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Influence of social networks sites on eating attitudes and body satisfaction of young women: a systematic review

Influência das redes sociais nas atitudes alimentares e satisfação corporal de mulheres jovens: uma revisão sistemática

Abstract

Introduction: There is evidence of an association between the use of social networks and the appearance of eating disorders and negative body images in young women. *Objective*: Systematically review scientific evidence concerning the influence of social networks on eating attitudes and body satisfaction to identify the principal aspects related to negative behavior in young women (17 to 44 years old). *Method*: This systematic literature review includes primary observational studies carried out with healthy women. The searches were carried out on August 23rd, 2022, in the databases Pubmed, Scopus, Web of Science, Embase, PsycINFO and the Virtual Health Library (VHL). All the steps were independently carried out by three reviewers, and the methodological quality of the studies was evaluated using the Research Triangle Institute (RTI) Item Bank. A synthetic narrative was then produced. *Results*: Sixteen observational studies complied with the inclusion criteria and were reviewed. The general use of social networks and of specific activities (selfies, investment in the selection of photos), involvement (appreciate, leave messages/ comments) and the following of 'health & fitness' and 'fitspiration' contents were associated with body dissatisfaction and eating disorders. A comparison of appearances seems to be the principal mediator in this association, with self-compassion exerting a positive effect on attenuating the effects. *Conclusion*: The general use and use of specific activities of social networks contributed to body dissatisfaction and eating disorders in young women by way of a comparison of appearances. We hope such information helps health professionals in preventive orientation.

Keywords: Social Media. Feeding Behavior. Body image.

Resumo

Introdução: Evidências demonstram associação entre o uso das redes sociais com atitudes alimentares transtornadas e imagem corporal negativa em mulheres jovens. *Objetivo*: Revisar sistematicamente as evidências científicas sobre a influência das redes sociais nas atitudes alimentares e na satisfação corporal, para identificar os principais aspectos relacionados aos comportamentos negativos em mulheres jovens (17 a 44 anos). *Método*: Trata-se de uma revisão sistemática da literatura que incluiuestudos primários observacionais realizados apenas com mulheres saudáveis. As buscas foram realizadas no dia 23 de agosto de 2022 nas bases de dados Pubmed, Scopus, Web of Science, Embase, PsycINFO e Biblioteca Virtual em Saúde (BVS). Todos os passos foram realizados de forma independente por três revisores.A qualidade metodológica dos estudos foi avaliada por meio do *ResearchTriangle Institute* (RTI) *Item*

Bank. Na sequência, realizou-se uma síntese narrativa. ***Resultados***: Dezesseis estudos observacionais atenderam aos critérios de inclusão e foram revisados. O uso geral das redes sociais, assim como atividades específicas (atividades de 'selfie', investimento em seleção de fotos), engajamento (curtir, deixar mensagens/comentários) e seguir conteúdos de 'saúde e *fitness*' e '*fitspiration*' foram associados à insatisfação corporal e a atitudes alimentares transtornadas. A comparação da aparência parece ser o principal mediador desta associação, e a autocompaixão parece exercer um efeito positivo na atenuação desses efeitos. ***Conclusão***: O uso geral e atividades específicas das redes sociais contribuem para insatisfação corporal e atitudes alimentares transtornadas em mulheres jovens por meio da comparação de aparência. Espera-se que essas informações auxiliem os profissionais de saúde em orientações preventivas.

Palavras-chave: Mídias sociais. Comportamento alimentar. Imagem corporal.

INTRODUCTION

A esthetic standards have changed throughout time[1] and individuals with bodies different to these standards may have a negative self-perception of their body image, even when showing an adequate nutritional state.[2] This dissatisfaction with body image mostly affects women,[3,4] causing sensations of guilt and shame,[5] which can result in self-destructive attitudes, such as changes in eating attitudes, contributing to the appearance of eating disorders (ED).[6]

Such behavior or eating disorders are considered unhealthy since they involve problematic food practices such as skipping meals, the use of laxatives and/or adopting restrictive weight control diets. Such behavior and the rigid concepts concerning healthy eating can cause feelings of fear, guilt and anxiety as related to the eating choices.[7,8] The etiology of these concerns with eating is multifactor and the environment, such as exposure to the traditional media, is one of the influences.[9] However, currently, social media, such associal network sites (SNS), have more influence due to the frequency with whichpeople use them, and young adults between 18 and 29 years of agemake up 90% of the most active users.[10,11]

SNS allows users to create personal profiles to share, visualize, comment on, and appreciate content created by friends, relatives, and people they get to know through the social networks themselves. They can also follow the profiles of artists and celebrities.[12] Two examples of the most popular visual social networks are Facebook and Instagram, which areused to share photos and videos.[13,14]

Although the objective of social networks is to construct social relationships, which is considered a positive aspect, evidence has shown an association between their use and eating disorders[15] and negative body images in young women.[16] Not only the frequency of using social networksbut also specific activities, such asof taking and posting selfies (self-portraits taken using the camera frontally), can lead to the risks of eating disorders and low self-esteem in young women.[17,18]

However, to the best of our knowledge, to this date, the reviews published considered distinct publics, such as young adult men and women[19] and children, pre-adolescents, adolescents and young adults[20] or only evaluated body dissatisfaction.[21] Considering the harm that can be caused to the health and that young women are a highly vulnerable group, it is important to identify the main aspects of the social networks that are related to the negative behavior of this group. Thus, the objective of this literature review was to investigate the evidence concerning the influence of social networks on eating attitudes and on the body satisfaction of young women, aiming to provide detailed information considering specific activities, the contents accessed, and possible mediatory factors of the associations encountered.

METHODS

The present study is a systematic literature review. The following guiding question was used: "What is the influence of the use of social networks on the eating attitudes and body satisfaction of young women?". The protocol was registered in the International Prospective Register of Systematic Reviews (PROSPERO) of the National Institute for Health Research under the number CRD 42023386929. To obtain methodological rigor in all steps, the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) recommendations were followed.[22]

Search strategy and eligibility

The PICO (**P**opulation, **I**ntervention, **C**omparison, and **O**utcomes) strategy guided the search for evidence. The population consisted of healthy young women, the intervention was the use of social networks, there was no comparative group, and the results were eating attitudes and body satisfaction. The searches were carried out on August 23rd, 2022, with no restrictions concerning the publication period.

The terms used were defined as from the Health Sciences Descriptors (DECS) in Portuguese, with their respective term in English. Frame 1 shows the data bases and the search strategy.

Frame 1. Search strategy.

Search question: "What is the influence of the use of social networks on the eating attitudes and body satisfaction of young women?"	
Databases	Pubmed, Scopus, Web of Science, Embase, PsycINFO, and the Virtual Health Library (VHL)
Search strategy	"Adult" AND "Women" OR "Female" AND "Feeding and Eating Disorders" OR "Feeding Behavior" OR "Disordered eating" OR "Eating attitudes" OR "Dietary practices" AND "Body Image" OR "Body Dissatisfaction" OR "Body satisfaction" AND "Social Media" OR "Social Networking" OR "Online Social Networking"

Source: Authors

The search strategies were organized according to the specifications of each database, as presented in Supplementary Material 1.

