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PARENTAL INVOLVEMENT IN PREVENTION

Abstract

Objective: To systematically review the literature on interventions to prevent eating disorders or body dissatisfaction by involving parents and to provide directions for future research by highlighting current gaps. **Method:** The literature was searched for papers reporting on the key concepts: parents, prevention and eating disorders or disordered eating or body dissatisfaction. All English language publications between 1992 and 2013 were searched across a range of academic databases. Studies were reviewed if they: i) studied an intervention program designed to reduce eating disorders or body dissatisfaction, or their risk factors, in children or adolescents; ii) provided some intervention program component for parents; and iii) included some outcome measure of intervention effectiveness on disordered eating or body dissatisfaction. **Results:** From 647 novel records uncovered by the search, 20 separate studies met inclusion criteria. Two quality studies reported that parental involvement significantly improved child outcomes on measures of disordered eating or body dissatisfaction in the children. **Discussion:** The majority of studies did not include program or evaluation designs that allowed quality evaluation of the effects of parent involvement in prevention interventions. Programs that were designed to suit the specific needs of parents provided better quality data than programs delivered in conjunction with school-based interventions for students. Although a greater focus on engaging and retaining parents is needed, this review demonstrates that a small number of prevention studies with parents have led to significant reductions in child eating and body image problems, and future research is indicated.

Parental involvement in prevention interventions: A systematic review of body dissatisfaction and eating disorder prevention programs with parents

Introduction

Parents are known to shape the development of a wide range of risk and protective factors for body dissatisfaction and eating disorders in their children (1; 2). For example, parents are salient role models who communicate attitudes and display behaviors relating to food, body weight and shape, in front of their children (3; 4). Parents can also influence their child through direct verbal messages about a child's appearance and eating, or through encouraging a child to change their diet or weight-control behaviors (5-7). A review by Rodgers and Chabrol (1), found that parental focus on the importance of appearance and weight can increase body shape and weight concerns among their children, and that this effect is particularly strong when parents directly criticize their child, or actively encourage them to lose weight. In addition to direct criticism, parent modelling of dieting and weight-management behaviors was also found to significantly impact on a child's dissatisfaction with their weight or shape and likelihood of engaging in dieting and bulimic-type behaviors.

Parents though, are not the only important source of influence on the development of body dissatisfaction and disordered eating. Sources of sociocultural pressure are numerous and, in addition to parents, peers and media are particularly strong influences (1; 8-10). Peers for example, can exert influence on a child's body image and eating habits through fat talk, pressure to diet and appearance-based teasing (11-13). Through consistent display of unattainable idealized images, exposure to media can result in elevated body dissatisfaction (14). However, parents play a unique role in shaping the development of eating patterns and body confidence, partly because parents can mediate the relationship between their children, peer and media influences, especially while the children are young. For example, parents can

help develop resilience to peer comments or pressure to value dieting, weight-loss and the thin-ideal, by encouraging value-based judgement rather than appearance-based judgement in their child (15). In addition, parents can limit a child's exposure to harmful messages about the importance of thinness in the media, by limiting screen time and developing critical media viewing, or "media literacy" (16; 17). Importantly, parents can also counteract the impact of peers and media by modelling protective behaviors for their children; by displaying positive body image and healthy eating habits, and avoiding of reinforcement of appearance stereotypes (1; 18; 19).

Given their important role in shaping a child's risk for developing eating and weight problems, eating disorder researchers have been calling for parental involvement in prevention programs from as early as 1996 (20). Primary prevention of eating disorders aims to reduce the incidence of clinical eating disorders. This is achieved through reduction of risk factors and optimization of protective factors. Ecological approaches to eating disorder prevention are those that aim to change the complex environment within which the developing child is located; the family, school and peer group contexts and the interactions between these (21). For school-aged children, ecological prevention programs have targeted school communities by providing intervention modules for entire student and teacher bodies (22). However, despite the important role of parents in providing context for eating and appearance-related behaviors, many school-based ecological interventions have not provided intervention components for parents (23-25). For children in the pre-school years, when the family of origin is the most important source for information about healthy body image and eating patterns, parents become the primary focus of prevention efforts. Yet, previous reviews of eating disorder prevention research have not reported on programs with parents of pre-school children (22; 26). Thus, there is an important gap in the research and review

literature on the value of including parents in prevention interventions for body dissatisfaction and eating disorders.

For the field to heed the call and effectively involve parents, we must first learn from earlier efforts by examining the successes of previous published trials (27). To consolidate current knowledge and provide directions for future program development and evaluation research, the purpose of this study was to systematically review the literature on body dissatisfaction and eating disorders prevention programs involving parents.

Method

This review followed the PRIMSA guidelines for conducting and reporting systematic reviews (28; 29).

Data sources

CSA PsycInfo, ISI Medline and Scopus databases were searched for eligible studies published in the English language between January 1992 and October 2013. The first search was conducted in April 2012 and this was updated in October 2013. Two searches in each database were conducted; a title/abstract/keyword search and a descriptor search.

