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## UNHEALTHY BEHAVIORS OF WEIGH CONTROL AND SUICIDE IN ADOLESCENTS: A INTEGRATIVE REVIEW

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### ABSTRACT

This integrative review aims to identify in the literature the relationship between unhealthy attitudes of weight control and suicidal behavior in adolescents. The bibliographic survey was carried out in September 2017 in National Library of Medicine National Institutes of Health and Virtual Health Library databases. The temporality of the publications was selected between the years 2013 and 2017. The guiding question was: what's the relationship between unhealthy attitudes of weight control and suicidal behavior? During the analysis was perceived the identification of weight control behavior and demonstrated that also healthy attitudes, such as physical activity, can be used in a detrimental way to health. The following unhealthy weight management procedures were identified: fasting, purgative measures and nonprescription medications. The studies present an association between weight control behaviors and suicidal behavior in adolescents. This study revealed restriction of publications that evaluate an association of these behaviors in adolescents and that those with normal or below normal weight do not seem to be prioritized in the studies, although they are also at risk. Unhealthy behaviors of weight control and suicide are public health concerns, considering its damaging influence on adolescent biopsychosocial growth and development.

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### INTRODUCTION

The society dictates ideal standards of beauty that are quickly disseminated by the media that are increasingly linked to everyday life through audiovisual language and constructing an interpretation of the world that interferes with the imaginary of people (Campana, 2012) influencing directly or indirectly in values, beliefs and expectations of individuals in the search for an acceptable physical appearance (Scutti, 2014). Body appearance is intimately linked to the image of beauty, dominion and social acceptance, therefore mainly sought by adolescents who start to seek their own perfect image, based on the pattern spread by advertising campaigns and distancing themselves from the real body.

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Believing in the acceptance of society and without social support to deal with the changes typical of adolescence, they are faced with the extreme appreciation of appearance, served by the media (Juan, 2010). Conflict is present, because while the media sells the perfect body image associated with success (Gestsdottir, 2015), it also influences unhealthy eating habits (Camelo, 2009) which are increasingly incorporated into life of the adolescents taking in addition to the increase of the corporal weight, damages to the health (Mainland, 2017). The adolescent is a being in construction, immediatist and highly vulnerable to sociocultural influences (Pereira, 2013). In order to reach the demands of the media (Juan, 2010) 3 and afraid to be excluded from their groups (Zametkin, 2004) many seek multiple resources to achieve their goals, sometimes using unhealthy methods of weight control related to feeding, purgative practices, use of medications and even physical activity hurtful to its development causing serious health disorders (Leme, 2013).

The preoccupation with body image is present in all age groups of adolescents and it is configured as a global public health problem (Schlösser, 2014). Failure to get the desired results can frustrate the young person leading to anxiety and binge eating, which can lead to weight gain (Leme, 2013) and generate even more feelings of sadness, social isolation and depression. These can be important predictors of suicidal behavior, especially in young people with poor psychosocial support (World Health Organization, 2001). Suicide is the second leading cause of death among 15- to 29-year-olds worldwide (World Health Organization, 2001). In Brazil, between 1982 and 2012, the suicide rate in the 15-19 age group ranged from 2.9 to 3.9 per 100,000 inhabitants (Waiselfisz, 2014). These data demonstrate that suicide is now also a global public health problem (World Health Organization, 2001). Considering adolescence as a period of transformation and vulnerability (Costa, 2014), suicide and weight control as a serious global public health problem (World Health Organization, 2001), the aim of this systematic review is to identify in the literature on the relationship between unhealthy weight control attitudes and suicidal behavior.

