

Programs to improve body image in adolescents: A systematic review

Programas para mejorar la imagen corporal en adolescentes: una revisión sistemática

Virginia Flores-Perez¹, Esteban Jaime Camacho-Ruiz², María del Consuelo Escoto-Ponce de León³,
Brenda Sarahi Cervantes-Luna⁴, Manuel Leonardo Ibarra-Espinosa⁵

DOI: 10.19136/hs.a22n3.5116

Review Article

• Received date: May 25, 2022 • Accepted date: October 20, 2022 • Publication date: September 18, 2023

Corresponding Author

Esteban Jaime Camacho Ruiz. Postal address: Av. Bordo de Xochiaca, Col. Benito Juárez,
C.P. 57000. Nezahualcóyotl, Estado de México, México.
E-mail: jaime_camacho_ruiz@hotmail.com

Abstract

Objective: To examine the intervention programs that have been conducted on body image in adolescents.

Materials and methods: The PRISMA statement was used in this review. The search for studies was conducted in PubMed, Web of Science, MEDLINE-ProQuest, and EBSCO databases from January 1, 2017, to January 25, 2022. Methodological quality was assessed using the Quality Assessment Tool for Quantitative Studies, developed by the Effective Public Health Practice Project.

Results: Eight studies were included, most of which had a strong methodological quality. The results obtained after the implementation of the programs reflected favorable changes in body image and body satisfaction for adolescents between 11 and 18 years old, only for five studies. Additionally, five studies maintained the same changes at follow-up.

Conclusions: Findings from this review allow us to conclude that intervention programs are a safe and effective way to influence adolescent body image.

Keywords: Body image; Body dissatisfaction; Adolescents; Program evaluation; Health promotion.

Resumen

Objetivo: Examinar los programas de intervención que se han realizado sobre imagen corporal en adolescentes.

Materiales y métodos: En esta revisión se utilizó la declaración PRISMA. La búsqueda de los estudios se realizó en las bases de datos PubMed, Web of Science, MEDLINE-ProQuest y EBSCO, a partir del 1 enero de 2017 hasta el 25 de enero de 2022. La calidad metodológica se evaluó a través de la Quality Assessment Tool for Quantitative Studies, desarrollada por el Effective Public Health Practice Project.

Resultados: Se incluyeron ocho estudios, de los cuales la mayoría tuvo una calidad metodológica fuerte. Los resultados obtenidos después de la implementación de los programas reflejaron cambios favorables en la imagen corporal y en satisfacción corporal para los adolescentes de entre 11 y 18 años, solo para cinco estudios. Adicionalmente, cinco estudios mantuvieron en el seguimiento los mismos cambios.

Conclusiones: Los hallazgos de esta revisión nos permiten concluir que los programas de intervención, constituyen una forma segura y eficaz de incidir en la imagen corporal de los adolescentes.

Palabras clave: Imagen corporal; Insatisfacción corporal; Adolescentes; Evaluación de programas; Promoción de la salud.

¹ Master's in health Sociology. UAEM Nezahualcóyotl University Center, Autonomous University of the State of Mexico, Nezahualcóyotl, State of Mexico, Mexico.

² PhD in Psychology. UAEM Nezahualcóyotl University Center, Autonomous University of the State of Mexico, Nezahualcóyotl, State of Mexico, Mexico.

³ PhD in Psychology. UAEM Ecatepec University Center, Autonomous University of the State of Mexico, Ecatepec, State of Mexico, Mexico.

⁴ PhD in Psychology. UAEM Ecatepec University Center, Autonomous University of the State of Mexico, Ecatepec, State of Mexico, Mexico.

⁵ Doctor of Collective Health Sciences. UAEM Nezahualcóyotl University Center, Autonomous University of the State of Mexico, Nezahualcóyotl, State of Mexico, Mexico.

Introduction

Adolescence is a phase characterized by physical, psychological, and social changes from 10 to 19 years old people. This phase is considered to be essential because adolescents are expected to acquire appropriate behaviors to be healthy in adulthood^{1,2}.

As adolescence is a stage of constant change, adolescents develop a greater awareness of their body image; however, not all adolescents manage to adapt themselves and maintain a favorable attitude towards their body, making adolescence a stage of high vulnerability^{3,4}.

Body image is an essential component of health, so we can define it as a multifaceted construct that refers to the mental representation of the body, which includes perceptual, cognitive-affective, and behavioral aspects^{5,6}.

According to Hernandez *et al.*⁷ and Smolak⁸ there are differences between men and women regarding their body image, which has been supported by some research indicating that women are more dissatisfied with their bodies than men^{9,10,11}. Nevertheless, it does not indicate that the study of body image in men is not critical. Due to this matter, there is great interest in researching body image during adolescence, especially because of the impact, it has on health¹².

Salazar-Mora² indicates that body image should be analyzed from a sociocultural approach because having body acceptance or not is influenced by society, parents, and peers. Likewise, Raich¹³ states that the imposition of unattainable body aesthetic ideals causes adolescents to develop a conflict between the body they have and the one they would like to have. This conflict may develop body dissatisfaction, which is expressed as a negative appraisal of the size and shape of the body (or parts of it) as well as weight^{5,14,15}.

