Revista Brasileira de Psiquiatria. 2017;39:316–322
Associação Brasileira de Psiquiatria
doi:10.1590/1516-4446-2016-1947

ORIGINAL ARTICLE

Association between body image dissatisfaction and depressive symptoms in adolescents

Fiorela Flores-Cornejo, Mayumi Kamego-Tome, Mariana A. Zapata-Pachas, German F. Alvarado

Escuela de Medicina, Universidad Peruana de Ciencias Aplicadas, Lima, Peru.

Objective: To determine the association between body image dissatisfaction (BID) and depressive symptoms in adolescents from a school in Lima, Peru.
Methods: A cross-sectional study was performed through a census of 875 high-school students, aged 13 to 17 years, from a school in Lima. Participants completed a survey containing the Body Shape Questionnaire (BSQ) and the Patient Health Questionnaire-9 (PHQ-9). Data regarding demographics, alcohol and tobacco use, self-esteem, and family history of depression were also obtained. To identify associated factors, Poisson regression with robust variance was used. Prevalence ratios with 95% confidence intervals were calculated.
Results: Of the 875 adolescents, 55.8% were male. The mean age was 14.1±1.5 years. Depressive symptoms were observed in 19.9% of participants. An association between BID and depressive symptoms was found. Alcohol and tobacco use were also associated with the outcome of interest.
Conclusions: Teens who had BID were 3.7 times more likely to report depressive symptoms. Additionally, those who used tobacco or alcohol were 1.5 and 1.4 times more likely to have depressive symptoms, respectively. Further studies targeting other populations and using longitudinal designs are recommended.

Keywords: Adolescents; body image; depression

Introduction

Depression is a public health problem that is present in 10-20% of the general population, according to the World Health Organization (WHO), and is considered the main cause of disability worldwide.[1] In Peru, the prevalence is similar at 10-20% overall and approximately 18% in Metropolitan Lima.[2]

The DSM-5 defines depression as "a depressed mood or loss of interest or pleasure in nearly all activities for a period of at least 2 weeks, considering that children and adolescents may be irritable instead of sad."[3] It is characterized by an episodic course with high rates of recurrence (35% in 2 years and 60% in 12 years).

The relevance of this issue is that depression is associated with various potentially preventable public health problems, such as deterioration in personal and/or social functioning,[4] substance abuse (alcohol and tobacco), and suicide.[4-6]

Several factors have been associated with the development of depressive symptoms in adolescents. Female sex and age have been found to be particularly important,[5] and some studies showed that alcohol and tobacco use are risk factors for depressive symptoms.[6,7]

According to research conducted in various countries, including the United States, Jamaica, and Spain, distorted body image could be a risk factor for developing depressive symptoms.[8-15] Body image is defined as "a concept that one has of their own shape, size, body mass and parts."[16] Misperceptions can have a great impact on adolescents[2] due to the extreme measures they might then take in pursuit of the "ideal image."[17,18]

Studies have shown that most teenagers have a distorted image of themselves.[16,19-21] In a cross-sectional study by Santana et al. of 1,494 adolescents aged 11 to 17 in Salvador, state of Bahia, Brazil, own body dissatisfaction was reported by 19.5% of adolescents, and was more prevalent in girls (26.6%) than boys (10%).[19]

In 2014, a Spanish study by Ferreiro et al. found that teens who had body image dissatisfaction (BID) were at increased risk of depressive symptoms.[8] Another study, conducted in 2014 by Blow et al. in a sample of 160 Hispanic college students in Texas, found the same association.[14] On the other hand, a study conducted in Brazil by Fortes et al. in 2015 on 407 young people showed no association between these variables.[22]

It is important to know the difference between self-esteem and body image, as the two concepts might be confused. Self-esteem, according to Mann, is defined as "the evaluative and affective dimension of self-concept and is considered an equivalent to self-regard and self-worth."[23] Contrariwise, body image is based on a biopsychosocial construct, i.e., the image that society, peers, and oneself has according to their ideal body image.[17]