The review included primary observational studies carried out only with human beings, written in Portuguese, Spanish or English. Review articles, book chapters, guidelines and other materials were not included. The following inclusion criteria were considered: quantitative studies that evaluated the use of social networks, eating attitudes and body satisfaction in women. With respect to age, the studies were directed at young adult women (19 to 44 years old); however, since a greater part of the studies were carried out amongst university students aged17, considered young adolescents, the authors opted to include studies carried out with young women from 17 to 44 years old. Experimental studies, studies carried out with men, children, adolescents below 17 years of age, pregnant or breastfeeding women, athletes, and groups of people suffering from specific morbidities in common, including those diagnosed with ED.

Selection of studies and data extraction

After carrying out the searches, the studies were selected independently by two reviewers (MGGM and LMR) using the Rayyan® selection platform. A screening of the titles and summaries was first carried out. In sequence, the potentially eligible studies, which conformed with the selection criteria, were recovered, and the whole articles were read. Any discordances were solved by consensus by a third reviewer (KGTM).

The data extracted included the study design, country, population, sample size, age range, type of social network, and the evaluation instruments used to evaluate eating attitudes and body satisfaction. A descriptive analysis was carried out and a synthetic narrative elaborated by way of a summary table.

Quality analysis of the studies

The quality of the articles included in this review was evaluated using the bias risk analysis carried out by two reviewers using the validated instrument Research Triangle Institute (RTI) Item Bank on Bias Risk and the Accuracy of Observational Studies.[23] The articles were evaluated with respect to their definition and sample selection, outcomes, information consistency, comparability of the analysis, results of the analysis, interpretation of the results and financing. Studies with three or more items classified as unclear or negative were classified as having bias risk (Supplementary Material 2).

RESULTS

The systematic search identified 932 studies (Pubmed:129; Scopus:480; Web of Science:42; Embase:135; Psycinfo:82 and BVS:64), and after removing duplicate registers, 596 articles were recovered for subsequent evaluation. After screening the titles and summaries, 140 studies were considered potentially eligible. Finally, 16 observational studies fitted the selection criteria and were included in this review. Figure 1 shows the selection flowchart.

Figure 1. Flowchart of the articles included in this review
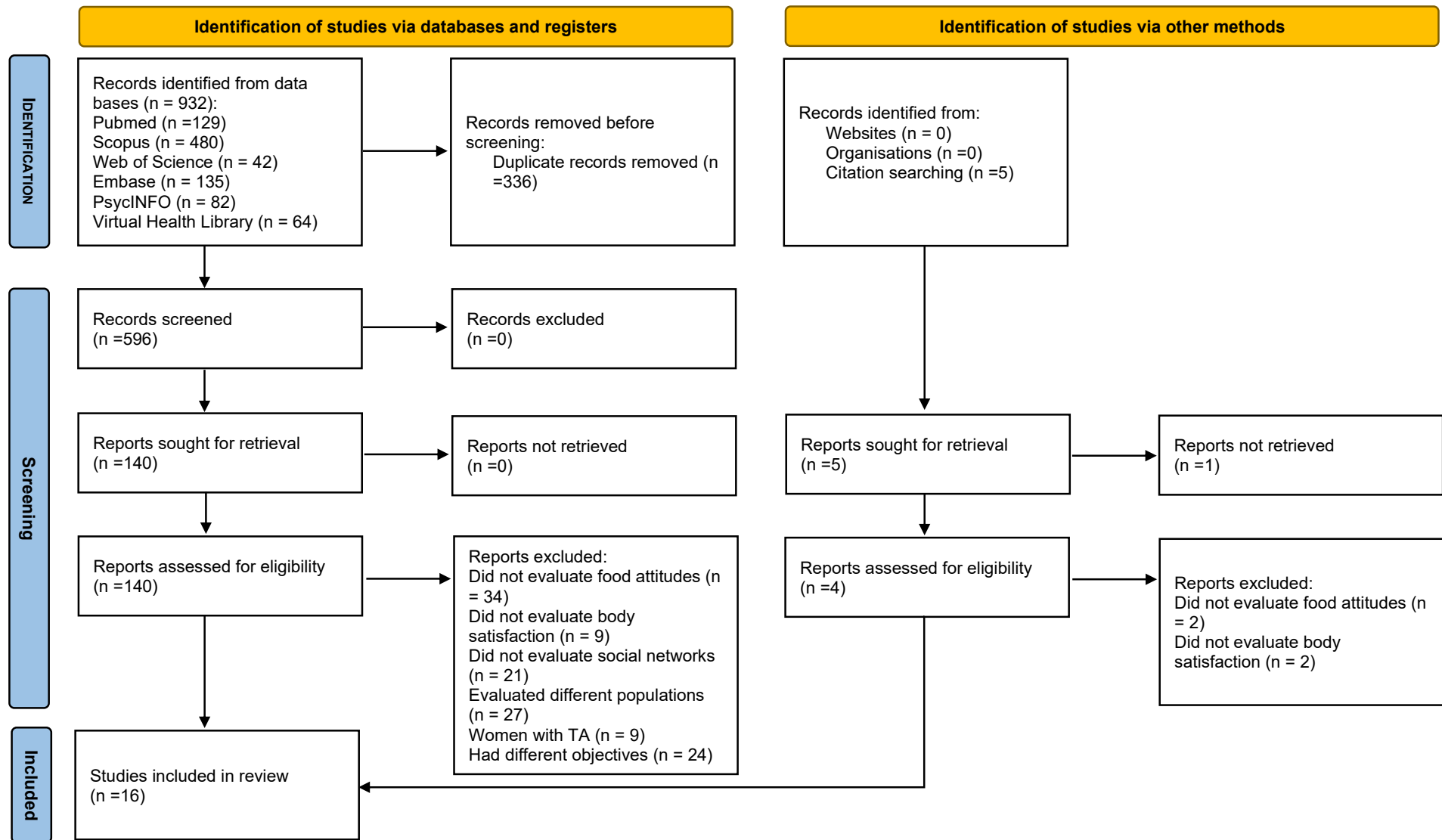
The studies recruited young women from the following countries: United States of America,[24-28] Australia,[27,29-34] Spain,[35] Korea[36] and Italy.[37] The sample sizes varied from 115 to 922 participants. The race was reported in 14 studies and the participants were principally Caucasian.[24-35,38,39] The BMI was reported in 11 studies, with a prevalence of adequate weight[25, 27-34,36,38] (Frame 2).

Frame 2. Characteristicsofthe 16 studiesincluded in this review.

Author, year	Design	Country	Population	Age	BMI	Race	Type of social network	Eating attitudes evaluation methods	Body satisfaction evaluation methods	Bias risk
Smith et al.[26]	Observational	United States of America	232 university women	17 to 35 (18.7 ± 1.6) years old	NI	76,3% Caucasian; 9,5%AfricanAmerican; 2,6% Asian; 9% Hawaiianand 17% other	Facebook	Subscalederivedfrom EDI: *bulimia*and EDE-Q	Subscale derived from EDI: body dissatisfaction	Low (8)
Fardouly e Vartanian[31]	Observational	Australia	227 university women	19.1 ± 2.2 years old	21.4 ± 3.9 kg/m^2	46,3%White; 41,9% Asianand 11,8% other	Facebook	Subscale derived from EDI: drive for thinness	Subscale derived from EDI: body dissatisfaction	Low (8)
Eckler et al.[24]	Observational	United States of America	881 university women	23.8 ±7.3 years old	NI	87,4%Caucasian/White; 4,3% African American/Black; 4,1% Asian; 2,5%Hispanic/Latino 1,6% other	Facebook	EAT-26	BSQ	Present (7)
Cohen et al.[29]	Observational	Australia	259 university women	18 to 29 (23,0 ± 3,5) years old	22.5 ± 3.9 kg/m^2	77,5%Caucasian/White; 15,1% Asian; 2,7% Middle Eastern; 0,8%African; 8,8%Aboriginaland3,1% other	Instagram and Facebook	Subscale derived from EDI: drive for thinness	AppearanceEvaluationsubscaleoftheMultidi-mensionalBody-Self RelationsQuestionnaire-AppearanceScales	Present (7)