Body dissatisfaction is a predictor of the triggering of eating disorders (ED), body dysmorphia, and steroid use¹², in addition, it is a risk factor for the promotion of emotional distress¹⁶, depression, low self-esteem, drive for muscularity and thinness¹⁷, and suicidal ideation³ as well.

Some researchers agree that further research is needed to understand the differences between women and men regarding their body image^{7,8}, besides identifying those protective and risk factors which affect this construct¹⁸.

However, Jones and Smolak¹² express that one cannot wait for complete crystal clear on the factors that impact adolescent body image. From this perspective, it is important for researchers to start designing, implementing, and evaluating programs. Researchers such as Ordóñez-Azuara *et al.*¹⁹,

Presnell *et al.*¹⁶ and Vaquero-Cristóbal *et al.*²⁰ agree that the implementation of promotion and prevention programs should be privileged because benefits for adolescent health would be greater. Moreover, it is considered necessary that those in charge of delivering the programs be highly trained. Therefore, this review is aimed at examining the intervention programs that have been conducted to improve body image in adolescents. Elements that were analyzed included: sample, program approach, theoretical model, content, teaching and learning tools, and post-intervention and follow-up outcomes.

Materials and methods

The PRISMA statement was used in this systematic review (Preferred Reporting Items for Systematic Reviews)²¹. The search for studies was carried out in the databases PubMed, Web of Science, MEDLINE- ProQuest, and EBSCO, using the search strategy: (*body image* OR *body dissatisfaction* OR *body satisfaction* OR *body image disturbance*) AND (*intervention* OR *program* OR *treatment* OR *prevention*) AND (*adolescents* OR *teenagers* OR *high school students* OR *youth*). The search period was from January 1st, 2017, to January 25th, 2022.

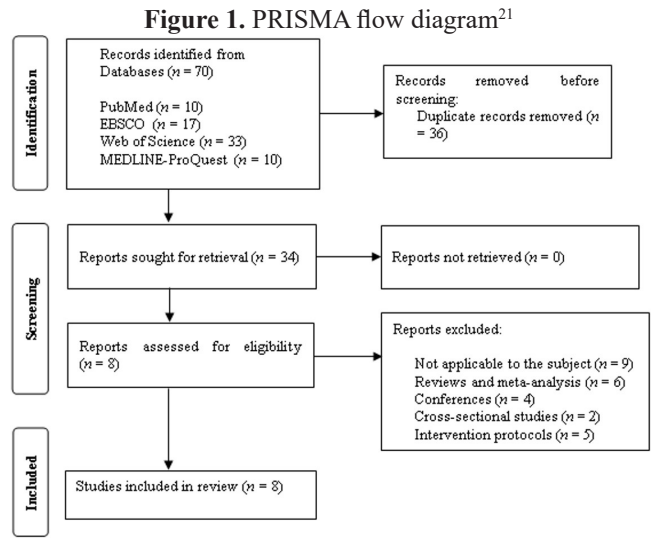
For the selection of the studies, the following criteria were considered: a) empirical studies, b) body image interventions aimed at adolescents, c) quasi-experimental or experimental design, and d) written in English. Likewise, the exclusion criteria were: a) studies that do not correspond to the topic, b) literature reviews or meta-analysis, c) conferences, dissertations, or books, d) non-experimental or pre-experimental design, and 4) intervention protocols.

After searching the studies in the four databases, 70 articles were obtained from which 51.4% were eliminated because they were duplicates. Subsequently, the titles and abstracts were examined, and when necessary, the full text was reviewed. Of the 34 articles, 37.1% were eliminated because they did not meet the inclusion criteria, leaving a total of eight (11.4%) articles (Figure 1).

In addition to considering the inclusion criteria, the first two authors of this study assessed the methodological quality of the eight studies using the Quality Assessment Tool for Quantitative Studies, elaborated by the Effective Public Health Practice Project (EPHPP)²². This tool allows the evaluation of various quantitative study designs (e.g, randomized controlled trials [RCT], quasi-experimental studies, uncontrolled studies), in addition, it has been shown to have construct and content validity. It contains six domains: a) selection bias, b) study design, c) confounders, d) blinding, e) data collection methods, and f) withdrawals and dropouts. According to the dictionary attached to this

tool, each domain is rated as strong (3 points), moderate (2 points), or weak (1 point). When the domain scores are obtained, they are averaged to obtain the overall rating (maximum 3 points), whereby each study is assigned a rating of weak (1.00-1.50), moderate (1.51-2.51), or strong (2.51-3.00) quality. Only studies assessed as strong and moderate are included in the review (Table 1).

From the eight articles included in the review, the following data were extracted independently by two authors of this study: reference, sample, program approach and name, theoretical model, sessions, duration, and frequency, content, didactic strategies, and main results (Table 2).



