Isr J Psychiatry Relat Sci Vol 42 No. 3 (2005) 172–177

Prevention of Eating Disorders: A Review of Outcome Evaluation Research

Niva Piran, PhD, C Psych

Department of Adult Education and Counseling Psychology, Faculty of Education, University of Toronto, Toronto, Canada

Abstract: Prevention programs for eating disorders have been targeted both at primary prevention, through minimizing risk and enhancing protective factors, and secondary prevention, through the early identification of individuals displaying sub-clinical forms of eating disorders. Primary prevention programs with elementary school children have been found to change knowledge effectively, change attitudes in about half of students, and result in maintained behavioral change in about one-fifth of the students. Interactive primary prevention programs in elementary schools that intervened with students' social environment, such as peers and teachers, in addition to equipping students with resilience skills, seemed to be more effective. Secondary prevention at the university level revealed, in follow-up studies of about three months, the maintenance of attitudinal change in about two-thirds of the sample, and the maintenance of behavioral change in about two-fifths of the participants. In addition to including cognitive, critical and general resilience skills, these programs also engaged participants actively and invited their critical reflections. Apart from the implementation of "packaged" prevention programs, preventative interventions should be applied by all health, mental health and education professionals in their daily contact with children and their significant others.

Eating Disorders as a Social Issue Requiring Prevention Interventions

Eating disorders are prevalent and associated with significant morbidity. In many Westernized countries, the prevalence of anorexia nervosa among adolescents and young women is 0.2-0.5% and about 1-2%, respectively (1). However, clinical eating disorders are part of a larger spectrum of disordered eating behaviors that produce significant morbidity while not meeting the full anorexia or bulimia nervosa clinical criteria. It is estimated that 8-15% of adolescent women display significant levels of subclinical symptomatology (2, 3). Further, at any point in time, about 40-45% of adolescent women are trying to lose weight through various means motivated by "normative" (4) body dissatisfaction (5). Among girls, body dissatisfaction and eating disorders increase during and following puberty (6), together with challenges to the experience of self, self esteem and mood, as well as other behaviors indicating disrupted connection with the body, such as smoking to curb appetite and weight gain, plastic surgeries, self harm behaviors, and sexual activity without negotiating for protection and without the experience of desire (7-9). While less research is available to date regarding boys, reports are suggesting that an increasing number of boys display preoccupation with becoming more muscular and losing fat (10). While the female to male ratio of clinical eating disorders is about 9:1, the ratio of binge eating disorder seems to be less extreme, about1.5:1 (10). At any point in time, about 15%-20% of adolescent men are trying to lose weight (5). Body weight and shape preoccupation, and associated eating disorders, can therefore be considered a significant health issue for youth.

The cost of the eating disorder spectrum to society and to affected individuals is significant. In terms of the impact on individuals, body dissatisfaction and disordered eating patterns have been found to be associated with challenges to self esteem and to predict, in prospective studies, future depression and eating disorders (11). The more severe end of the spectrum of disordered eating behaviors found in about 15% of adolescent women has been found to be associated with significant physical, psychological and social problems (3). Clinical eating disorders impact all aspects of afflicted individuals' lives, and those of their families and friends. Treatment for eat-

Address for Correspondence: Dr. Niva Piran (7-225), Department of Adult Education and Counseling Psychology, OISE/ University of Toronto, 252 Bloor St. West, Toronto, Ontario, Canada M5S 1V6. E-mail: npiran@oise.utoronto.ca

ing disorders is difficult and expensive, and recovery in many centers is reported to be achieved in about half of patients (12). The mortality rate for anorexia nervosa is 12 times higher than it is for young women in the general population (13). It therefore appears that societal and individual costs are associated with varied levels of disordered eating patterns.

