

Childhood Healthy Weights Intervention Initiative

SHIFTING

THE DESTINATION

BY SHIFTING THE
TRAJECTORY

EVALUATION REPORT



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Introduction

Departures from a healthy weight trajectory¹ are becoming a common occurrence among Canadian children and teens. These children are more likely to become obese adults and thus more likely to experience compromised health due to chronic disease, contributing to growing personal and health care costs. It isn't only the future that is impacted. Studies have shown that obese children are more likely to have a reduced quality of life and are at a greater risk of being teased, bullied and socially isolated. There is a growing body of evidence pointing to the benefits of family-based intervention programs for children and teens who are departing from the healthy weight trajectory.

The Childhood Healthy Weights Intervention Initiative ("the Initiative") offered family-based programming to help families with overweight or obese children shift their own lifestyle trajectories so that more children and teens attain and remain at a healthy weight. It was led by the Childhood Obesity Foundation in partnership with the Province of British Columbia (BC). The Initiative provided free access to three interventions that help BC families increase healthy eating and physical activity behaviours to promote healthy weights.

Background

The Initiative represented the culmination of several years of planning and coordination by many parties. Its objectives were to:

- *expand the Shapedown BC program to all health authorities* – to support families with children and teens who were obese and/or overweight and experiencing co-morbidities and complications
- *introduce MEND (Mind, Exercise, Nutrition, Do it!) in BC* – to support families with children who were obese or overweight
- *provide integrated telehealth support through DietitianServices@HealthLinkBC and the Physical Activity Line (PAL)* – telephone-based services for families with obese or overweight children and teens who have limited access to the direct, in-person supports described above

This report presents cumulative evaluation findings for two of these objectives. It reports on the Shapedown BC and MEND programs delivered from Winter 2013 through Spring 2014, the first four cycles of the Initiative. During this time, the Initiative offered Shapedown BC in five sites² (one in each health authority region) and MEND in 17 sites around the province. Five communities offered both MEND and Shapedown BC.

The Initiative is considered to be a demonstration project³. This term acknowledges the Initiative's focus on learning, adaptation and quality improvement. The Initiative is grounded in the principle that families are the core of the change strategy to address healthy weights; family-based approaches have been found to be the preferred intervention to address childhood obesity. The Initiative's approach is aligned with new guidelines from the Canadian Task Force on Preventive Health Care to help prevent and manage obesity in children and youth under age 18. These guidelines recommend that primary care practitioners should monitor regular growth and offer or refer children who are overweight or obese to structured behavioural programs aimed at achieving healthy growth.

¹ Note: A healthy weight trajectory is where height and weight change proportionally together as children develop. When children are off trajectory their weight gain is disproportionate to their change in height, denoting the acquisition of body fat that is not essential and in fact detrimental to healthy development and health overall.

² Although it is out of scope for this evaluation, since Fall 2014 a cultural and language adaptation of Shapedown BC for the ethnic Chinese has been offered in a sixth location; in Richmond BC through Vancouver Coastal Health.

³ Demonstration projects "provide the means to introduce and experience innovative ideas and approaches and prepare the way for replication and up-scaling" [18].

Methodology

The evaluation examined issues of Reach, Effectiveness, Adoption, Implementation and Maintenance, often referred to as the 'RE-AIM' Framework. The evaluation used multiple lines of evidence and both process and outcome evaluation practices. Evaluators collected and analyzed data from a variety of qualitative and quantitative sources including participant surveys, reports, stakeholder interviews, the Shapedown BC database, MEND's Operations Management and Monitoring System (OMMS)⁴, and other sources. A cultural and language adaptation of Shapedown BC for the ethnic Chinese undertaken as part of the Initiative is not in scope for this evaluation. Neither is the telehealth-based HealthLink BC Eating and Activity Program for Kids (HEAPK). These programs will be evaluated at a later date.