Source: own elaboration

Table 1. Methodological quality of studies included in the review

Studies	Domains						Rating	Global quality
	1. Selection bias	2. Study design	3. Confounders	4. Blinding	5. Data collection methods	6. Withdrawals and dropouts		
Bell <i>et al.</i> ²³	3	2	3	2	3	3	2.66	Strong
Gordon <i>et al.</i> ²⁴	3	3	3	2	3	3	2.83	Strong
Ovejero <i>et al.</i> ²⁵	3	2	2	2	3	2	2.33	Moderate
Regehr <i>et al.</i> ²⁶	3	2	3	2	3	3	2.66	Strong
Ghahremani <i>et al.</i> ²⁷	3	2	3	2	3	3	2.66	Strong
Rodgers <i>et al.</i> ²⁸	3	2	3	2	3	3	2.66	Strong
Dunstan <i>et al.</i> ²⁹	3	2	3	2	3	3	2.66	Strong
Dhillon and Deepak ³⁰	3	2	3	2	3	3	2.66	Strong

Note. Quality ratings. 3 = strong; 2 = moderate; 1 = weak
Source: own elaboration



Table 2. Content of body image programs included in the review

Reference	Sample	Program approach and name	Theoretical model	Sessions, duration, and frequency	Content	Teaching and learning tools	Results	
							Post-intervention	Follow-up
Bell <i>et al.</i> ²³ England	n = 268 H and M 12 to 13 years C = 134 I = 134	Cognitive dissonance <i>Digital Bodies</i>	NE	Single session 60 minutes	Body ideals across time and culture, with a specific focus on social media spaces. Deconstruct the myths surrounding the perfect body. The role of adolescents in the creation, perpetuation, and reinforcement of body ideals using digital technologies.	Self-affirmations. Discussion. Group assignments. Workbook. Implementation of intentions.	Body satisfaction was improved. Only women reduced internalization of the thinness ideal, but not internalization of the athleticism ideal or self-objectification.	After eight weeks, the improvement in body satisfaction was maintained.
Gordon <i>et al.</i> ²⁴ Australia	n = 892 H and M 11 to 15 years C = 409 I = 483	Media literacy <i>SoMe</i>	Constructivist theory	4 sessions 50 minutes Weekly	Criticism of advertising in social networks. Social networks: Are they real? Interaction with friends in social networks. Create positive social networks.	Slides. Brochures. Examples of social networks.	In girls, dietary restriction and depressive symptoms were reduced. In boys, self-esteem and drive for muscle building were increased (being an adverse effect).	The changes obtained in the girls were maintained for up to six months. In the case of children, the changes were preserved until 12 months of age.
Ovejero <i>et al.</i> ²⁵ Spain	n = 214 H and M 14 years C = 115 I = 99	NE <i>ECOPREV</i>	Cognitive-social theory	8 sessions 50 minutes Weekly	Media literacy. Healthy eating habits. Physical activity. Emotional intelligence. Activism.	Historical analysis. Use of advertising messages. Food pyramid. Film clips. Videos.	Body satisfaction, self-esteem, repair, and emotional clarity were improved. Self-oriented perfectionism and internalization of the body ideal of muscularity and thinness decreased.	The results were maintained after six months and one year.
Regehr <i>et al.</i> ²⁶ Canada	n = 119 H and M 12 years C = 43 I = 76	Interactive <i>Free To Be</i>	Positive psychology	6 sessions 55 minutes NE	Appearance pressures and media messages. Awareness of how the media is manipulated and the impact this has on the viewer. Body appreciation. Stereotypes of appearance and behavior. Positive body image. Self-identification.	Activity notebook.	Positive body image enhancement was not achieved. There was an increase in body image coping strategies and media literacy. Body dissatisfaction was reduced. It should be noted that men were the main beneficiaries of the program.	NA
Gahremani <i>et al.</i> ²⁷ Iran	n = 150 M 14 years C = 78 I = 72	NE	Self-efficacy theory	6 sessions 45 minutes NE	Body image and goal setting. The ability to feel cognition or self-surveillance. Critical thinking. Practice appreciation. Mind and body preparation.	Self-tests. Conferences. Reflection in the mirror. ABC learning (activation, belief, consequence). Corrective thinking. Gratitude practice. Body image ladder.	Body image concerns were significantly decreased, and self-esteem was increased.	NA

Continuation...



Continuation

Rodgers <i>et al.</i> ²⁸ United States	<i>n</i> = 274 H and M 18 years	NE <i>BodiMojo</i>	NE	6 weeks NE Daily	Mood and emotional regulation. Gratitude. Self-compassion (e.g., mindfulness, kindness, humanity). Body image (e.g., media literacy, peer influences, appearance comparison). Healthy lifestyle (e.g., mindful eating, sleep hygiene, physical activity).	Questionnaires. Audio meditation. Journaling. Record of feelings.	Esteem about appearance, self-compassion, and body image increased. No significant effects were found on body image flexibility or comparison by appearance and no significant effects were found on mood.	The changes were maintained at 12 weeks.
Dunstan <i>et al.</i> ²⁹ Australia	<i>n</i> = 200 M 11 to 14 years C = 53 I ₁ = 74 I ₂ = 73	Interactive <i>Happy Being Me</i>	NE	6 sessions NE	Body image. Pressure and prejudice. Fat talk. Media.	Discussion. Posters.	Body dissatisfaction decreased, as well as the internalization of the thinness ideal and the comparison of appearance. In addition, there was an increase in self-esteem.	The reduction in the internalization of the thin ideal and the increase in self-esteem were maintained at six months.
Dhillon and Deepak ³⁰ India	<i>n</i> = 49 M 12 to 14 years C = 25 I = 24	M e d i a literacy NE	NE	Single session 55 minutes	Media literacy. Use of technology to create beauty. Hidden media agendas in the promotion of beauty ideals.	Images of actresses and models from India and the West. Videos. Advertisements. Discussion.	Body satisfaction increased, as did awareness of the artificiality of media images.	NA

Note. *n* = sample size; H = men; M = women; C = control group; I = intervention group; NE = not specified; NA = not applicable Source: own elaboration

Results

Methodological quality

Eight studies were included in this review and span from 2017 to 2022. Eighty-seven-point five percent of the studies had a strong methodological quality^{23,24,26,27,28,29,30}. Only one study showed moderate methodological quality²⁵.