The first search was based on searching the title, abstract and keyword fields for a specified combination of terms that described the concepts of 1) parents 2) prevention and 3) body dissatisfaction or eating disorders. The search strategy was therefore: (parent*) AND (prevent*) AND ((“disordered eating” or binge or purge or “eating disorder*”) OR ((body or “body image” or shape or weight) and (concern or preoccup* or dissatf*))). The wildcard function ‘*’ was used to search multiple suffixes of the same term (i.e., “parent*” searched for parent or parents or parental or parenting or parented or parenthood or parentage).

The descriptor search used subject headings or key word descriptors assigned by individual databases. Database thesauri were used to select appropriate descriptors for their

relevance to the concepts of parenting, prevention and body dissatisfaction or eating disorders. The specific protocol for these searches can be provided upon request. The reference sections of relevant studies identified in the searches were manually scanned for other relevant studies, which were also included.

Study selection

Resulting studies were inspected by two authors (LH and CC) to assess for the following inclusion criteria: (1) Delivery of a prevention program designed to reduce body dissatisfaction or eating disorder symptoms or risk factors in children. Papers that described a protocol for development of a program but did not implement or evaluate it, were excluded. There were no restrictions on child participant age and hence teenagers and adolescents were also included. (2) Some component of program delivery specifically targeted to parents. Studies that involved parents in measurement of variables without providing program delivery, (i.e., completing parent-report questionnaires about child behavior), were excluded. (3) Implementation and reporting of an outcome measure to evaluate the prevention program. Outcome measures could include those assessing child body image, child eating pathology or eating behaviors, or parental behavior impacting on child eating or body image, for example, parental feeding behaviors. Outcome measures could be completed by the parent, the child or both.

Where reporting of program content, delivery design or use of outcome measure was inadequate for the review, authors were contacted for further details. If authors could not be contacted or sufficient detail provided, studies were excluded from the review.

Data extraction

Data from the reviewed studies were extracted by one person (LH) using a data extraction sheet and codebook based on the principles outlined by Elwood (30). The data extraction sheet listed the following categories designed to describe and compare the studies:

prevention intervention details (prevention program target aim, description of intervention, description of parent component), evaluation details (evaluation design, child outcome measures, parent outcome measures), child sample details (baseline sample *n*, mean age, age range, age standard deviation, post-test sample *n*, follow-up sample *n*, follow-up time, boy/girl baseline sample), parent sample details (baseline sample *n*, mean age, age range, age standard deviation, post-test sample *n*, follow-up sample *n*, follow-up time, male/female,) results details (type of data analyses, description of results, intervention found to be effective Y/N?) and further notes.

Results

Figure 1 depicts the flow of candidate and eligible articles. In total, 647 articles were subjected to a preliminary title and abstract screen. Of those, 611 articles were excluded as they clearly did not meet the three inclusion criteria. Of the remaining 31 articles, 11 were excluded because: the article reported on the same sample as a publication already included (*n*=3), the article did not present intervention evaluation data (*n*=4), the study did not include a measure relevant to body dissatisfaction or eating disorders (*n*=4). This left 20 studies included in the review. These studies represented published and unpublished research, as well as doctoral theses. Large heterogeneity in program structure and research methodology was found across literature.

Studies broadly fell into two categories; those that included a minimal and unassessed parental component, often as passive written materials provided to parents as an adjunct to a school-based student intervention (see Table 1); and those that attempted to evaluate an intervention component specifically for parents (see Table 2). Across the latter group, 830 parents of 2,794 children aged between 8-16 years were involved in a range of different evaluation and intervention programs. While many of these studies found significant positive

impacts on risk factors in children, the majority provided poor quality data on the effects of parental involvement in prevention interventions, either because of small parent sample sizes or designs that impeded quantitative significance testing (25; 31-35).

Two studies found significant positive effects on child outcomes but no changes in parent measures over time (32; 36). The study by Buchholz and colleagues (32) used a cluster randomized controlled trial, with gymnastics clubs randomized to intervention or assessment-only control. Gymnasts, coaches and parents received intervention materials. At posttest gymnasts perceived significantly less pressure to be thin and reported significantly lower internalization scores on the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ). However, mothers' scores on the SATAQ and other relevant measures of diet, body image and eating behaviors, remained unchanged over time. In the Follansbee-Junger and colleagues study (36), 68 parents with overweight children were randomized to receive a behavioral weight-loss intervention, in parent + child, parent-only or wait-list control conditions. Children in the two intervention conditions lost significantly more weight than the waitlist control condition over time. However, there were no significant differences found on the Child Eating and Attitude Test (ChEAT), or the parent-reported Child Feeding Questionnaire, between any of the three groups over time. The Follansbee-Junger and colleagues (36) trial used a RCT with 24 parent + child dyads, 24 parent-only and 19 waitlist control participants. Intervention groups were provided with 12 group-sessions of behavioral family-based weight management intervention. Where both children and parent dyads were involved, they completed separate groups. There were no significant differences found on ChEAT scores at any assessment point, between the parent + child and parent-only groups, so these were collapsed and compared with controls. Again, no significant differences were found across groups. However, relative to baseline, at 6-month follow-up children in the

parent + child and parent-only groups showed significant improvements in overweight (weight-loss) compared to the waitlist control group.

