Promoting Healthy Weights and Mental Health for Children and Youth

Backgrounder Document

Prepared by the:

camh HPRC
Health Promotion
Resource Centre

Contents

Background

Public health units in Ontario routinely embed mental health promotion goals into activities to address healthy weights. This was a key finding in the 2013 report, *Connecting the Dots: How Ontario Public Health Units are Addressing Child and Youth Mental Health* (PDF), co-led by Public Health Ontario (PHO), the CAMH Health Promotion Resource Centre (HPRC) and Toronto Public Health (TPH).

To further explore mental health and healthy weights promotion in Ontario public health units, PHO and the CAMH HPRC are hosting a one-day *Mental Health and Healthy Weights for Children and Youth* knowledge exchange forum on March 24, 2015 in Toronto as part of The Ontario Public Health Convention (TOPHC).

The objectives of this forum are to:

- Explore the intersection of public health activities that promote mental health and healthy weights in children and youth.
- Consider the role of health equity when working to promote mental health and healthy weights.
- Showcase the work of Ontario public health units in promoting mental health and healthy weights, including how they define their role in addressing mental health.
- Share tools, research and methods, and practical skills and strategies to facilitate the work of Ontario public health units and their partners in this area.

The goal of the knowledge exchange forum is to support the integration of mental health and healthy weights promotion into public health practice. As such, participants of the forum will include public health stakeholders who have the ability to inspire and inform decision-makers in their health unit about approaches to addressing both healthy weights and mental health. Specific participants may include public health managers and directors working in child health, family health, chronic disease and injury prevention, school health, mental health as well as others at the administrative and management level that can make decisions around planning and priorities relating to the promotion of healthy weights and mental health.

The purpose of this backgrounder is to inform the planning of, and discussions during, this knowledge exchange forum. The backgrounder is an overview of recent evidence starting with key points from three evidence briefs developed by Public Health Ontario (PHO). In addition, this backgrounder highlights relevant literature from two separate searches, relating to practices and initiatives that promote both healthy weights and mental health amongst children and youth populations. One search was focused on initiatives in peer-reviewed literature and the second was done to identify any grey literature sources. From the search outputs, specific themes are identified related to high-level promising approaches and are intended to be useful for the forum discussions. An additional goal in preparing this backgrounder overview of selected literature is to stimulate discussion and thinking during the knowledge exchange forum around potential proposed implications for practice that may support practitioners to integrate both the promotion of healthy weights and mental health into public health practice.

Acknowledgements

The *Mental Health and Healthy Weights for Children and Youth* knowledge exchange forum was guided by a Planning Committee that includes:

- Karen Gough, Program Manager, Nutrition Resource Centre, Ontario Public Health Association
- Dr. Jessica Hopkins, Associate Medical Officer of Health, City of Hamilton Public Health Services
- Colleen Kiel, Manager, Health Promotion Performance and Accountability, Health Promotion Division, Ministry of Health and Long-Term Care
- Chris Markham, Executive Director, Ophea
- Sherry Nigro, Manager, Health Promotion and Disease Prevention, Ottawa Public Health
- Joyce See, Director, Community Health Services & Chief Nursing Officer, Halton Region Health Department

We thank the Planning Committee for their assistance in reviewing this report and the Proposed Implications for Practice section of the document.

We also acknowledge Dr. Heather Manson, Sue Keller-Olaman, Inna Romanovska, and Heather Lillico from Public Health Ontario's Health Promotion, Chronic Disease and Injury Prevention team for their invaluable contributions and feedback on this this report.

Finally, the CAMH Health Promotion Resource Centre would like to acknowledge Alison Crepinsek for her coordinating role in the development of this backgrounder document.

Setting the Stage: Impacts of Healthy Eating, Physical Activity and Sleep on the Whole Child

Public Health Ontario recently completed three Evidence Briefs (2,3,4) that speak to the impacts of healthy weights strategies, namely healthy eating, physical activity and sleep on the whole child. An Evidence Brief is a short document that summarises, in systematic fashion, the best available evidence to clarify the issues, to describe the potential impacts and to inform considerations about the issues. The concept of the whole child was derived from the World Health Organization's definition of health which includes components of mental and social well-being (1). These Evidence Briefs discuss linkages between strategies for addressing healthy weights in children and youth and child and youth mental health and well-being. A summary of key points from the briefs pertaining to each topic's impact on mental health and well-being in children and youth are listed below.

Summary of key points related to mental health and well-being from three Evidence Briefs:

HEALTHY EATING:
Although research is limited, there is some evidence to support a positive association between healthy eating and mental health and cognition. For example, evidence shows positive associations between breakfast consumption and cognition; e.g., a systematic review by Hoyland, Dye and Lawton (5) shows that breakfast consumption is more beneficial than skipping breakfast, particularly for children whose nutritional status is compromised.
There is also evidence to show associations between healthy eating and social well-being. For instance, Berge et al. (6) found positive interpersonal dynamics (e.g. affect management, communication, interpersonal involvement) during family meal times to be associated with higher vegetable (but not fruit) intake among adolescents.
Other research shows that psychosocial factors (including self-efficacy, a healthy eating attitude and motivation to change diet) are mediators of healthy eating. One study by Chu, Farmer, Fung, Kulhe, Storey and Veugelers (7) showed that having children assist with home meal preparation was associated with high self-efficacy for selecting and eating healthy foods. Research suggests that these factors, and subsequently dietary behaviour, can be positively influenced by education and social marketing (e.g., online interactive health promotion interventions framed in health behaviour change theory) (8, 9).

