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Disordered eating behaviors and experiences of violence among Mexican youth with different sexual orientations: A population-based study

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ABSTRACT

Introduction. In high-income countries, sexual minorities are at a higher risk for disordered eating behaviors. It is not known whether these findings can be extrapolated to Mexico. **Objective.** Determine whether there are any differences in disordered eating behaviors among Mexican youth according to sexual orientation and analyze the potential role of experiences of violence and discrimination as mediators of these differences. **Method.** Data from a representative sample of Mexican youth (12 to 29 years old, *n* = 27,876) were analyzed. Three groups were identified: young people who were not in love (NIL), who were in love with people of the opposite sex (ILOS), or in love with people of the same sex (ILSS). Restrictive behaviors, secret eating, and self-induced vomiting were identified through a scale created for the survey. **Results.** ILSS men had a higher risk of restrictive thoughts and behaviors (B = .31), secret eating (OR = 2.21), and self-induced vomiting (OR = 3.65) than ILOS youth. Among women, there was only a difference in self-induced vomiting (RM = 2.49). In both sexes, being a young ILSS had an indirect effect on restrictive behaviors through its association with experiences of violence, discrimination at school, and sexual violence. **Discussion and conclusion**. Mexican sexual minority men are at a higher risk of disordered eating behaviors, whereas sexual minority women are at a higher risk of purging. Part of the differences in restrictive behaviors were explained by the increased risk for experiences of prejudice faced by sexual minority youth.

Keywords: Sexual orientation, eating and food ingestion disorders, inequities, discrimination, violence, gender.

RESUMEN

Introducción. En países de alto ingreso, las minorías sexuales tienen mayor riesgo de conductas alimentarias de riesgo. Se desconoce si esos hallazgos pueden ser extrapolados a México. **Objetivo.** Determinar si existen disparidades en las conductas alimentarias de riesgo entre los jóvenes mexicanos según la orientación sexual y analizar el papel potencial de las experiencias de violencia y discriminación como mediadoras de tales disparidades. **Método.** Se analizaron datos de una muestra representativa de jóvenes mexicanos (12 a 29 años, *n* = 27,876). Se identificaron tres grupos: jóvenes sin enamoramiento (sE), con enamoramiento por personas del otro sexo (cEOS) o con enamoramiento por personas del mismo sexo (cEMS). Las conductas restrictivas, comer a escondidas e inducirse vómito se identificaron a través de una escala creada para la encuesta. **Resultados.** Los hombres cEMS tuvieron mayor riesgo de pensamientos y comportamientos restrictivos (B = .31), comer a escondidas (RM = 2.21) e inducirse vómito (RM = 3.65) en comparación con los jóvenes cEOS. Entre las mujeres, solo hubo diferencia en inducirse vómito (RM = 2.49). En ambos sexos, ser un joven cEMS tuvo un efecto indirecto sobre las conductas restrictivas a través su asociación con experiencias de violencia y discriminación escolares y violencia sexual. **Discusión y conclusión.** Los hombres de minorías sexuales mexicanas tienen mayor riesgo de conductas alimentarias de riesgo, y las mujeres de minorías sexuales tienen mayor riesgo de una conducta de tipo purgativo. Parte de las disparidades en conductas restrictivas se explicaron por el mayor riesgo de experiencias de prejuicio que enfrentan los jóvenes de minorías sexuales.

Palabras clave: Orientación sexual, trastornos de la alimentación y de la ingestión de alimentos, inequidades, discriminación, violencia, género.

INTRODUCTION

The lesbian, gay, and bisexual (LGB) population is a group with a higher risk for disordered eating behaviors (DEB) and eating disorders than heterosexuals (Bankoff & Pantalone, 2014; Morrison, Morrison, & Sager, 2004). However, the existing evidence has its limitations. Initial studies on the subject focused on patients with eating disorders (Carlat, Camargo, & Herzog, 1997). In addition, most research has used convenience samples (Bankoff & Pantalone, 2014; Bayer, Robert-McComb, Clopton, & Reich, 2017; Morrison et al., 2004) or probability samples of university students (Laska et al., 2015) or high school students (Austin, Nelson, Birkett, Calzo, & Everett, 2013; Hadland, Austin, Goodenow, & Calzo, 2014; Watson, Adjei, Saewyc, Homma, & Goodenow, 2017). It is not known whether these findings can be generalized to the entire population due to the selection biases in unrepresentative samples. For example, subjects in non-representative samples have a higher socioeconomic status (Meyer & Wilson, 2009) and have suffered more experiences of sexual violence (Rothman, Exner, & Baughman, 2011) than those in representative samples.