Four studies were of sufficient quality to provide useful data on how inclusion of parents in prevention interventions affects child body image and eating disorder outcomes over time (37-40). Two of these found that parent interventions had no effect on child outcomes (39; 40). In the Trost study (40), parents of middle-school girls were randomized to a wait-list control or an intervention program of three, weekly, 90-minute group education sessions facilitated by psychology graduates. Parents' thin-ideal internalization, body dissatisfaction and dieting behaviors were found to be significantly lower in the intervention group over time. While significant reductions were found in corresponding measures for daughters whose parents received the intervention, no significant group by time interactions were found. The Sniezek study (39) used the *Student Bodies* materials from the earlier Bruning Brown study (31), but tried to enhance the parent component by transforming web-based content into hardcopy parent handouts. Both parents and adolescents completed measures of appearance-based criticism, and adolescents also completed EDI-2, EDE-Q and Weight Concerns Scale. There were no significant differences found between adolescents whose parent received the intervention and adolescents whose parent received the control handout on alcohol use, on perceived parental criticism over time, which suggests that the intervention had no effect.

Two of the four high-quality studies reported finding that parental involvement significantly improved child outcomes on measures of disordered eating or body image in their children (37; 38). In the Corning and colleagues study (37), mothers and their 12-14 year old daughters were randomized as dyads to either a control or intervention condition, which involved four, weekly, 90-minute workshops provided to mothers only. At both posttest and three month follow-up, girls whose mothers were in the intervention group

perceived less pressure to be thin from their mothers, and showed lower drive for thinness in themselves. In the Russell-Mayhew study (38; 41; 42), there were four arms including: students-only, students + parents, students + teachers, and students + parents + teachers. Parents and teachers did not complete measures, but attended workshops. The student intervention included a play discussing body image and eating issues. Students were stratified into elementary school and junior high groups and received age-appropriate modifications of the program. In the elementary school students, compared to the group without parent involvement, the two groups involving parents showed greater improvements on the Piers Harris Children's Self-Concept Scale, which measures dimensions such as satisfaction with physical appearance and personal attributes, behavior and anxiety.

Discussion

The current literature on body dissatisfaction and eating disorder prevention programs involving parents was systematically reviewed to consolidate current knowledge and provide directions for future program development and evaluation research. The 20 separate studies meeting inclusion criteria for review fell into two categories; those that included a minimal or unassessed parental component, and those that provided a more substantive intervention component for parents. Of the latter category, many failed to recruit or retain sample sizes sufficient to allow statistical significance testing. Parent engagement appeared to be a consistent issue across the literature, particularly in studies using passive intervention school-based programs. However, two quality studies were able to demonstrate that providing a prevention program designed for parents can positively impact on risk factors for child development of body dissatisfaction and eating disorders.

One example of the studies that did not provide evaluation data was the *Body Logic* study by Varnardo-Sullivan et al. (43). This intervention aimed to provide parents, whose

adolescent child had been found to be at-risk of a clinical eating disorder, with an intensive family-based program involving separate workshops for parents and adolescents on healthy eating and promotion of positive body image. Although carefully designed through consultation with parents, and despite inclusion of 55 adolescent participants found to be at risk through screening, only one parent-child dyad attended the intervention program. Quantitative evaluation of the program could therefore not be conducted, though the authors and other commentators concluded that their study importantly demonstrates a lack of motivation among parents of at-risk adolescents to identify their child's problem eating (27; 35; 44). A similar experience was reported in the Fiissel study (34). However, a study by Jones, Volker, Lock, Taylor, and Jacobi (45), which provided a six week online prevention program for parents of adolescents aged 11-17 years, found that a daughter's eating disorder risk status was positively correlated with the likelihood of parents engaging with program materials. In this study, parents of the girls who already met criteria for Anorexia Nervosa logged on more frequently and engaged with more program materials than parents of girls who were screened at high-risk. Similarly, parents of girls screened at high-risk logged on more frequently than parents of girls screened at risk.

These findings highlight the need for increased mental health literacy for eating disorders in the community. It is concerning that parents are not mobilized into preventive action when informed of their daughter's at-risk status. It may be that common misconceptions around disordered eating, such as "dieting is healthy" and "weight-loss should be encouraged in children", are overriding the call for parents to intervene early when their child is showing signs of disordered eating. Much more work in educating parents about the early warning signs of eating disorders and the long-term damaging effects that they can lead to, is clearly needed and relevant interventions are currently available (46; 47). Alternatively, an innovative approach to overcoming poor parental engagement in eating

disorder prevention is to provide parents with general parenting strategies designed to improve relationship quality. The Van Ryzin and Nowicka study in this review used this approach and found increased relationship quality reliably predicted improvements in maladaptive eating attitudes (48). Another promising intervention has been developed by Haines and colleagues (49), in which healthy weight-related messages are embedded in a general parenting program. However, this is yet to be evaluated using an experimental design, and hence was not included in this review. Importantly, research investigating parent reluctance to participate in prevention research would also prove invaluable to future intervention work aimed at parents. Without understanding the barriers parents perceive to their involvement, it is very difficult for researchers to optimize intervention design to suit their needs.