Interventions to address eating disorders should be seen as occurring in a continuum of prevention. Primary prevention involves lowering the incidence of new cases through minimizing risk and enhancing protective factors. Primary prevention interventions can target large populations (universal prevention) or address the needs of a smaller population at risk for the development of the target problems due to varied bio/psycho/social factors (selective prevention). Secondary or targeted prevention refers to interventions with individuals who are at risk for developing a disorder due to the presence of clear precursors. Secondary prevention involves early identification and intervention to prevent the occurrence of full-blown problems. Tertiary prevention relates to the treatment of eating disorders. The current article addresses primary and secondary prevention issues. Research conducted to date in the field of primary and secondary prevention is reviewed and conclusions regarding directions for further progress are outlined.

Primary Prevention

Most primary prevention has been conducted with children in elementary and middle schools, less than 14 years of age. Primary prevention efforts are most suitable for this age group, since problematic eating attitudes and behaviors are less commonly found and tend not to be reflective of entrenched habits or cohesive cognitive schemas (14). Based on an updated review by Levine and Piran (15), and the meta-analysis conducted by Stice and Shaw (16), 21 published studies which have employed comparison groups in their evaluations have been found (17). In comparison, only four such studies have been conducted with high school students, and four have been conducted with university students. The larger body of research at the elementary and middle school level allows for the examination of trends that could guide future developments.

Primary Prevention with Elementary and Middle School Students

The 21 published studies of primary prevention with elementary and middle school students that have employed comparison groups in their research design adhered to different levels of methodological rigor. Only the most rigorous outcome evaluation study can lead to unquestionable conclusions regarding the outcome of primary prevention. Such a "gold standard" study in prevention requires: a) an explicit theoretical rationale regarding the approach taken to prevention, including a list of targeted risk and protective factors; b) the utilization of one or more intervention groups and a control group, designed such that outcome evaluation will allow for studying the effectiveness of at list one specific program component; c) sample size should be large and group membership should be assigned following random allocation, preferably the random allocation of whole school communities to avoid spillover effects; d) measures should be standardized, reliable and validated, appropriate to the level of intervention so that both individual and system level changes can be assessed; e) adherence to the program and other implementation issues, such as training of facilitators, are assessed and documented; f) there should be a long-term follow-up of at least one year, preferably 2-5 years. To date, no primary prevention study has fulfilled all these criteria (17). For example, of the 21 studies, only 11 involved random allocation to intervention and comparison groups. Further research in this area is needed.

While recognizing the methodological limitations of the different outcome evaluation studies, it is valuable to examine trends in the findings from this cumulative body of knowledge (17). First, results confirm that favorable changes in knowledge level are almost invariably found, while favorable changes in attitudes, and even more so behaviors, are more difficult to obtain. All programs that aimed at the transmission of knowledge regarding healthy nutrition and activity levels, the natural diversity of weights and healthy development at puberty, found significant changes in knowledge. These changes in knowledge did not necessarily lead to attitudinal or behavioral change (17). Since models of eating disorder development have highlighted the role of attitu-

dinal risk factors such as body dissatisfaction or internalization of thinness in the development of eating disorders(11), a shift in such attitudes is important for the goal of prevention. In 13 out of 21 studies (62%), a greater attitudinal change was found in intervention groups as compared with the change found in comparison groups. Change was more commonly found in the internalization of thinness and not in body dissatisfaction(17). Further, the attitudinal change was maintained in 9 out of the 21 studies (43%) in follow-up assessments conducted most commonly 3 and 6 months post intervention. Significant change in behavior only occurred in studies where a change in attitudes occurred; however, attitudinal change did not necessarily lead to behavior change. Behavioral changes, such as reduced dieting or meal skipping, occurred in 6 out of the 21 studies (29%) and maintained in 4 out of the 21 studies (19%).

