



# RISKY EATING BEHAVIORS IN YOUNG ADULTS FROM TWO COMMUNES IN THE ÑUBLE REGION, CHILE IN THE COVID-19 PANDEMIC

CONDUCTAS ALIMENTARIAS DE RIESGO EN JÓVENES ADULTOS DE DOS COMUNAS DE LA REGIÓN DE ÑUBLE EN CHILE DURANTE PANDEMIA COVID-19

Javiera Sáez-Opazo<sup>1a</sup> , Valeria Quiroga-Salom<sup>1a</sup> , Monserrat Torres-Landeros<sup>1a</sup> , Ismael Morales-Ojeda<sup>2b</sup> , Miguel Ángel López-Espinoza<sup>1,3c</sup> , Pía Rojas-Cárdenas<sup>1,d</sup>

## ABSTRACT

**Objective:** To analyze risky eating behaviors in relation to nutritional status and physical activity in young adults during the COVID-19 pandemic in the communes of Chillán and Chillán Viejo. **Methods:** Observational and cross-sectional design. A sample of 184 young adults of both sexes, who lived in two communes in the Ñuble region (Chile) during the period of confinement due to COVID-19 pandemic, was obtained. A personal history questionnaire and the SCOFF scale that assesses the risk of eating behavior disorders (EDs) were applied. **Results:** A 37.16% risk for ED was found (95% CI: 30.23 – 44.63%). The risk of eating behavior disorders was related to the variables: physical activity ( $p=0.01$  bivariate analysis) and nutritional status ( $p=0.03$ , adjusted analysis). **Conclusion:** It was possible to identify a higher proportion than that recorded in the literature and the factors associated with eating disorders were those that were expected to be found.

**Keywords:** Eating disorders; Bulimia nervosa; Anorexia nervosa; Binge eating disorder; Pandemic; Quarantine. (Source: MESH-NLM)

## RESUMEN

**Objetivo:** Analizar las conductas alimentarias de riesgo, en relación con estado nutricional y actividad física en jóvenes adultos durante la pandemia COVID-19 en las comunas de Chillán y Chillán Viejo. **Método:** Diseño observacional y transversal. Se obtuvo una muestra de 184 adultos jóvenes de ambos sexos, que residían en dos comunas de la región de Ñuble (Chile) durante el periodo de confinamiento por la pandemia de COVID-19. Se les aplicó un cuestionario de antecedentes personales y la escala SCOFF que evalúa el riesgo de trastornos de la conducta alimentaria (TCA). **Resultados:** Se encontró un 37,16% de riesgo para TCA (IC 95%: 30,23 – 44,63%). El riesgo de trastornos de la conducta alimentaria tuvo relación con las variables: actividad física ( $p = 0.01$  análisis bivalente) y estado nutricional ( $p = 0.03$ , análisis ajustado). **Conclusión:** Se logró identificar una proporción superior a la registrada en la literatura y los factores asociados a TCA eran los que se esperaban encontrar.

**Palabras claves:** Trastornos de la conducta alimentaria; Bulimia nerviosa; Anorexia nervosa; Trastorno por atracón; Pandemia; Cuarentena. (Fuente: DeCS- BIREME)

<sup>1</sup> Carrera de Nutrición y Dietética, Facultad de Ciencias de la Salud, Universidad Adventista de Chile. Chillán, Chile.

<sup>2</sup> Universidad de las Américas, Facultad de Ciencias de la Salud, sede Viña del Mar, Valparaíso, Chile.

<sup>3</sup> Carrera de Nutrición y Dietética. Facultad de Salud. Universidad Santo Tomás, Talca. Chile.

<sup>a</sup> License in Nutrition and Dietetics.

<sup>b</sup> Nurse, Doctor in Biomedical Sciences.

<sup>c</sup> Nutritionist, Master in Public Health.

<sup>d</sup> Nutritionist, Master in Nutrition in Physical Activity and Sports.

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## INTRODUCTION

Eating Disorders (ED) are psychological disorders in which there is a more significant concern for weight, body image and diet<sup>(1)</sup>. which can cause serious health problems and even cause death in extreme cases, within the limits of which the most common are anorexia nervosa, bulimia nervosa and binge eating disorder, among others<sup>(1)</sup>. These disorders are classified within the Diagnostic Manual of Mental Disorders in its 5th Edition (DMS-5) and in the International Classification of Diseases (ICD-10)<sup>(1)</sup>.