WHO has proposed that adolescents are a vulnerable population.[24] In reviewing the literature, we found studies linking low self-esteem with depression in adolescents; however, no investigations conducted in Latin American countries (except Brazil) have assessed whether depression is associated with body image in this age group.[25]

Correspondence: Mariana Alejandra Zapata-Pachas, Julio Verne 165 Urb. Higuereta, Santiago de Surco, Lima 33, Peru.
E-mail: zapatamari31@gmail.com
Submitted Feb 28 2016, accepted Nov 03 2016, Epub Mar 23 2017.

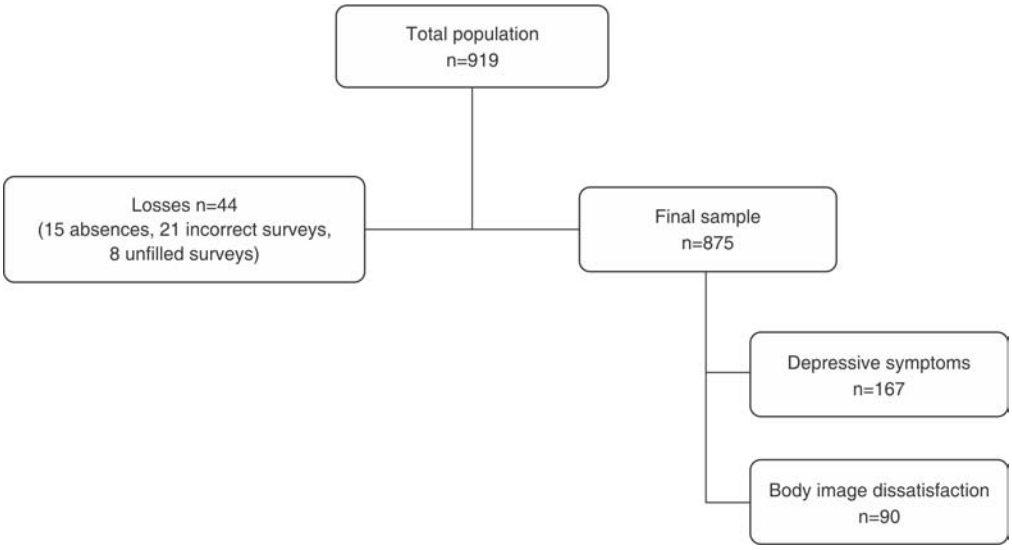


Figure 1 Flowchart of participation

The present study aims to determine whether an association exists between BID and depressive symptoms in high school students. Secondary aims were to determine the prevalence of depressive symptoms in this population and whether depressive symptoms are associated with lifetime alcohol and tobacco use.

Materials and methods

Design, sample population, and study site

From October 24 to 27, 2014, we conducted a cross-sectional study of all students enrolled for the 2014 school year in a private high school in Ate, Lima.

We excluded students who did not attend on the day of the surveys, students who did not return a consent form signed by their parents, and those who refused to answer the survey. The final sample comprised 875 students, and the response rate was 95.2% (Figure 1).

Sample size was calculated in Epidat 4.0 software. On the basis of data from previous studies,[15] a minimum sample size of 600 was established. Population 1 was the estimated proportion of people who had BID and depressive symptoms (30%) and population 2 was the estimated proportion of people without BID and depressive symptoms (20%). Confidence level was set to 95% and a statistical power of 80% was considered.[15]

Instruments

The questionnaire, a compendium of four previously validated instruments, was anonymous and self-administered. Tobacco and alcohol use were assessed using standardized questions from the Spanish version of the Youth Risk & Resiliency Survey Center for Disease Control (CDC).[26] For this study, only lifetime use was considered.