## MATERIALS AND METHODS

This study is a integrative review of the literature. The integrative literature review is conducted in order to identify, analyze and synthesize results of independent studies on the same subject at a given moment, in an objective way (Souza, 2010). The bibliographic survey was carried out in September 2017 through online access to the Pub Med (National Library of Medicine National Institutes of Health) and VHL (Virtual Health Library) databases. Different data to include a wider range of articles. For the search strategy the following descriptors were used: Adolescents OR Teenagers AND Body Weight AND Suicide. The eligibility criteria were: articles that answered the guiding question; research with adolescents in the age group of 10 to 19 years. Exclusion criteria were: case reports or integrative reviews, qualitative research, and articles that did not respond to the questioning of the study, as well as studies with specific populations: athletes, models, pregnant adolescents and adolescents with prostheses or orthoses. These populations were excluded because they configures samples with different risk for weight control behaviors. 222 articles were obtained through search engines; we used the filters of

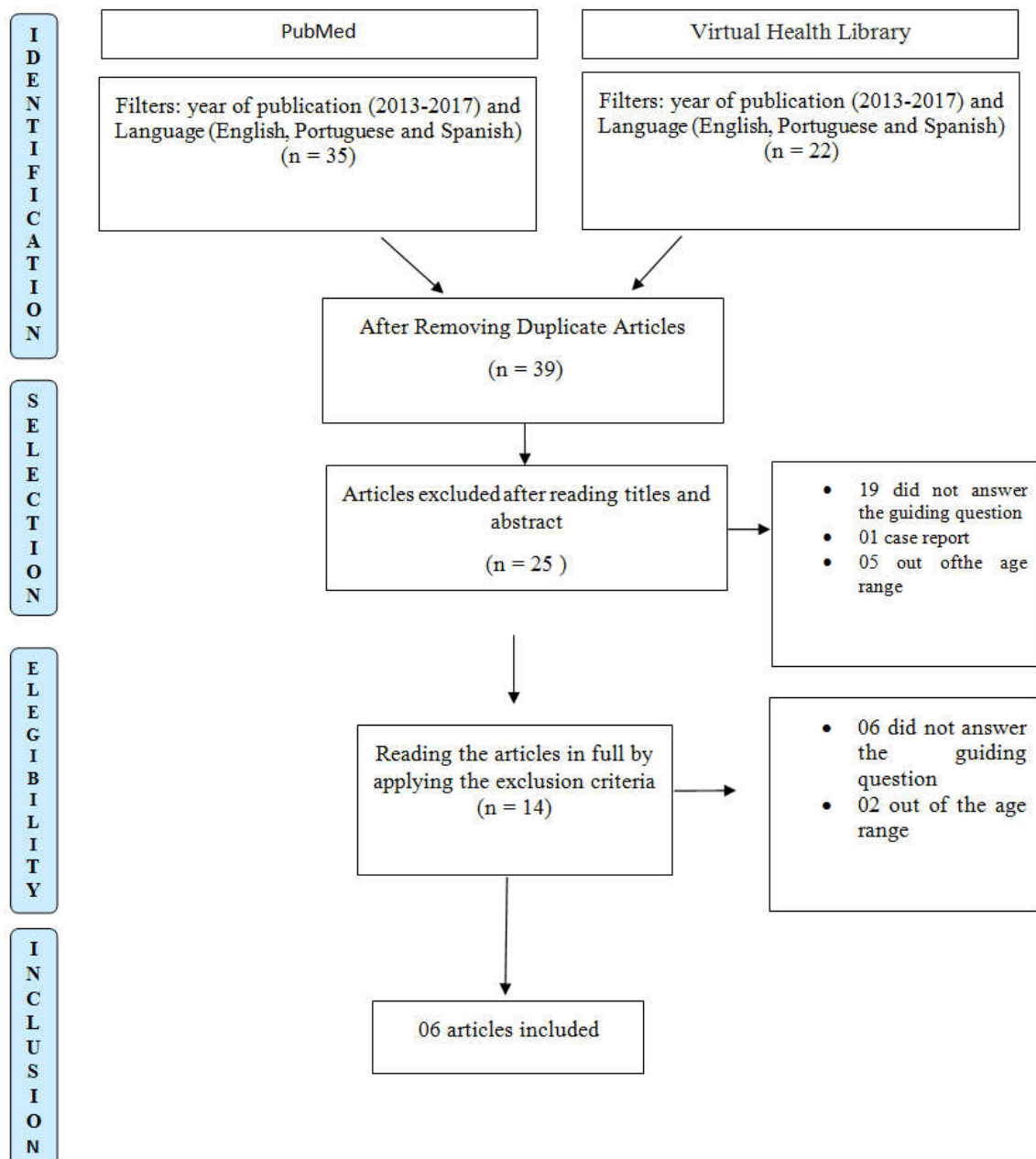


Figure 1. Flow of selection of articles, according to Prisma scale

publications of the last five years and languages (English, Portuguese and Spanish), composed for 57 articles. After removing duplicate, 39 articles. After reading the titles and abstracts, 25 studies were excluded; after reading in full remaining 14 articles, 6 articles remained to compose the study sample according to Figure 1. The guiding question was: what is the relationship between unhealthy attitudes of weight control and suicidal behavior? Two researchers independently read the abstracts resulting from the search and considered the guiding question and the exclusion criteria for the selection of articles. The results of both were compared and the doubts clarified with the third researcher.

## RESULTS

The six articles selected had a cross-sectional design, five had representative samples and were performed with individuals of both sexes, one was carried out only with female adolescents. The age range varied between 12 and 19 years of age. The studies had diverse locations including North America (Johnson, 2016; Manzo, 2015; Southerland, 2016), Eastern Europe (Laakso, 2013) Asia (Lee, 2015; Lee, 2016) and none performed in Brazil (Table 1). The YRBS (Youth Risk Behavior Survey) was used in five school-based studies