Frame 2. Characteristicsofthe 16 studiesincluded in this review. (Continues)

Author, year	Design	Country	Population	Age	BMI	Race	Type of social network	Eating attitudes evaluation methods	Body satisfaction evaluation methods	Bias risk
Howard et al.[25]	Observational	United States of America	922 university women	18 to 30 (21.0 ± 2.8) years old	Black women: 28.2 ± 6.1 kg/m^2); White women: 25.0 ± 5.8kg/m^2)	52% White; 48,0% Black	Facebook, Twitter and Instagram	EDE-Q	BSQ	Low (8)
Fardoulyet al.[27]	Observational	United States of America and Australia	203 young American womenand 73 universitystudentsfrom Australia	18 to 25 (22.8 ± 3.6) years old	24.4 ± 6.5 kg/m^2	American sample: 71,4% Caucasian; 12,8% African American; 8,4% Asian; 5,9%Hispanic American; 1,5% American Indian Australian sample: 54,8% Caucasian; 27,4% Asian; 2,7%Aboriginal/Pacific Islander; 15,1% other	Instagram	Subscale derived from EDI: drive for thinness	Subscale derived from EDI: body dissatisfaction	Present (7)
Kim[36]	Observational	Korea	305 young women	18 to 29 (23,4 ± 2,6) years old	20.9 ± 2.7 kg/m^2	NI	Facebook	Subscale derived from EDI: drive for thinness	Subscale derived from BESAA: weight	Low (8)
Saunders e Eaton[39]	Observational	NI	637 young women	18 to 24 (21,3 ± 1,7) years old	NI	67,5% Hispanicwhite; 12,4% non-Hispanicwhite; 12,6% Black; 2,5% Asian; 3,5% multirracial and1,6% self-identified as other	Instagram, Snapchat and Facebook	Subscales from EPSI	Subscale derived from EDI: body dissatisfaction	Present (7)

Frame 2. Characteristicsofthe 16 studiesincluded in this review. (Continues)

Author, year	Design	Country	Population	Age	BMI	Race	Type of social network	Eating attitudes evaluation methods	Body satisfaction evaluation methods	Bias risk
Cohen et al.[32]	Observational	Australia	259 young women	18 to 29 (23.0 ± 3.3) years old	22.5 ± 4.2 kg/m²	77,5% Caucasian; 15,1% Asian; 2,7% Middle Eastern; 0,8% African; 0,8%Aboriginaland 3,1% other	Social networking sites	Subscale derived from EDI: drive for thinness and bulimia	Appearance Evaluation subscale of the Multidi-mensional Body-Self Relations Questionnaire- Appearance Scales	Low (8)
Martinez et al.[35]	Observational	Spain	168 university women	18 to 25 (20 ± 0.8) years old	NI	96,7% Caucasian/White	Twitter, Facebook, Instagram, YouTube and Snapchat	EAT-26	BSQ	Present (7)
Butkowski et al.[38]	Observational	NI	177 youngwomen	18 to 30 years old	25.1 ± 6.3 kg/m²(52 % BMI between 18.5 and 24.9 kg/m2)	60% Caucasian/White; 11,9% Black/African American; 13,6% Asian; 10,7%Hispanic/Latina; 3,9% other	Instagram	Subscale derived from EDI: drive for thinness and bulimia	Subscalederivedfro m EDI: bodydissatisfaction	Present (7)
Seekiset al.[30]	Observational	Australia	338 university women	17 to 25 (19.1 ± 2.1) years old	22.5 ±3.7 kg/m² (74% BMI between 18.5 and 24.9 kg/m2)	80%Australian; 9% Asian; 2%European; 2% African and3% other	Facebook, Instagram, Snapchat, Pinterest and Tumblr	Subscale derived from EDI: drive for thinness	Subscale derived from EDI: body dissatisfaction	Low (8)

Frame 2. Characteristicsofthe 16 studiesincluded in this review. (Continues)

Author, year	Design	Country	Population	Age	BMI	Race	Type of social network	Food habits evaluation methods	Body satisfaction evaluation methods	Bias risk
Bue *et al.*[28]	Observational	United States of America	157 young women	18 to 35 (23.4 ± 4.9) years old	24.5 ± 5.5 kg/m^2	69% Caucasian; 6% biracial/multiracial; 4% negro/ Afro-American; 8% Hispanic/Latin; 9% Asiatic/Asiatic-American; 2% Hawaiian and 3% others	Instagram and Facebook	Subscale derived from EDI: drive for thinness	Subscale derived from EDI: body dissatisfaction	Present (7)
Seekis*et al.*[33]	Observational	Australia	338 university women	17 to 25 (19.1 ± 2.1) years old	22.6 ± 3.7 kg/m^2	86% white; 9% Asiatic; 2% African; 3% others	Social network sites	Subscale derived from EDI: drive for thinness	Subscale derived from EDI: body dissatisfaction	Present (7)
Piccoli *et al.*[37]	Observational	Italy	115 young women	25.4 ± 2.6 years old	NI	NI	Instagram	Subscale derived from EDI: drive for thinness	Subscale derived from EDI: body dissatisfaction	Low (9)
Wu *et al.*[34]	Observational	Australia	269 young women	20.7 ± 2.9 years old	24.4 ± 5.4 kg/m^2	84.8% Caucasian; 5.2% Asiatic, 2.2% Aboriginal and 7.8% others	Instagram	Subscale derived from EDI: drive for thinness	Subscale derived from EDI: body dissatisfaction	Low (8)

BESAA: Body-Esteem Scale for Adolescents and Adults. BSQ: Body Shape Questionnaire. EAT-26: Eating Attitudes Test. EDE-Q: Eating Disorder Examination Questionnaire. EDI: Eating Disorder Inventory. EPSI: Eating Pathology Symptoms Inventory. BMI: Body mass index. NI: not informed.

Source: authors

Of the 16 studies, 50.0% evaluated more than one network[25,28-30,32,33,35,39] and 43.7% evaluated only one social network.[24,26,27,31,36-38] The most mentioned social networks were Facebook[24-26,28,29-31,35,36,39] and Instagram.[25,27-30,35,37-39] The instrument most used to evaluate eating attitudes, weight concern, and diet was the subscale derived from the Eating Disorder Inventory (EDI): Drive for Thinness,[26-28,29-34,36-38] and the instrument most used to evaluate body satisfaction was the subscale derived from the EDI: Body dissatisfaction.[26-28,30,31,33,34,37,38] With respect to the evaluation of the bias risk of the studies, eightstudies[25,26,30-32,34,36,37] (50%) were classified with a low bias risk (Supplementary material 2).