Self-esteem was assessed using the Self-esteem Test for Teens, which consists of 21 questions, evaluated on a Likert-type scale, covering four domains: cognitions about yourself, cognition of competence, family relationship, and anger. This scale has no cutoff. The questionnaire has been validated for use in Spanish.[27]

Body image was assessed with the 34-item Body Shape Questionnaire (BSQ), scored on a Likert-type scale, which has also been validated for use in Spanish. BID was considered if the score was higher than 105 points.[28]

Depressive symptoms were measured with the 14-item Patient Health Questionnaire (PHQ-9), validated in Spanish.[29] Nine questions defined the score to determine whether depressive clinical features were present; a score $\geqslant$ 10 points was considered positive. This instrument is based on the DSM-IV.[30]

The questionnaire also collected demographic variables such as age, grade, sex (male/female), and history of depression in first-degree relatives.

Procedures

After approval of the research project by the Ethics Committee of the Universidad Peruana de Ciencias Aplicadas School of Health Sciences and the school authorities, the investigators went to the school as scheduled. First, lists of students from all secondary levels, stratified by grade and section, were obtained. Informed consent forms were sent in sealed envelopes to students' parents, and informed assent was obtained from the students before administration of the survey.

Data collection was performed on two days. On day one, first-, second-, and third-grade students were evaluated, while on day two, fourth- and fifth-graders were assessed. An investigator remained in each classroom to clear up any doubts from the students. The survey took approximately 15 to 25 minutes to complete.

Statistical analysis

Survey data were entered into a Microsoft Excel 2007 database by the double entry method. Statistical analyses were performed in STATA version 11.0.

Table 1 General characteristics of high school students in a school in Lima, Peru, 2014

Characteristics	Body image dissatisfaction*				
	Yes (n=90)	%	No (n=700)	%	p-value
Age (years), mean (SD)	14.3 (1.5)		14.1 (0.5)		0.17
Sex					< 0.001
Female	62	68.8	295	41.8	
Male	28	31.1	411	58.2	
Grade					0.41
First (12-13 years old)	13	14.4	159	22.5	
Second	18	20.1	142	20.1	
Third	20	22.2	153	21.9	
Fourth	19	21.1	133	18.8	
Fifth (16-17 years old)	20	22.2	119	16.9	
Self-esteem† z score, mean (SD)					
Cognition about yourself	-1.1 (1.1)		0.2 (0.9)		< 0.001
Cognition of competence	0.1 (1.0)		$-2*10^{-2}$ (1.0)		0.18
Anger	0.1 (0.9)		$-3*10^{-2}$ (1.0)		0.29
Family relationship	0.5 (1.3)		$-4*10^{-2}$ (0.9)		< 0.001
Tobacco use‡					0.04
Yes	30	33.7	168	23.8	
No	59	66.3	537	76.2	
Alcohol use‡					0.006
Yes	66	73.3	408	58.4	
No	24	26.7	291	41.6	
Family history of depression					0.02
Yes	21	23.3	101	14.3	
No	69	76.7	605	85.7	

SD = standard deviation.
* Defined as a Body Shape Questionnaire (BSQ) score $\geqslant$ 105 points.
† Self self-esteem test for adolescents.
‡ Lifetime prevalence.

Measures of central tendency and dispersion (for quantitative variables) and proportions (for categorical variables) were calculated. A *t*-test and chi-square test were used for bivariate analysis, and assumptions were verified. P-values < 0.05 were considered significant. Reliability was assessed using Cronbach's alpha for the self-esteem, BSQ, and PHQ-9 scales. Likewise, for the self-esteem scale, exploratory factor analysis with the principal components method was performed.

For multivariable analysis, we used Poisson regression with robust variance to model association between depressive symptoms and independent variables; the latter were included in the model if $p < 0.2$ on bivariate analysis. Adjustments could not be applied to all factors of self-esteem at the same time because of collinearity between them. Crude and adjusted analyses were performed, reporting prevalence ratios (PR) and 95% confidence intervals (95%CI).