At the beginning of 2020, the World Health Organization declared the disease caused by the SARS-COV2 virus a pandemic<sup>(2)</sup>, which caused countries, including Chile, to implement sanitary measures of social isolation and quarantines<sup>(3)</sup>. According to the evidence, during the pandemic, risk behaviors and factors associated with eating disorders have been altered by confinement conditions<sup>(4)</sup> having an effect on people's eating behaviors<sup>(5)</sup>. Studies have revealed that a change in a person's routine, where the structures created in "normal" life are removed, can increase the risk of eating disorders<sup>(6,7)</sup> manifesting itself in different ways, including changes in the appreciation of body image, binge eating behaviors or uncontrolled intake of food and deprivation of food<sup>(8)</sup>.

Due to these conditions, eating behaviors can be affected due to different factors such as Physical Activity (PA) and Nutritional Status (NS). In relation to PA, a reduction has been seen due to confinement measures<sup>(9)</sup>, which may be a factor present in eating disorders<sup>(10)</sup>. With regard to NS, on the one hand, it is assumed that a thin or underweight person has a higher risk of developing eating disorders; however, there is evidence<sup>(11,12)</sup> indicating an inverse trend between the Body Mass Index (BMI) and body dissatisfaction, with a higher risk of suffering eating disorders<sup>(13)</sup>.

This research aims to analyze risky eating behaviors in relation to nutritional status and physical activity in young adults during the COVID-19 pandemic in the communes of Chillán and Chillán Viejo. The evidence shows that in this age group this phenomenon, both nationally and regionally, is little investigated, contrary to the investigations carried out in the adolescent population<sup>(14,15)</sup>, so it is necessary to investigate this specific population in pandemic context.

## MATERIAL AND METHODS

### Design

Observational analytical and cross-sectional study<sup>(16)</sup>.

**Participants.** It was made up of young adults who live in the communes of Chillán and Chillán Viejo (Ñuble region, Chile). A sample of 184 subjects was obtained, which allows estimating a prevalence of ED risk (specifically anorexia and bulimia nervosa), around a  $P_0 = 0.12$ <sup>(14)</sup> and with a precision of 0.05 ( $1 - \alpha = 0.95$ ). They were selected by the random non-probabilistic method<sup>(16)</sup>. Adults between the ages of 18 and 25 years were included, of both sexes; who live in any of the two communes described above for at least two months. Subjects with a self-reported diagnosis of ED were excluded. This study was authorized by the Scientific Ethics Committee of the Adventist University of Chile (N°2021-20). Participation was completely voluntary and they signed an informed consent, following the guidelines of the Declaration of Helsinki<sup>(17)</sup>.

### Instruments

Two instruments were applied:

**1. Personal data questionnaire.** Designed by the same authors of this study, it allowed the collection of general and self-reported health information with data such as gender (female, male); age (date of birth); current studies (high school, technical level, university, postgraduate or other); occupation (student, worker, both); place of residence (Chillán, Chillán Viejo); self-reported pathology or current diagnosis of disease (for the exclusion criteria: eating disorders), perception of physical activity (performs, does not perform) and an estimated time (30, 60, 120 minutes or more).

**2. Eating behavior risk questionnaire SCOFF.** Used for ED risk screening, it consists of five dichotomous response questions (Yes: 1 point – No: 0 points) that evaluate the following aspects; self-induced vomiting (Sick), fear of uncontrolled eating (Control), weight loss (Out weight), changes in body image (Fat) and food dependence (Food). All questions are designed with one-way answers. Results of a sum greater than or equal to 2 points are classified as at risk of suffering from an eating disorder, specifically anorexia or bulimia nervosa<sup>(18)</sup>. The version used was translated into Spanish and validated in men and women<sup>(19-21)</sup>, with a sensitivity of 78% and a specificity of 84%<sup>(21)</sup>.

**3. Data collection.** The data collection was implemented with the Google Forms platform and disseminated through email and on social networks (Facebook and Instagram). It was available between September 1 and October 13, 2021.

### Statistic analysis

Qualitative variables were described with absolute and relative frequencies. The Chi2 test was used, and the magnitude of the associations was with the prevalence ratio (PR) and 95% confidence intervals. R-Studio was used with the "epiR",

"forcats", "ggplot2" and "gridExtra" packages.