Small parent sample sizes were almost ubiquitous in the literature and provide an enormous hurdle in understanding how parents can be effectively engaged in preventing body image and eating problems. For example, the Bruning Brown study (31) adapted the early *Student Bodies* online program (50) for adolescents and their parents. Parents were provided with an unstructured web-based program to be completed any time over a 4 week period. Content included a bulletin-board forum, acceptance of weight and shape diversity, discouraging negative parental attitudes and behaviors affecting daughters, such as teasing or pressure to diet, and exercises to develop positive communication strategies. Parents were randomized to either control or intervention arms. However, their daughters were also independently randomized to either control or intervention arms, which meant that in one dyad both control and intervention participants were possible. Significant differences were found between the adolescent intervention and adolescent control groups on eating pathology measures, and between the parent intervention and parent control groups on measures of criticism, suggesting the intervention was effective in some domains. However, qualitative

evaluation of the parent component revealed that only 11 of the 22 intervention group parents actually logged-on to the program, and of those, only eight reported having read 80% or more of the content. There was, therefore, very low uptake among parents and no differences were found between adolescents' whose parents received the intervention and adolescents' whose parents were in the wait-list control group. But because of the independent randomisation of parent and child, small cell sizes resulted and it is possible that there was inadequate power to assess for interaction effects. A similar result was found in the Buchholz trial (32), which provided an ecological intervention to gymnasts, their coaches, mothers and fathers, to change the "climate within gymnastics clubs" by reducing pressure to be thin and enhancing healthy eating habits. Although 49 mothers, 49 fathers and 24 coaches received the intervention workshops and written materials, only 32 mothers, 9 fathers, and 16 coaches completed posttest questionnaires. Despite athletes in the intervention group reporting significantly less pressure to be thin at posttest, compared to athletes in the waitlist control group, no significant intervention effect was found for mothers' responses. These studies show that prevention interventions can achieve meaningful results for children at risk of eating disorders by reducing important risk factors such as overweight and pressure to be thin. However, further research is needed to understand how involving parents in these interventions contributes to these effective and positive outcomes, as it is possible that the studies showing no significant changes in parent measures were hampered by small and inadequately powered parent sample sizes.

One possible explanation for difficulty engaging parents is the use of passive interventions. Providing parents with brief written information outlining child curriculum and encouraging family involvement in home activities was a common approach across the literature (see Table 1). Uptake and engagement with these materials was however, rarely assessed, or found to be low. Currently, there is no research that demonstrates that providing

take-home materials to supplement student curriculum is successful in improving prevention outcomes in children. Similar outcomes for passive interventions have been found in other research; a study investigating improvements in mental health literacy in those with eating disorders found that providing relevant information about warning signs, effective treatment and self-help was no more effective than providing information about local and general mental health services (51). Conversely, interventions that dedicated greater resources, time and effort to actively involving parents in prevention programs recruited and retained greater participant numbers (38-40; 52).

Of the twenty studies included in the review, four studies were of sufficient size and quality to provide useful data on parental involvement in prevention programs for child body dissatisfaction and eating disorders. The Snizek study (39) used a hardcopy version of the *Student Bodies* materials from the earlier Bruning Brown study (31). Though parents in both groups reported being less critical over time, no significant differences on perceived parental criticism were found between adolescents whose parent received the intervention and adolescents whose parent received the control materials, which suggests that the intervention had no effect. Interestingly though, an analysis based on only those daughters who had perceived a reduction in parental criticism after the intervention, found that their change score reliably predicted a change in the daughter's weight concerns. So daughters who *perceived* a reduction in criticism from their parents felt less concerned about their weight over time. This suggests that a child's perception of their parent's behavior is more important than the parents' perception of their own behavior, and highlights the need for careful design of evaluation studies and the importance of including child self-report measures. Rodgers and Chabrol (1), have highlighted the difficulties in reliably measuring complex risk factors such as parental pressure for thinness. However, sophisticated measures of parent-child interactions are currently available and provide insight into how emotional interactions

between parents and their adolescents can determine risk for psychopathology (53). But these are yet to be utilized in the eating disorders field and are very resource intensive.

The study by Trost (40) had similar findings to the Sniezek study (39) in that there were no significant differences in child perceived pressure to be thin though parents reported applying less pressure on their children over time. However, unlike the Sniezek study (39), the author did not look at the sub-sample of children who perceived a reduction in parental pressure and how this influenced other child outcomes. Although no significant group by time interactions were found, children of parents in the intervention group did show reductions in scores on thin-ideal internalisation, dieting behaviors and bulimic symptoms, which suggests that the sample may have been too underpowered to detect an effect. Therefore, although two of the four quality studies reviewed did not report statistically significant improved outcomes for child body dissatisfaction or eating disorder risk where parents were involved in prevention programs, they suggest that larger sample sizes and more valid measures may have uncovered different results.

Of the two quality studies that reported finding significant differences on child outcomes when parents were involved in prevention programs, the Russell-Mayhew study is particularly notable in that it included an almost equal proportion of boys and girls, and children as young as 8 years, but still managed to find an effect for parental involvement. The prevention program provided in the Corning and colleagues study (37) appeared more successful than previous programs on reducing parental pressure, as girls whose mothers were in the intervention group perceived less pressure from their mothers to be thin and showed a lower drive for thinness in themselves. Taken together, these studies suggest that parents can effectively participate in intervention programs designed to prevent eating and body image problems in children.