Shapedown BC

Shapedown BC is a clinically-based, effective weight management program delivered by health authorities with support from the Centre for Healthy Weights at BC Children's Hospital (Provincial Health Services Authority). A medical referral is required. A comprehensive multidisciplinary⁵ assessment determines a family's readiness to fully participate. The intervention is available to families as individual counselling and 10-week group programs, or as a modified group program. Group interventions are age clustered. Follow-up support is available to all participants. Participating families are also given free passes to their local YMCA or BC Recreation and Parks Association (BCRPA) member recreation centre for a period of three months after program completion.

SHAPEDOWN BC REACHED DIVERSE FAMILIES

Shapedown BC staff used an array of communication strategies to raise awareness about their programs. In total, 555 children and teens were referred to Shapedown BC between January 2013 and June 2014; the majority were eligible for the program. Shapedown BC teams completed 323 comprehensive intake assessments during this time and provided 246 referrals to specialists or community services.

In total, 171 eligible children and teens participated in 22 Shapedown BC group interventions between April 2013 and June 2014. Boys and girls participated almost equally. Almost all (94%) Shapedown BC children and teens presented at intake with a BMI-for-age at 97th percentile or above. Children and teens from both single-parent and two-parent families participated. Participants' families represented a variety of ethnicities and reported a range of income levels.

Shapedown BC achieved high participant retention and attendance levels. The programs had an overall retention rate of 84% – 143 children and teens were retained during these group interventions. More than two-thirds of the children, teens and their families who commenced attended 70% or more of the group sessions. Shapedown BC programs also provided families with more than 100 individual dietitian or mental health counselling sessions.

CHILDREN, TEENS AND FAMILIES MADE HEALTHY LIFESTYLE CHANGES DURING SHAPEDOWN BC

Among those participating in group interventions and for whom both pre-and post-measures were available, the analysis found statistically significant positive changes in:

- quality of life
- parental confidence

⁴ Operations Management and Monitoring System (OMMS) is used to organize, deliver and monitor MEND programs.

⁵ The Shapedown BC team consists of a dietitian, mental health professional, physician, exercise specialist and administrative assistant.

- anthropometric measures
- children's physical activity
- teen's physical appearance scale
- select nutrition indicators including both consumption and eating habit changes

Most (92%) of 173 participants completing feedback forms expressed overall satisfaction with their interventions. They also reported that they found activity and exercise, diet and nutrition information helpful for staying on track with their Shapedown BC goals.

HEALTH AUTHORITIES CONTINUE TO IMPLEMENT SHAPEDOWN BC

Four regional health authorities and the Provincial Health Services Authority (BC Children's Hospital) took part in the Initiative. Additional programs were delivered in Fall 2014 and Winter 2015 and more are planned for Spring 2015⁶. Potential program enhancements include reducing data collection requirements, advancing communication and engagement initiatives and exploring modified service delivery models with other sub-populations.

MEND

MEND is a community-based, evidence-based program. MEND programs are age-specific and BC implemented the MEND 7-13 and MEND 5-7 programs. Families self-refer to the program. Key Initiative delivery partners include the YMCA of Greater Vancouver, BCRPA, and participating YMCA and BCRPA member recreation centres. MEND is delivered by trained leaders with recreation and/or health backgrounds. The programs run for 10 weeks and are offered throughout the province by local teams out of venues such as community centres and schools. Participating families are given free passes to their local YMCA or BCRPA member recreation centre for a period of three months after program completion. Families also receive two years of access to 'MEND World', an online resource.

MEND 7-13 REACHED A BROAD DEMOGRAPHIC

A wide variety of strategies were used to promote MEND locally and provincially. Recruitment efforts resulted in 553 documented⁷ inquiries to MEND sites about the MEND 7-13 programs and 351 eligible children enrolled in MEND 7-13.

From April 2013 to June 2014, 329 eligible children commenced 33 MEND 7-13 programs. Boys and girls participated almost equally. Most MEND participants (84%) had a BMI-for-age above the 97th percentile. They came from both two-parent and single parent families. Participants' families represented a variety of ethnicities and had various annual household income levels. Parents of participants had varying education levels.

Retention was high; MEND 7-13 had an overall retention rate of 78% (255 children). More than two-thirds of the children and their families who commenced attended 70% or more of the sessions.