### RESULTS

Below are the results of the youth and adults selected in the sample, who correspond to 184 surveys eligible for analysis (Table 1).

**Table 1.** Distribution of study participants according to sociodemographic variables.

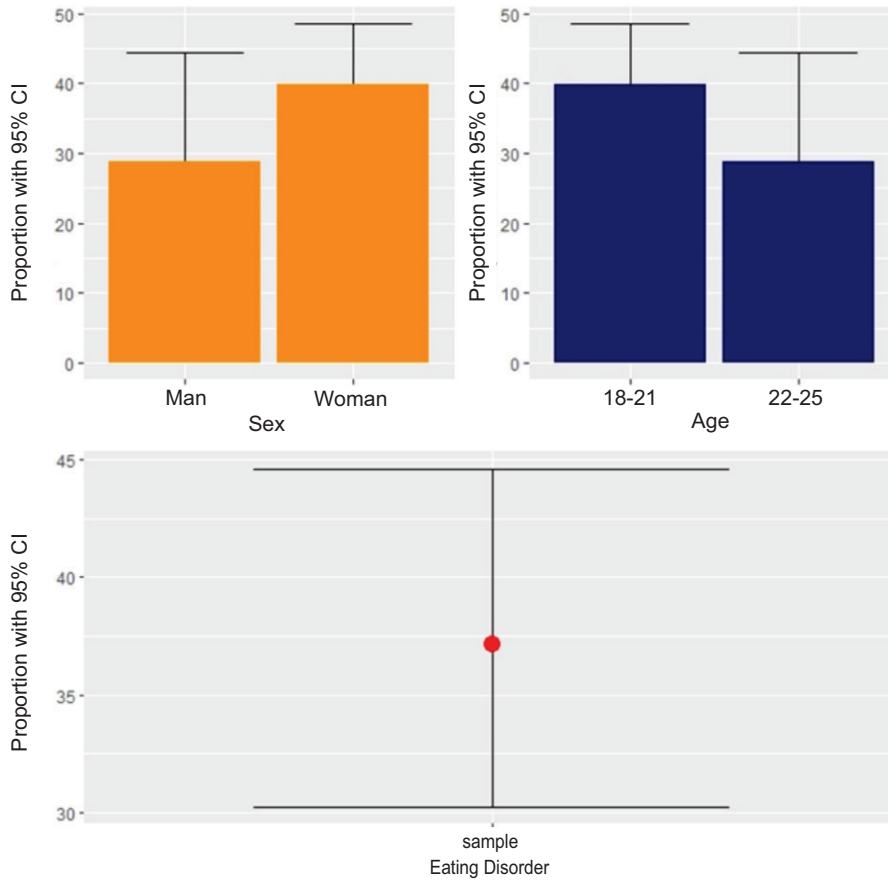
Independent variables	n	%	Confidence intervals 95%
<b>Sex</b>			
Woman	138	75.41	68.40 – 81.33
Man	45	24.59	18.67 – 31.60
<b>Age</b>			
18-21	84	45.90	38.58 – 53.40
22-25	99	54.10	46.60 – 61.42
<b>Actual studies</b>			
Secondary education	9	6.52	3.22 – 12.38
University	159	86.89	80.92 – 91.25
High level technician	7	3.83	1.69 – 8.04
Graduate or other	8	4.37	2.05 – 8.73
<b>Occupation</b>			
Student	136	74.32	67.24 – 80.35
Worker	28	15.30	10.57 – 21.53
Both	19	10.38	6.53 – 15.96
<b>Place of residence</b>			
Chillán	170	92.90	87.90 – 96.01
Chillán Viejo	13	7.10	3.99 – 12.10

Based on the SCOFF scale, we found that 37.16% (n=68) of the sample is at risk of eating disorders (95% CI: 30.23 – 44.63%). The distribution of the proportions by sex and age group did not show statistically significant differences ( $p = 0.1862$  and  $p = 0.3923$ , respectively)

even though the point estimates of the proportions of eating disorders were higher in women (39.86%), than in men (28.89%) and in the younger age group (40.47%), versus the older one (34.34%), as shown in (Figura 1).