Implications for future research

The reviewed studies highlight a clear and current gap in our understanding of how parents can best be motivated to participate in prevention research. The call by Levine and Smolak (26) for greater ecological programs with children, is being heeded. However, the focus has been on school-settings without effective parent engagement. With the exception of six studies in this review (35-37; 40; 45; 48), which carefully designed programs specifically for parents, all the programs reviewed were designed for children or adolescents, with a parent component built on, in an attempt to strengthen the messages being taught to children, rather than with the goal of understanding the implications of changing parental attitudes and behaviors on their child's eating and body image. Despite the need to engage parents in program design being recognized fifteen years ago (20), relatively little research has been designed to suit the needs of parents and to evaluate how programs developed for this particular audience affects the expression of risk factors and disorder incidence over time. Only one study in this review used a long-term follow-up period (48), and none investigated how providing information to parents of pre-school children may impact on body confidence and eating habits over time.

More attention needs to be directed to the crucially important family setting. Prevention interventions need to move beyond passive formats tagged on to school-based programs. True ecological interventions need to provide engaging programs designed to suit the needs of students, teachers *and parents*, coupled with robust evaluation designs, larger parent sample sizes and useful, sensitive measures of parent influence on child risk status. Given that recent research suggests children aged 5-6 years have a developed body image (54), may attribute negative characteristics such as “naughty”, “mean” and “lazy” to large body shapes (55) and can exhibit behaviors consistent with body dissatisfaction such as body checking and negative comments about their appearance (56), there is a striking need to develop programs for parents of children in these formative years, before the foundations for

body dissatisfaction and disordered eating are laid. While the field of eating disorders has long recognized the benefit of involving parents in eating disorder treatment (57), it has been slow to effectively involve parents in preventative action. The eating disorders field may fall behind advances in prevention of adolescent depression and obesity, unless it is prepared to use more creative and engaging ways to involve parents in program design and importantly, evaluation.

Conclusions

This review highlights the need for researchers to clearly understand the parent perspective so that creative and engaging programs can be designed to suit their needs. To be effective, future research needs to focus on developing materials specifically for parents, within larger ecological programs, or within the family setting for young children. Carefully designed evaluation methods with long-term follow-up are also needed. Despite these gaps, this review demonstrates that quality prevention programs for parents are being conducted, and are capable of reducing risk factors for body dissatisfaction and eating disorders in children.

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Tables

Table 1. *Studies meeting review inclusion criteria with minimal or unassessed parental component*

Paper	Intervention aims to	Intervention description	Evaluation
Berger (2011) (58)	Prevent onset of AN in girls, obesity in boys and BED/BN in both boys and girls	<i>PriMa</i> for grade 6 girls to prev AN, <i>TOPP</i> for grade 6 boys to prev obesity, <i>TORERA</i> for grade 8 universal prev BED/BN, <i>STARK</i> a universal top-up program Children: School-based suite of complementary interventions delivered by regular class teachers. Parents: telephone hotline available while programs were being conducted in schools	4x RCTs: across <100 schools Children: (n= <3,500, mixed, 10-15yrs) baseline, posttest Parents: no measures
Coller (1999) (59)	Prevent unhealthy dieting and excessive weight preoccupation	<i>Taste of food, fun and fitness</i> Children: 6x weekly 90min sessions focussing on healthy eating, physical activity and positive body image presented to Girl Scouts groups. Parents: weekly "Tip Sheet" to complement child curriculum	Pilot (uncontrolled, non-randomized): Children: (n=22, 100%f, 10-15yrs) baseline and posttest Parents: Qualitative posttest only (sample size not reported)
Marcus (2009) (60)	Prevent obesity/overweight by reducing unhealthy eating and sedentary behaviors	<i>STOPP</i> child obesity-prevention framework for changing school policy for student feeding/exercise over 4 years. Not curriculum-based intervention. Interventions schools had changes to school lunches (healthy foods, no sugary drinks, low fat dairy) and after-school care snacks made, requests to parents not to send unhealthy foods with children on sports and excursion days, increased activity by teachers in regular classrooms by 30min p/day and increases in after school care of activity and reduction in sedentary behaviors. Parents: twice yearly newsletters over 4 years intervention.	Cluster RCT: 10 schools randomized to intervention or assessment-only control Children: (3,135, 49%f, 6-10yrs) baseline, posttest Parents: posttest only

