Risk of eating behavior disorders in adolescents from Cartagena, Colombia

Zuleima Cogollo[1]
Edna Margarita Gómez-Bustamante[2]

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Abstract

Objective. To estimate the prevalence and explore the relationship of the risk of eating behavior disorders (REDB) with some factors in school-age adolescents from Cartagena, Colombia. **Methodology**. This was a cross-sectional study, which used probability sampling by conglomerates of high school students (sixth to eleventh grades) in 2012. The REDB was quantified with the SCOFF questionnaire (two or more points). The associations were fitted through a logistic regression model. **Results**. A total of 2625 students between 10 and 20 years of age (mean = 14 years) participated; 54% were women. A total of 32.5% scored for REDB. The risk factors associated were: problematic consumption of alcohol (OR=1.9; CI95%: 1.4-2.5), female sex (OR=1.6; CI95%: 1.4-1.9), non-heterosexual sexual orientation (OR=1.5; CI95%: 1.1-2.1), consumption of any illegal substance (OR=1.5; CI95%: 1.1-2.1), cigarette smoking at any moment in life (OR=1.5; CI95%: 1.2-1.8), depressive symptoms with clinical importance (OR=1.5; CI95%: 1.2-1.8), and family dysfunction (OR=1.2; CI95%: 1.1-1.5). **Conclusion**. An important proportion of school-age adolescents from Cartagena presented REDB, which was mainly related to problematic consumption of alcohol and the female sex.

Key words: feeding behavior; eating disorders; adolescent; students.

Riesgo de trastorno del comportamiento alimentario en adolescentes de Cartagena, Colombia

Resumen

Objetivo. Estimar la prevalencia y explorar la relación del riesgo de trastorno del comportamiento alimentario (RTCA) con respecto a algunos factores en adolescentes escolarizados de Cartagena, Colombia. **Metodología**. Estudio de corte transversal en el que se empleó muestreo probabilístico por conglomerados de los

1 RN, Master. Professor Universidad de Cartagena, Colombia.
email: zcogollom@unicartagena.edu.co
2 RN, Master. Professor Universidad de Cartagena, Colombia.
email: egomezb@unicartagena.edu.co

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estudiantes de secundaria (sexto a undécimo grado) en 2012. Se cuantificó el RTCA con el cuestionario SCOFF (dos o más puntos). Las asociaciones se ajustaron mediante un modelo de regresión logística. **Resultados**. En este trabajo participaron 2 625 estudiantes entre 10 y 20 años (media=14 años), de ellos 54% mujeres. El 32.5% puntuó para RTCA. Se asociaron como factores de riesgo: el consumo problemático de alcohol (OR=1.9; IC95%: 1.4-2.5), el sexo femenino (OR=1.6; IC95% 1.4-1.9), la orientación sexual no heterosexual (OR=1.5; IC95% 1.1-2,1), el consumo de alguna sustancia ilegal (OR=1.5; IC95% 1.1-2.1), el consumo de cigarrillo alguna vez (OR=1.5; IC95% 1.2-1.8), síntomas depresivos con importancia clínica (OR=1.5; IC95% 1.2-1.8) y disfunción familiar (OR=1.2; IC95% 1.1-1.5). **Conclusión**. Una proporción importante de los adolescentes escolarizados de Cartagena presentaron RTCA, el que estuvo relacionado principalmente con el consumo problemático de alcohol y el sexo femenino.

Palabras clave: conducta alimentaria; trastornos de la conducta alimentaria; adolescente; estudiantes; estudio transversal.

Risco de transtorno do comportamento alimentário em adolescentes de Cartagena, Colômbia