PHYSICAL ACTIVITY:
Although the evidence base for the association between physical activity and mental health is limited, there is evidence to support positive associations between physical activity and improvements in mental health in children and youth (10). For instance, a systematic review by Lees and Hopkins of randomized control trials of aerobic physical activity interventions for children demonstrated mental health outcomes including increased self-esteem and reduced depression (11).

Also, literature shows that play and participation in sports may be associated with improved social well-being. For instance, Eime et al. suggest participation in team sports may be associated with improved psychosocial health above and beyond those improvements associated with general physical activity

such as improved social interaction/integration and social skills (12). Similarly, Timmons, Naylor and Pfeiffer (2007) found playtime for preschool children aged 2-5 enhanced their emotional awareness and other social abilities, such as negotiation skills (13).

SLEEP:

Regarding the relationship between sleep and child and youth mental health, only two studies present relevant findings. A meta-analysis by Astill et al. found shorter sleep duration to be associated with more behavioural problems, both internalizing and externalizing, in children 5-12 years old (14). Chen et al. found significant negative associations among 13-18 year olds between inadequate sleep during school days and both 'life appreciation' and stress management, in addition to other health status related factors (taking responsibility for own health, healthy diet and regular exercise) (15).

The positive associations summarized from the three Evidence Briefs provide a starting point for discussing the integrated promotion of mental health and healthy weights in children and youth. The following section provides a brief overview and selected themes related to interventions and promising approaches from the published and grey literature. Gaps or opportunities for future exploration are also highlighted.

Overview and selected themes – Published and grey literature

The Centre for Addiction and Mental Health (CAMH) Health Promotion Resource Centre augmented the PHO Evidence Briefs with two additional searches of published and grey literature. The two searches were conducted on August 5, 2014 by PHO library services – to identify publications on integration of mental health and health promotion and to identify information about promising practices. The searchable question was:

"What are promising practices and initiatives that promote both healthy weights and mental health in children and youth?"

Methods are described in Appendix A.

Following a high-level overview of the selected peer-reviewed articles, emerging themes from both the published and the grey literature were described. The themes were derived from reports of successful practices or frequent examples of promising approaches in the published and grey literature through a content analysis. The themes were then further distilled into proposed implications for practice to help guide public health practice in Ontario in this area. To ensure the relevance of the proposed implications for practice, some preliminary feedback was received from public health and health promotion stakeholders working in areas relevant to child and youth mental health and healthy weights with the intention to build upon this section during the knowledge exchange forum.

Following the application of the inclusion and exclusion criteria, a total of 22 sources were included from these searches: 5 from the grey literature and 17 from the peer reviewed literature. The peer reviewed literature sources included in this backgrounder were from Canada (9), the United Kingdom (4) and Australia (4). All articles describing interventions occurred in urban or suburban settings and in major

cities such as Toronto, Calgary, Ottawa, London (UK), Sydney, Melbourne, Victoria and Queensland (Australia), or suburbs of these cities. Acknowledging this, a perceived gap in the literature may be the scarcity of research exploring mental health and healthy weight promotion programming in rural settings. Tables further summarizing the peer-reviewed literature and the grey literature outputs are available in Appendices B and C respectively.

The most dominant settings for practice were based in schools and in the community, although most interventions included in this backgrounder occurred in schools. The age range of participants in these projects was from as low as four years old to 18 years old. No interventions involving university-aged young adults (18+) were included in this backgrounder. The interventions mainly described outcomes and impacts on both boys and girls, however, at times, special attention was paid to one or the other if outcomes were different between the two groups. Future directions for research might include more targeted outreach to just females or males, however mixed samples allow for easy comparison between groups.

Common mental health outcomes associated with healthy weight promoting activities that were reported in the literature include: prevention or reduction of symptoms of depression and anxiety, reduction of mental health stigma, improved self-esteem, improved social skills and confidence and improved self-worth.

EMERGING THEMES: PROMISING APPROACHES TO PROMOTING MENTAL HEALTH AND HEALTHY WEIGHTS

In reviewing the literature, we sought to identify promising approaches that would be relevant to public health practice around promoting mental health and healthy weights. Approaches included here are those that emerged with frequency and were self-reported as being successful in terms of addressing healthy weights and impacting mental health outcomes. These approaches are listed and described below and reflect a snapshot of potential areas for promoting mental health and healthy weights through public health practice:

1) Mental health and healthy weights promotion in early childhood
2) Novel approaches such as using arts-based approaches
3) School-based initiatives that take a comprehensive approach and involve multiple stakeholders
4) Holistic approaches that promote healthy weights by promoting overall well-being
5) Strategies and approaches that create clear roles for professionals and other stakeholders by providing opportunities for collaboration and professional development

MENTAL HEALTH AND HEALTHY WEIGHT PROMOTION IN EARLY CHILDHOOD

The formative years from birth to age six are of critical importance to healthy physical, mental and emotional health. Consequently, the literature suggests that activities to promote mental health and healthy weights begin in early childhood. This is the time within the lifespan when children will learn and develop the most, so positive influences are greatest at a young age. Early childhood development programs and prevention-based initiatives beginning in early childhood support and foster children during this critical period to help build resiliency that lasts a lifetime (16, 17, 18, 19). For example, children who participated in the Better Beginnings (Ontario, Canada) project between the ages of 4 and 8 scored significantly higher than youth from the comparison sites on key indicators of mental health

when measured again in late adolescence (17). Features of this intervention include: child focused programming (before school breakfast program, recreation programs), family focused programming (family camps, workshops), and neighbourhood focused programs (leadership development, community events) occurring in disadvantaged neighbourhoods in Ontario. At this life stage, interventions focus on reducing symptoms of anxiety through play-based activities and occur typically in classroom or team settings with strong support from a variety of stakeholders including teachers, coaches, and parents. Early childhood interventions produce significant decreases in anxiety at post-intervention and further significant decreases at 12-month follow-up (18). As such, interventions that encourage play and learning-through-activity at an early age show positive effects on well-being in children. However, some research shows that there is a need for well-designed long term follow up procedures to maintain the sustained effect of these activities (20).