Country

Body image programs for adolescents aged 11 to 18 years old were conducted in Australia (*n* = 2)^{24,29}, United States²⁸, England²³, Iran²⁷, Spain²⁵, Canada²⁶ and India³⁰.

Purpose

Programs aimed at improving body image (*n* = 3) and body satisfaction (*n* = 5). In addition, the authors of these programs expected that they would also address issues such as internalization of the body ideal of muscularity/thinness, appearance comparison and psychological risk factors, mood, self-esteem, and body change strategies and well-being.

Methodology

Thirty-seven-point five percent of the studies included only women and 62.5% were mixed. Regarding the design of the studies, 87.5% were quasi-experimental and only one was an RCT. The sample size for the control group ranged from 25 to 409 participants (*M* = 127.71; *SD* = 132.62) and for the intervention group ranged from 24 to 483 participants (*M* = 156.00; *SD* = 151.86).

The studies assessed *body image or body satisfaction/dissatisfaction* using as instruments: Body Image State Scale (BISS)³¹, Body Image Questionnaire (QÜIC)³², Body Image Acceptance and Action Questionnaire (BIAAQ)³³, Body Image Concern Inventory (BICI)³⁴, Body Satisfaction Scale (BSS)³⁵, Body Appreciation Scale (BAS)³⁶, Eating Disorder Inventory-Body Dissatisfaction Subscale (EDI-BD)³⁷ and the Eating Disorder Examination Questionnaire (EDEQ)³⁸. Furthermore, other instruments aimed at evaluating *social appearance standards* were used, such as the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-3-4; *n* = 5)^{39,40} and the Physical Appearance Comparison Scale (PACS; *n* = 3)⁴¹, for *self-esteem* the Rosenberg Self-Esteem Scale (RSES; *n* = 4)⁴², for *feeding behavior* was used

Dutch Eating Behaviour Questionnaire (DEBQ; $n = 2$)⁴³ and for *body esteem* the Body Esteem Scale for Adults and Adolescents (BESAA; $n = 2$)⁴⁴. Only the study by Regehr *et al.*²⁶ used an additional scale to assess satisfaction with their program.

For the intervention, only half of the studies reported the type of program they implemented, highlighting *media literacy* ($n = 2$), *cognitive dissonance* ($n = 1$), and *interactive* ($n = 2$). Four studies stated that their program had a theoretical foundation^{24,26,27}. The programs were also implemented by research assistants or researchers in psychology, doctoral students, or professionals with doctoral degrees^{25,29} and facilitators^{24,26}. In some studies, single sessions were conducted ($n = 2$), while in others there were four ($n = 1$), six ($n = 3$), or even eight sessions ($n = 1$), the average was 4.57 sessions ($SD = 2.70$), however, the Rodgers *et al.*²⁸ study did not mention how many sessions they conducted. The duration of each session was 45 to 60 minutes, and concerning the periodicity, three studies did not specify it^{26,27,29}. The main topics addressed in the program sessions were: body aesthetic ideals, appearance pressure and prejudices, media literacy, body image, body appreciation, positive social networks, mood and emotional regulation, gratitude and self-compassion, and healthy lifestyles.

Teaching and learning tools used vary from one intervention program to another, however, it should be noted that the tools have been more interactive than didactic.

All studies applied a pre-test and a post-test. More than half were followed up ($n = 5$) with a time interval of eight weeks to 12 months.

Effects on post-intervention and follow-up

The results achieved after the implementation of the programs reflected favorable changes in body satisfaction^{23,25,30}, the body image^{27,28} and the reduction of body dissatisfaction²⁹. On the other hand, no changes were obtained in positive body image²⁶ or body dissatisfaction²⁴.

Some programs also had significant changes in decreasing the internalization of the thin/muscle ideal^{23,25,29}, in increasing self-esteem^{24,25,27,29} and body image coping strategies²⁶. Likewise, Rodgers *et al.*²⁸ indicated that they did not have the expected results in terms of body image flexibility or comparison by appearance and mood.

Specifically, the Gordon *et al.*²⁴ program was able to reduce food restriction and depressive symptoms, but they reported that it harmed men as they increased the drive for muscularity, which according to the authors was due to the content of the program.

Concerning follow-up, the most of the programs maintained the same changes over the years^{23,24,25,28,29}.

Limitations

The main limitations mentioned in the studies above were: length of follow-up or lack of follow-up ($n = 4$), participant attrition ($n = 2$), sample size ($n = 3$), lack of inclusion of men ($n = 2$) and use of self-reporting instruments and the use of measures with low reliability ($n = 2$).