General use of social networks and the use of their specific activities

The studies included in this review reported a positive association between the general use of social networks and eating disorders.[35,39] In one of them, these attitudes were positively associated with rising comparisons and body surveillance.[39] However, the effects of using social networks on body and food concerns could be associated with some specific activities and not with the general use of social networks.[32] Two studies evaluated the posting of selfies, and the results were similar. One of them reported that the frequency of posting selfies was negatively associated with body dissatisfaction,[38] and the other provided evidence that the posting of selfies was significantly associated with body satisfaction.[32]

The effort involved in selecting the selfies to post was also investigated. This investment in photos was associated with an increase in body dissatisfaction and the symptoms of bulimia.[32] In another study, the investment in the feedback from selfies, which refers to the importance given to the public's responses to the photos posted, was associated with a drive for thinness but not with body dissatisfaction. However, mediation analyses demonstrated that the women who reported a greater investment in this feedback were more predisposed to body dissatisfaction and a search for thinnes by way of an indirect influence of body surveillance.[38]

One study used eye-tracking methods to evaluate how the women visually processed a photo of themselves, measuring the self-reported high and low anxiety attention given to the different body regions. The use of Instagram was associated with an increase in the drive for thinness and with an increase in the comparison of physical appearance. This use was also a significant predictor of the body regions giving rise to high anxiety. The comparison of physical appearance and body dissatisfaction measured the relationship between the frequency of using Instagram and the attention given to the high-anxiety body region.[28]

Other specific activities, such as profile maintenance (altering profile, updating status, posting photos, editing profile photos) and social grooming (enjoy, leave messages/ comment on profiles of friends and acquaintances), were evaluated. It was noted that using Facebook for social grooming, but not for profile maintenance, was negatively associated with weight satisfaction and positively with the drive for thinness.[36]

One study evaluated the effects of the inadequate use of Facebook, which is defined as the tendency to look for negative social evaluations and/or get involved with social comparisons. For this evaluation, a Maladaptive Facebook Usage Scale was created in the absence of a questionnaire. In fitted analyses, the inadequate use of Facebook predicted significant increases in the symptoms of bulimia and excessive eating episodes. This inadequate use also predicted an increase in body dissatisfaction.[26]

'Health and fitness'/ 'fitspiration' contents

Another aspect evaluated by the studies was the type of content accessed. In the study of Cohen et al.[29] there was no significant association between the general use of social networks and concern about body image. However, following 'health and fitness' accounts on Instagram was associated with a drive for thinness. Following neutral accounts concerning appearance was not associated with any body image result. In the same way, Seekis et al.[30] observed that visualizing or following the sites of celebrities, fashion and beauty and giving importance to likes and comments regarding photos had an indirect effect by way of rising comparisons concerning appearance, body vigilance and concern about appearance, both for body dissatisfaction and the drive for thinness.

Various studies investigated the content of 'fitspiration' (a combination of the words fitness and inspiration), and all observed a specificinfluence on body satisfaction and eating habits. One study identified direct effects on body dissatisfaction and the drive for thinness, being stronger for the drive for thinness.[30] In a previous publication by the same group, the analyses demonstrated significant positive correlations between accesses for fitspiration, body dissatisfaction drive for thinness, and comparisons of rising appearance. There was a direct association between fitspiration, body dissatisfaction and the drive for thinness, and an indirect association between these variables, mediated by a comparison of rising appearance.[33] The study of another group showed similar results.[27]

With the general use of Instagram, Fardouly et al.[27] only obtained a positive correlation for self-objectification. On the other hand, visualization of the fitspiration images was positively correlated with body dissatisfaction and drive for thinness but not with self-objectification. Internalization, that is, the degree with which individuals consider the ideals of beauty socially defined as beliefs and objectives, and the tendency to compare appearance, mediated the relationship between the visualization of fitspiration images and body dissatisfaction and between the visualization of fitspiration images and the drive for thinness.

One study evaluated the relationship between posting or visualizing fitspiration images and "eat clean" (an extreme form of "healthy" eating, characterized by the restriction of processed foods and those with additives and preservatives) images. The visualization of these contents on Instagram was negatively associated with the internalization of the ideal of thinness and with eating disorders. However, frequent posting did not have the same impact as frequent visualizing, showing a difference between the mediators, highlighting the internalization of the athletic ideal and the thinness ideal.[34]

Aiming to identify mitigating factors in the association between fitspiration content, body dissatisfaction and the drive for thinness, one study investigated if self-compassion exerted a protective effect. Self-compassion was evaluated using the Self-Compassion Scale, with sub-scales divided into compassionate (self-kindness, humanness and mindfulness) and non-compassionate (self-judgement, isolation and super-identification) facets.[40] For more isolated participants with greater self-judgement and super-identification, fitspiration predicted body dissatisfaction and the drive for thinness indirectly by way of a rising comparison of appearance. In contrast, less isolated participants with reduced self-judgement and super-identification dampened these indirect associations. The association between fitspiration and the drive for thinness was attenuated by greater self-kindness, humanness, mindfulness and less isolation.[33]

Comparison of appearance

The general use of Facebook was positively associated with a comparison with the appearances of colleagues on the social network. Mediation analyses revealed that a comparison with the appearances of

colleagues mediated the relationship between the use of Facebook (profile maintenance and social use) and body weight dissatisfaction and the drive for thinness.[36] These data were obtained from Korean women,[36] but, as demonstrated up to now in this review, a comparison of appearance was a constant factor in studies carried out with American,[28] Australian,[33] and American and Australian[27] women. A study carried out with Italian women corroborated these results, demonstrating that the comparisons of appearance mediated a positive association between the activities involving photos on Instagram, the drive for thinness and body dissatisfaction.[37] In one of the studies already cited, the participants reported comparing their appearance more frequently with friends and celebrities, followed by acquaintances and themselves, and finally with strangers and relatives.[27]

Another study investigated general comparisons of appearance on Facebook and the comparisons with specific groups of women (relatives, close friends, distant colleagues and celebrities). Mediation analyses showed that general comparisons on Facebook, the frequency of comparing with close friends and distant colleagues, and comparisons with distant colleagues and celebrities mediated the relationship between the use of Facebook and concern with body image. Multiple analyses demonstrated that the indirect effect of distant colleagues was greater than the effect of celebrities. In general, a comparison with distant colleagues seems to make women who spend a lot of time on Facebook become more concerned with their bodies.[31]

Body weight and race

Some studies evaluated whether the effects of using social networks could be related to the profiles of the women who use them. Eckler et al.[24] carried out some analyses, considering the desire to maintain, lose or gain weight. They showed that, for all the levels of desired weight change, the greater the time spent on Facebook, the greater the negative sentiment after seeing postings/ photos. Despite these results, no association was observed between the time spent on Facebook and concern with body shape for any of the weight change levels. However, amongst the women wishing to lose weight, as the time spent on Facebook increased, the desire to lose weight moderated the relationship between time spent on Facebook and the risk of ED.

Another study investigated racial differences with respect to the use of social networks to evaluate negro and white women. The association between the frequency of using Facebook and body dissatisfaction was not moderated by race. There was no association between the frequency of using social networks and eating disorders. The authors also evaluated the search for recognition on social networks – that is, the importance given to the social network in obtaining feedback or receiving validation by the others. There was no racial difference in the search for recognition on the social networks. The greatest search for recognition on social networks was associated with body dissatisfaction and eating disorders but with no moderation according to race.[25]

DISCUSSION

This review investigated the influence of social networks on young women's eating attitudes and body satisfaction. The results indicated that the general use of social networks, as well asspecific activities/ social engagement, and the following of 'health and fitness' and 'fitspiration' contents were associated with body dissatisfaction and eating disorders. The comparison of appearances was the factor most indicated as mediator between the use of social networks, body dissatisfaction and eating disorders. Self-compassion appeared to play a positive role in attenuating these effects. The desire for weight reduction moderated the

relationship between the time spent using social networks and eating disorders, and race exercised no moderation.

