzerland/abroad), and residence (urban/rural).

BMI was calculated from self-reported height and weight and we used the cut-offs for underweight, overweight and obesity defined by Cole et al (26, 27). Self-assessment of pubertal timing was determined by the question “If you think about the age you began puberty, compared with your same age peers, would you say that you were...” trichotomized into ‘early pubertal timing’, ‘average pubertal timing’ and ‘late pubertal timing’. This method has shown to be a valid approximation to pubertal timing with a 94% correlation with physician evaluations (28).

Family variables included family structure (parents living together or not), parents birthplace (at least one born in Switzerland/both abroad), socioeconomic status (SES), mother-AYA and father-AYA relationship.

Self-assessment of SES was determined by the question used in the ESPAD project (17): “Compared to the financial situation of other families in Switzerland, would you say that your family is...” with seven possible answers ranging from ‘very well below average’ to ‘very well above average’ and trichotomized into ‘above average’, ‘average’ and ‘below average’. Father and mother relationship with the AYA were rated on a scale from 1 [very poor] to 10 [Excellent].

School variables included academic track (student/apprentice) and self-reported school performance (above average, average or below average student).

We controlled for variables likely to have a relationship with disordered eating such as the average weekly number of days of physical activity lasting a minimum of 60 minutes, having faced weight issues the past year, having a chronic condition (disability or chronic disease) (29), emotional well-being (30), self-reported health (good/poor) (31) and positive attitude towards life.

To measure emotional well-being we used the WHO-Five Well-Being Index (WHO-5), whose validity in adolescents has been proved (32). The WHO-5 index includes five items and each one is rated on a 6-point Likert scale ranging from 0 (at no time) to 5 (all of the time) (33). Scores are added and a result below 13/25 indicates poor well-being. Cronbach’s alpha in the present study was .81. We measured their vision of the future using the Positive attitude to life scale which includes six items ranging from 1 (absolutely untrue) to 6 (absolutely true), a higher score meaning that they had a better positive attitude to life (34). Cronbach’s alpha in the present study was .87.

The study protocol was approved by the Ethics Committee of the canton of Vaud.

Statistical analyses were performed with STATA 13.0 (StataCorp, College Station, Texas). In a first step we used Chi-square test and Student’s t-test to compare categorical and continuous variables between the two groups. Results are given as point prevalence and means. In a second step, all statistically significant variables ( $p < 0.05$ ) at the bivariate level were included in a backward logistic



regression analysis. Because the SCOFF and the variable “weight issues during the past year” might interact with each other, we reran the analysis without the variable “weight issue during the past year”. However, the results didn’t change significantly (data not shown). Similarly, we also tried to include in the regression model variables significant at the 10% level at the bivariate level, but again without any change. Finally, the specification of the final multivariate model was checked using the linktest, but no problem was found. Results are given as adjusted odds ratio (aOR) with 95% confidence intervals (95%CI).

## RESULTS

At the bivariate level AYA at risk of disordered eating were significantly more likely to be overweight or obese, to report early pubertal timing, to be born abroad and to have a low socio-economic status. Regarding family-related variables, SCOFF[+] males were significantly more likely to have non-Swiss born parents not living together, and to have a poorer relationship both with their father and their mother. Considering health-related variables, SCOFF[+] males were significantly more likely to report poor health, to have faced weight issues during the past year, to have a chronic condition, a poor emotional wellbeing and a less positive attitude towards life (Table 1).

The results of the backward logistic regression are reported in Table 2. After controlling for confounding factors and compared to the control group, SCOFF[+] males were more likely to be overweight (aOR: 2.58 [1.78:3.75]) or obese (aOR: 3.12 [1.70:5.71]). For their social background, SCOFF[+] males were more likely to have a lower socio-economic status (aOR: 2.20 [1.39:3.48]) and non-Swiss parents (aOR: 1.66 [1.19:2.31]). They were also more likely to have faced weight issues during the past year (aOR: 5.79 [2.98:11.27], to report a chronic condition (aOR: 1.63 [1.11:2.40]), poorer emotional well-being (aOR: 1.79 [1.19:2.69]) and a less positive attitude towards life (aOR: 0.95 [0.93:0.98]).

## DISCUSSION

Overall 10% of our sample was at risk of disordered eating. They were more likely to be overweight or obese, to be of lower socio-economic status, to have both parents of foreign origin, to suffer from a chronic condition and to have a less positive attitude towards life.