Discussion

The goal of this review was to examine the intervention programs that have been conducted to improve on body image in adolescents. Therefore, after identifying and selecting the studies through the databases, an evaluation of the methodological quality was carried out to ensure that the studies were prepared with high scientific rigor, which in turn allowed confidence in their results and conclusions. In the present review, we used the tool developed by the EPHPP²², which has been found to have excellent inter-rater reliability⁴⁵. As a result of this evaluation, seven studies had strong methodological quality, and only one had moderate methodological quality.

Over the years, the use of various approaches in body image intervention programs has been identified. In this review, the focus of two studies^{24,30} was *media literacy*. From this approach, participants play an active role as they are taught to analyze, understand, evaluate, and even critically transform the messages they receive from the media regarding unrealistic stereotypes of perfection of men and women. Programs under this approach involve increasing participants' awareness and developing strategies to defend themselves against the persuasive influence of the media^{46,47}. Similarly, two studies^{26,29} provided information on positive body image, appearance pressure and media, body appreciation, among others, used interactive techniques, used the interactive approach which allows participants to engage deeply with the program so that they can gain and employ the skills learned in their daily lives, enabling change that goes beyond simply increasing the knowledge⁴⁸. Only one study²³ used the *cognitive dissonance approach* which allows participants to modify inconsistencies arising from thoughts, emotions, beliefs, attitudes, and behaviors that cause psychological distress⁴⁹. This discomfort motivates participants to voluntarily change their behavior until they restore their consistency⁵⁰. It should be noted that each of these approaches has both empirical and scientific support, which allows us to know their effectiveness over the years and whether their use will benefit the health of participants. Three studies^{25,26,27,28} did not specify which approach they used so we suggest not omitting important information about the intervention program even if it is thought it can be inferred.

Importantly, some studies^{24,25,26,27} stated the theoretical foundation of their program (e.g., constructivist theory, social-cognitive, self-efficacy, positive psychology). However, there is still no agreement as to which theory and approach would be the most appropriate to ensure the success of the program⁵¹. In the same sense, there is a lack of evidence that would allow us to determine with certainty who or whose programs are the most appropriate to implement intervention programs⁵¹. In this case, some programs^{24,25,26,29} were run by research assistants or researchers in psychology, doctoral students or professionals with doctorates, in conjunction with facilitators who were trained by the principal investigators and although the results were relevant, it is necessary to keep in mind that training must be provided correctly to avoid generating negative effects on participants.

Sixty-two-point five percent of the intervention programs conducted four to eight sessions obtaining favorable post-intervention results^{26,27}, and in some cases their effects were also reflected in the follow-up^{24,25,29}. It has been established that interventions that include a one-session hour per week during three weeks at least, generate more significant changes because participants have more opportunities to reflect on the content and materials of the program, as well as to apply what they have learned^{48,52}. However, it has been noted that participant attrition in multisession interventions is a problem. Therefore, they are suggested to be brief⁵³. Stice and Shaw⁴⁸ recognize that one-session interventions are easier to disseminate, have greater acceptability, and are lower cost, but might be less effective compared to long-term interventions. On the contrary, the intervention programs of Bell *et al.*²³ and Dhillon and Deepak³⁰ had positive post-intervention results, although not all changes were maintained at follow-up²³. Given this discrepancy between single-session and multi-session interventions, more research is needed to understand what would be most appropriate according to the needs and accessibility of the participants.

As shown in Table 2, the contents of the intervention programs and the teaching and learning tools are not the same, since it depends to a great extent on the focus of the program. However, when designing an intervention program, it is necessary to carry out an exhaustive review of the literature to obtain the best scientific evidence on what and how it has been done and who has done it. An important aspect to consider is to know the limitations that the researchers have had at the time of implementing the program, since this information will help us to reduce risks during the intervention.

According to O'Dea⁴⁶, one of the basic principles to be considered by responsible researchers in the development of intervention programs is *first, do no harm*. Concerning this,

one study reported that the intervention was counterproductive for men as the drive for muscularity increased post-intervention and was maintained at follow-up. This result was due to the content of the program; however, the authors did not mention if they implemented any measures to reduce the harm caused by the intervention²⁴. Therefore, future research should have clear ethical principles for research involving human subjects to safeguard the health of the participants. Finally, the time interval of the five studies that conducted a follow-up was from eight weeks to 12 months, which complicates making a concrete conclusion on the scope since some maintained the same changes and others did not, so Yager *et al.*⁵⁴ suggest that intervention programs consider conducting a minimum follow-up of three months if the necessary conditions exist to do so.