(Johnson, 2016; Manzo, 2015; Southerland, 2016; Lee, 2015; Lee, 2016) and one used the K-SADS-PL (Schedule for affective disorder and Schizophrenia for school-age children present and lifetime) performed in a hospital setting in which the attending physician or a trained medical student conducted the interviews (Laakso, 2013). The studies considered as unhealthy weight control: fasting for 24 hours or more, use of medications without a prescription, use of laxatives and / or diuretics, self-induced vomiting (Johnson, 2016; Manzo, 2015; Southerland, 2016; Lee, 2015; Lee, 2016), food substitution by formulas (Johnson, 2016), (Southerland, 2016) e consumption of a single type of food (monodietas) (Lee, 2015; Lee, 2016). Self-induced vomiting was evaluated separately in two articles (Johnson, 2016; Laakso, 2013; Johnson, 2016; Laakso, 2013) and showed association with attempted suicide. Two articles evaluated excessive physical exercise as unhealthy behavior of weight control (Laakso, 2013; Lee, 2016). Only one study evaluated underestimation of body weight (Lee, 2015), and found a positive association for unhealthy weight control and suicidal ideation. Among the components of suicidal behavior assessed by the articles included in this review were suicidal thinking, planning and attempted suicide, its association with weight control behaviors can be seen in Table 2.

**Table 1. Distribution of articles according to author / year, place, sample, age group and instrument with characterization of the variables**

Author / Year	Local	Sample	Age group	Instrument	Variables	Variables
Lee e Lee, 2016	South Korea	20.264	Mean of 16,43 years	K-YRBWS	Fasting $\geq$ 24h; Nonprescription medications; Self-induced vomiting; Laxatives or diuretics	Suicidal ideation *
Lee <i>et al.</i> , 2016	Korea	69.726	12-18 years	K-YRBWS	Fasting $\geq$ 24h /; Nonprescription medications; Vomiting; Self-induced; Laxatives or diuretics; Food substitutes; Monodiets	Suicidal ideation * Suicide attempt*
Johnson <i>et al.</i> , 2016	EUA	4.148	15-19 years	YRBS	Fasting $\geq$ 24h; Nonprescription medications; Purge	Suicidal ideation * Suicidal planning * Suicide attempt*
Manzo <i>et al.</i> , 2015	EUA	21610	15 -19 years	YRBS	Fasting $\geq$ 24h; Nonprescription medications; Vomiting Self-induced, Laxatives; Food Substitutes	Suicidal thoughts * Suicidal planning * Suicide attempt*
Southerland <i>et al.</i> , 2015	EUA	64.790	Mean of 12,81 years	YRBS	Fasting $\geq$ 24h; Nonprescription medications; Self-induced vomiting; Laxatives; Food Substitutes	Suicidal thoughts * Suicidal planning * Suicide attempt*
Laakso <i>et al.</i> , 2013	Finland	300 women	12 - 17 years	K-SADS-PL	Nonprescription medications; Self-induced vomiting; Laxatives and diuretics	Suicidal ideation* Suicide attempt*