The results of the studies included in this review were consistent with each other. Only two studies presented contradictory data, such as the association between selfie activities and body satisfaction.[32,38] This fact could be attributed to the greater positive reinforcement concerning appearance by way of likesor that those more inclined to post selfies are those with greater body satisfaction.

The association between the frequency of using social networks, eating disorders[15] and body dissatisfaction[16] appears to be well elucidated by the literature. Data are scarce concerning the influence of specific activities on eating disorders and should be investigated in future research. On the other hand, diverse studies have evaluated the association between these activities and body image, and the data reinforce the results demonstrated in this review. It has already been demonstrated in an experimental study that women who take and post selfies on social networks feel more anxious, less confident, and less physically attractive. Harmful effects occur even when the photos are retouched.[41]

Nevertheless, the results for social engagement, such as the comments and captions, need to be explored more. The exposure to positive comments concerning feminine appearance, and not concerning the place where the photo was taken, could lead women to greater body satisfaction.[42] However, it appears that the visual images in a post contribute more to body image than the accompanying comments.[43] One study showed that women exposed to images of plus-size models demonstrated less body dissatisfaction and better moods, independent of the accompanying type of comment (positive, negative or neutral).[44] With respect to likes, the evidence showed there could be a difference between the number of likes and the degree of importance attributed to them. In one study, the number of likes was not associated with body dissatisfaction or the comparison of appearances, but the degree of importance attributed to the likes in the actual photos and in those of other people was associated with body dissatisfaction and the comparison of appearances.[45]

Associations with social comparisons were found frequently in the studies included in this review.[27,31,33,36,37] Women, in particular, were shown to be more vulnerable to a behavior of social comparison, which is associated with body dissatisfaction and inadequate eating behavior.[46] Social comparison has been indicated as a mediatory variable between sociocultural influence, body dissatisfaction and eating disorders for a long time,[47] the use of social networks being a sociocultural influence.

The comparison with friends and colleagues was considered more relevant both on Facebook[31,36] and on Instagram.[27] The authors attributed this to the fact that the appearance of friends or colleagues was more attainable when compared to celebrities, who frequently retouch or edit their images. Thus, the images of celebrities may influence less than looking at the images of friends or colleagues, which transmit realism,[27,36] and this could decrease the defense mechanism of persuasion.[36,48] On the other hand, the women reported comparing their appearances less frequently with relatives,[27,31] which was attributed to the fact that the target group of family members is composed of young women, such as sisters and cousins, and older women, such as mothers and aunts, which may not be perceived as targets for relevant comparison.[31] However, due to the observational design, these explanations are speculations that require further investigation.

In one of the studies, the greatest frequency of social comparison occurred with celebrities in addition to friends.[27] These data were similar to those of Brown & Tiggermann,[49] who also observed that the adoration of celebrities modified the effect of exposure to the images of celebrities with respect to body dissatisfaction. Such adoration is defined as a strong connection, which can make the women imagine they have special relationships with the celebrities. The comparison with the images of celebrities is particularly important on

this platform, which also includes social network influencers who share their own images or lifestyles and, despite being common people, have a great number of followers.

A survey carried out before the "social network era" with images of celebrities observed that women showing greater concern with their own bodies underestimated the body size of slim celebrities but overestimated the body size of overweight celebrities. This result suggests that women might be affected by exposure to the media due to their own perception of themselves.[50] These data corroborate those of Eckler et al.[24], according to which women wishing to lose weight present different results from those satisfied with their own weight.

Finally, with respect to the type of content accessed, the results show a clear association between fitspiration, body dissatisfaction and eating disorders,[27,30,33,34] and data from an experimental study corroborate these results. In that study, how the fitspiration content affected body satisfaction and a negative mood was evaluated. The participants were divided into three groups: the fitspiration group, the half fitspiration and half journey content group, and the control group with only journey content. On comparing the pre-and post-visualization of images on Instagram, body satisfaction decreased significantly in the fitspiration group and in the half-and-half group. Still, it showedno difference in the control group. While the negative mood state increased for the fitspiration and half & half groups after exposure, it reduced in the control group. On evaluating the use of Instagram, the number of counts followed, the number of followers and the number of fitspiration counts followed were significantly correlated with a greater occurrence of eating disorders.[51]

The comparison of appearance mediated this relationship, demonstrated together with the internalization of thinness.[27] The results of other experimental studies carried out with women corroborated these data, including the mediation by comparison of appearances.[52] These prejudicial effects of the fitspiration content extend to different populations.[53,54] Although the intention of sharing this content was to motivate the adoption of a healthier lifestyle, the effect becamenoxious for those who visualized it. Also, as previously mentioned, frequently posting fitspiration did not have the same impact as frequently visualizing it,[34] but more research is required to understand the differences in these activities better.

One study suggested that to decrease body dissatisfaction and eating disorders, one should encourage women to celebrate their bodies exactly as they are, posting natural photos of themselves without makeup, filters or editions. The idea is that visualization of these natural photos could cause the acceptance and normalization of real bodies and decrease rising comparisons and, consequently, women's insecurities in relation to their appearances. Also, it is essential to nourish a social network of acceptance, that is, to have friends and colleagues who are not concerned with physical appearance follow accounts that promote body acceptance and positivity.[55,56] This suggests that, to accept their bodies in a positive way, women depend on their life relationships; that is, they are happier closer to people who like them independentlyof their bodies.[57]

As a limitation, we could indicate the prevalence of including Caucasian women. However, one of the studies included mentioned that the negative consequences occurred independently of race,[25] and the study carried out by Kim,[36] including only Asiatic women, presented results similar to those of studies with Caucasian women. Nevertheless, it is important to consider that social comparison could occur in a different way in equally different cultural contexts. Another relevant point is the observational design of the studies included in this review, which only allows the evaluation of associations, not allowing causal inference. In addition, some relationships could be bidirectional. One example is the relationship between the comparison of appearance, the use of social networks and body dissatisfaction; that is, the women showing greater body dissatisfaction could compare their appearances more on social networks. The carrying out of studies with a

longitudinal design could aid in determining the causal direction of the relationship. Despite these points, this review clearly provides detailed information concerning the use of social networks, specifically by young women, who are highly vulnerable to eating disorders. The review considers the influence of specific activities, the contents accessed, and the mediating factors found in the associations. Such information is fundamental for preventive orientation and could guide future studies.

CONCLUSION

This review provided alarming evidence concerning the influence of using social networks on young women's eating attitudes and body satisfaction, especially when dealing with specific activities such as engagement and following the 'health and fitness' and 'fitspiration' contents. While the comparison of appearance mediates the association between body dissatisfaction and eating disorders, self-compassion appears to mitigate these effects.

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Contributors

Miranda MGG and LM Rocha LM contributed to the study design, analysis and interpretation of data and writing of the article; Moreno KGT contributed to the analysis and interpretation of data; Menegassi B contributed to the review and approval of the final version. All authors participated in the review and approval of the version to be published.

Conflict of Interest: The authors declare that there is no conflict of interest.