Conclusions

The findings of this review allow us to conclude that intervention programs are a safe and effective way to improve body image in adolescents aged 11 to 18 years old if the design, implementation, and evaluation are carried out correctly. Therefore, it is necessary to analyze and evaluate the existing scientific evidence on body image programs to ensure that methodologically it is a quality program and that everything that has been detrimental to the health of adolescents has been discarded. It is important to recognize that there is still much to be done in terms of health promotion and prevention. Therefore, for future research it is recommended the following: 1) it is necessary to have instruments with adequate psychometric properties and specifically designed for the target population, 2) intervention programs should include both men and women, as both are vulnerable to body image problems, 3) likewise, it must be guaranteed that all those who participate in the intervention complete it, so it will be the task of the researcher to develop strategies to prevent desertion, 4) although follow-up is sometimes not possible, it should be considered when designing the intervention program, because this way we can ensure that what was implemented is meaningful for the participants, 5) finally, in the Piran⁵⁵ study it is pointed out that new intervention programs should be oriented towards positive body image, as well as the inclusion of positive psychology and embodiment. In this sense, Hernández-Cruz *et al.*⁵⁶ reviewed the literature on positive body image interventions in children and adolescents and found favorable results after the intervention, but the effects were not maintained at follow-up, and there was no homogeneity in the methodological aspects, which represents a great area of opportunity for researchers.

Conflicts of interest

The authors have no conflicts of interest to declare.

Authors' contributions

Conceptualization, design, methodology, evaluation of the methodological quality, and elaboration of the discussion V.F.P.; Methodology, data analysis, and interpretation, evaluation of methodological quality, and supervision of the manuscript E.J.C.R.; Writing, revising, and editing the manuscript and drafting the discussion and conclusions M.C.E.P.; The search for information in databases, analysis, and interpretation of data B.S.C.L.; Elaboration of the discussion and conclusions M.L.I.E.

Acknowledgements

The first author thanks the Consejo Mexiquense de Ciencia y Tecnología (COMECYT) for granting the financial support EESP2021-0006 as part of the program Estancias de Investigación Especializadas COMECYT EDOMÉX.

References

- World Health Organization [Internet]. La salud de los jóvenes: un reto y una esperanza; 1995 [cited 2022 Feb 4]; Available from: <https://apps.who.int/iris/handle/10665/37632>
- Salazar-Mora Z. Adolescencia e imagen corporal en la época de la delgadez. *Rev Reflexiones*. 2008;87(2):67-80. Available from: <https://revistas.ucr.ac.cr/index.php/reflexiones/article/view/11496/10842>
- Guadarrama R, Carrillo SS, Márquez O, Hernández JC, Veytia M. Insatisfacción corporal e ideación suicida en adolescentes estudiantes del Estado de México. *Rev Mex Trastor Aliment*. 2014;5(2):98-106. DOI: 10.1016/S2007-1523(14)72005-1
- Hidalgo MI, Ceñal MJ. Adolescencia. Aspectos físicos, psicológicos y sociales. *An de Pediatria Contin*. 2014;12(1):42-46. DOI: 10.1016/S1696-2818(14)70167-2
- Grogan S. *Body image: understanding body dissatisfaction in men, women and children*. 3rd ed. London: Routledge; 2017. DOI: 10.4324/9781315681528
- Thompson JK. *Body image disturbance: assessment and treatment*. New York: Pergamon Press; 1990.
- Hernández AA, Mancilla-Díaz JM, Álvarez GL, Ortega M, Larios M, Martínez JI. Edad, consciencia e interiorización del ideal corporal como predictores de insatisfacción y conductas alimentarias anómalas. *Rev Colomb de Psicol*. 2013;22(1):121-133. Available from: <https://revistas.unal.edu.co/index.php/psicologia/article/view/28326/40807>
- Smolak L. Body image in children and adolescents: where do we go from here? *Body image*. 2004;1(1):15-28. DOI: 10.1016/S1740-1445(03)00008-1
- Guadarrama-Guadarrama R, Hernández-Navor JC, Veytia-López M. “Cómo me percibo y cómo me gustaría ser”: un estudio sobre la imagen corporal de los adolescentes mexicanos. *Rev Psicol Clín Niños Adolesc*. 2018;5(1):37-43. DOI: 10.21134/rpcna.2018.05.1.5
- Pineda-García G, Gómez-Peresmitré G, Platas S, Velasco V. El cuerpo: percepción de atractivo, insatisfacción y alteración en adolescentes de la frontera mexicana del noroeste. *Psicol Salud*. 2017;27(2):155-166. Available from: <https://psicologiaysalud.uv.mx/index.php/psicysalud/article/view/2528/4410>
- Ruíz AO, González NI, González S, Torres MA, Vázquez R. Más allá de la apariencia: imagen corporal asociada a las actitudes y conductas de riesgo de trastorno alimentario en adolescentes. *Revista de Psicología de la Universidad Autónoma del Estado de México*. 2021;10(19):107-123. Available from: <https://revistapsicologia.uaemex.mx/article/view/16054>
- Jones DC, Smolak L. Body image during adolescence: a developmental perspective. *Encyclopedia of Adolescence*. 2011;1:77-86. DOI: 10.1016/B978-0-12-373951-3.00005-3
- Raich RM. *Imagen corporal. Conocer y valorar el propio cuerpo*. España: Pirámide; 2000.
- American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 4th ed. Washington: American Psychiatric Press Inc; 1994.
- Cash TF, Pruzinsky, T. *Body image: A handbook of theory, research, and clinical practice*. New York: Guilford Press; 2002.
- Presnell KE, Bearman SK, Stice E. Risk factors for body dissatisfaction in adolescent boys and girls: a prospective study. *Int J Eat Disord*. 2004;36(4):389-401. DOI: 10.1002/eat.20045
- 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(5):888-899. DOI: 10.1037/0012-1649.42.5.888
- Markey CN. Invited commentary: why body image is important to adolescent development. *J Youth Adolesc*. 2010;39(12):1387-1391. DOI: 10.1007/s10964-010-9510-0