The 21 published studies that have employed comparison groups in their evaluations varied in a number of important dimensions, including level of intervention, underlying theoretical model, process of intervention, gender of target group and the breadth of target symptomatology. In examining the outcome pattern of the different studies, it is valuable to consider these different dimensions. Considering the level of intervention, most programs aimed at enhancing children's resistance skills, while other programs aimed, in addition, to address the social environment of these children through targeting peer norms, teachers and parents (17). A public health perspective to prevention work advocates coordinated efforts at varied levels of intervention, the "macro" level of social policy, the "mezzo" level of community settings such as school, and the individual level (18). Programs that included systemic interventions, such as changes in peer norms regarding weight teasing, or educating teachers regarding weight prejudice and eating disorders (19-21) tended to find a greater intervention effect. These results are in line with substance use prevention research where enlisting whole communities towards the cause of primary prevention has resulted in significant favorable outcome (22, 23).

The different prevention programs have been guided by different theoretical perspectives in aiming to enhance the resistance skills of children to social pressures, especially appearance-related pressures and pressures for thinness (24). Programs that were guided by Bandura's social cognitive theory, such as the program developed by Killen et al. (25), and cognitive behavioral theory, such as developed by Stewart et al. (26) have attempted to reduce the overvaluation of appearance and thinness, maladaptive beliefs and negative feeling about the body, as well as increase healthy attitudes and behaviors. Another approach, the non-specific vulnerability-stressor model (24), informed by healthy promotion theory (27) led to the development of programs, such as O'Dea and Abraham's (28) that enhance positive self esteem and coping strategies and relational networks in the life of children, without an emphasis on body weight and shape issues. A third approach has been guided by critical social theory (29). In this approach, programs attempt to equip participating children with a critical stance towards culture through an examination of the way social structures shape individuals' daily experiences (19). These programs have emphasized media literacy (30) or a more general critical examination of culture (19). Many programs have integrated elements from all these three perspectives. Current data do not allow for a comparative evaluation of these approaches as they all seem to have led to several positive results.

Interestingly, while research data suggest that programs guided by different theoretical approaches do not lead to differential outcome, the process of prevention programs may be associated with differential outcome. Programs that have tended to use an interactive format of intervention, rather than a didactic format, were associated with more positive attitudinal and behavioral changes (17). This tendency was also reported by Stice and Shaw (16) in their meta-analysis of prevention interventions conducted to date. Also, while intervening in gender cohesive or coeducational groups may necessarily entail a somewhat different content or process, no clear pattern of differential outcome could be discerned when reviewing the outcome data available to date (17).

To conclude, primary prevention work with children has led to moderate success and has helped delineate promising avenues for further research. In particular, this research suggests the importance of

designing programs that intervene both at the individual and the social system level, that integrate different theoretical perspectives, and that use interactive approaches.

Primary Prevention at the High School and University Levels

Research studies of programs aimed at primary prevention conducted at the high school and university levels are few and do not allow for the examination of trends (17). The four studies of primary prevention conducted in high school settings employed different approaches and led to moderately positive results. The unique findings of this group of studies suggest that students at this age are keen to discuss maturational challenges (31, 32) and that psychoeducational information about the futility of dieting and usefulness of a healthy life style can reduce unhealthy approaches to dieting in the long term, while not affecting an attitudinal change in the level of body dissatisfaction (33).

The four studies that have targeted the population of university students suggest that one shot interventions do not seem to work, though, similar to the findings of Neumark-Sztainer et al. (33) in a high school population, a short educational approach that emphasizes a healthy life style on campus and the futility of dieting may have a positive behavioral effect without actually shifting attitudes (34). The studies also suggest that unchanged group means in prevention outcome studies may mask interaction effects between individual characteristics of participating students and the content of the program (35). Applying a clinical approach to primary prevention did not seem to work (36). A systemic approach to prevention, for example in university dormitories, such as have been implemented by Sigall (37), should be tested in outcome research. Sigall trained student leaders in residence to counter negative messages regarding body shape and eating through role modeling, educational programs, peer discussions and enlisting outside support.