SUPPLEMENTARY MATERIAL

SUPPLEMENTARY MATERIAL1

Search strategy

Pubmed– 23/08/2022

((((Adult OR Adults) AND ((Women OR Girls OR Girl OR Woman OR "Women's Groups" OR "Women Groups" OR "Women's Group") OR (Female OR Females))) AND (((("Feeding and Eating Disorders"[Title/Abstract] OR "Eating and Feeding Disorders"[Title/Abstract] OR "Feeding Disorders"[Title/Abstract] OR "Disorder, Feeding"[Title/Abstract] OR "Disorders, Feeding"[Title/Abstract] OR "Feeding Disorder"[Title/Abstract] OR "Eating Disorders"[Title/Abstract] OR "Disorder, Eating"[Title/Abstract] OR "Disorders, Eating"[Title/Abstract] OR "Eating Disorder"[Title/Abstract] OR "Appetite Disorders"[Title/Abstract] OR "Appetite Disorder"[Title/Abstract]) OR (Feeding and Eating Disorders[MeSH Terms])) OR ((Feeding Behavior[MeSH Terms]) OR ("Feeding Behavior"[Title/Abstract] OR "Behavior, Feeding"[Title/Abstract] OR "Feeding Behaviors"[Title/Abstract] OR "Eating Behavior"[Title/Abstract] OR "Behavior, Eating"[Title/Abstract] OR "Eating Behaviors"[Title/Abstract] OR "Feeding-Related Behavior"[Title/Abstract] OR "Behavior, Feeding-Related"[Title/Abstract] OR "Feeding Related Behavior"[Title/Abstract] OR "Feeding-Related Behaviors"[Title/Abstract] OR "Feeding Patterns"[Title/Abstract] OR "Feeding Pattern"[Title/Abstract] OR "Pattern, Feeding"[Title/Abstract] OR "Food Habits"[Title/Abstract] OR "Food Habit"[Title/Abstract] OR "Habit, Food"[Title/Abstract] OR "Eating Habits"[Title/Abstract] OR "Eating Habit"[Title/Abstract] OR "Habit, Eating"[Title/Abstract] OR "Dietary Habits"[Title/Abstract] OR "Dietary Habit"[Title/Abstract] OR "Habit, Dietary"[Title/Abstract] OR "Diet Habits"[Title/Abstract] OR "Diet Habit"[Title/Abstract] OR "Habit, Diet"[Title/Abstract] OR "Habits, Diet"[Title/Abstract]))) OR ((("Disordered eating") OR ("eating attitudes")) OR ("dietary practices")))) AND (((((Body Dissatisfaction[MeSH Terms]) OR (Body Image[MeSH Terms])) OR ("Body Image"[Title/Abstract] OR "Body Images"[Title/Abstract] OR "Image, Body"[Title/Abstract] OR "Body Identity"[Title/Abstract] OR "Identity, Body"[Title/Abstract] OR "Body Representation"[Title/Abstract] OR "Body Representations"[Title/Abstract] OR "Representation, Body"[Title/Abstract] OR "Body Schema"[Title/Abstract] OR "Body Schemas"[Title/Abstract] OR "Schema, Body"[Title/Abstract])) OR ((Body Dissatisfaction[MeSH Terms]) OR ("Body Dissatisfaction"[Title/Abstract] OR "Dissatisfaction, Body"[Title/Abstract] OR "Body Image Dissatisfaction"[Title/Abstract] OR "Body Image Dissatisfactions"[Title/Abstract] OR "Dissatisfaction, Body Image"[Title/Abstract] OR "Dissatisfactions, Body Image"[Title/Abstract] OR "Image Dissatisfaction, Body"[Title/Abstract] OR "Image Dissatisfactions, Body"[Title/Abstract] OR "Negative Body Image"[Title/Abstract] OR "Body Image, Negative"[Title/Abstract] OR "Body Images, Negative"[Title/Abstract] OR "Image, Negative Body"[Title/Abstract] OR "Images, Negative Body"[Title/Abstract] OR "Negative Body Images"[Title/Abstract])) OR ("body satisfaction"))) AND ((((Social Media[MeSH Terms]) OR ("Social Media"[Title/Abstract] OR "Media, Social"[Title/Abstract] OR "Social Medium"[Title/Abstract] OR "Twitter Messaging"[Title/Abstract] OR "Messaging, Twitter"[Title/Abstract] OR "Web 2.0"[Title/Abstract] OR "2.0s, Web"[Title/Abstract] OR "Web 2.0s"[Title/Abstract])) OR ((Social Networking[MeSH Terms]) OR ("Social Networking"[Title/Abstract] OR "Networking, Social"[Title/Abstract] OR "Social Networks"[Title/Abstract] OR "Network, Social"[Title/Abstract] OR "Social Network"[Title/Abstract])) OR ((Online Social Networking[MeSH Terms]) OR ("Online Social Networking"[Title/Abstract] OR "Networking, Online Social"[Title/Abstract] OR "Social Networking, Online"[Title/Abstract])))

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(ALL (adult OR adults)) AND (ALL (women OR girls OR girl OR woman OR "Women's Groups" OR "Women Groups" OR "Women's Group") OR ALL (female OR females)) AND (TITLE-ABS-KEY ("Feeding and Eating Disorders" OR "Eating and Feeding Disorders" OR "Feeding Disorders" OR "Disorder, Feeding" OR "Disorders, Feeding" OR "Feeding Disorder" OR "Eating Disorders" OR "Disorder, Eating" OR "Disorders, Eating" OR "Eating Disorder" OR "Appetite Disorders" OR "Appetite Disorder") OR TITLE-ABS-KEY ("Feeding Behavior" OR "Behavior, Feeding" OR "Feeding Behaviors" OR "Eating Behavior" OR "Behavior, Eating" OR "Eating Behaviors" OR "Feeding-Related Behavior" OR "Behavior, Feeding-Related" OR "Feeding Related Behavior" OR "Feeding-Related Behaviors" OR "Feeding Patterns" OR "Feeding Pattern" OR "Pattern, Feeding" OR "Food Habits" OR "Food Habit" OR "Habit, Food" OR "Eating Habits" OR "Eating Habit" OR "Habit, Eating" OR "Dietary Habits" OR "Dietary Habit" OR "Habit, Dietary" OR "Diet Habits" OR "Diet Habit" OR "Habit, Diet" OR "Habits, Diet") OR ALL ("Disordered eating") OR ALL ("eating attitudes") OR TITLE-ABS-KEY ("dietary practices")) AND (TITLE-ABS-KEY ("Body Image" OR "Body Images" OR "Image, Body" OR "Body Identity" OR "Identity, Body" OR "Body Representation" OR "Body Representations" OR "Representation, Body" OR "Body Schema" OR "Body Schemas" OR "Schema, Body") OR TITLE-ABS-KEY ("Body Dissatisfaction" OR "Dissatisfaction, Body" OR "Body Image Dissatisfaction" OR "Body Image Dissatisfactions" OR "Dissatisfaction, Body Image" OR "Dissatisfactions, Body Image" OR "Image Dissatisfaction, Body" OR "Image Dissatisfactions, Body" OR "Negative Body Image" OR "Body Image, Negative" OR "Body Images, Negative" OR "Image, Negative Body" OR "Images, Negative Body" OR "Negative Body Images" OR "body satisfaction")) AND (TITLE-ABS-KEY ("Social Media" OR "Media, Social" OR "Social Medium" OR "Twitter Messaging" OR "Messaging, Twitter" OR "Web 2.0" OR "2.0s, Web" OR "Web 2.0s") OR TITLE-ABS-KEY ("Social Networking" OR "Networking, Social" OR "Social Networks" OR "Network, Social" OR "Social Network") OR TITLE-ABS-KEY ("Online Social Networking" OR "Networking, Online Social" OR "Social Networking, Online"))