NOVEL APPROACHES

Some literature suggests the usefulness of incorporating novel approaches like expressive arts into health promotion programs both as a way to engage the target population and to promote wellbeing within that population. Indeed, novel approaches (i.e., adventure therapy, social marketing, use of internet-based tools) and activities that allow for creative expression (e.g., dance, unstructured play) generated some of the most positive outcomes for participants within the literature reviewed (21, 22, 23).

Not all children enjoy sport as a form of exercise and levels of activity decrease with age. In recognition of the falling levels of physical activity in children and young people, activities like dance are often used as an alternative to traditional team sports (24). Adolescents are more likely to engage in street dance as a form of physical activity over and above other forms of exercise. Outcomes include improved positive thinking, cooperation and solidarity, confidence, improved social skills, self-expression and sense of belonging (21).

Alternative approaches also present opportunities to engage low-income youth in mental health promotion programming as they often do not require special equipment and are often non-competitive activities suitable for all abilities. There is potential for fostering positive social involvement, a critical factor implicated in the promotion of physical activity and wellbeing among adolescents (21). That being said, individuals or families from a low-income bracket access physical activity/healthy living programming less so initiatives that reduce costs to participation are suggested (25).

SCHOOL-BASED INITIATIVES THAT TAKE A COMPREHENSIVE APPROACH AND INVOLVE MULTIPLE STAKEHOLDERS

The literature indicates that approaches that are community or school-based and co-led by a range of stakeholders show promise in promoting mental health and wellness in children and youth. They respond to the needs identified by the community, and are built into perceived gaps of organizations or communities. School mental health programs need to be integrated and coordinated with other school activities and suggest a need for ongoing, multi-faceted, multi-level interventions (20, 26, 27). For this reason, comprehensive wellness initiatives provide opportunities for educators and health promotion professionals to embed mental health promotion and capacity building activities.

As part of a comprehensive approach, collaboration is key in executing successful school and community-based mental health programming, particularly in communicating to education professionals that potential programming is relevant. When successful, planning processes engage a variety of stakeholders, including community development and health promotion teams, parents, educators and other stakeholders who shape the intervention together (28). Multiple variables must be considered and wellness interventions alone may not be enough to positively impact participants. Rather, a combined and multi-layered approach with ongoing educational and training opportunities may promote positive change (29).

HOLISTIC APPROACHES THAT PROMOTE HEALTHY WEIGHTS BY PROMOTING OVERALL WELL-BEING

The literature suggests a shift in the overall approach to how practices to promote healthy weights are delivered. Namely, the prevention of disordered eating and the prevention of obesity and overweight were two approaches discussed in the literature in relation to promoting healthy weights. In this context, the literature identifies a need to discuss these approaches and their related issues as linked. In turn, healthy weight promoting initiatives fall along a continuum rather than being addressed separately (23, 33, 31).

Promoting healthy weights is a complex issue and is best addressed by adopting a holistic, integrated approach to health meaning that multiple components of health are considered including physical, mental and emotional elements. This approach helps children develop healthy lifestyle attitudes and behaviors that are not based on weight but rather on achieving health. People who feel good about themselves and their bodies are more likely to have a healthy self-esteem and adopt healthy lifestyles attitudes and behaviors (36).

Within this perspective, it is suggested that weight loss might not be the 'gold standard' in healthy weight promoting initiatives. Moreover, improvements in body image and self-worth can be enhanced independent of weight loss simply by getting youth more physically active (23, 33, 31).

The literature also notes dieting is contraindicated for children and youth due to the associated mental and physical symptoms such as body dissatisfaction, lower self-esteem, growth retardation, pubertal delay, malnutrition, anemia, fatigue, anxiety, depression, decreased ability to concentrate and learn, and impaired performance in school (33). Further, behavioral or empowerment-based improvements are of benefit in themselves. Although, there is a need to better measure concepts like improved self-esteem and self-efficacy rather than measures like BMI and weight loss or gain (34).

STRATEGIES AND APPROACHES THAT CREATE CLEAR ROLES FOR PROFESSIONALS AND OTHER STAKEHOLDERS BY PROVIDING OPPORTUNITIES FOR COLLABORATION AND PROFESSIONAL DEVELOPMENT

The literature shows that it is necessary in community and school settings to set clear roles for professionals and other stakeholders by providing opportunities for collaboration and professional development. For instance, the literature highlights the tensions around the role of the educator in responding to mental health issues in the school setting (27, 30). Apprehensions arise around assigning educators the role of prescribing healthy eating/healthy weights messaging to children if educators are

not sensitized to the vulnerabilities children have to low appearance esteem, body satisfaction, and unhealthy dieting behaviors when delivered through a classroom setting (31). Others argue that teachers and school officials need to be involved (28, 29). Further, some eating disorder experts highlight the importance of education professionals and other service providers in understanding the potential unintended impacts of healthy weight interventions and messaging (31, 32). As such, there is a need for further collaboration across diverse stakeholders and better professional development opportunities for public health and front line practitioners.

Proposed Implications for Practice

The themes from the literature presented as promising approaches have implications for practice. Further derived from these themes and through initial discussion with public health stakeholders, these proposed implications for practice are outlined below.