Furthermore, most of the research on DEB in LGB youth has been conducted in the United States. We only identified one recent study undertaken on a small convenience sample ($N = 217$) of gay and bisexual men (GBM) from Mexico City (Cervantes-Luna, Escoto, Camacho, & Bosques, 2019). It is unclear whether the findings in high-income countries can be generalized to youth in middle-income countries because adherence to Western beauty stereotypes increases with the economic development of society. For example, Mexican American women have less body satisfaction than their Mexican counterparts (Vitae, 2015).

Sex can act as a moderating variable for differences in DEBs associated with sexual orientation. On the one hand, GBM consistently tend to have a higher risk of body dissatisfaction (Gigi, Bachner-Melman, & Lev-Ari, 2016; Morrison et al., 2004), DEB (Gigi et al., 2016) or eating disorders (Carlat et al., 1997) than their heterosexual counterparts. On the other, results among women are mixed since in some studies lesbian or bisexual (LBW) women have a lower risk of body dissatisfaction (Alvy, 2013), while in others they have had a higher risk of purging or bingeing (Austin et al., 2013; Hadland et al., 2014; Laska et al., 2015; Watson et al., 2017) or no differences were observed due to sexual orientation (Morrison et al., 2004). Furthermore, research on DEB among LBW has received less attention (Bankoff & Pantalone, 2014; Calzo, Blashill, Brown, & Argenal, 2017).

Stress due to being a sexual minority is one approach that has been used to explain differences in DEB owing to sexual orientation (Calzo et al., 2017). According to the theory of stress due to being a sexual minority (Meyer, 2003), the greater risk of negative health events observed in LGB individuals is the result of the adverse experiences (in other words, stressors caused by being a sexual minority) they face because of belonging to a stigmatized group. Stressors for sexual minorities include victimization, discrimination, internalized homophobia, concealment, and expectation of rejection. LGB people are disproportionately affected by victimization (Zou & Andersen, 2015). In turn, victimization at school (Lee & Vaillancourt, 2019) and sexual violence (Bulgin & Frederick Amar, 2016) have been associated with a greater likelihood of DEB or restrictive behaviors, such as skipping breakfast (Sampasa-Kanyinga & Willmore, 2015). Studies with non-probabilistic samples of the US LGB population on the relationship between stress and being a sexual minority have produced inconsistent findings (Bayer et al., 2017; Katz-Wise & Hyde, 2012; Siconolfi et al., 2016). Moreover, this relationship has not been explored with data from national population-based surveys.

The objectives of this study were: 1. compare the prevalence of DEB due to sexual orientation in young Mexicans, 2. determine whether sex can moderate the relationship between sexual orientation and DEB, and 3. determine whether the increased risk of DEB among LGB youth (in comparison with heterosexual youth) can be partly explained by the fact that they experience victimization and discrimination more frequently.

METHOD

Design of the study

Data from the National Youth Survey (NYS) of Mexico (Instituto Mexicano de la Juventud [IMJ], 2012) were analyzed.

Subjects

The NYS sample is representative of young Mexicans aged 12 to 29 years since its design included probabilistic, multistage, stratified, and cluster sampling.

Procedure

Fieldwork was carried out in November and December 2010 and included 27,971 young people. Data on 95 subjects were incomplete, so the analytical sample consisted of 27,876 records. Information was collected through two questionnaires (one on households and one on the subjects) administered by the interviewers. In each household, two respondents were selected: a) the head of the family, his spouse, or any resident over 18 years of age provided information on the household characteristics, and b) a young person between 12 and 29 years of age who provided their own information. The Instituto Mexicano de la Juventud (IMJ, Mexican Institute of Youth) and the Centro Region-

al de Investigaciones Multidiciplinarias (CRIM, Regional Center for Multidisciplinary Research) of the Universidad Nacional Autónoma de México (UNAM, National Autonomous University of Mexico) coordinated a specialist committee to design the National Youth Survey (IMJ, 2012).

Subjects were asked whether they had ever been in love and whether they had been in love with someone of the same sex. According to these questions, three groups were created:

- not in love (NIL),
- in love with someone of the opposite sex (ILOS),
- in love with someone of the same sex (ILSS).

We created these groups since NIL are younger than ILOS and ILSS youth, have a lower socioeconomic level, live predominantly in rural areas and, most importantly, have lower rates of negative health events (Mendoza-Pérez & Ortiz-Hernández, 2019). The ILOS group therefore served as the reference group for our analysis.