Ethical aspects

As mentioned, this study was approved by the Ethics Committee of the Universidad Peruana de Ciencias Aplicadas School of Health Sciences. In addition, permission to conduct the study was obtained from school authorities. Participants' parents were informed in advance of the study's objectives, and only those participants who assented and whose parents had signed informed consent forms were included and surveyed.

Results

Population characteristics

In 2014, 919 students were enrolled in the school in which the study was conducted. The overall non-response rate was 4.8% (n=44); 21 students completed the surveys incorrectly, 15 were absent on the days of data collection, and eight refused to take the survey. Thus, the final sample size was 875 (55.8% male). The mean age was 14.1 ± 1.5 years (range: 11 to 17 years).

Overall, 19.9% of participants had depressive symptoms and 11.3% had BID. Lifetime prevalence of alcohol and tobacco use was 60.3% and 25.1% respectively. Finally, 15.7% of participants had at least one family member diagnosed with depression (data not shown).

In general, we found associations between sex, tobacco use, alcohol use, family history of depression, the "cognition about yourself" domain of the Self-esteem Test for Teens, and family relationship with BID ($p < 0.05$) (Table 1). We did not find associations between the other variables and BID.

As explained in the Instruments section, the self-esteem variable has four factors: cognition about yourself,

Table 2 Bivariate analysis of association between depressive symptoms and body image dissatisfaction (BID) in a sample of high school students from Lima, Peru, 2014

	Depressive symptoms*		
	Yes n=167	No n=673	p-value
Age (years), mean (SD)	14.2 (1.5)	14.1 (1.4)	0.20
Body image			< 0.001
BID	101 (14.8)	582 (85.2)	
No BID	53 (61.6)	33 (38.4)	
Sex			< 0.001
Female	94 (25.5)	274 (74.5)	
Male	73 (15.5)	399 (84.5)	
Grade			0.08
First (12-13 years old)	35 (19.1)	148 (80.9)	
Second	36 (20.1)	143 (79.9)	
Third	24 (13.7)	151 (86.3)	
Fourth	33 (21.4)	121 (78.6)	
Fifth (16-17 years old)	39 (26.2)	110 (73.8)	
Self-esteem z score, mean (SD)			
Cognition about yourself	-0.6 (1.2)	0.1 (0.9)	< 0.001
Cognition of competence	0.6 (1.2)	-0.2 (0.9)	< 0.001
Anger	0.2 (1.0)	$-4*10^{-2}$ (1.0)	0.02
Family relationship	0.5 (1.2)	-0.1 (0.9)	< 0.001
Tobacco use†			0.001
Yes	58 (27.6)	152 (72.4)	
No	108 (17.2)	519 (82.8)	
Alcohol use†			0.002
Yes	117 (23.5)	380 (76.5)	
No	49 (14.7)	285 (85.3)	
Family history of depression			0.04
Yes	34 (26.6)	94 (73.4)	
No	133 (18.7)	578 (81.3)	

SD = standard deviation.
* Defined by a Patient Health Questionnaire-9 (PHQ-9) score ⩾ 10 points.
† Lifetime prevalence.

cognition about competence, anger, and family relationship. We found a Cronbach's alpha of 0.89 for this instrument, and an exploratory factor analysis found the same four factors reported in the literature.[27] For the body image scale (BSQ), Cronbach's alpha was 0.96; for depression (PHQ-9), Cronbach's alpha was 0.85. Exploratory factor analysis was also performed for the BSQ and PHQ-9 (data not shown), and yielded structures similar to those already reported, i.e., a one-factor solution.[28,31,32]

Analysis of the percentage of lost data for the exposure (9%) (data not shown) did not show any association with the age and sex distribution of participants ($p > 0.05$).