1. The formative years from birth to age six are of critical importance to healthy physical, mental and emotional health. This is the time within the lifespan when children will learn and develop the most, so positive influences are greatest at a young age. Early childhood development programs that support and foster children during this critical period help to build resiliency that lasts a lifetime (16). Promoting mental wellbeing during childhood (from birth to 19-years-old) might be considered as a major priority for governments. Participating in healthy active living activities and promoting linkages to social networks and community resources are important to develop strong skills (19).

2. Mental health programming can be proactively included within curriculum related to health and physical education, and with support staff such as guidance counsellors providing support to students and promoting linkages to agencies providing services in schools (35).

3. It is possible to improve self-esteem through broad lifestyle approaches in a school environment. A clear mental health promotion curriculum and improvement of the school climate through wellness initiatives can support this. Teacher training to detect mental health concerns and facilitate appropriate interventions is supported (36).

4. Initiatives that provide increased opportunities to access recreation, through decreasing financial and transportation barriers while creating more supportive environments for physical activity are also supported, as it is noted that individuals or families from a low-income bracket access physical activity/healthy living programming less. Suggestions include creating more subsidized programming or expediting fee assistance applications so that families may enroll their children (25).

5. Incorporating non-traditional approaches to promoting mental health and healthy weights like expressive arts can be a way to engage children and youth populations and to promote wellbeing within those populations (21, 22, 23).

6. Increased flexibility and awareness by health professionals of shifts in their fields and how mental health is addressed and delivered – particularly in school settings would be helpful:
    - **For health professionals:** Paying explicit attention to the impacts of their activities, on *both* physical health *and* mental health, or adding an explicit concern for the determinants of mental health within their practice settings, as an easy and natural shift. Public health professionals more broadly have an important role as advocates and advisors (37).
    - **For educators:** Comprehensive school health approaches that include healthy physical environments and a supportive social environment can help promote positive mental health (38).

References

1. World Health Organization. WHO definition of health [Internet]. Geneva: WHO; c2003 http://www.who.int/about/definition/en/print.html.

2. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Evidence Brief: Whole Child Impacts and Interventions for Healthy Eating in 0-18 year olds. Toronto, ON: Queen's printer for Ontario, 2014.

3. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Evidence Brief: The Positive Impacts of physical Activity on the Whole Child. Toronto, ON: Queen's printer for Ontario, 2014.

4. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Evidence Brief: whole Child Effects and Interventions for Adequate Sleep, Sleep Disruption, Sleep Restriction, and Sleep Deprivation in 0-19 year olds. Toronto, ON: Queen's printer for Ontario, 2014.

5. Hoyland A, Dye L, Lawton CL. A systematic review of the effect of breakfast on the cognitive performance of children and adolescents. Nutr Res Rev. 2009;22(2):220-43

6. Berge JM, Jin SW, Hannan P, Neumark-Sztainer D. Structural and interpersonal characteristics of family meals: associations with adolescent body mass index and dietary patterns. J Acad Nutr Diet. 2013;113(6):816-22

7. Chu YL, Farmer A, Fung C, Kuhle S, Storey KE, Veugelers PJ. Involvement in home meal preparation is associated with food preference and self-efficacy among Canadian children. Public Health Nutr. 2013;16(1):108-12

8. Brug J, Oenema A, Kroeze W, Raat H. The internet and nutrition education: challenges and opportunities. Eur J Clin Nutr. 2005;59:S130-S139

9. Gordon R, McDermott L, Stead M, Angus K. The effectiveness of social marketing interventions for health improvement: What's the evidence? . Public Health. 2006;120(12):1133-9

10. Biddle SJ, Asare M. Physical activity and mental health in children and adolescents: A review of reviews. Br J Sports Med. 2011;45(11):886-95.

11. Lees C, Hopkins J. Effect of aerobic exercise on cognition, academic achievement, and psychosocial function in children: A systematic review of randomized control trials. Prev Chronic Dis. 2013;10:E174. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3 809922/

12. Eime RM, Young JA, Harvey JT, Charity MJ, Payne WR. A systematic review of the psychological and social benefits of participation in sport for children and adolescents: informing development of a conceptual model of health through sport. Int J Behav Nutr Phys Act. 2013;10:98. Available from: http://www.ijbnpa.org/content/pdf/1479-5868- 10-98.pdf

13. Timmons BW, Naylor P, Pfeiffer KA. Physical activity for preschool children -- how much and how? Can J Public Health. 2007;98 Suppl 2:S122- 34.

14. Astill RG, Van der Heijden KB, Van Ijzendoorn MH, Van Someren EJ. Sleep, cognition, and behavioral problems in school-age children: a century of research meta-analyzed. Psychol Bull. 2012;138(6):1109-38.

15. Chen MY, Wang EK, Jeng YJ. Adequate sleep among adolescents is positively associated with health status and health-related behaviors. BMC Public Health. 2006;8(6):59. Available from: http://www.biomedcentral.com/1471- 2458/6/59

16. Northwest Territories Health and Social Services. (2012). *A shared path towards wellness: mental health and addictions action plan* http://www.hss.gov.nt.ca/sites/default/files/a_shared_path_towards_wellness.pdf

17. Love N, Nelson G, Pancer SM, Loomis C, Hasford J. Generativity as a positive mental health outcome: the long-term impacts of better beginnings, better futures on youth at ages 18-19. Canadian Journal of Community Mental Health. 2013;32(1):155-69.