Resumo

Objetivo. Estimar a prevalência e explorar a relação do risco de transtorno do comportamento alimentário (RTCA) com alguns fatores em adolescentes escolarizados de Cartagena, Colômbia. **Metodologia.** Estudo de corte transversal no que se empregou amostra probabilística por conglomerados dos estudantes de secundária (sexto do primeiro grau a segundo ano do segundo grau) em 2012. Quantificou-se o RTCA com o questionário SCOFF (dois ou mais pontos). As associações se ajustaram mediante um modelo de regressão logística. **Resultados.** Participaram 2 625 estudantes entre 10 e 20 anos (média=14 anos) e 54% foram mulheres. 32.5% pontuaram para RTCA. Associaram-se como fatores de risco: o consumo problemático de álcool (OR=1.9; IC95%: 1.4-2.5), o sexo feminino (OR=1.6; IC95% 1.4-1.9), a orientação sexual não heterossexual (OR=1.5; IC95% 1.1-2,1), o consumo de alguma substância ilegal (OR=1.5; IC95% 1.1-2.1), o consumo de cigarro alguma vez (OR=1.5; IC95% 1.2-1.8), sintomas depressivos com importância clínica (OR=1.5; IC95% 1.2-1.8) e disfunção familiar (OR=1.2; IC95% 1.1-1.5). **Conclusão**. Uma proporção importante dos adolescentes escolarizados de Cartagena apresentaram RTCA, o que esteve relacionado principalmente com o consumo problemático de álcool e o sexo feminino.

Palavras chave: comportamento alimentar; transtornos da alimentação; adolescente; estudantes.

Introduction

In current society, the greatest concern is for the physical appearance; the idea of thinness has been generalized and the risk of eating behavior disorders (REDB) increased. From the perspective of collective and public healthcare REDB is a priority matter of high frequency in adolescent population.[1] In the clinical context, eating behavior disorders gather three main diagnostic categories: anorexia, bulimia, and unspecified eating behavior disorders, according to the American Psychiatric Association and the World Health Organization.[2] However, epidemiological studies frequently identify only individuals in REDB.

Within the global context, in high school students, according to the characteristics of the population and the measurement instrument, the frequency of REDB can be reached by 22%.[3,4] In Colombia, prevalence is observed between 3 and 25% REDB in school-age adolescents[5]. To date, studies available in Colombia have been limited to estimating the prevalence of REDB and a reduced

number of associated variables and consistently reported that REDB was higher in women and in those manifesting depressive symptoms with clinical importance.[5]

Given that the REDB is a complex phenomenon related to different variables, which interact according to the population group studied,[6] and that currently, it is one of the most relevant mental health problems in adolescents, given the difficulty of early diagnosis and its consequences; thereby, nurses play a fundamental role in timely detection and offering nursing care within the context of an interdisciplinary therapeutic strategy, as well as in evaluating the care needs, diagnoses, and nursing activities that make up the care plan in this type of mental disorder.[7] The approach from the socio-cultural, biological, and psychological perspective, without losing sight of the family will enable this action to be efficient and affective.[7]

This research analyzed a broad number of possible variables associated to REDB, not included in preceding Colombian studies, and controlled eventual bias.[8] This study sought to know the prevalence and variables related to REDB in school-age adolescents from Cartagena, Colombia.

Methodology

This work is a sub-product of a previous cross-sectional observational analytic study revised and approved by the Ethics Committee at Universidad de Cartagena. The parents authorized their children's participation and the students agreed to participate in the research. A sample was calculated of 1067 high school students, attending public schools in the city of Cartagena, Colombia, during 2012; the frequency expected was 50% for any of the events that could be taken as dependent variable, with 3% margin and 5% alpha error. Additionally, the initial sample was multiplied by 2.5; a design effect to have close confidence intervals in all the estimations of associations and in the fit through logistic regression. The sampling was random through conglomerates; each classroom was taken as one of them.

The students completed the questionnaire, without indicating identification. The form inquired on demographic data (age in years, sex, educational level, and economic level of residence) and the scales presented ahead. Sexual orientation was evaluated with a point that included the definition of the categories: bisexual, heterosexual, homosexual, and unsure of the sexual orientation. For analysis, two groups were re-categorized: heterosexual and non-heterosexual (bisexual, homosexual, and unsure about sexual orientation).