Note: \* In the last year

**Table 2. Association of variables, behaviors for weight control and suicide**

Author / Year	Independent Variables	Dependent Variables	Outcome (OR and/or IC)
Lee and Lee, 2016	Behavior for weight control	Overestimation *	1,54 ( 1,37-1,72)
	Suicidal ideation	Underestimation *	0,50 (0,43-0,59)
Lee <i>et al.</i> , 2016	Control Behavior *	Overestimation *	1,20 (1,08-1,33)
		Underestimation *	1,12 (1,00-1,25)
		Suicidal ideation	1,57♂/ 1,32♀
		Suicide attempt	2,49♂/ 1,92♀
Johnson <i>et al.</i> , 2016	3 control measures *: fasting; food substitutes; vomiting or laxative Vomiting or use of laxatives 3 control measures *: fasting; food substitutes; vomiting or laxative	Suicidal ideation	1,70 ♂/ 1,33♀
		Suicide attempt	1,84 ♂/ 2,24♀
		Suicidal thoughts	3,0 ( 1,4-6,5)♂/ 4,5 ( 2,5-8,3)♀
		Suicide planning	3,7 ( 1,7-7,9)♂/ 4,2 ( 2,3-7,7)♀
Manzo <i>et al.</i> , 2015	Inappropriate weight control	Suicide attempt	3,2 ( 1,8-5,6)♂/ 4,5 (IC: 2,5-8,4)♀
		Suicidal behavior	4,54 American Indians ♀ / 3,86 White ♀ 2,21 American Indians ♂ 2,15 White ♂
Southerland <i>et al.</i> , 2015	Extreme weight control behaviors	Suicidal thoughts	3,3 (3,13-3,47)
		Suicide planning	3,12 (2,94-3,31)
		Suicide attempt	3,56 ( 3,30-3,83)
Laakso <i>et al.</i> , 2013	Vomiting Excessive exercise	Attempted suicide and self-mutilating behavior	12,0 (1,11-129,29)
		Suicide attempt	20,61(1,56-272,21)

## DISCUSSION

The articles selected for this review studied the association between unhealthy behaviors of weight control, inappropriate or extreme, and suicidal behaviors. It is understood by weight control manners all the actions that the individual adopts to lose weight, maintain weight or even gain weight. These can be classified as healthy when it comes to balanced diets and exercise that fit within the guidelines for health promotion; (such as self-induced vomiting, use of laxatives and diuretics), restrictive diets, where the individual opts for a lower caloric intake than the recommended one or even if he or she feeds on (Johnson, 2016; Manzo, 2015; Southerland, 2016; Laakso, 2013; Lee, 2015; Lee, 2016). In order to better express the strength of each of these conducts we opted to discuss them separately: Studies have shown that fasting is a component of unhealthy behaviors of weight management used by adolescents (Johnson, 2016; Manzo, 2015; Southerland, 2016; Laakso, 2013; Lee, 2015; Lee, 2016). Fasting is responsible for the decrease in plasma glucose and this state causes cortisol, hormone release associated with anxiety and negative feelings (Guyton, 2006) as depressive and irritable mood, important predictors of suicidal behavior (Zametkin, 2004). This is a quick and easy practice to control weight in a short period of time (Fischer, 2015); and perhaps for that reason is so prevalent among the studies of this review. It is possible that because it is a quick and easy practice to control weight in a short period of time has been so prevalent among studies and was present in the regions studied in this review. Vomiting is another risk factor for the development of eating disorders, which are also predictors of suicidal behavior<sup>3</sup>. The association between self-induced vomiting and suicide attempt identified in this review (Johnson, 2016; Manzo, 2015; Southerland, 2016; Laakso, 2013; Lee, 2015; Lee, 2016) showing that this practice was widely used by adolescents, possibly because it does not generate financial cost and is easy to perform (Fischer, 2015), as well as fasting.