DEBs were evaluated using a five-item scale (Table 1). The response options for the items were yes or no (with a score of zero and one, respectively). The only exception was the first item, which had two options: "above" or "below." This variable was dichotomized to identify young people who thought their weight was above their ideal. An exploratory factor analysis (Table 1) yielded two factors explaining 53.4% of total variance. Factor 1 was called "restrictive behaviors" and a score was estimated by adding the responses of the variables with high weights in this factor (questions 1, 2, and 3). The second factor had two variables: secret eating and self-induced vomiting. The Alpha Cronbachs on the scale, the restrictive behaviors factor, and the second factor were .56, .60 and .39, respectively. The first factor explained 36.6% of the variance and the second 25.1%. The low internal consistency of the second factor and the fact that it only contained two ítems did not justify creating a composite variable. Each of the variables was therefore separately analyzed.

Sexual violence and experiences of violence and school discrimination were evaluated as mediating variables. Sexual violence was assessed using the following question: *Has anyone ever forced you to have sex?* Three closed questions were used to identify experiences of violence and discrimination in the last school the young people had attended (Table 1). An exploratory factor analysis yielded just one factor (Table 1). Affirmative responses were added to the items, and the new variable was dichotomized to identify subjects who had had at least one experience of school violence and discrimination. The Cronbach's alpha of the scale was .63.

Other covariates included the youths' age, occupation, and religion, socioeconomic level (SES) of the household, age, sex, and educational attainment of the head of household, size of the locality and geographic region. Four groups were created based on their activity: they studied and worked, worked, studied, or neither worked nor studied. Subjects' religion was evaluated using thirteen options classified into three groups: Catholics, other Christians, and non-Christians. To assess the household SES, a wealth in-

Table 1
Frequency and exploratory factor analysis of disordered eating behaviors, violence and school discrimination among young Mexicans, 2010

	n	*%*	*Factor 1*	*Factor 2*
Disordered eating behaviors[†]				
Eigen value			1.83	1.25
Variance, %			36.6	25.1
1. Is your current weight above or below what you would like it to be? (answer option: above)	6,471	23.1	.71	-.11
2. Have you ever taken pills, medicine, or drinks to get thin or lose weight?	1,702	5.8	.76	.05
3. Have you gone on slimming diets?	3,635	12.1	.81	.22
4. Have you engaged in secret eating?	786	2.9	.11	.68
5. How do you feel when you have eaten a lot? Have you induced vomiting to feel better?	530	1.9	-.05	.83
Experiences of violence and school discrimination				
Eigen value			1.75	
Variance, %			58.8	
At your last school...				
Did you experience any form of discrimination?	1,182	4.3	.75	
Did you suffer physical violence?	861	3.4	.77	
Were you bullied by your classmates?	1,420	5.5	.78	

Notes: %, weighted frequencies.
[†] For all the items on disordered eating behaviors, the response options were yes or no. The only exception was the first item, which had two options: above or below. This variable was dichotomized to identify young people who chose the first option.

dex was compiled based on 20 goods and services available to household members. Factor analysis yielded a factor that explained 64.3% of the variation and included 14 goods or services considered in the wealth index. Finally, the index was coded to create three categories of household SES according to the terciles of the quantity of goods or services. The sex, age, and education of the head of the family were also considered. Lastly, the states were classified into four geographic regions: center, north, west, and south. There were three categories of size of locality: urban (15,000 inhabitants or more), semi-urban (2,500 to 14,999 inhabitants), and rural (2,499 inhabitants or less).

Statistical analysis

Analyses were conducted using STATA 14.2 (Stata Corp., College Station, USA). Estimates were made using survey commands (*svy*) that considered the complex sampling design of the NYS. Frequencies of the categorical variables and means of continuous variables were obtained. Differences between the sexual orientation groups were analyzed using the Chi-square test. Statistically significant differences were defined as a value of $p < .05$. A linear regression model was estimated, in which the independent variable was sexual orientation, and the dependent variable was the restrictive behaviors score. For secret eating and self-induced vomiting variable, a logistic regression model was estimated for each one in which the independent variable was sexual orientation. These models were adjusted for other covariates (sociodemographic characteristics of youth and heads of household, household SES, geographic region, and size of locality).