Secondary Prevention

With the exception of one study, all published reports of secondary prevention which included at least one intervention group have targeted university students preoccupied with body weight and shape (17). Review of 13 studies that included the comparison of 15 different programs to no intervention control groups revealed favorable outcome in many of the studies. Attitudinal change was found in 14 out of 15 interventions (93%) and maintenance for a typical period of 1-3 months was found in 10 out of 15 (67%). Behavioral change was found in 8 out of the 15 studies (56%) and maintenance of gains in 6 out of 15 comparisons (40%). Several reasons may account for the more favorable pattern of results achieved in this secondary prevention group of studies, when compared with primary prevention with school children. Students in a heightened state of distress who respond to program advertisement are likely more motivated to work towards benefiting from the program. Regression to the mean is another phenomenon that may yield significant change effects. It is also possible that prevention work which targets individuals, and not their social environment, may have more impact on students in university whose critical cognitive skills are more developed and who are less immersed in unchanged social systems compared with younger children. In addition, secondary prevention work with highly weight preoccupied students has likely benefited from the vast clinical experience of treating individuals with eating disorders (17). Nonetheless, the very short follow-up periods in all secondary prevention studies limit conclusions about the benefit of secondary prevention. Further, since most programs did not have more than one active intervention group, placebo effects could not be consistently assessed.

Examination of the theoretical position of the programs that have yielded positive attitudinal and behavioral results at follow up reflects the integration of social cognitive theory, the non-specific vulnerability-stressor model and critical theory. For example, Kaminski and McNamara (38) employed a combination of cognitive interventions that challenged negative thinking and related feelings in the body domain, and enhanced skills such as assertiveness while also emphasizing critical awareness of culture, a component the authors found to be particularly powerful in reducing participants' internalization of thinness. Celio et al. (39) used an 8-session internet course, 3 face-to-face meetings, weekly participation in a chat group mediated by facilitator, and

weekly writing of critical reflection papers. In this program they used a psychoeducational component which included education about healthy weight regulation, a cognitive component involving strategies to challenge negative thoughts and contrasting "real" and "virtual" images of women, a general skills approach to dealing with stress, and a critical component including a feminist perspective on women's body related issues. Stice et al. (40) developed the cognitive-dissonance program which includes a 3-session group-based format. In this program, participants are asked to devise a program to dissuade female high school students from internalizing pressures for thinness. Content-wise, this program emphasizes the development of critical thinking, such as the way large corporations benefit from the thin ideal. From a process perspective, the program empowers participants and enhances their communication and assertiveness skill, in addition to challenging internalized socially-based cognitions. In addition to including cognitive, critical and general protective skills, these programs also engaged participants actively and invited their critical reflections.

To conclude, research of secondary prevention in university settings requires a multi-intervention group design and a longer term follow-up. The impact of systemic interventions at the university level needs to be evaluated as well. Results to date are promising in the shorter term.

General Conclusion

Clinical eating disorders and the spectrum of disordered eating patterns comprise a significant health issue for youth and older groups. A review of prevention programs research conducted to date reveals initial promising results for both primary and secondary prevention. Prevention research, however, needs to expand, especially by including a multi-intervention group design that targets both individual and systemic changes and that involve longer term follow-up. Further, in light of other health challenges faced by youth, and in line with health promotion strategies that emphasize the role of shared protective and risk factors in youth health, new prevention programs should aim to address broader prevention goals, such as drug abuse and obesity. While this review examined outcome evaluation of existing prevention programs, preventative interventions should be applied by all health, mental health and education professionals in their daily contact with children and their significant others (41).