Depressive symptoms and independent variables: bivariate analysis

We did not find an association between age and depressive symptoms (p = 0.20) (Table 2); 61.6% of adolescents with BID endorsed depressive symptoms, vs. 14.8% without BID ($p < 0.001$). Each of the four factors of the self-esteem variable was associated with depressive symptomatology ($p < 0.05$) (Table 2).

We found significant associations between tobacco and alcohol use and depressive symptoms ($p < 0.01$ for both cases). Furthermore, 26.6% of students with a family history of depression reported depressive symptoms, as compared with 18.7% of those without such a family history (p = 0.04) (Table 2).

Multivariable analysis of association between depressive symptoms and independent variables

Table 3 shows the results of Poisson regression analysis. We found an association between BID and depressive symptoms (adjusted PR = 3.7; 95%CI 2.8-4.9; $p < 0.001$), as well as associations between tobacco use and depression (adjusted PR = 1.5; 95%CI 1.1-2.1; p = 0.01) and depression and alcohol use (adjusted PR = 1.4; 95%CI 1.0-2.0; p = 0.04). Other explored variables were not associated. We could not adjust by all self-esteem factors at the same time because of collinearity between them; however, adjustment with separate models by each factor of self-esteem (results not shown) yielded adjusted PRs for BID consistently above 3.0 ($p < 0.001$), except for the first factor ("cognition about yourself"), for which the PR

Table 3 Multivariate analysis of association between depressive symptoms and body image dissatisfaction (BID) in a sample of high schoolers from Lima, Peru, 2014

Characteristics	Depressive symptoms					
	Crude model			Adjusted model		
	PR*	95%CI	p-value	PR*	95%CI	p-value
Body image						
BID†	4.2	3.2-5.3	< 0.001	3.7	< 0.001	0.001
No BID	1	Ref				
Age (years)	1.1	1.0-1.2	0.22	1.0	0.9-1.1	0.48
Sex						
Female	1.7	1.3-2.2	< 0.001	1.2	0.9-1.7	0.14
Male	1	Ref				
Family history of depression						
Yes	1.4	1.0-2.0	0.04	1.1	0.8-1.5	0.59
No	1	Ref				
Tobacco use†						
Yes	1.6	1.2-2.1	0.001	1.5	1.1-2.1	0.01
No	1	Ref				
Alcohol use†						
Yes	1.6	1.2-2.2	0.002	1.4	1.0-2.0	0.04
No	1	Ref				

BID = body image dissatisfaction; PR = prevalence ratio.
* Poisson regression with robust variance.
† Lifetime prevalence.

was 2.3 but still significantly associated with the outcome ($p < 0.001$).

Discussion

The main findings of this study were the prevalence of depressive symptoms and BID (19.9% and 11.3% respectively) and the association between depressive symptoms and BID ($p < 0.001$). Participants who met the cutoff score for BID were 3.7 times more likely to report depressive symptoms than participants who did not endorse BID. Those who had ever used alcohol were 40% more likely to report depressive symptoms, while those who had ever used tobacco were 50% more likely to endorse such symptoms, after adjusting for all variables in the equation.

The prevalence of depression found in our sample was in the range reported by WHO studies.[1,33] Conversely, the prevalence of BID was lower than that reported by other studies.[9,19,21] This may be explained by social and cultural differences between populations, by the use of different instruments, or both. However, it is important to note that BID is a concern because of its long duration and possible consequences, which include eating disorders, depression, and suicide risk.

After adjusting for potential confounders, a significant association was found between depressive symptoms and BID. This is consistent with previous studies that have found an association between these variables, such as that performed among Turkish adolescents by Ozmen in 2007[15] and by Almeida in Portugal in 2013.[9] This association might be mediated by bullying or chronic stress; the underlying mechanism is still unclear.[34] Depressive symptoms were also associated with lifetime prevalence of smoking and alcohol intake in our sample. A study by Goodman found that smoking was strongly associated with a higher probability of developing depressive symptoms.[35] Regarding drinking, Costello and Aalto-Setälä reported an association between depressive disorders and alcohol intake.[6,18] The present study has not found an association between depression and sex.