A mediation analysis with moderation effects was used to achieve objectives two and three, (Preacher, Rucker, & Hayes, 2007). In other words, it was evaluated whether the moderating variable (W, sex) could modify the effect of the mediating variables (M, experiences of victimization) to explain the association between the independent variable (X, sexual orientation) and the dependent variable (Y, restrictive behaviors score). To this end, a generalized structural equation model (GSEM) was estimated, which has the capacity to simultaneously model different types of dependent variables (whether dichotomous, ordinal, or counting) (Rabe-Hesketh, Skrondal, & Pickles, 2004). GSEMs consider the complex sampling design since they allow the incorporation of sample weights and standard error adjustment due to the existence of clusters. Linear regression was used to model the restrictive behavior score and logistic regression for sexual violence and school violence and discrimination. For this analysis, only the restrictive behavior score was considered since the second factor that emerged in the exploratory factor analysis had low internal consistency.

We evaluated the role of sex as a moderating variable in three steps. First, an unconstrained model was estimated, which allowed all regression coefficients to differ between men and women. Then, the Wald test (F) was conducted to determine whether regression coefficients were constant between sexes. Third, based on the previous results, a final model was estimated with the constrained regression coefficients so that they were equal when there was no difference between sexes; otherwise, the regression coefficients were left unconstrained. The Bayesian information criterion (BIC) was used to compare models (Raffalovich, Deane, Armstrong, & Tsao, 2008). The BIC is a measure of the fit of the model and the model with the lowest BIC is considered optimal. Using non-linear combinations (STATA *nlcom* command) of regression coefficients (B), the total and indirect effects of being a young ILSS in the DEB were estimated. The product of two regression coefficients (B of M in X by B of Y in M) was estimated to determine the indirect effect of X in Y through M.

Ethical considerations

Field work was conducted by CRIM. Ethical approval was obtained from UNAM institutional committee. Ethical approval of the analysis reported here was granted by the Ethics Committee of the Biological and Health Sciences Division of the Universidad Autónoma Metropolitana (UAM, Metropolitan Autonomous University).

RESULTS

The weighted proportion of male ILSS was 1.8% ($n = 211$), ILOS was 70.4% ($n = 9{,}379$), and NIL was 27.8% ($n = 3{,}590$), respectively. The proportions in women were 1.4% ($n = 190$), 74.4% ($n = 11{,}131$), and 24.2% ($n = 3{,}470$), respectively (data not shown in tables). A third of the subjects reported some DEB while 5% or less had experienced some form of victimization or discrimination (Table 1).

The characteristics of the NYS subjects are given in Appendix 1. Most of the subjects were Catholic, and a third had high or medium SES. Most of the household heads were men and the majority had completed elementary school. Compared with the young ILOS, those ILSS included a higher proportion of subjects who worked, were not Christian, had medium SES, had a head of household with higher educational attainment, and lived in the central region or in urban locations. Among men, young ILSS were older than those ILOS. More ILSS women had female heads of household than those ILOS.

ILSS men had higher scores for restrictive behaviors than ILOS (Table 2). The prevalence and risk of secret eating and self-induced vomiting was higher in ILSS than ILOS men. These differences persisted after adjusting for covariates. Similar results were observed in women, although the increased risk for secret eating was no longer significant after adjusting for other covariates.

Table 2
Disordered eating behaviors by sex and sexual orientation among young Mexicans 2010

	Men				*Women*			
		Sexual orientation				*Sexual orientation*		
	Total	*NIL*	*ILOS*	*ILSS*	*Total*	*NIL*	*ILOS*	*ILSS*
Restrictive behaviors								
Mean	.26	.14[ab]	.30[ac]	.49[bc]	.54	.29[ab]	.63[a]	.70[b]
Linear regression models		B		B		B		B
Raw models		-.14[†]	Ref.	.34[†]		-.33[†]	Ref.	.07
Adjusted models		-.08[†]	Ref.	.31[†]		-.17[†]	Ref.	.01
Secret eating								
Prevalence, %	2.3	2.1	2.3	5.3	3.5	2.5	3.8	7.2
Logistic regression models		RM		RM		RM		RM
Raw models		.89	Ref.	2.33[†]		.64[†]	Ref.	1.97[†]
Adjusted models		.89	Ref.	2.21[†]		.64	Ref.	1.88
Self-induced vomiting								
Prevalence, %	1.2	.9	1.2	5.0	2.5	2.0	2.6	6.9
Logistic regression models		OR		OR		OR		OR
Raw models		.71	Ref.	4.18[†]		.76	Ref.	2.75[†]
Adjusted models		.65	Ref.	3.55[†]		.56[†]	Ref.	2.49[†]

Abbreviations: NIL, young people not in love; ILOS, young people in love with someone of the opposite sex; ILSS, young people in love with someone of the same sex; B, linear regression coefficient; OR, Odds ration. Identical superíndices indicate that 95% confidence intervals do not overlap.