18. Pahl KM, Barrett PM. Preventing anxiety and promoting social and emotional strength in preschool children: a universal evaluation of the Fun FRIENDS program. Advances in School Mental Health Promotion. 2010;3(3):14-25

19. Caan W, Jenkins R. Integrating the promotion of child mental health into national policies for health sector reform. Journal of Public Mental Health. 2008;7(1):9-15.

20. O'Mara L, Lind C. What do we know about school mental health promotion programmes for children and youth? Advances in School Mental Health Promotion. 2013;6(3):203-24.

21. Harris N, Wilks L, Stewart D. HYPEd-up: Youth dance culture and health. Arts & Health. 2012;4(3):239-48.

22. Beaulac J, Kristjansson E, Calhoun M. 'Bigger than hip-hop?' impact of a community-based physical activity program on youth living in a disadvantaged neighborhood in Canada. Journal of Youth Studies. 2011;14(8):961-74.

23. Quin E, Frazer L, Redding E. The health benefits of creative dance: improving children's physical and psychological wellbeing. Education & Health. 2007;25(2):31-3.

24. Bungay H, Vella-Burrows T. The effects of participating in creative activities on the health and well-being of children and young people: A rapid review of the literature. Perspect Public Health. 2013;133(1):44-52

25. McNeil DA, Wilson BN, Siever JE, Ronca M, Mah JK. Connecting children to recreational activities: results of a cluster randomized trial. Am J Health Promot. 2009;23(6):376-87.

26. Firth N, Butler H, Drew S, Krelle A, Sheffield J, Patton G, et al. Implementing multi-level programmes and approaches that address student well-being and connectedness: factoring in the needs of the schools. Advances in School Mental Health Promotion. 2008;1(4):14-24.

27. Burns J, Boucher S, Glover S, Graetz B, Kay D, Patton G, et al. Preventing depression in young people. What does the evidence tell us and how can we use it to inform school-based mental health initiatives? Advances in School Mental Health Promotion. 2008;1(2):5-16.

28. Short KH, Weist MD, Manion IG, Evans SW. Tying together research and practice: using ROPE for successful partnerships in school mental health. Administration and Policy in Mental Health and Mental Health Services Research. 2012;39(4):238-47.

29. Laberge S, Bush PL, Chagnon M. Effects of a culturally tailored physical activity promotion program on selected self-regulation skills and attitudes in adolescents of an underserved, multiethnic milieu. Am J Health Promot. 2012;26(4):e105-15.

30. Hopkins L. Schools and adolescent mental health: education providers or health care providers? Journal of Public Mental Health. 2014;13(1):20-4.

31. Pinhas L, McVey G, Walker KS, Norris M, Katzman D, Collier S. Trading health for a healthy weight: the uncharted side of healthy weights initiatives. Eating Disorders. 2013;21(2):109-16.

32. McVey, G., Walker, K., Beyers, J. , Harrison, H., Simkins, S., Russell-Mayhew, S. Integrating weight bias awareness and mental health promotion into obesity prevention delivery: a public health pilot study. Preventing Chronic Disease. 2013; 10, E54

33. Goldfield GS, Mallory R, Parker T, Cunningham T, Legg C, Lumb A, et al. Effects of modifying physical activity and sedentary behavior on psychosocial adjustment in overweight/obese children. J Pediatr Psychol. 2007;32(7):783-93

34. Halton Region Departments of Health and Social & Community Services. (2009). Healthy eating, physical activity, body image and self-esteem: common messages discussion paper. www.halton.ca/common/pages/UserFile.aspx?fileId=44379

35. Perth District Health Unit. (2012). *Mental health promotion survey: summary report* http://www.pdhu.on.ca/assets/uploads/pages/file/PDHU%20Reports/Healthy%20Living%20Perth/Mental%20Health%20Promotion%20Survey%20Summary%20Report,%20November%202012.pdf

36. World Health Organization. (2002). *Prevention and promotion in mental health.* http://www.who.int/mental_health/media/en/545.pdf

37. National Collaborating Centre for Healthy Public Policy. (2014). *Defining a population mental health framework for public health* http://www.ncchpp.ca/docs/2014_SanteMentale_EN.pdf)

38. Simcoe Muskoka District Health Unit. (2013). *Promoting positive mental health in schools.* http://www.simcoemuskokahealth.org/JFY/Schools/SchoolAdministrators/SchoolWideInitiatives/MentalHealth.aspx

Appendix A. Literature Search Methods

Three databases (MEDLine, PsycINFO, and CINAHL) were searched for published literatures. Published literature search terms included: “Health Promotion”, “Mental Disorder”, “Mental Health”, “Primary Prevention”, and “Whole Child”. Grey literature search tools included custom search engines, specific site searches (i.e., cdc.gov and who.int), web search on google.ca, and reference list scanning.

From the published literature search, titles and abstracts of English-language articles were screened by one PHO reviewer. A list of relevant titles and abstracts were provided to the CAMH HPRC for further eligibility assessment. Next two CAMH HPRC reviewers scanned the literature to further identify potentially relevant materials and the final eligibility assessment and subsequent data extraction was done by one CAMH reviewer.

The list of grey literature was scanned by one PHO reviewer and potentially relevant links and materials were highlighted. The complete search result of grey literature sources was provided to the CAMH HPRC. Next two CAMH HPRC reviewers scanned the literature to further identify potentially relevant links and materials and the final eligibility assessment and subsequent data extraction was done by one CAMH reviewer.

The published and grey literature outputs were scanned and assessed by the CAMH HPRC reviewer according to the inclusion and exclusion criteria established by the research team.