Some important limitations of this study must be addressed. These include the potential for social desirability bias, because students knew their parents would receive a report with the results of the survey; nevertheless, any doubts were cleared up during a session. Likewise, the fact that participants completed the questionnaire in the same room as their classmates means their answers may have been influenced by peer pressure or a desire to be "socially correct." Nevertheless, there was no conversation in the classroom during this process; therefore, although this should be considered a limitation, we believe it is unlikely to have affected the results of this study. Classification in the depressive symptoms group using a validated instrument should not be considered equivalent to an evaluation performed by a trained clinician, although such epidemiological assessment correlates well with clinical evaluation.[36] In addition, some data were lost for the exposure variable (9%); nevertheless, we did not find an association between these lost data and the distribution of sex or age. Not measuring bullying is a limitation, because it has been found that adolescents affected this problem are more likely to have a bad perception of their image and experience depression more often.[37,38] Likewise, we did not measure stress levels, eating disorders, or body mass index (BMI); the latter in particular is known

to be associated with depressive symptoms.[39] Finally, we assessed lifetime prevalence (cumulative occurrence) of tobacco and alcohol use; different results could have been found if we had used measures of more recent use, but this was not an aim of the present study.

Although the instruments used in this study had been validated for use in Spanish, they have not been validated for use in Peru. Thus, we performed exploratory factor analyses for the self-esteem, BSQ, and PHQ-9 variables. Also, the BSQ was originally developed for women, although the instrument is currently used in both sexes. Moreover, PHQ-9 was originally developed for adults, although nowadays it is also used in adolescents.[40]

This study was cross-sectional, not longitudinal; thus, if there is causality, it could be reverse, meaning that depressive symptoms may lead to BID. Finally, as our research was carried out in a private school, we cannot extrapolate conclusions to other populations (e.g., students of public schools).

A strong point of this study is that it was the first investigation to associate BID with depressive symptoms in Peru, and one of the first in Latin America and in developing countries to do so. As proposed by Thornicroft et al.,[41] more research in developing countries is needed to address the research gap in mental health.

It is important to highlight that the obtained results may advocate for further investigations, as this study population - adolescents - is considered vulnerable; it is important to focus on prevention, design and implement interventions, and instruct families with the objective of improving adolescent health. In addition to implementing a system of individualized psychological screening of students, continued research into this issue with longitudinal studies, to confirm the direction of the association, is warranted. Studies involving more students in different settings and from different social strata are particularly recommended.

Acknowledgements

This publication is based on the undergraduate thesis of FFC, MKT, and MZP, submitted to the Universidad Peruana de Ciencias Aplicadas (UPC) School of Medicine. The authors of this paper would like to express their gratitude to their thesis advisers for the useful feedback provided. GFA acknowledges the UPC Office of the Vice Provost for Research for its support.

Disclosure

The authors report no conflicts of interest.