Notes: [†] The 95% confidence interval does not include the null value (in other words, .00 for linear regression models or 1.00 for logistic regression models). Models adjusted for the age, religion and occupation of young people, household socioeconomic level, size of locality, geographical región and age, sex and education of head of household.

The main results of the GSEM mediation model are shown in Table 3 and Figure 1. Full results are given in Appendix 2. Only one coefficient differed between sexes: among men, being a young ILSS was associated with a direct, positive effect on restrictive behaviors, whereas in women this relationship did not exist. Moreover, being a young ILSS had an indirect effect on restrictive behaviors through its association with school violence and discrimination and sexual violence. The fit of the model with constrained coefficients (BIC = 65757.61) was better than the model with unconstrained coefficients (BIC = 65954.16). In addition, there were significant differences between models (*Likelihood-ratio test*: chi square = 202.76, $p < .000$).

In men, the total effect of being an ILSS youth on restrictive behaviors was B = 1.58 (95% CI, [1.20, 1.97]), while the indirect effect through school violence and discrimination was B = .37 (95% CI, [.22, .53]) and the indirect effect through sexual violence was B = .64 (95% CI, [.33, .94]). The relative contributions of the direct effect and the two indirect effects were 36.2%, 23.6%, and 40.2%, re-

Tabla 3
Mediation models to explain differences between ILSS and ILOS regarding their disordered eating behaviors among young Mexicans 2010

	Unconstrained model				*Differences between sexes*		*Constrained model*			
	Men		*Women*				*Men*		*Women*	
Dependent Variable / Independent Variable	*B*	*p*	*B*	*p*	*F*	*p*	*B*	*p*	*B*	*p*
Restrictive behaviors										
In love with the same sex	.56	.000	-.06	.590	12.12	.000	.57	.000	.03	.766
School violence and discrimination	.39	.000	.37	.000	.05	.823	.38	.000	.38	.000
Sexual violence	.26	.17	.40	.000	.53	.465	.39	.000	.39	.000
School violence and discrimination										
In love with the same sex	1.14	.000	.72	.009	1.29	.256	.98	.000	.98	.000
Sexual violence										
In love with the same sex	1.96	.000	1.36	.000	1.59	.207	1.61	.000	1.61	.000

Notes: B, non standardized regression coefficient. Young people in love with the same sex (ILSS) were the exposed group and young people in love with people of the opposite sex (ILOS) were the reference group. Models adjusted by occupation, religion, and age of youth; socioeconomic position of household; education and age of head of household; size of locality and region.

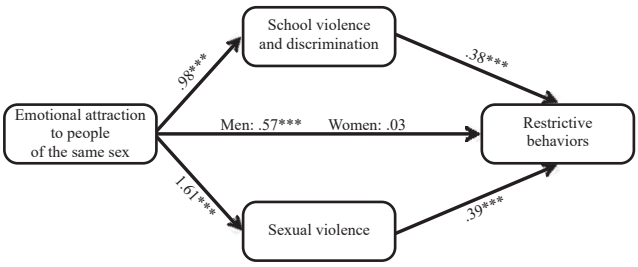

Figure 1. Mediation model to explain differences between ILSS and ILOS youth regarding the risk of engaging in restrictive behaviors.
Model adjusted for occupation, religion, and age of youth; household socioeconomic, size of locality, region; education and age of head of household. Young people in love with a person of the same sex (ILSS) were the exposed group and young people in love with a person of the opposite sex (ILOS) were the reference group.
Non-standardized regression coefficients are shown.
*p < .050, **p < .010, ***p < .001.

spectively. In women, the total effect of being a young ILSS on restrictive behaviors was B = 1.01 (95% CI, [.66, 1.36]). Indirect effects through school violence and discrimination and sexual violence were the same as for men (B = .37 and B = .64, respectively). Since there was no direct effect of being a young ILSS in women, the contributions of the two indirect effects were 37.0% and 63.0%, respectively.

DISCUSSION AND CONCLUSION

Our analysis showed that, compared to ILOS men, ILSS had a higher risk of restrictive behaviors, secret eating, and inducing vomiting, whereas in women, ILSS only had a higher probability of the last variable. The findings in Mexican men are consistent with the increased risk of presenting the following events in GBM: body dissatisfaction (Calzo et al., 2015; Laska et al., 2015; Morrison et al., 2004; Yean et al., 2013), restrictive diets (Calzo et al., 2015; Hadland et al., 2014; Matthews-Ewald, Zullig, & Ward, 2014), and purging and taking weight-loss pills (Austin et al., 2013; Austin et al., 2009; Hadland et al., 2014; Laska et al., 2015; Matthews-Ewald et al., 2014; Watson et al., 2017).