All the articles in this review (Johnson, 2016; Manzo, 2015; Southerland, 2016; Laakso, 2013; Lee, 2015; Lee, 2016) reported the use of medications by adolescents without a prescription. Among the drugs used for weight control are anorectics, capable of generating from loss of appetite and temporary increase of physical capacity to delirium and degeneration of nerve cells (Guyton, 2006) leading to the distortion of reality that without a prospect of change induces isolation social and consequently suicidal tendencies. Other drugs referred to (Johnson, 2016; Manzo, 2015; Southerland, 2016; Laakso, 2013; Lee, 2015; Lee, 2016) were laxatives and diuretics. This is a disturbing fact, since it raises concerns about the type of medication (anorectics, laxatives and diuretics) being used, the damages that may occur with self-medication and alert to the means of acquisition. (Pardo, 2013). Excessive physical exercise as a form of weight control was associated with suicide ideation and attempted suicide in only one article and was considered a risk factor for the health of the population studied, since girls who attempted suicide practiced excessive physical activity (Laakso, 2013).

Another study found association between suicidal behavior and physical exercise, only when fasting for 24 hours or more and food reduction were added to the analysis (Lee, 2016). This may indicate that fasting was the predictor of suicidal behavior rather than physical exercise, as it is considered a protective factor for the health of individuals. The underestimation of body weight was evaluated by only one

study (Lee, 2015) It is possible that eutrophic or underweight adolescents are currently considered of low priority (Lee, 2016) in relation to the population of the other studies and therefore there is little interest in carrying out studies that underestimate their needs. These adolescents have bodies that are desired by advertising campaigns<sup>3</sup>. However, underweight or underweight adolescents feel uncomfortable with their body and with comments from their peers becoming vulnerable to media influences that dictate aesthetic standards and are sometimes susceptible to non-standard methods healthy to increase body weight (Lee, 2015), such as the consumption of very caloric foods and low nutritional value. The practice of unhealthy weight control attitudes increased the chance of suicidal behavior more in girls than in boys (Johnson, 2016; Manzo, 2015).

This result corroborates previous studies in which female adolescents are more likely to engage in suicidal behavior than men (Chung, 2012; Lampard, 2014). Female adolescents are likely to feel more pressured by society to maintain an ideal weight since it is associated with power, success, and sexual performance. Overweight or obese girls feel more discriminated than boys (Bittencourt, 2009). Thus, body dissatisfaction, especially in girls, leaves them more vulnerable to low self-esteem associated with feelings of sadness and loneliness, increasing the risk of depression and consequently suicidal behavior. Among the limitations of the study we can verify the restriction to articles published in the last five years, and some study considered classic for the area may have been excluded. The fact that no study of this review was conducted in Brazil does not clarify the relationship between inadequate weight control and suicidal behavior in Brazilian adolescents, however, we can observe how the subject has been approached in the last five years with the adolescent population in world level.

## Conclusion

Unhealthy behaviors of weight control and suicide are public health concerns, considering their damaging influence on adolescent biopsychosocial growth and development. The analysis identified various weight-management behaviors and showed that even healthy attitudes, such as physical activity, can be used in ways that impair health when over-performed. According to the articles analyzed there was no significant difference by sex regarding the association between unhealthy behavior of weight control and suicidal behavior. This study also revealed a restriction of publications that evaluate the association of these behaviors in adolescents and that individuals with normal or below normal weight appear not to be a priority in the studies, although they are also at risk. It is suggested to carry out studies on this subject in Brazil, in order to know the reality of Brazilian adolescents and to establish public policies to control and prevent these behaviors, thus protecting the healthy psychological state of adolescents in regard to weight concerns, and to assist educators and health professionals in helping adolescents develop skills in identifying signs and preventing the onset of unhealthy weight management behaviors and encouraging them to adhere to healthy methods.

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