Web of Science – 23/08/2022

Adult OR Adults (All Fields) AND Women OR Girls OR Girl OR Woman OR "Women's Groups" OR "Women Groups" OR "Women's Group" (All Fields) or Female OR Females (All Fields) AND "Feeding and Eating Disorders" OR "Eating and Feeding Disorders" OR "Feeding Disorders" OR "Disorder, Feeding" OR "Disorders, Feeding" OR "Feeding Disorder" OR "Eating Disorders" OR "Disorder, Eating" OR "Disorders, Eating" OR "Eating Disorder" OR "Appetite Disorders" OR "Appetite Disorder" (Topic) or "Feeding Behavior" OR "Behavior, Feeding" OR "Feeding Behaviors" OR "Eating Behavior" OR "Behavior, Eating" OR "Eating Behaviors" OR "Feeding-Related Behavior" OR "Behavior, Feeding-Related" OR "Feeding Related Behavior" OR "Feeding-Related Behaviors" OR "Feeding Patterns" OR "Feeding Pattern" OR "Pattern, Feeding" OR "Food Habits" OR "Food Habit" OR "Habit, Food" OR "Eating Habits" OR "Eating Habit" OR "Habit, Eating" OR "Dietary Habits" OR "Dietary Habit" OR "Habit, Dietary" OR "Diet Habits" OR "Diet Habit" OR "Habit, Diet" OR "Habits, Diet" (Topic) or "Disordered eating" (All Fields) or "eating attitudes" (All Fields) or "dietary practices" (All Fields) AND "Body Image" OR "Body Images" OR "Image, Body" OR "Body Identity" OR "Identity, Body" OR "Body Representation" OR "Body Representations" OR "Representation, Body" OR "Body Schema" OR "Body Schemas" OR "Schema, Body" (Topic) or "Body Dissatisfaction" OR "Dissatisfaction, Body" OR "Body Image Dissatisfaction" OR "Body Image Dissatisfactions" OR "Dissatisfaction, Body Image" OR "Dissatisfactions, Body Image" OR "Image Dissatisfaction, Body" OR "Image Dissatisfactions, Body" OR "Negative Body Image" OR "Body Image, Negative" OR "Body Images, Negative" OR "Image, Negative Body" OR "Images, Negative Body" OR "Negative Body Images" (Topic) or "body satisfaction" (All Fields) AND "Social Media" OR "Media, Social" OR "Social Medium" OR "Twitter Messaging" OR "Messaging, Twitter" OR "Web 2.0" OR "2.0s, Web" OR "Web 2.0s" (Topic) or "Social Networking" OR "Networking, Social" OR "Social Networks" OR "Network, Social" OR "Social Network" (Topic) or "Online Social Networking" OR "Networking, Online Social" OR "Social Networking, Online" (Topic)

Embase – 23/08/2022

('adult'/exp OR adult OR 'adult'/syn) AND ('women'/exp OR women OR 'women'/syn OR 'female'/exp OR female OR 'female'/syn) AND ('eating disorder'/exp OR 'eating disorder'/syn OR 'feeding behavior'/exp OR 'feeding behavior'/syn OR 'eating attitudes' OR 'dietary practices') AND ('body image'/exp OR 'body image'/syn OR 'body dissatisfaction'/exp OR 'body dissatisfaction'/syn OR 'body satisfaction'/syn) AND ('social media'/exp OR 'social media'/syn OR 'social network'/exp OR 'social network'/syn OR 'online social network'/exp OR 'online social network'/syn)

Psycinfo– 23/08/2022

((Any Field: ("Social Media") OR Any Field: ("Media, Social") OR Any Field: ("Social Medium") OR Any Field: ("Twitter Messaging") OR Any Field: ("Messaging, Twitter") OR Any Field: ("Web 2.0") OR Any Field: ("2.0s, Web") OR Any Field: ("Web 2.0s")) OR (Any Field: ("Social Networking") OR Any Field: ("Networking, Social") OR Any Field: ("Social Networks") OR Any Field: ("Network, Social") OR Any Field: ("Social Network")) OR (Any Field: ("Online Social Networking") OR Any Field: ("Networking, Online Social") OR Any Field: ("Social Networking, Online"))) AND ((Any Field: ("Body Image") OR Any Field: ("Body Images") OR Any Field: ("Image, Body") OR Any Field: ("Body Identity") OR Any Field: ("Identity, Body") OR Any Field: ("Body Representation") OR Any Field: ("Body Representations") OR Any Field: ("Representation, Body") OR Any Field: ("Body Schema") OR Any Field: ("Body Schemas") OR Any Field: ("Schema, Body")) OR (Any Field: ("Body Dissatisfaction") OR Any Field: ("Dissatisfaction, Body") OR Any Field: ("Body Image Dissatisfaction") OR Any Field: ("Body Image Dissatisfactions") OR Any Field: ("Dissatisfaction, Body Image") OR Any Field: ("Dissatisfactions, Body Image") OR Any Field: ("Image Dissatisfaction, Body") OR Any Field: ("Image Dissatisfactions, Body")) OR Any Field: ("Negative Body Image") OR Any Field: ("Body Image, Negative") OR Any Field: ("Body Images, Negative") OR Any Field: ("Image, Negative Body") OR Any Field: ("Images, Negative Body") OR Any Field: ("Negative Body Images"))) AND ((Any Field: ("Feeding and Eating Disorders") OR Any Field: ("Eating and Feeding Disorders") OR Any Field: ("Feeding Disorders") OR Any Field: ("Disorder, Feeding") OR Any Field: ("Disorders, Feeding") OR (Any Field: "body satisfaction") OR Any Field: ("Feeding Disorder") OR Any Field: ("Eating Disorders") OR Any Field: ("Disorder, Eating") OR Any Field: ("Disorders, Eating") OR Any Field: ("Eating Disorder") OR Any Field: ("Appetite Disorders") OR Any Field: ("Appetite Disorder")) OR (Any Field:

("Feeding Behavior") OR Any Field: ("Behavior, Feeding") OR Any Field: ("Feeding Behaviors") OR Any Field: ("Eating Behavior") OR Any Field: ("Behavior, Eating") OR Any Field: ("Eating Behaviors") OR Any Field: ("Feeding-Related Behavior") OR Any Field: ("Behavior, Feeding-Related") OR Any Field: ("Feeding Related Behavior") OR Any Field: ("Feeding-Related Behaviors") OR Any Field: ("Feeding Patterns") OR Any Field: ("Feeding Pattern") OR Any Field: ("Pattern, Feeding") OR Any Field: ("Food Habits") OR Any Field: ("Food Habit") OR Any Field: ("Habit, Food") OR Any Field: ("Eating Habits") OR Any Field: ("Eating Habit") OR Any Field: ("Habit, Eating") OR Any Field: ("Dietary Habits") OR Any Field: ("Dietary Habit") OR Any Field: ("Habit, Dietary") OR Any Field: ("Diet Habits") OR Any Field: ("Diet Habit") OR Any Field: ("Habit, Diet") OR Any Field: ("Habits, Diet")) OR (Any Field: ("Disordered eating")) OR (Any Field: ("Disordered eating")) OR (Any Field: ("dietary practices"))) AND ((Any Field: (Women) OR Any Field: (Girls) OR Any Field: (Girl) OR Any Field: (Woman) OR Any Field: ("Women's Groups") OR Any Field: ("Women Groups") OR Any Field: ("Women's Group")) OR (Any Field: (Female) OR Any Field: (Females))) AND ((Any Field: (Adult) OR Any Field: (Adults)))

