

RISK FACTORS FOR THE DEVELOPMENT OF SYMPTOMATOLOGY OF EATING DISORDERS: PROSPECTIVE STUDY

FACTORES DE RIESGO PARA EL DESARROLLO DE SINTOMATOLOGÍA DE TRASTORNOS ALIMENTARIOS: ESTUDIO PROSPECTIVO

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Resumen

Doscientos ochenta y un hombres y mujeres (12-14 años de edad) participaron en la línea base de un estudio prospectivo diseñado para examinar un grupo de factores de riesgo potenciales para el desarrollo de trastornos alimentarios. De los 281 participantes, 246 (87.5%) completaron el Test Infantil de Actitudes Alimentarias en el seguimiento (12 meses después). Los 20 que rebasaron el punto de corte en este instrumento fueron clasificados como un grupo sintomático. Empleando pruebas t para muestras independientes, los grupos sintomático y asintomático fueron comparados en las siguientes medidas: Inventario de Autoestima, Inventario de Trastornos Alimentarios, Cuestionario de Influencia de los Modelos Estéticos Corporales, Cuestionario de Imagen Corporal e índice de masa corporal. Los participantes con sintomatología informaron menor autoestima y mayor insatisfacción corporal. Adicionalmente, informaron mayor influencia de los modelos estéticos corporales y un deterioro en las características psicológicas y conductuales asociadas con los trastornos alimentarios. El estatus de esas variables puede indicar una vulnerabilidad potencial a los trastornos alimentarios y sugiere el uso de estrategias de intervención.

Palabras clave: Actitudes Alimentarias, Insatisfacción corporal, Niños, Sintomatología, Vulnerabilidad.

Abstract

Two hundred eighty-one boys and girls (12-14 years old) participated in the baseline phase of a prospective study designed to examine a set of potential risk factors for the development of eating disorders. Of the 281, 246 participants (87.5%) completed the Children Eating Attitudes Test on follow-up (12 months later). 20 who overpass cutoff point in this measure were classified as a symptomatic group. Using independent samples t test, symptomatic and asymptomatic groups were compared on the following measures: Self-Esteem Inventory, Eating Disorders Inventory, Questionnaire on Influences on Body Shape Model, Body Shape Questionnaire, and Body Mass Index. Symptomatic participants reported lower self-esteem and greater body dissatisfaction. Additionally, reported greater influences of body shape model and biases on psychological and behavioral characteristics linked with eating disorders. The status on these variables may indicate potential vulnerability to eating disorders and, ultimately, suggest the employ of intervention strategies.

Key words: Eating Attitudes, Body Dissatisfaction, Young Children, Symptomatology, Vulnerability.

Eating disorders (ED) are characterized by severe alterations in eating behaviors and include specific disorders such as anorexia nervosa (AN) and bulimia nervosa (BN), and those which do not fulfill the criteria for specific eating disorders (American Psychiatric Association [APA], 2000). These disorders are more common in women than in men (Lindberg & Hjern, 2003); moreover, they are problems that affect youths and adolescents mainly (Martínez-González, et al., 2003). The average age of onset of an ED ranges from 14 to 20 years old (Striegel-Moore, 1997). However, girls' concerns with their own weight and desire to be thin(er) emerges between the ages of 9 and 11 (Shapiro, Newcomb, & Loeb, 1997). The ED have been associated with severe medical complications (Treasure & Smukler, 1995), its therapeutic management is complex (Ben-Tovim, et al., 2001), and mortality rates are high (Fisher, et al., 1995).

ED are problems caused by a combination of psychological, biological, and cultural factors (Lorenzo, Lavori, & Lock, 2002). Biologic factors include adiposity, gender and age (Killen, et al., 1994); the psychological factors include: weight and body shape concern (Fairburn, Cooper, Doll, & Welch, 1999), eating restriction (Polivy & Herman, 2002) body shape dissatisfaction (Mancilla, et al., 1999), low self-esteem (Byrne & McLean, 2001), and negative self-worth (Fairburn, et al., 1999). The sociocultural factors include the thin idealization and pressure from parents and friends on body shape image (Dunkley, Wertheim, & Paxton, 2001). Additionally, other risk factors founded in Mexico

are perfectionism and maturity fear (Mancilla, et al., 1999).