The evaluation found recruitment to be challenging for a variety of reasons including the project's initial implementation timeline. Another perceived challenge was that the need for a healthy weights intervention did not appear to resonate with some eligible families; some stakeholders believed that many parents do not recognize that their children are departing from the healthy weight trajectory and can benefit from an intervention.

⁶ For a variety of reasons, the Prince George Healthy Children and Families: Shapedown BC program is not running in 2015. Northern Health plans to stay connected with developments and opportunities in healthy weights programming.

⁷ It is likely that additional inquiries (telephone or in-person) were made to recreation centres though not recorded and shared with MEND program staff for reporting purposes.

MEND 7-13 PARTICIPANTS MADE HEALTHY LIFESTYLE CHANGES

Among those participating in MEND 7-13 and for whom both a pre-and post-measure were available, the analysis found statistically significant positive changes in the following:

- *nutrition* – nutrition scores, servings of vegetables and fruit and other nutrition indicators
- *physical activity* – hours of physical activity per week and children's physical activity scores
- *sedentary behaviour* – hours of screen time per week
- *psychological well-being* – emotional distress, body-esteem, self-esteem
- *anthropometry* – child BMI and BMI z-score, child waist circumference, parent BMI

Overall, families and program staff were satisfied with MEND 7-13 and its programming.

MEND 5-7 RECRUITMENT WAS PARTICULARLY CHALLENGING

The MEND 5-7 interventions commenced one year later than MEND 7-13 programs began. Based on experiences with MEND 7-13 in BC, and with MEND 5-7 in other jurisdictions, the Initiative anticipated recruitment challenges. MEND 5-7 broadened the eligibility criteria to include children with a BMI-for-age above the 85th percentile as well as healthy weight children who had risk factors such as overweight or obese parents. Despite the broadened criteria, recruitment was very challenging, labour intensive and had limited success.

Twenty-five children attended three MEND 5-7 programs. Of these children, 88% (22) were retained in the program.

MEND 5-7 PARTICIPANTS MADE HEALTHY LIFESTYLE CHANGES

Families made changes towards healthy lifestyles during MEND 5-7 and planned to make further changes after finishing the program. Parents increased consumption of vegetables and fruits after MEND 5-7. Many parents felt less stressed about feeding their children after MEND 5-7. They also felt their child's confidence and their own parenting confidence improved after MEND 5-7. Overall, families and program staff were satisfied with MEND 5-7 programming.

THE FOUNDATION FOR SUCCESSFUL LONGER-TERM MEND IMPLEMENTATION HAS BEGUN TO BE ESTABLISHED

Overall, MEND service delivery partners interviewed (for both MEND 7-13 and MEND 5-7) were pleased to participate in MEND's implementation. Seventeen communities offered MEND programming during the scope of the evaluation. Additional programs ran in Fall 2014 and Winter 2015 and more are planned for Spring 2015.

MEND is in an early stage of integration with community and health services. Challenges associated with recruitment need to be addressed in order for more BC families to benefit from MEND. Also, changes to the curriculum are needed to address staff and stakeholder concerns about enhancing the program's relevance for food insecure families, and First Nations families and communities, while maintaining the elements of the program that participants liked.

Strengths and Limitations

The evaluation's strengths included its high external validity, use of valid and reliable instruments, pre-existing evidence base, comprehensive datasets, multiple lines of quantitative and qualitative data, and evaluation working group. Its limitations included a lack of control groups, quantitative follow-up data and feedback data from those who were not retained in the program or did not complete forms. For some Shapedown BC measures only a small sample of pre-and post data were available for data analysis. And, only a small number of children participated in MEND 5-7. As a result, data analyses were underpowered to detect significant change in outcomes for some Shapedown BC measures and for the MEND 5-7 program.

Discussion of Key Findings

Shapedown BC and MEND share common characteristics in their approaches to supporting BC children — both focus on families as the core of the change strategy and encourage healthy eating and physical activity to address overweight and obesity. The evaluation found that the two programs had many similar implementation experiences and outcomes. The Childhood Obesity Foundation and its partners were able to plan, launch, deliver and evaluate Shapedown BC and MEND programming at 22 demonstration sites around the province. This was achieved in just over two years.