Religiosity was evaluated through the Francis Scale of Attitude toward Christianity short-form, with five items exploring the affective response to God, Jesus, and prayer; each point offers five response options. The scores range from 0 to 20; scores equal to or below 18 correspond to low religiosity.[9] The level of physical activity was quantified through questions adapted from the YOUTH 2007 questionnaire from the United States. Physical inactivity was considered when engaging in less than three days of activities during the last week.[10] Problematic consumption of alcohol was estimated through the CAGE questionnaire; problematic consumption of alcohol was considered with an affirmative response to two or more of the four points of the questionnaire.[11]

To evaluate consumption of any illegal substance at any moment in life, the participants were asked about their use of ecstasy, cannabis, crack, cocaine, and other substances (inhalants, taking sleeping pills or pills for the nerves). Questions were asked about cigarette smoking at any moment in life and during the last month. The presence of depressive symptoms with clinical importance (DSWCI) was quantified through the psychological general wellbeing index (WHO-5), which has five points that quantify DSWCI during the last month. Scores above six were considered DSWCI.[12] Family functioning was quantified with

the family APGAR scale, which has five items, exploring the perception of family functioning during the last six months. Scores below 16 were taken with family dysfunction.[13]

The REDB was quantified with the SCOFF questionnaire. This instrument comprises five questions related to eating behavior disorder (EBD) symptoms during the last three months.[14] This questionnaire has been validated in Colombian adolescent population and habitually shows low internal consistency; nevertheless, with good performance against a reference criterion, good sensitivity and specificity to identify possible cases.[15]

The STATA statistical package was used. All the variables studied were dichotomized. According to their ages, the students were divided into age groups over and under 15 years of age. The association between low religiosity and the variables studied was quantified through odds ratio (OR) with 95% confidence intervals (CI95%). Finally, the associations were adjusted for age and sex via binomial logistic regression. The Hosmer-Lemeshow goodness fit was estimated for the final model. The internal consistency of the scales used in this study had the following Cronbach's alpha coefficients: 0.91 for Francis; CAGE: 0.58; WHO-5: 0.75; family APGAR: 0.77; and SCOFF: 0.39.

Results

A total of 2625 students satisfactorily completed the whole questionnaire. Mean age of the participants was 13.8 ± 2.0 years; 60.4% of the students were between 10 and 15 years of age and 39.6% were between 16 and 20 years of age.

Regarding sex, 54.3% were women. The students were between 6th and 11th grades: 67.7% in basic secondary (between 6th and 9th grades) and 32.3% middle vocational (10th and 11th grades).

In terms of socioeconomic level, 72.8% of the students reported coming from low socioeconomic levels and 27.2% from middle and high socioeconomic levels. According to sexual orientation, 91.9% were classified as heterosexual and 8.1% as non-heterosexual (gay, lesbian, and unsure). In relationship to REDB, a group of 852 students (32.5%; CI95%: 30.7%-34.3%) obtained risk scores for these disorders. Distribution of other variables studied indicated: 32.7% has low religiosity, 27.6% has a high level of physical activity, 15% have smoked at any moment in life and 7.9% has consumed some illegal substance, 8.8% has problematic consumption of alcohol, 7.2% has suffered from depressive symptoms with clinical importance, and almost one of every two (48.0%) has family dysfunction.

The internal consistency of the scales quantifying construct was found between 0.39 and 0.91. Cronbach's alpha coefficients were: 0.91 for Francis; CAGE: 0.58; WHO-5: 0.75; family APGAR: 0.77, and SCOFF: 0.39. With bivariate analysis, we obtained the values for OR of all the variables of interest that can be noted in Table 1. Except for socioeconomic level, religiosity, and level of physical activity, the remaining variables showed association among these risk factors and REDB.

Table 2 shows that in the multivariate analysis, the variables: problematic consumption of alcohol, female sex, consumption of any illegal substance at any moment in life, non-heterosexual sexual orientation, depressive symptoms with clinical importance, cigarette smoking at any moment in life, and family dysfunction were associated to REDB, with OR values between 1.84 and 1.24. The model fit adequately.

Table 1. Associations for REDB and its risk factors in high school students from Cartagena, Colombia

Variable	OR	OR $CI_{95\%}$
Age in years: 10-15 / 16-20	1.25	1.06-1.48
Sex: female/male	1.52	1.29-1.80
Education: basic secondary/medial vocational	1.52	1.27-1.82
Economic level: low/medium-high	1.20	1.00-1.45
Sexual orientation: non-heterosexual/heterosexual	1.60	1.21-2.13
Religiosity: low/high	1.17	0.98-1.39
Level of physical activity: high/low	0.98	0.82-1.18
Cigarette smoking at any moment in life / Never experimented	1.65	1.32-2.05
Consumption of any illegal substance at any moment in life: yes/no	1.74	1.31-2.33
Problematic consumption of alcohol: yes/no	2.01	1.53-2.63
Depressive symptoms with clinical importance: yes/no	1.82	1.35-2.45
Family dysfunction: yes/no	1.39	1.18-1.64