19. Ordóñez-Azuara YG, Vázquez-Azuara NL, Gutiérrez-Herrera RF, Mendoza-Rivera R, Riquelme-Heras HM, González-Contreras HG. Factores biopsicosociales correlacionados con la insatisfacción de la imagen corporal en adolescentes mexicanos. *Rev Mex Med Familiar*. 2018;5(2):75-82. DOI: 10.24875/RMF.18000077
20. Vaquero-Cristóbal R, Alacid F, Muyor JM, López-Miñarro PA. Imagen corporal: revisión bibliográfica. *Nutr Hosp*. 2013;28(1):27-35. DOI: 10.3305/nh.2013.28.1.6016
21. Page MJ, Moher D, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD et al. PRISMA 2020 explanation and elaboration: updated guidance and exemplars for reporting systematic reviews. *BMJ*. 2021;372(160):1-36. DOI: 10.1136/bmj.n160
22. Thomas BH, Ciliska D, Dobbins M, Micucci S. A process for systematically reviewing the literature: providing the research evidence for public health nursing interventions. *Worldviews Evid Based Nurs*. 2004;1(3):176-184. DOI: 10.1111/j.1524-475X.2004.04006.x
23. Bell BT, Taylor CI, Paddock DL, Bates A. Digital Bodies: a controlled evaluation of a brief classroom-based intervention for reducing negative body image among adolescents in the digital age. *Br J Educ Psychol*. 2021;92(1):280-298. DOI: 10.1111/bjep.12449
24. Gordon CS, Jarman HK, Rodgers RF, McLean SA, Slater A, Fuller-Tyszkiewicz M, Paxton SJ. Outcomes of a cluster randomized controlled trial of the SoMe social media literacy program for improving body image-related outcomes in adolescent boys and girls. *Nutrients*. 2021;13(11):1-17. DOI: 10.3390/nu13113825
25. Ovejero OJ, Espinoza P, González M, Subiza I, Becerra A, Raich RM, Mora M. Universal prevention program of eating, weight and body image problems in adolescents: a 12-month follow-up. *Psicothema*. 2020;32(2):204-213. DOI: 10.7334/psicothema2019.296
26. Regehr RY, Owens RL, Cox DW, Clayton CC. Piloting Free to Be: a positive body image program for adolescents. *Couns Psychol*. 2020;48(6):774-800. DOI: 10.1177/0011000020922216
27. Ghahremani L, Hemmati N, Kaveh MH, Fararoei M. Effects of an educational intervention targeting body image on self-esteem of Iranian high-school students: a quasi-experimental trial. *Arch Psychiatry Psychother*. 2018;20(1):59-66. DOI: 10.12740/APP/81549
28. Rodgers RF, Donovan E, Cousineau TM, Yates K, McGowan K, Cook E, Lowy AS, Franko DL. BodiMojo: efficacy of a mobile-based intervention in improving body image and self-compassion among adolescents. *J Youth Adolesc*. 2018;47(7):1363-1372. DOI: 10.1007/s10964-017-0804-3
29. Dunstan CJ, Paxton SJ, McLean SA. An evaluation of a body image intervention in adolescent girls delivered in single-sex versus co-educational classroom settings. *Eat Behav*. 2017;25:23-31. DOI: 10.1016/j.eatbeh.2016.03.016
30. Dhillon MD, Deepak S. A body-image based media literacy intervention for Indian adolescent females. *J Indian Assoc Child Adolesc Ment Health*. 2017;13(1):48-73. Available from: <https://journals.sagepub.com/doi/pdf/10.1177/0973134220170104>
31. Bird EL, Halliwell E, Diedrichs PC, Harcourt D. Happy being me in the UK: a controlled evaluation of a school-based body image intervention with pre-adolescent children. *Body Image*. 2013;10(3):326-334. DOI: 10.1016/j.bodyim.2013.02.008
32. Penelo E, Espinoza P, Portell M, Raich RM. Assessment of body image: psychometric properties of the Body Image Questionnaire. *J Health Psychol*. 2012;17(4):556-566. DOI: 10.1177/1359105311417913
33. Sandoz EK, Wilson KG, Merwin RM, Kellum KK. Assessment of body image flexibility: the Body Image-Acceptance and Action Questionnaire. *J Contextual Behav Sci*. 2013;2(1-2):39-48. DOI: 10.1016/j.jcbs.2013.03.002
34. Littleton HL, Axsom D, Pury CL. Development of the Body Image Concern Inventory. *Behav Res Ther*. 2005;43(2):229-241. DOI: 10.1016/j.brat.2003.12.006
35. Cash TF, Fleming, EC, Alindogan J, Steadman L, Whitehead A. Beyond body image as a trait: the development and validation of the Body Image States Scale. *Eat Disord*. 2002;10(2):103-113. DOI: 10.1080/10640260290081678
36. Tylka TL, Wood-Barcalow NL. The Body Appreciation Scale-2: item refinement and psychometric evaluation. *Body Image*. 2015;12(1):53-67. DOI: 10.1016/j.bodyim.2014.09.006
37. Garner DM, Olmstead MP, Polivy J. Development and validation of a multidimensional Eating Disorder Inventory for anorexia nervosa and bulimia. *Int J Eat Disord*. 1983;2(2):15-35. DOI: 10.1002/1098-108X(198321)2:2<15::AID-EAT2260020203>3.0.CO;2-6