Inclusion criteria:
Only articles from Canada, the United Kingdom (UK) or Australia were included because of the broad similarity between their education and health care contexts. Articles that focused on participants that were of school age (0-18 years) were included and programs that occurred in a school setting were accepted. Time-limited interventions and programs were also included, as were articles that described the presence of allied health professionals (e.g., public health and other service providers) as well as target populations that may be considered marginalized or face barriers in their everyday life (e.g., low socio-economic status).

Interventions or programs focused on treating mental health issues, behavioural issues and delinquent issues (all including a diagnosis) were accepted, as were articles that described the treatment of overweight and obese patients with mental health concerns including: low self-esteem, anxiety, coping, depression and body image issues.

Exclusion criteria:
Studies whose primary settings were clinical were excluded, as were articles that had a primary focus on alcohol and drug use.

Full text versions of the potentially relevant articles were retrieved by one CAMH HPRC reviewer. After the full text reading, the CAMH HPRC reviewer selected articles from the peer-reviewed literature to be included in this backgrounder. Relevant information was extracted from each included article by one CAMH HPRC staff member. Quality appraisal was beyond the scope of this backgrounder. Additional

articles from the grey literature sources were included to inform the forum planning and discussions, as well as highlight real-world examples.

Following a high-level overview of the selected peer-reviewed articles, emerging themes from both the published and the grey literature were described. The themes were derived from reports of successful practices or frequent examples of promising approaches in the published and grey literature through a content analysis. The themes were then further distilled into specific proposed implications for practice to help guide public health practice in Ontario in this area. To ensure the relevance of the proposed implications for practice, feedback was sought from public health and health promotion stakeholders working in areas relevant to child and youth mental health and healthy weights.

Appendix B. Summary - Peer Reviewed Articles

Source	Location	Setting	Target Population	Type/ Description of Intervention	Outcomes
Love N, Nelson G, Pancer SM, Loomis C, Hasford J. Generativity as a positive mental health outcome: the long-term impacts of better beginnings, better futures on youth at ages 18-19. Canadian Journal of Community Mental Health. 2013;32(1):155-69.	Ontario, Canada	Community	Children (4-8 years of age) living in economically disadvantaged neighbourhoods	• Study examined long-term impacts of the Better Beginnings, Better Futures project – a universal, community-based prevention program. • The Better Beginnings was implemented programs in 3 sites focusing directly on children, including in-class, in-school, before-after school, and holiday vacation programs (programs also implemented to focus on parents and whole neighborhood). Project goals: promote children's health, well-being, and development; reduce children's emotional and behavioral problems; strengthen parents, families and neighborhoods in responding to the needs of their young children • Quasi-experimental design using a narrative approach was used to compare youths aged 18-	• Generativity, which occurs as a stage of healthy adult development, was studied as a indicator of positive mental health • There were significant differences between the 2 groups found on 2 measures of generativity • There were strong associations between generativity and community involvement. • Encouraging youth to have connection to their community and care for others may help enhance generativity and as a result positive mental health • Findings demonstrate utility of adopting a narrative approach to evaluate the long-term outcomes of

				19 who participated in Better Beginnings with youths who did not participate as part of a long-term evaluation.	prevention programs for children and youth.
Burns J, Boucher S, Glover S, Graetz B, Kay D, Patton G, et al. Preventing depression young people. What does the evidence tell us and how can we use it to inform school-based mental health initiatives? Advances in School Mental Health Promotion. 2008;1(2):5-16.	Australia	School	Adolescents	• This article describes an intervention, *beyondblue* , that was used to engage whole school communities in the prevention of depression. • The authors make the case that a population health approach provides a theoretically sound framework around which to prevent depression.	• The results of the review demonstrate that changing the school ecology by building positive relationships can help to influence students' emotional well-being.
Firth N, Butler H, Drew S, Krelle A, Sheffield J, Patton G, et al. Implementing multi-level programmes and approaches that address student well-being and connectedness: factoring in the needs of the schools. Advances in School Mental Health Promotion. 2008;1(4):14-24.	Queensland, South Australia and Victoria	School	Adolescents	• A cluster randomized trial was conducted to evaluate the *beyondblue* schools research initiative. Article reviews qualitative process data from the evaluation to indicate important component so of implementation. • This research initiative developed a multi-level intervention designed to increase individual and social environment protective factors within the school community to reduce or prevent adolescent depression.	• When deemed successful, the project fit in with existing perceived needs such as by making links to academic success • Successful chool mental health programs integrated and coordinated with other school activities and suggest a need for ongoing, multi-faceted, multi-level interventions. •

				• Basic premise of intervention was that social connectedness builds individual resilience through the making o whole school change.	
Quin E, Frazer L, Redding E. The health benefits of creative dance: improving children's physical and psychological wellbeing. Education & Health. 2007;25(2):31-3.	Southampton, Hampshire, Isle of Wight and Portsmouth, United Kingdom	School	Children (school-aged)	• Study of pre- and post-assessments of physiological and psychological measures were conducted of a 10-week dance program.	• Evaluation of program suggests that creative dance increases the physical and psychological wellbeing of adolescents with effects on self-esteem, motivation and attitudes towards dance.
McNeil DA, Wilson BN, Siever JE, Ronca M, Mah JK. Connecting children to recreational activities: results of a cluster randomized trial. Am J Health Promot. 2009;23(6):376-87.	Calgary, Alberta, Canada	School	Children (Grades 3-5)	• The purpose of this study was to identify if outreach support increases school-aged children's participation in recreational activities. • The design of the study was a cluster randomized trial • The measure used was the Children's Assessment of Participation and Enjoyment (CAPE) as the primary measure at baseline, middle, and end	• Outcomes of the study demonstrated that children living in vulnerable neighbourhoods benefit from outreach workers who connect them with physical activity programs. • Many families did not complete the measures associated with self-esteem and psychosocial health (secondary