McVey (2007) (61)	Prevent eating disorders	<p><i>Healthy schools Healthy Kids:</i> Children: multicomponent school-based program including in-class teacher-led curriculum, voluntary peer-support groups for female students, one-off focus group session for male students about teasing, bullying and coping skills, school-wide environment initiatives (play about peer-pressure and body acceptance), daily public service announcements, video presentations, posters promoting body acceptance, size acceptance and self-acceptance. Parents: Monthly 2hr workshops (n=8), monthly newsletter article on curriculum for students and examining personal attitudes to weight/shape and beliefs about food, and developing positive body image in children</p>	Cluster RCT: 4 schools randomized to intervention or assessment-only control Children: (n=982, 52%f, M=11.3yrs) baseline, posttest, 6m f/u Parents: no measures
O'Dea (2000) (62)	Reduce body dissatisfaction	<p><i>Everybody's Different</i> Children: school-based teacher delivered curriculum. 9x weekly 50–80-min lessons focussing on dealing with stress, self-evaluation, communication and relationship skills, with additional home-based activities Parents: students encouraged to discuss content of weekly lessons with parents and complete home-based activities with parental input.</p>	RCT: classes randomized to intervention or assessment-only control Children: (n=470, 63%f, 11-14yrs) baseline, posttest, 6m f/u Parents: no measures
Smolak (1998) (63)	Prevent eating disorders	<p><i>Eating Smart, Eating for Me</i> Children: school-based teacher delivered curriculum, 10x weekly lessons focusing on nutrition, exercising, positive body image, no-dieting and critical evaluation of media Parents: 9x weekly newsletters on student curriculum, a handout on AN, BN and obesity, weekly student homework assignments encouraged parental involvement</p>	Controlled (non-randomized): 8x intervention classes, 3x assessment only control classes (across 6 schools) Children: (n=253, 54%f, NR) baseline, posttest Parents: no measures

NR = Not Reported, f/u = Follow-up measure, %f = Percentage of female participants, AN = Anorexia Nervosa, BN = Bulimia Nervosa, BED =

Binge Eating Disorder, M = mean child age (given where range not reported)

Table 2. *Studies meeting review inclusion criteria with intervention components designed specifically for parents*

Paper	Intervention aims to	Intervention description	Evaluation design
Bruning Brown (2003) (31)	Prevent eating disorders in adolescent girls	<i>Student Bodies</i> Children: structured 8x 1hr weekly web-based psychoeducational program in class. Discusses RFs for EDs, improving BI, documentary style audio and video, personalized feedback, quizzes, self-monitoring, goal-setting, weekly reading and writing assignments Parents: unstructured web-based program with four sections to be completed any time over a 4 week period	RCT: parents and children randomized separately. Children randomized to intervention or active control, parents to intervention or waitlist control Children: (n=153, 100%f, 14-16yrs) baseline, posttest, 3m f/u Parents: baseline (n=69), posttest
Buchholz (2008) (32)	Prevent eating disorders in female gymnasts	<i>BodySense program</i> Children: focus groups to develop program content, then 1 workshop with "10 BodySense basics" relating to eating, weight and body image attitudes, resisting pressure to diet and healthy eating information Parents: a binder with info brochures, 8x newsletters sent to family homes, "fuel tank" information and food snacks, access to support staff, a poster	Cluster RCT: gym clubs randomized to intervention or assessment-only control Children: (n=118, 100%f, 11-18yrs) baseline, posttest Parents: Baseline, posttest (n=32)
Corning (2010) (37)	Reduce development of body-related problems in middle-school girls	<i>Healthy Girls Project</i> Parents only: a 4x 90min weekly workshop intervention for mothers of grade 7-8 girls. Combined psychoeducation, behavioral activities and group discussion. Homework activities including a structured interaction between mother and daughter	RCT: Mothers randomized to intervention or waitlist control group Children only: (n=31, 100%f, 12-14yrs) baseline, posttest, 3m f/u Parents: did not complete measures (n=31)
Fiissel (2006) (34)	Reduce body weight and shape preoccupation, unhealthy eating attitudes and behaviors	<i>The Me I'm meant to Be</i> Children: a compilation of other published programs, based on health promotion principles. 6x 60min weekly sessions designed to improve self & body-esteem, media literacy, healthy eating, stress management, body stereotypes, sociocultural influences and negative appearance attitudes.	Controlled (non randomized): "boys and girls" clubs assigned to intervention or assessment-only control Children: (82, 100%f, 7-11yrs) baseline, posttest, 3m f/u Parents: Qualitative posttest only (n=7)