The main strengths of this study are that it is based on a large representative sample of AYA in post-mandatory education and focuses exclusively on males. However some limitations need to be stressed. First, because of the cross-sectional design of the study no causal relationship can be drawn. Second, as the results of this survey come from a self-reported questionnaire response bias cannot be precluded. Regarding weight status particularly, overweight or obese youth tend to underestimate their actual weight (35) which could underestimate our results. Nevertheless the use of anonymous data collection should have minimized this issue. Third, an important limitation of the body mass index (BMI) has to be considered. Indeed, it does not distinguish between body fat, muscle mass or bone density. SCOFF[+] males considered as overweight or obese regarding BMI could be muscular. That possibility would concur with the muscularity body concern of males. Fourth, the GenerationFree study did not include more specific male assessment such as drive for muscularity that could have sharpened the present analysis (36). However, the initial aim of the GenerationFree study was to focus on AYA's lifestyle independently of the gender. Fifth, the SCOFF questionnaire is only a screening tool for disordered eating and cannot replace diagnosis made by a clinician. However, the SCOFF questionnaire has a high sensitivity with therefore few false positives (24).

Dominé et al (13) had also found an association between unhealthy eating behaviors and overweight or obesity among males. The reverse is true too as overweight youth have an increased risk for disordered eating behaviors. Indeed, dieting, for example, is a common risk factor for overweight and ED, as it might trigger a cycle of restriction and overeating, thus possibly leading to binge eating and weight gain (37). Increased body mass contributes to body dissatisfaction because not fitting with the leanness-ideal which in turn is a risk factor for eating pathology (38).

Regarding associations between SES and disordered eating, the literature is controversial (39). Nevertheless, the link between low socio-economic status and overweight/obesity has been well established in numerous studies even though the underlying mechanisms are still not well understood (40). We can hypothesize that eating healthy is more financially demanding but also nutrition knowledge and time for cooking, which can lack when both parents work (41). Overweight/obesity and their psychosocial consequences such as peer teasing and repeated diets are known risk factors of disordered eating (37). Besides, defective family environment often observed in low-income households might lead to disordered behaviors and among them disordered eating (42). Further research is required to assess the link between socio-economic status and disordered eating, especially among males.

Our results also demonstrate that SCOFF[+] males were more likely to self-report an early puberty. There is a controversy in the literature regarding whether early or late puberty among males is associated to disordered eating highlighting the need for further research (3, 43). Interestingly, Dominé et al (13) also found an association between early puberty and disordered eating behaviors or concerns. Psychological mechanisms could account in this study for the relationship between early puberty and disordered eating. Off-time development among males might foster feelings of alienation especially during a development phase where comparison to peers is a major concern. Even more, experiencing puberty before peers might lead to greater psychological disturbance: early maturing males are less likely to be prepared to face body changes and might focus more on their body.

The risk of disordered eating was significantly more predominant among males with foreign-born parents. Regarding ethnicity, the literature highlights an emergence of disordered eating in non-Western cultures (44). Furthermore, some authors demonstrated an association between culture change and disordered eating that depends on the group studied (45). A possible explanation is that children of foreign-born parents grow up between two different cultures and thus can feel torn between native and local values. Disordered eating can be a way to cope with the identity issues caused by the culture shock. However, this cultural turmoil may express itself in a different manner. Some cultures consider positively overweight or obesity as a sign of wealth, preferring a larger body size. A possible explanation is that

confronted with local body standards, AYA of foreign-born parents might experience conflicting expectations possibly leading to eating disorders.

We also found that SCOFF[+] males were more likely to have a chronic condition. Chronic conditions that require diet-management like diabetes or cystic fibrosis might increase food preoccupation. Besides, physical stigma due to illness or to treatment can foster body dissatisfaction, a risk factor of disordered eating (29). AYA suffering from chronic condition are striving to be like their healthy peers and report lower self-esteem (46). Disordered eating may be a functional response to face identity crisis.

Research focusing on the relationship between disordered eating and attitude towards life is scarce. In this study SCOFF[+] males reported a less positive attitude towards life. The whole world of disordered eating subjects revolves around food and weight, thus not leaving much room left for other concerns. Disordered eating might thus serve as a mask to cover up existential concerns about purpose in life and self-identity. Furthermore, depression, a common psychiatric comorbidity in patients with an eating pathology, is associated with feelings of hopelessness and worthlessness which to darken one's future (47, 48).

As expected, our results showed that SCOFF[+] males had faced weight issues during the past year. This concurs with the SCOFF evaluation, thus underscoring its relevance. Additionally, in line with pre-existing studies, we found that SCOFF[+] males had a poorer emotional well-being (49).

Based on this study results, 10% of young males are at risk of disordered eating. This finding provides further evidence suggesting that disordered eating is no longer a specific female issue (even though females in our study report a much higher rate, 31% [data not shown]) and tends to affect males too. Besides, although males show some similarities with females at risk of disordered eating, they also present differences. Therefore, looking at males through a female prism would be much too restrictive. From a clinical standpoint, it is important for practitioners to consider the specificities of males at risk of disordered eating, especially overweight and obesity. Health providers should keep in mind the

aforementioned characteristics when consulting with AYA males and be encouraged to discuss disordered eating with them.