References

1 Kessler RC, Aguilar-Gaxiola S, Alonso J, Chatterji S, Lee S, Ormel J, et al. The global burden of mental disorders: an update from the WHO World Mental Health (WMH) surveys. Epidemiol Psichatr Soc. 2009;18:23-33.
2 Instituto Nacional de Salud Mental "Honorio Delgado-Hideyo Noguchi". Estudio epidemiológico metropolitano en salud mental [Internet]. Anales de Salud Mental. 2002 [cited 2016 Nov 14]. www.insm.gob.pe/investigacion/archivos/estudios/2002-ASM-EESM-M/files/res/downloads/book.pdf
3 American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5).Arlington: American Psychiatric Publishing; 2013.
4 Avenevoli S, Knight E, Kessler RC, Merikangas KR. Epidemiology of depression in children and adolescents. New York: Guilford; 2008.
5 De La O-Vizcarra M, Pimentel-Nieto D, Soto Maldonado BA, De la O-Vizcarra TJ, Quintana-Vargas S. Frecuencia y factores de riesgo para depresión en adolescentes. Pediatr Mex. 2009;11:57-61.
6 Costello DM, Swendsen J, Rose JS, Dierker LC. Risk and protective factors associated with trajectories of depressed mood from adolescence to early adulthood. J Consult Clin Psychol. 2008;76:173-83.
7 Pasco JA, Williams LJ, Jacka FN, Ng F, Henry MJ, Micholson GC, et al. Tobacco smoking as a risk factor for major depressive disorder: population base study. Br J Psychiatry. 2008;193:322-6.
8 Ferreiro F, Seoane G, Senra C. Toward understanding the role of body dissatisfaction in the gender differences in depressive symptoms and disordered eating: a longitudinal study during adolescence. J Adolesc. 2014;37:73-84.
9 Almeida S, Severo M, Araújo J, Lopes C, Ramos E. Body image and depressive symptoms in 13-year-old adolescents. J Paediatr Child Health. 2012;48:E165-71.
10 Johnson F, Wardle J. Dietary restraint, body dissatisfaction, and psychological distress: a prospective analysis. J Abnorm Psychol. 2005;114:119-25.
11 Paxton SJ, Eisenberg ME, Neumark-Sztainer D. Prospective predictors of body dissatisfaction in adolescent girls and boys: a five-year longitudinal study. Dev Psychol. 2006;42:888-99.
12 Salafia EHB, Gondoli DM. A 4-year longitudinal investigation of the processes by which parents and peers influence the development of early adolescent girls' bulimic symptoms. J Early Adolesc. 2011;31:390-414.
13 Nichols SD, Dookeran SS, Ragbir KK, Dalrymple N. Body image perception and the risk of unhealthy behaviours among university students. West Indian Med J. 2009;58:465-71.
14 Blow J, Cooper TV. Predictors of body dissatisfaction and satisfaction in a Hispanic college student sample. Eat Behav. 2014;15:1-4.
15 Ozmen D, Ozmen E, Ergin D, Cetinkaya AC, Sen N, Dundar PE, et al. The association of self-esteem, depression and body satisfaction with obesity among Turkish adolescents. BMC Public Health. 2007 May 16;7:80-80.
16 Lukianowicz N. ''Body image'' disturbances in psychiatric disorders. Br J Psychiatry. 1967;113:31-47.
17 Vaquero-Cristóbal R, Alacid F, Muyor JM, López-Miñarro PÁ. [Body image; literature review]. Nutr Hosp. 2013;28:27-35.
18 Aalto-Setälä T, Marttunen M, Tuulio-Henriksson A, Poikolainen K, Lönnqvist J. Depressive symptoms in adolescence as predictors of early adulthood depressive disorders and maladjustment. Am J Psychiatry. 2002;159:1235-7.
19 Santana ML, Silva Rde C, Assis AM, Raich RM, Machado ME, de J Pinto E, et al. Factors associated with body image dissatisfaction among adolescents in public schools students in Salvador, Brazil. Nutr Hosp. 2013;28:747-55.
20 Mora ZS. Adolescencia e imagen corporal en la época de la delgadez. Rev Reflexiones. 2008;87:67-80.
21 Pinheiro AP, Giugliani ER. Body dissatisfaction in Brazilian schoolchildren: prevalence and associated factors. Rev Saude Publica. 2006;40:489-96.
22 Fortes Lde S, Meireles JF, Paes ST, Dias FC, Cipriani FM, Ferreira ME. An association between the internalization of body image, depressive symptoms and restrictive eating habits among young males. Cienc Saude Colet. 2015;20:3457-65.
23 Mann M, Hosman CM, Schaalma HP, de Vries NK. Self-esteem in a broad-spectrum approach for mental health promotion. Health Educ Res. 2004;19:357-72.
24 World Health Organization. The health of young people: a challenge and a promise.Geneva: WHO; 1993.
25 Carvalho PHB, Conti MA, Neves CM, Meireles JFF, Oliveira FC, Ferreira MEC. Psychometric assessment of the Brazilian version of the Male Body Dissatisfaction Scale. Arch Clin Psychiatry. 2015;42:90-4.
26 Youth Risk & Resiliency Survey. [Internet] Official NMYRRS Website [cited 2014 Feb 14].http://www.youthrisk.org/pdf/YRRS-2013-HS-S-Std.pdf
27 Caso J, Hernández-Guzmán L, González-Montesinos M. Prueba de autoestima para adolescentes. Rev Univ Psychol. 2011;10:535-43.
28 Castrillón-Moreno D, Montaño IL, Avendaño-Prieto G, Pérez-Acosta A. Validación del body shape questionnaire (cuestionario de la figura