References

1. Van Hoeken D, Lucas AR, Hoek HW Epidemiology. HW Hoek, JL Treasure, MA Katzman. Neurobiology in the treatment of eating disorders. London: John Wiley, 1998: pp. 97-126.
2. Austin SB. Prevention research in eating disorders: Theory and new directions. Psychol Med 2000;30: 1249-1262.
3. Shisslak CM, Crago M, Estes L. The spectrum of eating disturbances. Int J Eat Disord 1995;18:209-219.
4. Rodin J, Silberstein L, Striegel-Moore R. Women and weight: A normative discontent. In: Sonderegger T, editor. Psychology and Gender. Lincoln, NE: University of Nebraska, 1984: pp. 267-307.
5. French SA, Story M, Neumark-Sztainer D, Downes B, Resnick M, Blum R. Ethnic differences in psychosocial and health behavior correlates of dieting, purging, and binge eating in a population-based sample of adolescents. Int J Eat Disord 1997;22:315-322.
6. Field AE, Camargo CA Jr, Taylor CB, Berkey C, Frazier AL, Gillman MW, Colditz GA. Overweight, weight concerns, and bulimic behaviors among girls and boys. J Am Acad Child Adolesc Psychiatry 1999;38:754-760.
7. Ekrut S, Fields JP, Sing R, Marx F. Diversity in girls' experiences: Feeling good about who you are. In: Ross Leaderbeater BJ, Way N, editors. Urban girls. New York: NYU, 1996: pp. 53-64.
8. Thompson JK, Heinberg LJ, Altabe M, Tantleff-Dunn S. Exacting beauty. Washington, D.C.: APA, 1999.
9. Tolman D. Doing desire: Adolescent girls' struggles for/with sexuality. Gender Soc 1994;8:324-342.
10. Pope Jr HG, Phillips KA, Olivardia R. The Adonis complex: The secret crisis of male body obsession. New York: Free Press, 2000.
11. Stice E, Hayward C, Cameron R, Killen JD, Taylor CB. Body image and eating related factors predict onset of depression in female adolescents: A longitudinal study. J Abnorm Psychol 2000;109:438-444.
12. JohnsonWG, Tsoh JY, Varnado PJ. Eating disorders: Efficacy of pharmacological and psychological interventions. Clin Psychol Rev 1996;16:457-478.
13. Becker AE, Grinspoon SK, Klibanski A, Herzog DB. Eating disorders. N Engl J Med 1999;340:1092-1098.
14. Smolak L. Elementary school curricula for the primary prevention of eating problems. In: Piran N, Levine MP, Steiner-Adair C, editors. Preventing eating disorders: A handbook of interventions and special challenges. Philadelphia, Penn.: Brunner/Mazel, 1999.