Shapedown BC and MEND were effective after scale up in BC. Both intervention programs reached diverse demographics. Families who participated in Shapedown BC and MEND were satisfied with their interventions and made lifestyle changes. Once people enrolled, the programs were well attended and retention was comparable to previous evaluations of Shapedown BC, MEND, and with interventions for pediatric chronic conditions. Participating families and program staff were enthusiastic about the programs and satisfied with the content.

The Initiative offered programming for both overweight and obese participants. However, it primarily served families with children and teens who were at the uppermost end of the weight continuum⁸; the majority of children and teens who participated in Shapedown BC and MEND 7-13 were obese. A variety of factors facilitated and challenged family participation in Shapedown BC and MEND. These included program locations, age group offerings and schedules as well as family readiness and family circumstances including other time commitments.

Despite significant effort being expended to disseminate information about Shapedown BC and MEND, recruitment was the greatest challenge encountered during the Initiative. Stakeholders commented on the inherent challenges of introducing a new program to any community. As well, some stakeholders believed registration was subdued due to parents' attitudes about their children's weights, such as parental concerns about stigmatizing children and teens by 'naming the problem'. Some stakeholders also proposed that interventions targeted at overweight and obese children and teens promoted weight stigma or had an inherent weight bias. It is important to note, however, that once parents experienced 'triggers for change', such as weight affecting other areas of their child or teen's life, they sought an intervention—and retention was high. The Initiative's experience, and that of others, suggests that multiple strategies are needed to reach and attract families who can benefit from the interventions.

Both Shapedown BC and MEND program staff valued the training and ongoing practice and technical support they received. Shapedown BC and MEND program staff would like to see reduced data collection requirements. Further, there is a desire among key partners for ongoing communication and engagement with the Initiative.

⁸ The World Health Organization (WHO) standard for overweight children is defined as a BMI-for-age between 85th and 97th percentiles; for obese children it is above the 97th percentile. Above a healthy weight is defined as a BMI-for-age above the 85th percentile, as per WHO growth curves.

Conclusions

The Childhood Healthy Weights Intervention Initiative successfully addressed identified gaps in services for children and teens who were departing or had already departed the healthy weight trajectory. The Initiative used a family-focused, multi-agency approach to addressing childhood obesity. Supportive programs were delivered across the province, attracting a range of families most of whom were satisfied with the programs and who experienced healthy lifestyle changes.

This evaluation showed that the successful scale up was achieved, in part, as a result of quality programming and delivery using a partnership approach. The province-wide scale up of Shapedown BC and MEND provides a template for other initiatives and jurisdictions and sheds light on the partner-guided course corrections that are important to long-term sustainability of such programs.

The Province and BC agencies are working together to help shift the healthy weight trajectory to ensure more children are destined to become adults who enjoy positive health outcomes.

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Childhood Obesity Foundation's Mission and Vision

Our mission is to lead a societal shift toward healthy eating and active lifestyles to reduce childhood obesity and the resulting physical and emotional impacts.

Our vision is children and youth of Canada free of chronic diseases that ensue from obesity.

1.0 INTRODUCTION

Departures from a healthy weight trajectory⁹ are becoming a common occurrence among Canadian children and teens — obesity rates in teens have tripled in 25 years [1, 2], and one-third of Canadian children and youth are now overweight or obese [3]. If left unchecked, research shows that these children are more likely to become obese adults and thus more likely to experience compromised health due to chronic disease, contributing to growing personal and health care costs [4]. But it isn't only the future that is impacted by childhood obesity. Studies have shown that obesity contributes to neurocognitive damage in children [5], they are more likely to have a reduced quality of life and are at a greater risk of being teased, bullied and socially isolated [6].

These are sobering concerns and they warrant a considered, tailored and sustained response. Although universal health promotion and prevention programs and policies in childcare, schools and community are essential, they are likely not enough support for children and teens who have already departed the trajectory. There is a growing body of evidence pointing to the benefits of family-based intervention programs for children and teens who are departing from the healthy weight trajectory [7].