38. Fairburn CG, Beglin SJ. Assessment of eating disorders: Interview or self-report questionnaire? *Int J Eat Disord.* 1994;16(4):363-370. DOI: 10.1002/1098-108X(199412)16:4<363::AID-EAT2260160405>3.0.CO;2-%23
39. Schaefer LM, Burke NL, Thompson JK, Dedrick RF, Heinberg LJ, Calogero RM et al. Development and validation of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4). *Psychol Assess.* 2015; 27(1):54-67. DOI: 10.1037/a0037917
40. Thompson JK, van de Berg P, Roehrig M, Guarda AS, Heinberg LJ. The Sociocultural Attitudes Towards Appearance Scale-3 (SATAQ-3): Development and validation. *Int J Eat Disord.* 2004; 35(3): 293-304. DOI: 10.1002/eat.10257
41. Thompson JK, Heinberg L, Tantleff-Dunn S. The Physical Appearance Comparison Scale (PACS). *Behav Ther.* 1991;14:174.
42. Rosenberg M. Society and the adolescent self-image. New Jersey: Princeton University Press; 1965.
43. Van Strien T, Frijters JER, Bergers GPA, Defares PB. The Dutch Eating Behavior Questionnaire (DEBQ) for assessment of restrained, emotional, and external eating behavior. *Int J Eat Disord.* 1986;5(2):295-315. DOI: 10.1002/1098-108X(198602)5:2<295::AID-EAT2260050209>3.0.CO;2-T
44. Mendelson BK, Mendelson MJ, White DR. Body-Esteem Scale for Adolescents and Adults. *J Personal Assess.* 2001;76(1):90-106. DOI: 10.1207/S15327752JPA7601_6
45. Armijo-Olivo S, Stiles CR, Hagen NA, Biondo PD, Cummings GG. Assessment of study quality for systematic reviews: a comparison of the Cochrane collaboration risk of bias tool and the effective public health practice project quality assessment tool: methodological research. *J Eval Clin Pract.* 2012;18(1):12-28. DOI: 10.1111/j.1365-2753.2010.01516.x
46. O'Dea J. School-based health education strategies for the improvement of body image and prevention of eating problems: an overview of safe and successful interventions. *Health Educ.* 2005;105(1):11-33. DOI: 10.1108/09654280510572277
47. Irving LM, Berel SR. Comparison of media-literacy programs to strengthen college women's resistance to media images. *Psychol Women Q.* 2001;25(2):103-111. DOI: 10.1111/1471-6402.00012
48. Stice E, Shaw H. Eating disorder prevention programs: a meta-analytic review. *Psychol Bull.* 2004;130(2):206-227. DOI: 10.1037/0033-2909.130.2.206
49. Festinger L. A theory of cognitive dissonance. United States: Stanford University Press; 1957.
50. Leippe MR, Eisenstadt D. Generalization of dissonance reduction: decreasing prejudice through induced compliance. *J Pers Soc Psychol.* 1994;67(3):395-413. DOI: 10.1037/0022-3514.67.3.395
51. Diedrichs PC, Halliwell E. School-based interventions to promote positive body image and the acceptance of diversity in appearance. In: Rumsey N, Harcourt D, editors. *Oxford handbook of the psychology of appearance.* United Kingdom: Oxford University Press; 2012. p. 1-22. DOI: 10.1093/oxfordhb/9780199580521.013.0038
52. Watson R, Vaughn LM. Limiting the effects of the media on body image: does the length of a media literacy intervention make a difference? *Eat Disord.* 2006;14(5):385-400. DOI: 10.1080/10640260600952530
53. O'Brien KM, LeBow MD. Reducing maladaptive weight management practices: developing a psychoeducational intervention program. *Eat Behav.* 2007;8(2):195-210. DOI: 10.1016/j.eatbeh.2006.06.001
54. Yager Z, Diedrichs PC, Ricciardelli LA, Halliwell E. What works in secondary schools? A systematic review of classroom-based body image programs. *Body Image.* 2013;10(3):271-281. DOI: 10.1016/j.bodyim.2013.04.001
55. Piran N. New possibilities in the prevention of eating disorders: The introduction of positive body image measures. *Body Image.* 2015;14:146-157. DOI: 10.1016/j.bodyim.2015.03.008
56. Hernández-Cruz A, Cervantes-Luna BS, Escoto-Ponce de León MC, Rodríguez-Hernández G, Flores-Perez V. Evaluación de intervenciones sobre imagen corporal positiva en niños y adolescentes: revisión sistemática. *Rev Colomb Psiquiat.* 2022;xx(xx):1-9. DOI: 10.1016/j.rcp.2022.07.004