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((adult OR adults)) AND ((women OR girls OR girl OR woman OR "Women's Groups" OR "Women Groups" OR "Women's Group") OR (female OR females)) AND (("Feeding and Eating Disorders" OR "Eating and Feeding Disorders" OR "Feeding Disorders" OR "Disorder, Feeding" OR "Disorders, Feeding" OR "Feeding Disorder" OR "Eating Disorders" OR "Disorder, Eating" OR "Disorders, Eating" OR "Eating Disorder" OR "Appetite Disorders" OR "Appetite Disorder") OR ("Feeding Behavior" OR "Behavior, Feeding" OR "Feeding Behaviors" OR "Eating Behavior" OR "Behavior, Eating" OR "Eating Behaviors" OR "Feeding-Related Behavior" OR "Behavior, Feeding-Related" OR "Feeding Related Behavior" OR "Feeding-Related Behaviors" OR "Feeding Patterns" OR "Feeding Pattern" OR "Pattern, Feeding" OR "Food Habits" OR "Food Habit" OR "Habit, Food" OR "Eating Habits" OR "Eating Habit" OR "Habit, Eating" OR "Dietary Habits" OR "Dietary Habit" OR "Habit, Dietary" OR "Diet Habits" OR "Diet Habit" OR "Habit, Diet" OR "Habits, Diet") OR ("eating attitudes") OR ("dietary practices") OR ("Disordered eating")) AND (("Body Image" OR "Body Images" OR "Image, Body" OR "Body Identity" OR "Identity, Body" OR "Body Representation" OR "Body Representations" OR "Representation, Body" OR "Body Schema" OR "Body Schemas" OR "Schema, Body") OR ("Body Dissatisfaction" OR "Dissatisfaction, Body" OR "Body Image Dissatisfaction" OR "Body Image Dissatisfactions" OR "Dissatisfaction, Body Image" OR "Dissatisfactions, Body Image" OR "Image Dissatisfaction, Body" OR "Image Dissatisfactions, Body" OR "Negative Body Image" OR "Body Image, Negative" OR "Body Images, Negative" OR "Image, Negative Body" OR "Images, Negative Body" OR "Negative Body Images" OR "body satisfaction")) AND (("Social Media" OR "Media, Social" OR "Social Medium" OR "Twitter Messaging" OR "Messaging, Twitter" OR "Web 2.0" OR "2.0s, Web" OR "Web 2.0s") OR ("Social Networking" OR "Networking, Social" OR "Social Networks" OR "Network, Social" OR "Social Network") OR ("Online Social Networking" OR "Networking, Online Social" OR "Social Networking, Online"))

SUPPLEMENTARY MATERIAL 2

Evaluation of the risk of bias in the studies

RTI questions/ References	Sample definition and selection		Outcomes	Soundness of information		Follow-up	
	Are critical inclusion/exclusion criteria clearly stated (does not require the reader to infer)?	Was the sample size sufficiently large to detect a clinically significant difference of 5% or more in at least one primary outcome measure?	Are the important outcomes pre-specified by the researchers?	Are exposures assessed using valid and reliable measures, implemented consistently across all study participants?	Are outcomes assessed using valid and reliable measures, implemented consistently across all study participants?	Is the length of follow-up the same for all groups?	Is the length of time following the intervention/exposure sufficient to support the evaluation of primary outcomes and harms?
Smith et al.[26]	Partially	Not identified	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Fardouly & Vartanian[31]	Partially	+	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Eckler et al.[24]	Partially	Not identified	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Cohen et al.[29]	Partially	Not identified	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Howard et al.[25]	Partially	Not identified	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Fardouly et al.[27]	Partially	Not identified	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Kim[36]	Partially	Not identified	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Saunders & Eaton[39]	+	Not identified	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Cohen et al.[32]	Partially	Not identified	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Martinez et al.[35]	Partially	Not identified	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Butkowski et al.[38]	Partially	Not identified	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Seekis et al.[30]	Partially	+	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study

RTI questions/ References	Sample definition and selection		Outcomes	Soundness of information		Follow-up	
	Are critical inclusion/exclusion criteria clearly stated (does not require the reader to infer)?	Was the sample size sufficiently large to detect a clinically significant difference of 5% or more in at least one primary outcome measure?	Are the important outcomes pre-specified by the researchers?	Are exposures assessed using valid and reliable measures, implemented consistently across all study participants?	Are outcomes assessed using valid and reliable measures, implemented consistently across all study participants?	Is the length of follow-up the same for all groups?	Is the length of time following the intervention/exposure sufficient to support the evaluation of primary outcomes and harms?
Bue et al.[28]	Partially	Not identified	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Seekis et al.[33]	Partially	+	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Piccoli et al.[37]	Partially	+	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study
Wu et al.[34]	Partially	+	+	+	+	Not applicable: cross-sectional study	Not applicable: cross-sectional study

RTI questions/ References	Analysis comparability	Analysis outcome			Interpretation	Presentation and reporting	Total points
	Were the important confounding and effect-modifying variables taken into account in the design and/or analysis?	In cases of high loss to follow-up (or differential loss to follow-up), is the impact assessed?	Are any important primary outcomes missing from the results?	Are the statistical methods used to assess the primary benefit outcomes appropriate to the data?	Are results believable taking study limitations into consideration?	Is the source of funding identified?	
Smith et al.[26]	+	Not applicable: cross-sectional study	+	+	+	+	8
Fardouly & Vartanian[31]	Not identified	Not applicable: cross-sectional study	+	+	+	+	8
Eckler et al.[24]	+	Not applicable: cross-sectional study	+	+	+	-	7

RTI questions/ References	Analysis comparability	Analysis outcome			Interpretation	Presentation and reporting	Total points
	Were the important confounding and effect-modifying variables taken into account in the design and/or analysis?	In cases of high loss to follow-up (or differential loss to follow-up), is the impact assessed?	Are any important primary outcomes missing from the results?	Are the statistical methods used to assess the primary benefit outcomes appropriate to the data?	Are results believable taking study limitations into consideration?	Is the source of funding identified?	
Cohen et al.[29]	+	Not applicable: cross-sectional study	+	Partially	+	+	7
Howard et al.[25]	+	Not applicable: cross-sectional study	+	+	+	+	8
Fardouly et al.[27]	Not identified	Not applicable: cross-sectional study	+	+	+	+	7
Kim[36]	+	Not applicable: cross-sectional study	+	+	+	+	8
Saunders e Eaton[39]	Not identified	Not applicable: cross-sectional study	+	+	+	-	7
Cohen et al.[32]	+	Not applicable: cross-sectional study	+	+	+	+	8
Martinez et al.[35]	+	Not applicable: cross-sectional study	+	+	+	-	7
Butkowski et al.[38]	+	Not applicable: cross-sectional study	+	+	+	-	7
Seekis et al.[30]	Not identified	Not applicable: cross-sectional study	+	+	+	+	8
Bue et al.[28]	+	Not applicable: cross-sectional study	+	+	+	-	7
Seekis et al.[33]	Partially	Not applicable: cross-sectional study	+	+	+	-	7
Piccoli et al.[37]	+	Not applicable: cross-sectional study	+	+	+	+	9
Wu et al.[34]	Not identified	Not applicable: cross-sectional study	+	+	+	+	8