Follansbee-Junger (2010) (36)	Prevent overweight in children	<p>Supplementary take-home materials encouraged involvement of parents in homework</p> <p>Parents: Information workshops offered but not taken up. Handouts with overview of child curriculum</p> <p>Children & Parents: 12x 90min group-sessions of behavioral family-based weight management intervention. Included stoplight program for classifying foods based on nutrition and energy content, reducing sedentary behaviors, increasing physical activity and fruit/veg intake. Where both children and parent dyads were involved, they completed separate groups</p>	<p>RCT: parents randomized to Parent+Child, parent-only or waitlist control group</p> <p>Children: (n=68, 49%f, 8-13yrs)baseline, posttest, 6m f/u</p> <p>Parents: Baseline, posttest, 6m f/u (n=50)</p>
Haines (2006) (25)	Reduce appearance-based teasing and unhealthy weight-control behaviors	<p><i>VIK (very important kids)</i></p> <p>Children: multi-component intervention with after-school & theatre programs, school staff training, no teasing campaign, book of the month, theatre production</p> <p>Parents: 2x family nights (psychoeducational session on body image and hiphop dance tutorial with children), postcards sent home supplementing student curriculum, audience for theatre production, parent-teacher conference night booth</p>	<p>Controlled (non randomized): 2 schools (1 intervention, 1 control).</p> <p>Children only: (n=151,53%f, M=10.15) baseline, posttest</p> <p>Parents: did not complete measures (n=9 attended family night)</p>
Jones (2012) (45)	Prevent onset of full-syndrome AN in individuals with recognized risk factors	<p><i>Parents Act Now</i></p> <p>Parents only: 6 modules of internet delivered program for parents of adolescents with established or emerging AN. Based on FBT manual (Lock et al, 2001) and a previous internet delivered prevention program for adolescents (Jacobi et al 2007). Focus on psychoeducation for parents to intervene and prevent or reduce problem eating/exercise behaviors. Completed over 6 week period.</p>	<p>Multisite observational study: participants screened and placed into Risk, High Risk or current ED categories.</p> <p>Children: (n=46, 100%f, 11-17yrs) baseline, posttest</p> <p>Parents: baseline and posttest (n=19)</p>
McVey (unpublished) (33)	Promote positive body image and reduce eating problems	<p><i>Every BODY Is a Somebody</i></p> <p>From McVey & Davis (2002)</p> <p>Children: "life skills promotion approach". Focus on self-esteem and coping with stress. 6x weekly in-class sessions covering unrealistic thin ideal, self-esteem and positive body image, acceptance of diversity, non-dieting approach, stress management, positive relationships</p>	<p>Cluster RCT: 4 schools (2 controls and 2 intervention; these were randomly split by student class into parent+student or student-only groups)</p> <p>Children only: (n=286, 100%f, M=11.2) baseline, posttest, 6m, 12m f/u</p> <p>Parents: did not complete measures (n=28)</p>

Neumark-Sztainer (2000) (52)	Promote body acceptance and prevent dieting behaviors among preadolescent girls	<p>Parents: 1x 3hr workshop discussing overview of student program, development of body image and role of parents, risk factors for disordered eating and managing normative adolescent stressors</p> <p><i>Free to be Me</i></p> <p>Children: 6x 90min sessions during biweekly scout meetings, based on social cognitive theory. Topics covered body development, media's effect on body image and self-esteem, and building resistance to negative images. Presented by regular Troop leaders who received training in program materials</p> <p>Parents: Weekly handout explaining daughter's activities, activities to do with daughter, preparation of healthy snack for troop meeting</p>	<p>Cluster RCT: 24 troops randomly assigned to wait-list control or intervention</p> <p>Children: (n=221, 100%f, M=10.6) baseline, posttest, 3m f/u</p> <p>Parents: Qualitative posttest only (n=75)</p>
Russell-Mayhew (2004) (38)	Promote acceptance of body diversity and rejection of thin-ideal and dieting messages	<p>Children: <i>Its what's inside that counts</i> a puppet show for elementary students; <i>Heavenly Bodies</i> a drama/comedy play for JnrHigh students. Focus on acceptance of diversity in appearance, rejection of messages about the "perfect body", healthy body image, self-esteem, self acceptance and pubertal changes. In-service teacher training on awareness and prevention of eating disorders.</p> <p>Parents: 1x 1.5hr workshop on positive body image (n=114)</p>	<p>RCT: randomized to 5 groups by school: Student-only, student+parent, student+parent+teachers, parent+teachers only, waitlist control (no intervention for students, teachers or parents)</p> <p>Children: (1095, 58%f, 8-14yrs) baseline, posttest, 1m f/u</p> <p>Parents: focus group at f/u (n=50)</p>
Sniezek (2006) (39)	Reduce parental appearance-based criticism, reduce weight concerns and unhealthy weight control behaviors (e.g. dieting)	<p><i>Student Bodies</i></p> <p>Children: structured 8 week web-based psychoeducational program of 2x40min classes/week (as per Bruning Brown, 2002)</p> <p>Parents: Psychoeducational pamphlet</p>	<p>RCT: Randomized by dyad to intervention or active control.</p> <p>Children: (n=175, 100%f, 14-16yrs)baseline, posttest</p> <p>Parents: Baseline, posttest (n=129)</p>
Troost (2006) (40)	Reduce thin ideal internalisation and parental pressure to be thin	<p><i>Healthy Image Partnership (HIP) Parents Program</i></p> <p>Parent-only 3x once weekly 90min education sessions. Focus on thin-ideal, role of parents in body image development, strategies to help daughters improve body image</p>	<p>RCT: parents randomized to intervention or wait-list control</p> <p>Children: (n=81, 100%f, 10-15yrs) baseline, post-treat, 3m f/u</p> <p>Parents: Baseline, post-treat, 3m f/u (n=68)</p>

Van Ryzin (2013) (48)	Reduce escalations in antisocial behavior in youth and improve relationship quality with parents	<i>The Family Check Up (FCU)</i> Children & Parents: a family-based intervention consisting of three levels; an assessment session with family therapist in the home video-taping family interactions, a feedback session providing motivational interviewing to encourage change, and referral to specialist parenting services to improve family management practices (n=115)	RCT: procedure NR Children: baseline (n=998, 47%f, M=12 yrs), 3x yearly f/u, 5 yr f/u, 10 yr f/u Parents: no measures
Varnado-Sullivan (2001) (35)	Address body image concerns and promote healthy nutritional intake	<i>The Body Logic Program</i> Multi-level universal + selective program. Children: 3x50min sessions for all students focussing on communication skills, self-esteem, positive body image, puberty and challenging thin ideal. Homework activities to do with family Parents: 4x targeted prevention sessions for families of students at risk of developing ED, although all students/parents invited.	Controlled (non randomized): 2 schools (1 intervention, 1 waitlist control). Children: (n=287, 55%f, 10-13yrs)baseline, posttest, multiple f/u for 10weeks post Parents: Baseline, posttest (n=1)