A risk factor is a variable that has been shown to prospectively predict a pathological outcome subsequent (e.g. ED symptomatology; Stice, 2002). In this sense, only longitudinal research can demonstrate the effects of a particular risk factor.

Using a longitudinal design, Cattarin and Thompson (1994) founded that level of obesity predicted social pressure to be thin, body dissatisfaction, restrictive eating practices, and negative affect. Additionally, in a study of dieting London schoolgirls, 38% of the sample were still dieting about 1 year later, about 33% had stopped, and about 20% of the dieters had progressed to an eating disorder, as opposed to only 3% of nondieters (Patton, Jhonson-Sabine, Wood, Mann, & Wakeling, 1990). Also, the weight concern may be a higher risk for the development of eating pathology (Wiseman, Peltzman, Halmi, & Sunday, 2004). Killen, et al. (1994) followed a group of 12-years-old girls over 3 years and found one consistently strong predictor for an eating disorder: the presence of weight concerns.

Low self-esteem has been considered a risk factor for ED. Button (1990) conducted a prospective study in which low self-esteem in British schoolgirls (ages 11-12) was predictive of higher levels of eating disturbances 4 years later. Indeed, it has also been suggested that sociocultural pressure may be related to eating pathology because it triggers an internalization of the thin ideal, body dissatisfaction, dieting, and emotional disturbances. In support of this, perceived pressure to be thing prospectively

predicted increases in dieting (Stice, Mazotti, Krebs, & Martin, 1998) and onset of bulimic pathology (Field, Camargo, Taylor, Berkey, & Colditz, 1999), and weight-related teasing predicted growth in body dissatisfaction (Cattarin & Thompson, 1994).

Few multivariate etiologic models have been tested in a prospective design (Stice, 2001). Stice (2001) proposed the dual pathway model. This proposes that sociocultural pressure to be thin leads to an internalization of thin ideal and consequent body dissatisfaction. This body dissatisfaction in turn, theoretically fosters elevated dieting and negative affect, which in turn increase the risk for bulimic pathology. As such, this model can be considered a synthesis of the sociocultural (Striegel-Moore, Silberstein, & Rodin, 1986), dietary restraint (Polivy & Herman, 2002), and affect regulation (McCarthy, 1990) models of eating pathology.

Even there are researches involving risk factors associated with the development of ED (e.g. Toro, Guerrero, Sentis, Castro, & Puértolas, 2009), there are few prospective studies, which make it difficult to understand whether these disorders precede the disorder or are a consequence of the appearance of the symptoms. Because of this reason it is relevant to carry out prospective researches that allow identifying the potential risk for the development of an ED. With the gathered information it is possible to design prevention programs that pay attention to such risk factors to prevent the presence of ED. Most studies examining risk factors for ED in adolescents have focused entirely on young women. While ED occur mainly in women, the number of men diagnosed with ED has increased (e.g., Braun, Sunday, Huang, & Halmi, 1999), however, few researchers have examined the risk factors in adolescent boys. Because of the previously exposed reasons, the aim of the present study was to identify risk factors for the development of ED; in order to do so self-esteem, influence of the body shape models and body shape dissatisfaction were compared between two groups of secondary school students, initially free from ED symptomatology: One which overpass ChEAT cutoff point (group with symptomatology) on follow-up (twelve months later) and another which did not overpass cutoff point (group without symptomatology). We hypothesized that the participants with symptomatology (follow-up) would display significantly higher scores in the

variables of interest (baseline), compared to those who did not display symptomatology.

Method

Participants

A representative sample of students of first grade of secondary school (11-14 years old) of the Northern zone of the metropolitan area of Mexico City was invited to participate in the study. Among 811 students aged 11 to 14 years ($M = 12.52$, $SD = 0.62$) from three private schools, 281 (144 women and 137 men) selected at random (systematic selection), completed the baseline questionnaire.

In follow-up, 15 participants were not contacted and 35 were eliminated in the baseline, as they surpassed the cutoff point of the screening measure, so only 231 students were reevaluated 12 months after.