Table 2. Multivariate model for variables related to REDB in adolescents from Cartagena, Colombia

Variable	OR	OR $CI_{95\%}$
Problematic consumption of alcohol	1.84	1.39-2.45
Female sex	1.68	1.42-2.00
Consumption of any illegal substance at any moment	1.56	1.16-2.11
Non-heterosexual sexual orientation	1.55	1.16-2.08
Depressive symptoms with clinical importance	1.52	1.11-2.07
Cigarette smoking at any moment	1.49	1.18-1.89
Family dysfunction	1.28	1.08-1.52

Hosmer-Lemeshow test chi square = 7.754; degrees of freedom = 6; probability = 0.257

Discussion

This study showed that approximately one third of adolescent students are under REDB. The risk is significantly higher in students with problematic consumption of alcohol and in women. With a similar instrument, REDB prevalence of 32.5% in this research exceeds that documented in other research, which found prevalence that did not surpass 25%.[3,4]

Likewise, this study showed that age was independent of REDB. The few studies available in this population are contradictory: Herpertz-Dahlmann *et al.,*[4] and Unikel *et al*.,[16] observed that REDB increased with age, while González-Juárez *et al.,* [17] and Vega *et al*.,[18] found that this risk diminished with age.

In the current research it was noted that women showed a higher proportion of REDB compared to men; said data agrees with most.[4,5,18] We also observed that cigarette smoking at any moment in life was associated to REDB, although few

investigations have explored this relationship; Martínez-Mantilla *et al*.,[19] found that daily cigarette smoking in high school students was independent of REDB. Also, Babio *et al.,*[20] demonstrated that this consumption was only associated to REDB in women.

Our results revealed that socio-economic level was independent of REDB, a similar observation to that reported by Ángel *et al*.[5] In terms of the relationship between depressive symptoms with clinical importance and REDB our study showed relationship between these two variables, a finding that coincides with that reported by other authors like Herpertz-Dahlmann *et al.,*[4] and Piñeros *et al.,*[21]; however, Babio *et al*.,[20] specified that depressive symptoms are related to REDB exclusively in women. Family dysfunction was another of the variables associated significantly to REDB in our study group, a finding that is similar to the research by González-Quiñonez *et al*., [22] who reported that family dysfunction increases the of REDB.

Consumption of legal (alcohol and cigarettes) and illegal substances is related to REDB, although no studies were found with adolescent population exploring these associations, research with university students suggests that consumption of substances can be a strategy to lower anxiety and food intake.[23] Regarding sexual orientation, non-heterosexual students showed higher risk of REDB compared to heterosexual students; the aforementioned has been explained a greater concern for the body shape and weight control, particularly in non-heterosexual males.[24]

In our research, religiosity and physical activity did not show statistically significant relationship with REDB. The religious beliefs or convictions can be important factors in REDB in some contexts, above all in that related to self-punishments and sacrifices in some religions.[25] Physical activity can be an indicator of REDB in some populations, where exercise is used as a weight-control strategy by adolescents.[26]

The findings from the current study corroborate the complexity of the problem of eating behavior disorders in adolescent populations, which is why it is necessary for the strategies of promoting healthy eating behavior and prevention and reduction of REDB to be comprehensive, with an interdisciplinary approach and guaranteeing participation from different sectors to encompass all the aspects involving this problem.[3, 5]

One of the main intervention strategies is education for individuals, family, and community in which nursing professionals have the necessary training to carry out prevention-type programs, at all levels of care, especially in the first level of care, as an entryway into the healthcare system.[7] From this study, it may be concluded that the prevalence of REDB is high in adolescent students from Cartagena, Colombia. The REDB is significantly higher in those reporting problematic consumption of alcohol, in women, adolescents with history of consuming any illegal substance, non-heterosexuals, those presenting depressive symptoms with clinical importance, in cigarette smoking at any moment of their lives, and those with family dysfunction. Interventions are needed aimed at carrying out comprehensive prevention of REDB in high school students from this Colombian city.

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