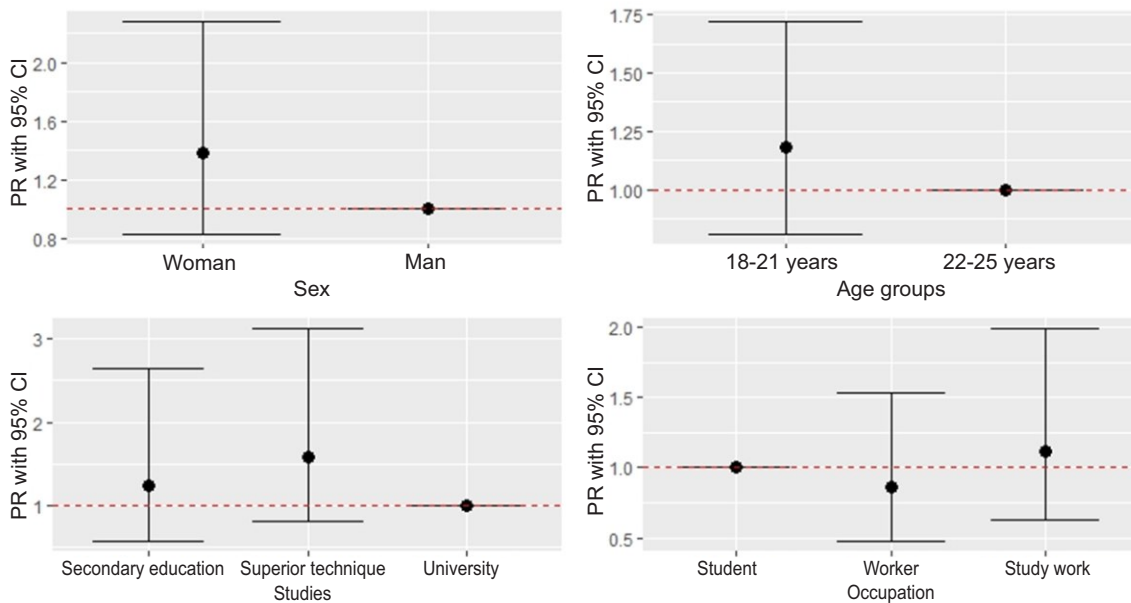
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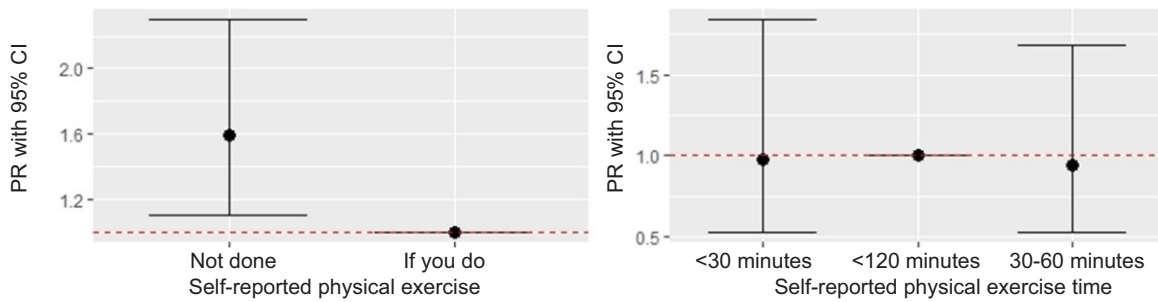


**Figure 1.** Proportions of eating disorders according to sex, age group and global sample CI, 95% confidence interval for the proportion.

When evaluating the potential association between the risk of eating disorders and the independent variables studied (Figura 2), it was found that not performing

physical activity increases the risk of screening for eating disorders by 1.59 times (95% CI: 1.10- 2.30).





**Figure 2.** Prevalence ratios that evaluate associations between independent variables and the risk of eating disorder.

Table 2 shows the Poisson regression between the risk or not of eating disorders and nutritional status (eutrophic and overweight/obesity), adjusted for sex, age, and physical activity.

Again, a statistically significant association was found ( $p = 0.044$ ), where self-reported overweight and obese subjects present 1.41 times more risk of being screened for ED risk.