Instruments

Children's Eating Attitudes Test ([ChEAT] Maloney, McGuire, & Daniels, 1988) evaluates the symptomatology and concerns characteristic of anorexia nervosa from 26 items with six answer options. High scores indicate the presence of ED symptomatology, and the cutoff point is 20. This measure was validated by Escoto and Camacho (2008) who found an acceptable reliability ($\alpha = .82$) for pre-teenagers from 9 to 15 years old. This test was utilized as a screening measure to: 1) Eliminate the participants who displayed symptomatology in the baseline; and 2) create the groups with or without symptomatology in follow-up.

Adolescent's Self-Esteem Inventory (PAI; Pope, McHayle, & Craighead, 1988) includes 21 items with 5-answer options. It was validated for Mexico by Caso (1999) who found a reliability of .84 and four factors: Self-Perception, Competence Perception, Familial Relation and Anger. Low scores are associated with greater self-esteem.

Eating Disorders Inventory (EDI; Garner, Olmstead, & Polivy, 1983); it comprises 64 items with 6 answer options and was designed to evaluate the cognitive and behavioral characteristics associated with ED. It evaluates the drive for thinness, identification of the interperceptive awareness, bulimia, body dissatisfaction, ineffectiveness, maturity fear, perfectionism and interpersonal distrust. It has

been validated with Mexican women (Mancilla-Díaz, Franco-Paredes, Álvarez-Rayón, & Vázquez-Arévalo, 2003) and men (Franco, Mancilla, Álvarez, Vázquez, & López, 2004). High scores point out greater eating pathology.

The Body Shape Questionnaire (BSQ) developed by Cooper, Taylor, Cooper, and Fairburn (1987) evaluates the dissatisfaction and self-perception related to body image. In Mexico the scale has a reliability of .98; it has 34 items with six answer options, and has been utilized with children from 10 to 11 years old. Evaluates normative discomfort and body dissatisfaction (Galán, 2004). High scores indicate the presence of greater dissatisfaction with body image.

Questionnaire on Influences on the Body Shape Model (CIMEC; Toro, Salamero, & Martínez, 1994); it has 40 items with 3 answer options. High scores indicate greater influence from the body shape model. It was validated in Mexican women by Vázquez, Álvarez, and Mancilla (2000), who obtained a reliability of .94. It has been used with 10-year-old children (Vázquez, López, Álvarez, Mancilla, & Ruiz, 2006) and adolescents from 11 to 18 years old (Toro, et al., 2006); it evaluates the publicity, social models, and social relations influence, besides discomfort with body image.

Body weight and height were registered by the personnel of medical services of the institution: The body mass index (BMI) was calculated dividing the weight (in kg) by height (in meters), squared.

Procedure

The protocol of research was presented to the authorities of the Institution and Scholar Zone, who allowed carrying out the project. Informed consent of the parents was obtained, sending letters through the principal of the school; the parents were informed on the characteristics of the measures as well as on those of the intervention, so as to obtain the permission for their children to take part in the study and the confidentiality and anonymity of the results was guaranteed. Only favorable answers participated in the study; additionally informed consent from the students was obtained.

Baseline screening

A screening procedure was accomplished at baseline. In the screening we used the 26-item version

of the ChEAT. The individuals who surpassed the cutoff point (≥ 20) were excluded from subsequent follow-up analyses (to differentiate a risk factor from a concomitant or consequence of an ED symptom), and their parents were invited to an informational talk where the importance of receiving professional help for the early detection of the problems found in their children was remarked. In this initial screening we found 35 prevalent ED symptomatology cases. Therefore, the cohort at risk of new ED symptoms during the follow-up was 246 students who answered PAI, EDI, BSQ, and CIMEC.

Follow-up

Fifteen participants were not contacted in follow-up (12 months), and the main reason for not participating was school absenteeism. Thus, the sample ended up integrated by 231 students (123 women and 108 men; participation rate, 93.1%) who were examined again with ChEAT as screening measure (in order to identify new cases with symptomatology); out of these, 20 surpassed the cutoff point of this instrument (symptomatic group) and were compared in the variables of interest with 30 participants who did not display symptomatology (asymptomatic group) and were chosen at random from out of the 211 participants who did not surpass the cutoff point in follow-up.