Our analysis also showed that, among Mexican women, ILSS were at a higher risk of purging (self-inducted vomiting), but there were no differences due to sexual orientation in restrictive behaviors. These patterns are consistent with most of the existing evidence that recognizes the heterogeneity of DEBs. On the one hand, there is a low rate of restrictive behaviors among LBW (Matthews-Ewald et al., 2014; Morrison et al., 2004) or there are no differences associated with sexual orientation (Laska et al., 2015; Moore & Keel, 2003; Morrison et al., 2004; Yean et al., 2013). On the other, with exceptions (Matthews-Ewald et al., 2014), LBW have a higher prevalence of behaviors related to bulimia nervosa such as use of weight loss pills, self-inducted vomiting and purging (Austin et al., 2009; Laska et al., 2015).

Why are there differences between men in terms of restrictive behaviors due to sexual orientation, but not between women? One explanation is the emphasis placed on physical appearance in the gay male subculture (Morrison et al., 2004). In contrast, in the lesbian subculture, the ideal body type is larger than that of heterosexual women. (Alvy, 2013; Calzo et al., 2017). However, in Mexico, gay and lesbian subcultures are concentrated in large cities in the northern and central regions, and only adults can access commercial gay and lesbian entertainment establishments. In this respect, the differences (or the lack of them) in DEBs by sexual orientation among young Mexicans remained after adjusting for age, geographic region, and size of locality. Accordingly, the existence of gay and lesbian subcultures cannot fully explain the role of sex as a moderating variable in the association between sexual orientation and restrictive behaviors.

Another explanation for the role of sex as a moderating variable can be found in objectification theory (Schaefer & Thompson, 2018). One aspect shared by heterosexual women and GBM is that they are attracted to men, which means they are subject to the beauty standards imposed by the "male gaze." For this reason, heterosexual women and GBM develop self-awareness about their physical appearance and adapt their behavior to achieve prevailing beauty standards. By contrast, LBW do not have to meet the demands of the "male gaze."

Another finding of the study is that the experiences of sexual violence and school violence and discrimination explained part of the association of being a young ILSS with restrictive behaviors. Even among women, the association between sexual orientation and restrictive behaviors was only observed through the indirect effect of these experiences of prejudice. Victims of sexual violence (Bulgin & Frederick Amar, 2016; Moyer, DiPietro, Berkowitz, & Stunkard, 1997) and bullying (Copeland et al., 2015; Lee & Vaillancourt, 2019) are at a greater risk for engaging in restrictive behaviors. Adversity during childhood is related to low self-esteem, which in turn is associated with restrictive behaviors (Copeland et al., 2015). Subjects who suffer violence may perceive that these experiences are because their sexual orientation is negatively evaluated by others and therefore develop a negative self-image, which may be related to restrictive behaviors (Copeland et al., 2015). In this context, when an LGB person perceives their sexual orientation as a personal defect (Siconolfi et al., 2016), the desire to be thin (materialized as restrictive behaviors) could be a way to offset the stigma associated with the former.

One strength of our research is that we analyzed a population-based survey, which reduces selection bias and increases generalizability. Moreover, the size of the NYS sample enabled us to assess the role of sex as a moderating variable. An important limitation of our study is that de-

spite the existence of validated scales for the Mexican population, the questions in the questionnaire were developed expressly for the NYS, which reduces the comparability of our study. For this reason, we evaluated some of the psychometric properties of the indicators. Although two factors emerged in the factor analysis, the two subscales had low internal reliability. It should be noted that previous research (e. g., Austin et al., 2013; Hadland et al., 2014; Laska et al., 2015; Watson et al., 2017) has commonly used isolated questions to assess specific DEB symptoms. Items in the second factor were therefore analyzed separately and not included in the mediation analysis. Another limitation is that dissatisfaction with musculature was not measured.

The cross-sectional design of the NYS is another restriction because the temporal sequence of variables can partly be determined by considering the reference period of the questions in the questionnaire or by the nature of the phenomenon. Some of our DEB measures and experiences of prejudice assess thoughts, behaviors, and events throughout life. In other words, the mediating and dependent variables could overlap in time. Conversely, since sexual orientation is established at an early age (Lippa, 2005), it is extremely likely that our independent variable preceded the mediating and dependent variables.

Sexual orientation encompasses multiple dimensions such as sexual attraction, emotional attraction, sexual behavior, and self-identification. Our sexual orientation indicator focuses on being in love (a proxy for emotional attraction). Assessing emotional attraction is more relevant in adolescents because most of them have not had sexual relations and many have not developed an identity based on their sexual orientation (Badgett, 2009). However, it proved impossible to distinguish bisexual participants.