Because this condition is by no means insignificant, further research specifically focused on males with disordered eating is warranted in order to better define their characteristics. Furthermore, working on enhanced eating disorders prevention, longitudinal data are needed to understand risk factors of disordered eating among males.

**DISCLOSURE**

**Conflicts of Interest.** The authors declare no conflict of interest.

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## **AUTHOR CONTRIBUTIONS**

Sabine Ammann analyzed and interpreted the data, drafted and revised the manuscript, and approved the final version of the manuscript as submitted.

André Berchtold conceptualized and designed the study, obtained funding, analyzed and interpreted the data, critically revised the manuscript, and approved the final version of the manuscript as submitted.

Yara Barrense-Dias conceptualized and designed the study, coordinated data collection, critically revised the manuscript, and approved the final version of the manuscript as submitted.

Christina Akre conceptualized and designed the study, coordinated data collection, critically revised the manuscript, and approved the final version of the manuscript as submitted.

Joan-Carles Surís conceptualized and designed the study, obtained funding, acquired, analyzed and interpreted the data, critically revised the manuscript, and approved the final version of the manuscript as submitted.



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Table 1. Bivariate analyses comparing the 2 groups.

Variable	SCOFF[-] (n=2 039)	SCOFF[+] (n=230)	p-value
<b>Age</b> (years $\pm$ standard error)	18.27 $\pm$ 0.04	18.41 $\pm$ 0.14	0.344
<b>Body mass index</b>			
Underweight	1.10 %	1.79 %	<0.001
Normal weight	80.40 %	57.67 %	
Overweight	14.39 %	28.30 %	
Obese	4.11 %	12.23 %	
<b>Puberty</b>			
Early	26.51 %	37.43 %	<0.001
On time	58.31 %	44.32 %	
Late	15.18 %	18.26 %	
<b>Socioeconomic status</b>			
Below average	8.23 %	20.48 %	<0.001
Average	48.66 %	43.33 %	
Above average	43.10 %	36.18 %	
<b>Residence</b> (urban)	35.07 %	38.74 %	0.302
<b>Family structure</b> (parents living together)	70.14 %	61.63 %	0.014
<b>Parents birthplace</b> (both abroad)	22.89 %	36.03 %	<0.001
<b>Adolescent's birthplace</b> (Switzerland)	88.08 %	79.04 %	0.001
<b>Academic track</b> (high-school)	31.07 %	26.26 %	0.169
<b>School performance</b>			
Above average	28.70 %	32.49 %	0.092
Average	64.85 %	58.00 %	
Below average	6.45 %	9.52 %	
<b>Health</b> (poor)	2.68 %	11.05 %	<0.001
<b>Weight issues during the last 12 months</b> (often)	1.08 %	10.94 %	<0.001
<b>Chronic condition</b> (yes)	13.75 %	24.71 %	<0.001
<b>Physical activity during the last 7 days</b> (mean $\pm$ standard error)	3.13 $\pm$ 0.05	3.23 $\pm$ 0.16	0.519
<b>Emotional wellbeing</b> (poor)	12.86 %	30.46 %	<0.001
<b>Positive attitude to life</b> (mean $\pm$ standard error)	28.31 $\pm$ 0.13	25.12 $\pm$ 0.51	<0.001
<b>Relationship with father</b> (mean $\pm$ standard error)	8.21 $\pm$ 0.06	7.42 $\pm$ 0.19	<0.001
<b>Relationship with mother</b> (mean $\pm$ standard error)	8.77 $\pm$ 0.04	8.43 $\pm$ 0.15	0.024

Table 2. Backward logistic regression analysis for SCOFF[+], using SCOFF[-] as the reference category.

Variable	Adjusted OR	[95% Conf. Interval]	p-value
<b>Body mass index</b>			
Underweight	2.00	0.60 : 6.63	0.26
Normal weight (reference)	1.00		
Overweight	2.60	1.79 : 3.78	<0.001
Obese	3.14	1.72 : 5.74	<0.001
<b>Puberty</b>			
Early	1.45	1.02 : 2.07	0.04
On time (reference)	1.00		
Late	1.38	0.90 : 2.12	0.14
<b>Socioeconomic status</b>			
Below	2.20	1.40 : 3.47	<0.001
Average (reference)	1.00		
Above	1.14	0.81 : 1.59	0.46
<b>Parents birthplace</b> (both abroad)	1.66	1.19 : 2.31	<0.001
<b>Weight issues during the last 12 months</b> (often)	5.43	2.72 : 10.80	<0.001
<b>Chronic condition</b> (yes)	1.63	1.11 : 2.40	0.01
<b>Emotional well-being</b> (poor)	1.85	1.23 : 2.78	<0.001
<b>Positive attitude to life</b>	0.95	0.93 : 0.98	<0.001

OR: Odds Ratio