ANALYSIS

We used an independent sample t-test to compare the mean of the scales at baseline between those participants who thereafter had ED symptoms and those who did not.

RESULTS

Symptomatology

According cutoff point of ChEAT, 35 participants were identified in baseline with ED symptomatology (12.45%), and in follow-up 20 new cases of ED symptomatology were identified (8.66%).

Self-esteem

In the univariate comparisons between the groups, with and with non symptomatology (Table 1) differences in the scales of Self-Perception, Perception of Competence, Anger, and total score in PAI were

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found. In all cases, group with symptomatology showed lower scores, therefore in this group self-esteem was lower.

Cognitive and behavioral traits associated to eating disorders

In Body Dissatisfaction, Bulimia, Interoceptive Awareness, and Inefficacy EDI subscales, the group with symptomatology showed higher scores in comparison to the group with non symptomatology.

Internalization of the body aesthetic model

In relation to the CIMEC, in the group with symptomatology higher scores were observed in the Influence of the Publicity subscale; however the group with non symptomatology showed higher influence of the social relationships.

Body dissatisfaction

For the BSQ, statistically significant differences were observed in Body Dissatisfaction subscale. The group with symptomatology showed higher dissatisfaction in comparison with the group with non symptomatology.

Attitudes and eating behaviors

The group with symptomatology obtained higher scores in Drive to Lose Weight subscale as well as in the total score of the ChEAT, in comparison with the group with non symptomatology.

Body mass index

They were not differences statistically significant in the age and in the BMI among the groups ($p > .05$).

Table 1. Pre-test differences between participants with and without ED symptomatology in post-test

Subscales/Scales	Group		<i>t</i>
	Symptomatic <i>n</i> = 20	Asymptomatic <i>n</i> = 30	
Self perception (PAI)	27.60 (6.96)	32.17 (2.80)	2.79**
Perception of competence (PAI)	26.15 (7.86)	31.53 (2.85)	2.94**
Familial relation (PAI)	12.75 (2.77)	13.73 (1.36)	1.47
Anger (PAI)	13.10 (3.34)	15.43 (3.07)	2.54*
Total (PAI)	79.60 (17.99)	92.87 (7.16)	3.14**
Drive to lose weight (EDI)	4.55 (5.37)	3.13 (3.44)	1.05
Body shape dissatisfaction (EDI)	5.90 (4.96)	3.67 (3.42)	1.90*
Maturity fear (EDI)	9.45 (9.96)	6.80 (3.18)	1.60
Bulimia (EDI)	1.50 (2.46)	0.27 (0.91)	2.15*
Interoceptive awareness (EDI)	6.80 (6.17)	3.47 (3.18)	2.23*
Inefficacy (EDI)	4.65 (4.28)	1.70 (2.05)	2.87**
Perfectionism (EDI)	6.60 (3.36)	5.27 (3.40)	1.36
Interpersonal distrust (EDI)	4.15 (3.72)	3.83 (2.48)	0.36
Influence from publicity (CIMEC)	4.25 (4.72)	2.13 (2.94)	1.96*
Influence from body shape model (CIMEC)	2.55 (1.93)	2.17 (1.78)	0.72
Influence from social relations (CIMEC)	1.80 (1.88)	3.03 (2.06)	2.15*
Discomfort from body shape image (CIMEC)	4.80 (4.50)	3.30 (3.92)	1.25
Total (CIMEC)	15.85 (13.89)	12.90 (9.94)	0.82
Discomfort with body shape image (BSQ)	21.95 (12.98)	17.23 (8.51)	1.43
Body dissatisfaction (BSQ)	19.55 (9.78)	14.43 (5.57)	2.12*
Total (BSQ)	67.60 (34.83)	52.03 (20.85)	1.80
Drive to lose weight (ChEAT)	2.60 (3.66)	0.73 (1.44)	2.17*
Avoidance of fattening food (ChEAT)	0.50 (1.00)	0.47 (1.48)	0.09
Concern about food (ChEAT)	0.20 (0.70)	0.20 (0.81)	0.00
Perceived social pressure (ChEAT)	1.60 (2.41)	0.53 (1.43)	1.78
Obsessions and compulsions (ChEAT)	1.75 (1.48)	1.20 (1.13)	1.41
Eating patterns and styles (ChEAT)	2.90 (3.32)	1.97 (1.69)	1.31
Compensatory behaviors (ChEAT)	0.05 (0.22)	0.07 (0.37)	0.18
Total (ChEAT)	16.30 (4.84)	10.20 (6.06)	3.77**
BMI	21.69 (4.67)	20.79 (3.16)	0.81

* $p < .05$; ** $p < .01$.