				of 1 year. Outcomes assessed were body mass index, child physical and psychosocial health, coordination, and self-esteem were measured	measures) and so this data is missing. • Low income also appeared to be a barrier to engagement.
Harris N, Wilks L, Stewart D. HYPEd-up: Youth dance culture and health. Arts & Health. 2012;4(3):239-48.	Cambridge, United Kingdom	Community	Youth	• This article describes an exploratory student that examined the potential of hip hop youth dance culture to engage disadvantaged youth in a 12-week program called HYPE: Hip Hop 1⁄4 • A qualitative, cross-section study design was used to examine participants' perceptions about the impact of the program on their physical, psychological and social well-being.	• The majority of participants reported that the program was a positive experience. • Participants cited that the program offered an opportunity to engage both with their peers and the broader community. • Findings support the conclusion that the arts are a tool in promoting youth health.
Goldfield GS, Mallory R, Parker T, Cunningham T, Legg C, Lumb A, et al. Effects of modifying physical activity and sedentary behavior on psychosocial adjustment in overweight/obese children. J Pediatr Psychol. 2007;32(7):783-93	Ottawa, Canada	Community	Children (8-12 years old)	• The aim of this randomized control trial study was to examine the effects of an 8 week intervention designed to increase physical activity while reducing TV viewing on changes in physical self-perceptions and global self-worth in overweight/obese children, and evaluate the degree to which this relation- ship is	• Data from the current study indicate that increases in overall physical activity are associated with improvements in body satisfaction, perceived physical conditioning, and perceived physical self-worth, and these psychological benefits were

				influenced by changes in body composition.	independent of reductions in BMI.
Laberge S, Bush PL, Chagnon M. Effects of a culturally tailored physical activity promotion program on selected self-regulation skills and attitudes in adolescents of an underserved, multiethnic milieu. Am J Health Promot. 2012;26(4):e105-15.	Montreal, Quebec, Canada	School	Children (Grade 8)	• This study used a quasi-experimental approach to assess the impact 45 minutes of daily physical activity (i.e. the FunAction program (on specific self-regulation skills and attitudes including: self-control, self-esteem, attention/concentration, social competence, and interethnic relationships using a social marketing approach (e.g. focusing on fun and taking into account youth preferences).	• Significant improvements were observed only in attention/concentration. • Social marketing principles can help encourage adolescents from underserved, multiethnic milieus to participate in physical activity during their lunch hour.
Beaulac J, Kristjansson E, Calhoun M. 'Bigger than hip-hop?' impact of a community-based physical activity program on youth living in a disadvantaged neighborhood in Canada. Journal of Youth Studies. 2011;14(8):961-74.	Ottawa, Ontario, Canada	Community	Youth (11-16 years old)	• Qualitative study (i.e. interviews, focus groups) to determine whether a 13-week hip-hop dance program was associated with improved well-being for adolescents living in a multicultural, socio-economically disadvantaged urban community in Ottawa	• Adolescents, parents and/or personnel described benefits across seven main areas, including dancing and related skills, behaviours (e.g. reduced television viewing), physical well-being, psychological well-being, relationships, respect for others and for diversity, and school performance.

					• This community-based hip-hop dance program may be an effective and relevant program for the promotion of physical activity and positive development among lower-income and culturally diverse urban youth.
Pinhas L, McVey G, Walker KS, Norris M, Katzman D, Collier S. Trading health for a healthy weight: the uncharted side of healthy weights initiatives. Eating Disorders. 2013;21(2):109-16.	Toronto, Ontario, Canada	Hospital/community	Youth (13-14 years old)	• This article is a case series of four children seen at specialized eating disorder clinics. As each child attributed eating pattern changes to information garnered from school-based healthy eating curricula, the unanticipated consequences of these initiatives are described and alternatives are discussed.	• The adoption of more ecological approaches that acknowledge the social determinants of health may reduce the risk of triggering disordered eating as it aims to build resilience in the context of weight-related programs. • There is a need to promote health, regardless of size. • Professional development opportunities are important for sensitizing adult role models like teachers to food, weight and shape discussions.
Pahl KM, Barrett PM. Preventing anxiety and	Queensland, Australia	School	Children (4-6 years old)	• This article describes an	• Children in both

promoting social and emotional strength in preschool children: a universal evaluation of the Fun FRIENDS program. Advances in School Mental Health Promotion. 2010;3(3):14-25				evaluation of a school-based, universal preventative intervention program for preschool children. The Fun FRIENDS program aims to teach children cognitive-behavioural strategies in a play-based manner to prevent anxiety and to increase social and emotional strength • Two intervention conditions were used: Intervention Group (IG) and Waitlist Intervention Group (WIG)	intervention conditions (IG and WLG) had improved significantly on anxiety at post-intervention. • Nearly significant decreases in anxiety were found at post-intervention and further significant decreases were found at 12-month follow-up. • Improvements were found at all time points for girls but not for boys.
Bungay H, Vella-Burrows T. The effects of participating in creative activities on the health and well-being of children and young people: A rapid review of the literature. Perspect Public Health. 2013;133(1):44-52	Cambridge, United Kingdom	Community and school	Children (11-18 years old)	• A rapid review search was conducted systematically and 20 papers on research related to music, dance, singing drama and visual arts were included. • The search yielded 20 papers. Given the diversity of papers, the findings were organizing into the headings of sexual health, obesity, mental health and emotional well-being.	• It was found that participating in creative activities can have a positive effect on behavioural changes, self-confidence, self-esteem, levels of knowledge and physical activity
O'Mara L, Lind C. What do we know about school mental health promotion	Calgary, Alberta, Canada	School	Children (6-18 years old)	• Using an integrative review approach, two	• Authors conclude that mental health