corporal) BSQ para la población colombiana. Act Colom Psicol. 2007;10:15-23.
29 Calderon M, Galvez-Bucollini JA, Cueva G, Ordonez C, Bromley C, Fiestas F. Validación de la versión peruana del PHQ 9 para el diagnóstico de depresión. Rev Peru Med Exp Salud Publica. 2012;29:578.
30 Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med. 2001;16:606-13.
31 Warren CS, Cepeda-Benito A, Gleaves CH, Moreno S, Rodriguez S, Fernandez MC, et al. English and Spanish versions of the Body Shape Questionnaire: measurement equivalence across ethnicity and clinical status. Int J Eat Disord. 2008;41:265-72.
32 Merz EL, Malcarne VL, Roesch SC, Riley N, Robins GR. A multigroup confirmatory factor analysis of the Patient Health Questionnaire-9 among English- and Spanish- speaking Latinas. Cultur Divers Ethnic Minor Psychol. 2011;17:309-16.
33 Kessler RC, Avenevoli S, Costello EJ, Georgiades K, Green JG, Gruber MJ, et al. Prevalence, persistence, and sociodemographic correlates of DSM-IV disorders in the National Comorbidity Survey Replication Adolescent Supplement. Arch Gen Psychiatry. 2012;69: 372-80.
34 Goldfield GS, Moore C, Henderson K, Buchholz A, Obeid N, Flament MF. Body dissatisfaction, dietary restraint, depression and weight status in adolescents. J Sch Health. 2010;80:186-92.
35 Goodman E, Capitman J. Depressive symptoms and cigarette smoking among teens. Pediatrics. 2000;106:748-55.
36 Haro JM, Arbabzadeh-Bouchez S, Brugha TS, de Girolano G, Guyer ME, Jin R, et al. Concordance of the Composite International Diagnostic Interview Version 3.0 (CIDI 3.0) with standardized clinical assessments in the WHO World Mental Health surveys. Int J Methods Psychiatr Res. 2006;15:167-80.
37 Kaltiala-Heino R, Fröjd S. Correlation between bullying and clinical depression in adolescent patients. Adolesc Health Med Ther. 2011; 2:37-44.
38 Wilson ML, Viswanathan B, Rousson V, Bovet P. Weight status, Body image and bullying among adolescents in Seychelles. Int J Environ Res Public Health. 2013;10:1763-74.
39 Eidsdottir ST, Kristjansson AL, Sigfusdottir ID, Garber CE, Allegrante JP. Association between, higher BMI and depressive symptoms in Icelandic adolescents: the mediational function of body image. Eur J Public Health. 2013;24:888-92.
40 Richardson LP, McCauley E, Grossman DC, McCarty CA, Richards J, Russo J, et al. Evaluation of the Patient Health Questionnaire-9 Item for detecting major depression among adolescents. Pediatrics. 2010;126:117-23.
41 Tornicroft G, Cooper S, Bortel TV, Kakuma R, Lund C. Capacity building in global mental health research. Harv Rev Psychiatry. 2012; 20:13-24.