In conclusion, our findings support the fact that sex can moderate the association between sexual orientation and restrictive behaviors because GBM (but not LBW) from Mexico had a higher risk of suffering them. Furthermore, in both sexes, LGB subjects were at higher risk of purging. A significant proportion of sexual orientation differences in restrictive behaviors can be explained by increased exposure to violence and discrimination among LGB youth.

Although other factors may help explain differences in restrictive behaviors by sexual orientation, our findings suggest that preventing these conditions in LGB populations requires the elimination of homophobia because this factor affects them through experiences of violence and discrimination. Programs designed to prevent bullying are required as LGB youth are more exposed to these forms of prejudice. In addition, clinicians should consider that, in LGB people, restrictive behaviors may be related to experiences of victimization. In other words, professionals who counsel sexual minority individuals should explore the history of victimization as an DEB risk factor.

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Conflict of interest

The authors declare they have no conflicts of interest.

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APPENDIX 1

Sociodemographic characteristics by sex and sexual orientation of young Mexicans 2010

	Men (n = 12,935)					*Women (n = 14,491)*				
		Sexual Orientation					*Sexual Orientation*			
	Total	*NIL*	*ILOS*	*ILSS*		*Total*	*NIL*	*ILOS*	*ILSS*	
	m	*m*	*m*	*m*		*m*	*m*	*m*	*m*	
Age of subject	19.7	16.7[ab]	20.8[ac]	22.6[bc]		20.0	16.2[ab]	21.2[a]	22.0[b]	
Age of head of household	43.3	43.9[b]	43.1[c]	39.1[bc]		42.3	44.8[a]	41.5[a]	42.0	
	%	*%*	*%*	*%*	*p*	*%*	*%*	*%*	*%*	*p*
Activity										
Studies and works	13.2	11.2	14.0	14.1	.000	8.7	9.3	8.5	12.1	.000
Works	37.3	19.3	44.1	53.1		20.3	10.1	23.4	30.9	
Studies	38.8	59.4	31.2	15.7		38.9	65.6	30.3	30.9	
Does not work or study	10.7	10.1	10.8	17.1		32.1	14.9	37.8	26.1	
Religion										
Catholic	81.8	83.6	81.2	73.1	.012	84.2	84.2	84.3	78.7	.000
Other type of Christian	7.1	6.8	7.2	8.1		8.5	8.1	8.7	3.5	
Non-Christian	11.1	9.5	11.6	18.8		7.3	7.7	7.0	17.8	
Household Socioeconomic Status										
Low	28.7	37.7	25.5	15.1	.000	32.5	37.5	31.0	24.6	.000
Medium	33.0	30.8	33.5	45.1		35.3	33.8	35.7	36.6	
High	38.3	31.6	41.0	39.8		32.2	28.6	33.3	38.9	
Sex of head of family										
Male	81.4	80.6	81.9	76.8	.247	76.6	76.0	77.1	56.3	.000
Female	18.6	19.4	18.1	23.2		23.4	24.0	22.9	43.7	
Educational Attainment of Head of Family										
Elementary school	35.5	41.2	33.6	23.0	.000	38.8	45.5	36.7	32.9	.000
Junior high school	29.2	30.3	28.9	24.4		28.5	28.0	28.8	22.7	
Senior high school	19.9	16.6	20.9	30.2		19.2	16.6	20.1	21.1	
BA or over	15.3	11.9	16.5	22.5		13.4	9.9	14.3	23.3	
Region										
Center	31.2	28.4	32.0	41.7	.024	31.6	28.7	32.5	33.3	.002
North	22.2	24.0	21.7	14.7		21.0	21.9	20.6	22.1	
West	23.7	23.1	23.9	23.5		23.8	22.2	24.5	22.7	
South	22.9	24.5	22.4	20.1		23.6	27.2	22.4	21.9	
Locality										
Urban	64.5	57.8	67.1	67.1	.000	63.7	55.8	66.0	77.5	.000
Semi-urban	12.7	14.9	11.9	9.0		12.7	16.0	11.8	8.3	
Rural	22.8	27.4	21.0	23.9		23.6	28.2	22.2	14.2	

Notes: Abbreviations: NIL, young people not in love; ILOs, young people in love with someone of the opposite sex; ILLS, young people in love with someone of the same sex; m, weighted average; %, weighted frequency. The same superscript means there are no statistically significant differences between groups.