Discussion

This paper, assess the role of self-esteem, influence from body shape models and body shape dissatisfaction as risk factors for the development of ED symptomatology in a sample of participants recruited from the general population, who initially were free of symptomatology and were followed-up to assess the incidence of new cases. We used the Children Eating Attitude Test to evaluate symptoms of ED. ChEAT scores of 20 or more have been associated with more disturbed eating attitudes and behaviors and an increased vulnerability toward development of an ED. A total of 12.24% (35) participants showed scores of 20 or more on baseline, similar outcome to 11.07% reported by Rolland, Farnill, and Griffiths (1997) with participants of 8 to 12 years old. However, the percentage of participants with ED symptomatology in the present study was higher than 10.6% reported by Escoto and Camacho (2008) with men and women of 9 to 15 years old, to 10.5% reported by McVey, Tweed, and Blackmore (2004) with children of 10 to 14 years old, to 6.9% found by Maloney, McGuire, Daniels and Specker (1989) with children of 7 to 13 years old, and to 4.9% found by Schur, Sanders, and Steiner (2000) with children of 8 to 13 years. It was found that the presence of ED symptomatology in children's Mexican samples is higher than in other countries, which indicates that the cutoff point of 20 possibly is not appropriate for Mexican children. During the follow-up we identified 20 incident cases of EDs symptomatology (8.66%), according to ChEAT's cutoff point.

In the univariate comparison, significantly lower self-esteem was found into ED symptomatology group. Previous studies indicate that low self-esteem is associated with a high prevalence of ED (Gual, et al., 2002). Furthermore, the prospective analysis carried out in the present research confirms the potentially casual association of self-esteem and the emergence of ED symptomatology. This indicates that it is important for the preventive programs to include self-esteem as a fundamental factor for the setting of these disorders. In this sense, new researches that evaluate the effect of the increment of self-esteem and its impact on the prevention of ED are need, as outlined by O'Dea and Abraham (2000).

In the body dissatisfaction, interoceptive awareness and inefficacy, the group with symptomatology showed higher scores in comparison with the group with non symptomatology, which agree with Peck and Lightsey's (2008) findings. This indicates that a high level of body dissatisfaction and an extreme lack of emotional awareness, including uncertainty about hunger and satiation sensations, play a significant role in differentiating groups at differing levels of ED symptoms severity.

In the group with symptomatology, higher scores were observed in the influence of the publicity; however the group with non symptomatology showed higher influence of the social relationships. These findings support the idea that body concerns are most likely to emerge in the context of a general subculture of weight and shape consciousness in which multiple agents exert influence (Dunkley, et al., 2001). The findings also emphasize the importance of examining multiple agents in future research.

Conversely to reported by other authors, in the present paper, a greater incidence of ED symptomatology among men than in women was found. This remarks the importance of including both men and women in the programs for ED prevention.

Findings from this study suggest that prevention programs would benefit by addressing the influence of multiple sociocultural agents (e.g., teaching how to assess magazine information critically and deal with peers), and perhaps to design interventions for those agents themselves (e.g., parents). It would be useful for future studies to explore the role of other sociocultural agents, such as schools and teachers, in influencing attitudes and behaviors. Furthermore, it would be useful to examine the comparative role of different sociocultural agents across time, to determine their longitudinal predictive capabilities and whether their importance varies developmentally.

It is important to recognize some limitations of this study; the identified cases showed symptomatology only, so it is important to make interviews (according to DSM-IV criteria, APA, 2000) in order to characterize the participants with ED. In relation to the sample size, our retention rate in the study might be considered high in absolute terms (94%) and the mortality rate (6%) is small to cause important biases, however, the proportion of participants

lost along the study might be relatively high in relation to the short period of the study (12 months). For future researches it is recommended increasing the sample size to increase the external validity of the sample.

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