programmes for children and youth? Advances in School Mental Health Promotion. 2013;6(3):203-24.				authors searcher 11 selected databases, and hand-searched an additional 15 journals to answer the question: "What is the state of school-based mental health promotion literature reviews published in selected databases in the English language from 1998 to 2010?"	promoting practice that involves whole school approaches using inter-sectoral partnerships shows the most promise for lasting impact. • Interventions associated with positive outcomes include those that are aimed more broadly at promoting mental health (rather than preventing mental illness), adopt interventions continuously (over one year), aim to involve changes to the school climate (rather than deliver brief person-centered programs), extend beyond practice in the classroom, focus on improving self-esteem and address self-concept and coping as a general approach to curriculum. • Study populations are limited and many studies lack clarity.
Caan W, Jenkins R.	Cambridge, United	Community	Children (0-19	• This article reports on	• Recommendations

Integrating the promotion of child mental health into national policies for health sector reform. Journal of Public Mental Health. 2008;7(1):9-15.	Kingdom		years old)	recommendations suggested by a workshop held in London in 2006, organized by the World Health Organization Collaborating Centre, Institute of Psychiatry, King's College London. • The workshop considered the core components of effective methods of integrating mental health within health and other public sectors.	from the workshop include addressing the various developmental stages related to child mental health including: • Birth to five years old; • Five to eleven years old; • 11-19 years old
Hopkins L. Schools and adolescent mental health: education providers or health care providers? Journal of Public Mental Health. 2014;13(1):20-4.	Melbourne, Australia	School	Secondary school students	• This study aims to uncover the ways in which schools and other education providers are responding to mental health issues through both prevention and treatment. • The project took a qualitative approach to gathering data from student support staff based in schools and out-of-schools learning settings using (i.e. focus groups)	• The project found that early intervention to prevent and avoid mental illness and mental distress amongst secondary school students is usually a reactive, piecemeal approach • Individual schools and learning providers are responding to issues in a variety of ways, along a continuum of care.
Short KH, Weist MD, Manion IG, Evans SW. Tying together research and practice: using ROPE for successful	Ottawa, Ontario, Canada; South Carolina, USA; Ohio, USA	School	Children and youth	• This article draws on literature and practice examples to explore the role of research partnerships in bringing	• The authors cite that researchers and practitioners working collaboratively can enhance the

partnerships in school mental health. Administration and Policy in Mental Health and Mental Health Services Research. 2012;39(4):238-47.				research and practice connected to enhancing the mental health of children and youth in school settings together.	likelihood that school mental health programming will be as relevant as possible to education professionals. • Engaging a diversity of stakeholders to shape interventions and research can support uptake of these activities • Researchers and educators can support one another to develop the infrastructure (e.g. training, coaching, fidelity management) to implement practices.
McVey, G., Walker, K., Beyers, J. , Harrison, H., Simkins, S., Russell-Mayhew, S. Integrating weight bias awareness and mental health promotion into obesity prevention delivery: a public health pilot study. Preventing Chronic Disease. 2013; 10, E54	Ontario, Canada	Community	Public health promoters; children and youth	• A full-day workshop was conducted with Ontario public health promoters to raise awareness about 1) weight bias and its negative effect on health; 2) ways to balance healthy weight messaging to prevent the triggering of weigh and shape preoccupation, and 3) the incorporation of mental health promotion in healthy weight messaging.	• The researchers conclude that the workshop training was associated with decreases in anti-fat attitudes and the internalization of media stereotypes around thinness. • Healthy weight messaging was improved by learning to avoid messages that trigger weight and shape preoccupation/unhe

				• A survey at preintervention, postintervention, and follow up was conducted to evaluate the workshop.	althful eating practices among children and youth • Participants also identified learning ways to integrate mental health promotion and resiliency-building into their practice.

Appendix C. Summary – Grey Literature Sources

Source and URL	Description
Halton Region Departments of Health and Social & Community Services. (2009). Healthy eating, physical activity, body image and self-esteem: common messages discussion paper. www.halton.ca/common/pages/UserFile.aspx?fileId=44379	The purpose of this document is to support public health staff of Halton Region to provide consistent, clear recommendations and information for the public on issues of weights, healthy eating, physical activity, body image and self-esteem.
National Collaborating Centre for Healthy Public Policy. (2014). *Defining a population mental health framework for public health* http://www.ncchpp.ca/docs/2014_SanteMentale_EN.pdf	This briefing document outlines a population mental health framework for public health. In particular, the document responds to the questions: 1) What would the role of public health be in advancing population mental health? 2) How could we define a population mental health framework for public health?
Perth District Health Unit. (2012). *Mental health promotion survey: summary report* URL no longer available	Please contact Perth District Health Unit for more information.
Simcoe Muskoka District Health Unit. (2013). *Promoting positive mental health in schools.* http://www.simcoemuskokahealth.org/JFY/Schools/SchoolAdministrators/SchoolWideInitiatives/MentalHealth.aspx	This webpage describes Simcoe Muskoka District Health Unit's approach to promoting positive mental health in schools. It identifies that the most effective way for school communities to ensure the best possible outcomes in support of children and youth is to use a comprehensive approach.
World Health Organization. (2002). *Prevention and promotion in mental health.* http://www.who.int/mental_health/media/en/545.pdf	This document is based on deliberations of a World Health Organization meeting and other additional sources highlighting basic issues in the field of prevention and promotion of mental health with special reference to the evidence base.