APPENDIX 2

Mediation model to explain differences between ILSS and ILOS groups regarding disordered eating behaviors among young Mexicans, 2010

	Unconstrained model				*Differences between sexes*		*Constrained model*			
	Men		*Women*				*Men*		*Women*	
Dependent variable / Independent variable	*B*	*p*	*B*	*p*	*F*	*p*	*B*	*p*	*B*	*p*
Restrictive behaviors										
NIL	-.38	.000	-.43	.000	.22	.637	-.42	.000	-.42	.000
ILOS	.56	.000	-.06	.590	12.12	.000	.57	.000	-.03	.766
School violence and discrimination	.39	.000	.37	.000	.05	.823	.38	.000	.38	.000
Sexual violence	.26	.179	.40	.000	.53	.465	.39	.000	.39	.000
Age of subject	.03	.000	.05	.000	5.83	.016	.03	.000	.05	.000
Household socioeconomic status	.10	.000	.11	.000	.20	.656	.15	.000	.15	.000
Youth activity:										
Studies and works	.28	.001	.28	.000	.00	.962	.27	.000	.27	.000
Works	.21	.006	.24	.000	.09	.760	.20	.000	.20	.000
Does not study or work	.23	.010	.12	.030	1.02	.312	.11	.016	.11	.016
Educational attainment of head of family:										
Junior high school	.11	.131	.12	.010	.02	.881	.07	.049	.07	.049
Senior high school	.16	.054	.17	.001	.01	.922	.12	.005	.12	.005
BA or over	.14	.130	.07	.234	.32	.572	-.07	.048	-.07	.048
Age of head of family	.00	.379	.01	.000	2.51	.113	.00	.002	.00	.002
Sex of head of family	.21	.002	.02	.638	5.84	.016	.21	.002	.04	.257
Catholic religion	-.17	.010	-.16	.000	.03	.857	-.07	.048	-.07	.048
Urban locality	.17	.007	.22	.000	.46	.496	.00	.002	.00	.002
School violence and discrimination										
NIL	-.37	.001	-.42	.000	.09	.767	-.39	.000	-.39	.000
ILSS	1.14	.000	.72	.009	1.29	.256	.98	.000	.98	.000
Age of youth	-.06	.000	-.06	.000	.09	.754	-.06	.000	-.06	.000
Youth activity:										
Studies and works	.39	.003	.18	.198	1.16	.281	.32	.001	.32	.001
Works	.28	.032	.50	.000	1.49	.222	.38	.000	.38	.000
Does not work or study	.23	.121	.15	.269	.18	.672	.17	.089	.17	.089
Educational attainment of head of family:										
Junior high school	.14	.224	.04	.692	.35	.551	.09	.258	.09	.258
Senior high school	-.06	.626	-.06	.636	.00	.996	-.01	.852	-.06	.465
BA or over	-.18	.213	-.40	.008	1.08	.298	-.28	.007	-.28	.007
Catholic religion	-.38	.000	-.37	.000	.00	.970	-.37	.000	-.37	.000
Urban locality	.03	.738	.22	.027	1.90	.168	.13	.058	.13	.058
Sexual violence										
NIL	-1.09	.024	-.66	.058	.51	.474	-.82	.004	-0.82	.004
ILSS	1.96	.000	1.36	.000	1.59	.207	1.61	.000	1.61	.000
Age of youth	.03	.309	.04	.056	.08	.781	.04	.034	0.04	.034
Household socioecomic level	-.02	.864	-.20	.034	1.56	.211	-.15	.049	-0.15	.049
Youth activity:										
Studies and works	1.67	.001	1.40	.001	.18	.670	1.56	.000	1.56	.000
Works	1.63	.002	2.04	.000	.40	.524	1.91	.000	1.91	.000
Does not work or study	1.12	.034	1.41	.000	.21	.648	1.32	.000	1.37	.000
Educational attainment of head of family:										
Junior high school	-.38	.230	.33	.104	3.56	.059	.13	.454	.13	.454
Senior high school	-.21	.531	.46	.100	2.36	.124	.24	.278	.24	.278
BA or higher	-.13	.766	.22	.461	.44	.507	.12	.639	.12	.639
Catholic religion	-.38	.175	-.56	.002	.30	.581	-.50	.001	-.50	.001
Urban locality	-.21	.428	.39	.058	3.19	.074	.20	.219	.20	.219

Notes: B, Non-standardized regression coefficients are shown. The exposed groups were youth in love with someone of the same sex (ILSS) or not in love (NIL) and youth in love with someone of the opposite sex (ILOS) were the reference group. Model adjusted for occupation, religion, and age of youth; household socioeconomic level, size of locality, region; education and age of the head of household.