15. Levine MP, Piran N. The prevention of eating disorders: Towards a participatory ecology of knowledge, action, and advocacy. In: Striegel-Moore R, Smolak L, editors. Eating disorders: New directions for research and practice. Washington, D.C.: APA, 2001: pp. 233-253.
16. Stice E, Shaw H. Eating disorder prevention programs: A meta-analytic review. Psychol Bull 2004;130:206-227.
17. Piran N. Preventing eating disorders: A review of outcome evaluation research. Unpublished manuscript, OISE/University of Toronto, 2004.
18. McKinlay JB, Marceau LD. A tale of 3 tails. Am J Public Health 1999;89:295-298.
19. Piran N. Re-inhabiting the body from the inside out: Girls transform their school environment. In: Tolman DL, Brydon-Miller M, editors. From subjects to subjectivities: A handbook of interpretative and participatory methods. New York: NYU, 2001: pp. 218-238.
20. Smolak L, Levine MP. A two-year follow-up of a primary prevention program for negative body image and unhealthy weight regulation. Eat Disord: J Treat Prevent 2001;9:313-325.
21. McVey GL, Lieberman M, Voorberg N, Wardrop D, Blackmore E. School-based peer support groups: A new approach to the prevention of disordered eating. Eat Disord: J Treat Prevent 2003;11:169-186.
22. Pentz MA, Dwyer J, MacKinnon DP, Flay BR, Hansen WB, Wang EY, Johnson CA. A multicommunity trial for primary prevention of adolescent drug abuse: Effects on drug use prevalence. JAMA 1989;261:3259-3266.
23. Perry CL. Creating health behavior change: How to develop community-wide programs for youth. Thousand Oaks, Cal.: Sage, 1999.
24. Levine MP, Piran N. The role of body image in the prevention of eating disorders. Body Image 2004;1:57-70.
25. Killen JD, Taylor, CB, Hammer L, Litt I, Wilson DM, Rich T, Simmonds B, Kraemer H, Varady A. An attempt to modify unhealthful eating attitudes and weight regulation practices of young adolescent girls. Int J Eat Disord 1993;13:349-384.
26. Stewart DA, Carter JC, Drinkwater J, Hainsworth J, Fairburn CG. Modification of eating attitudes and behavior in adolescent girls: A controlled study. Int J Eat Disord 2001;29:107-118.
27. Cowen EL. Psychological wellness: Some hopes for the future. In: Cicchetti D, Rappaport J, Sandler I, Weissberg RP, editors. The promotion of wellness in children and adolescents. Washington, D.C.: Child Welfare League of America, 2000: pp. 477-503.
28. O'Dea J, Abraham S. Improving the body image, eating attitudes and behaviors of young male and female adolescents: A new educational approach which focuses on self esteem. Int J Eat Disord 2000;28:43-57.
29. Foucault M. Discipline and punish: The birth of the prison. New York: Vintage Books, 1979.
30. Neumark-Sztainer D, Sherwood N, Coller T, Hannan PJ. Primary prevention of disordered eating among pre-adolescent girls: Feasibility and short-term impact of a community-based intervention. J Am Dietetic Assoc 2000;100:1466-1473.
31. Buddeberg-Fischer B, Klaghofer R, Gnam G, Buddeberg C. Prevention of disturbed eating behavior: A prospective intervention study in 14- to 19-year old Swiss students. Acta Psychiatr Scand 1998;98:146-155.
32. Santonastaso P, Zanetti T, Ferrara S, Olivetto MD, Magnavita N, Favaro A. A preventive intervention program in adolescent school girls: A longitudinal study. Psychother Psychosom 1999;68:46-50.
33. Neumark-Sztainer D, Butler R, Palti H. Eating disturbances among adolescent girls: Evaluation of a school-based primary prevention program. J Nut Educ 1995; 27:24-30.
34. Martz D, Bazzini D. Eating disorder prevention programming may be failing: Evaluation of two one-shot programs. J College Student Develop 1999;40:32-42.
35. Mutterpel JA, Sanderson CA. Mind over matter: Internalization of the thinness norm as a moderator of responsiveness to norm misperception education in college women. Health Psychol 2002;21:519-523.
36. Nicolino JD, Martz DM, Curtin L. Evaluation of a cognitive-behavioral therapy intervention to improve body image and decrease dieting in college women. Eat Behav 2001;2:353-362.
37. Sigall B. The Panhellenic task force on eating disorders: A program of primary and secondary prevention for sororities. In: Piran N, Levine MP, Steiner-Adair C, editors. Preventing eating disorders. Philadelphia: Brunner/Mazel, 1999: pp. 222-237.
38. Kaminski PL, McNamara K. A treatment for college women at risk for bulimia: A controlled evaluation. J Counsel Develop 1996;74:288-294.
39. Celio AA, Winzelberg AJ, Wilfley DE, Eppstein-Herald D, Springer EA, Dev P. Reducing risk factors for eating disorders: Comparison of an internet- and classroom-delivered psychoeducational program. J Consult Clin Psychol 2000;68:650-657.
40. Stice E, Mazotti L, Weibel D, Agras WS. Dissonance prevention program decreases thin-ideal internalization, body dissatisfaction, dieting, negative affect, and bulimic symptoms: A preliminary experiment. Int J Eat Disord 2000;27:206-217.
41. Piran N. Teachers: On "being" (rather than "doing") prevention. Eat Disord: J Treat Prevent 2004;12:1-9.