**Table 2.** Prevalence ratio between the presence or absence of ED risk and nutritional status.

Nutritional condition	Prevalence Ratio	Confidence intervals 95%	P-value
Overweight and obesity *	1.41	1.10 – 1.80	0.044
Eutrophic	1.00		

Poisson regression adjusted for sex, age and physical activity.  
 \* Data were pooled for analysis (overweight: 1 and obesity: 2)

## DISCUSSION

In the present investigation, we studied the risk of eating disorders in a sample of young people residing in two communes of the Ñuble region, finding a higher proportion of 37.16% than the specific estimates, compared to that of other countries such as Brazil<sup>(22)</sup>, España<sup>(23,24)</sup>, Libya<sup>(25)</sup> and China<sup>(26)</sup>, samples collected before 2020. This ED prevalence value obtained in our study could be partly explained by the pandemic context, since being a stressful event that modified habitual life and eating routines could predispose to a greater risk of altered eating behaviors in this particular population.

Secondly, we wanted to evaluate possible variables associated with a higher risk of eating disorders. Once cleared by some confounders, we found that overweight and obesity (together) presented a significantly increased risk of presenting an eating disorder. This finding is similar to that published by Castejón et al.<sup>(13)</sup>, where their results showed that overweight people had an obsession with thinness and

body dissatisfaction, which is associated with states of anxiety regarding physical appearance, which could lead to a greater risk of eating disorders.

Zapata et al.<sup>(27)</sup> conducted a study in the Chilean adolescent population and found that 27.7% and 16.9% of overweight and obese women presented a higher risk of developing eating disorders<sup>(28)</sup>. In turn, malnutrition due to excess has been exacerbated by the increase in emotional food intake caused by the stress of confinement and the fear of contracting the COVID-19 disease<sup>(29)</sup> so it can be assumed that there is a greater risk of starting ED-related events.

Only in a bivariate way did we find a statistically significant association between not performing physical activity and eating disorders. This is consistent with the study by Nurkkala et al.<sup>(30)</sup>, that the trait drives for thinness measured in young men was associated with longer sedentary time. Indeed, the evidence shows us that PA can reduce anxiety, which in turn decreases the risk of eating disorders<sup>(31)</sup>. This anxiety has been



increased by the confinement measure due to the declared pandemic<sup>(32)</sup>, since the PA strategy is of vital importance in this context.

Despite the inverse relationship observed between PA and ED, there is also evidence that suggests the opposite, such as a study published in 2020<sup>(33)</sup>, where shows that moderate-intense PA is correlated with binge eating ( $r = 0.302$ ;  $p < 0.001$ ) and uncontrolled eating ( $r = 0.346$ ;  $p < 0.001$ ). This can be explained because various motivations for performing PA include aesthetic (appearance), health benefits, social acceptance, or enjoyment. For example, the study by Nurkkala et al.<sup>(30)</sup> found that youngsters with inappropriate eating behaviors were associated with PA related to the body, that is, more linked to improving body image; while subjects with bulimic traits were inversely associated with exercise motivation linked to a health benefit.

Our study had limitations. The first one we highlight is

about the sample obtained with a non-probabilistic method. Secondly, the application of instruments with the self-report modality is therefore exposed to social desirability bias<sup>(34)</sup>. Third, since it is cross-sectional, a causal relationship cannot be established between the independent and dependent variables. Fourthly, the dependent variable was measured with an instrument that serves as ED screening and therefore there was no clinical diagnosis of the pathology that the subjects in this sample would have. Nevertheless, this study aims to show concrete evidence in the context of general confinement, a situation rarely seen, and with the tools available to achieve an approach as faithful as possible to the reality of this experience.

## CONCLUSION:

In conclusion, we found ED percentages higher than previously available estimates. Of the factors associated with the risk of eating disorders, age, sex, occupation, and time of physical activity were not significant. Overweight was statistically associated with obesity (as a whole) and not performing PA.

**Authorship contributions:** JS-O participated in the conception of the article, the data collection, its writing and approval of the final version. VQ-S participated in the conception of the article, the data collection, its writing and approval of the final version. MT-L participated in the conception of the article, the data collection, its writing and approval of the final version. IM-O participated in its drafting and approval of the final version ML-E participated in the statistical analysis of the data, its drafting and approval of the final version. PR-C participated in the conception of the article, the data collection, its writing and approval of the final version.

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**Correspondence:** Prof. Pía Rojas-Cárdenas

**Address:** Camino a Tanilvoro, Km 12. Chillán, Chile

**Telephone number:** +56 964233893

**E-mail:** [piarojas@unach.cl](mailto:piarojas@unach.cl)

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