NR = Not Reported, f/u = Follow-up measure, %f = Percentage of female participants, AN = Anorexia Nervosa, BN = Bulimia Nervosa, BED =

Binge Eating Disorder, M = mean child age (given where range not reported)

Figures

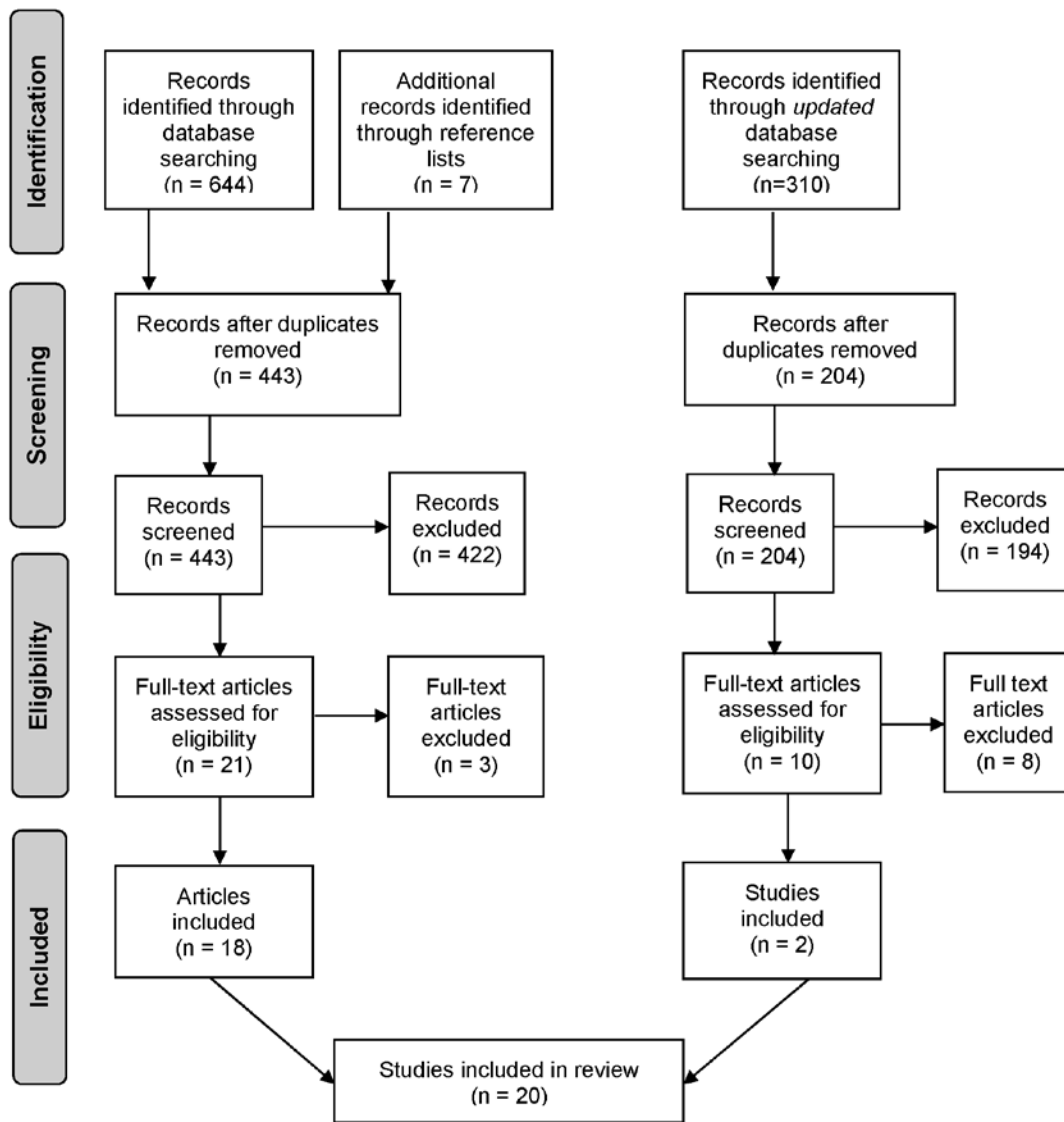


Figure 1. Systematic literature review flow diagram

Academic databases CSA PsycInfo, ISI Medline and Scopus were searched for eligible studies published in the English language between January 1992 and October 2013. Studies needed to meet three criteria to be included in the review: 1) evaluate an intervention aimed at preventing eating disorders or body dissatisfaction or their risk factors, in children, 2) provide some program component to parents, 3) include an outcome measure relevant to

assessing child body image, eating behaviors, or parental behavior impacting on child eating or body image.