In 2012/13, 37% of Canadian 12-17 year olds and 26% of children aged 5-11 were overweight or obese [20].

The Childhood Healthy Weights Intervention Initiative (“the Initiative”) was developed to support British Columbian families with children and teens who are departing or have departed from the healthy weight trajectory and need help to get back on track. It was led by the Childhood Obesity Foundation in partnership with the Province of British Columbia (BC). The Initiative supports the government's public health strategy, Healthy Families BC, that focuses on leadership, prevention and health improvement for BC families and their communities.

One of the aims of the Initiative is to help families with overweight or obese children shift their own lifestyle trajectories so that more children and teens attain and remain at a healthy weight. The Initiative provides free access to three interventions that help families increase healthy eating and physical activity behaviours to promote healthy weights.

How the report is organized

Section 2.0 presents the background to the Initiative and describes how the different interventions offer multiple pathways for families to follow. The evaluation's methodology is outlined in Section 3.0, including project scope and an evaluation overview. Section 4.0 presents an overview and findings for Shapedown BC. Section 5.0 is an overview and findings for MEND 7-13 and MEND 5-7. The evaluation's strengths and limitations are outlined in Section 6.0. A discussion of key findings is presented in Section 7.0 and overarching conclusions in Section 8.0.

⁹ Note: A healthy weight trajectory is where height and weight change proportionally together as children develop. When children are off trajectory their weight gain is disproportionate to their change in height, denoting the acquisition of body fat that is not essential and in fact detrimental to healthy development and health overall.

2.0 BACKGROUND



The Initiative is the culmination of several years of planning and coordination by many parties. These individuals and agencies brought diverse perspectives to the complex problem of childhood obesity, while sharing a common goal. This section describes the impetus for the Initiative and explains how it was intended as a tailored response to different types of BC families who are seeking support for their overweight and obese children and teens.

Over the past decade government and other public health stakeholders have invested in strategies to prevent childhood obesity by promoting physical activity and healthy eating in the settings where children spend their time. School Daily Physical Activity and Food Sales Guidelines, Action Schools! BC and the BC School Fruit and Vegetable Nutrition Program are examples of such programs. Although they have an important role to play, these universal approaches do not provide the targeted support that is necessary to assist families with children who are off the healthy weight trajectory. In many jurisdictions, including BC, parents whose children had left the healthy weight trajectory and who recognized the need for change had nowhere to turn for a targeted approach. In 2006, the Province responded to this need by supporting Shapedown BC at BC Children's Hospital's Centre for Healthy Weights (Provincial Health Services Authority). Shapedown BC provides free, multi-disciplinary, family-based support for children and youth. An opportunity for more comprehensive action to address service gaps emerged in 2010 when the Federal/Provincial/Territorial Ministers of Health committed to championing strategies to identify and address overweight and obesity in children. In BC, this mobilized several organizations and consequently various activities were initiated.

In 2011, BC adopted and disseminated the new World Health Organization (WHO) child growth reference standards [8] for monitoring childhood weight trajectories. In 2012, key stakeholders began to discuss the potential of scaling up Shapedown BC from its Lower Mainland-based delivery model to other BC health authority regions. In addition, Child Health BC (Provincial Health Services Authority) took the lead in developing a clinical care pathway that helps care providers to identify and care for overweight and obese children and youth.

Also in 2012, the Childhood Obesity Foundation was approached by the Ministry of Health to develop and lead a province-wide family-focused childhood healthy weights intervention program through a demonstration phase. The program was intended to attend to three service gaps or goals:

1. support for families with children and teens who were obese and/or overweight and experiencing co-morbidities and complications
2. support for families with children who were obese or overweight

-
3. telehealth services for families with obese or overweight children and teens who have limited access to the direct, in-person supports described above

The Province and its stakeholders explored childhood obesity programming options and identified three existing programs that could help to achieve these goals. All three programs focus on overall health and well-being rather than on weight-based outcomes and serve families who have children and teens who are obese or overweight.

Shapedown BC's established, evidence-based programming was selected to address the first goal—clinical-based support for children and teens who were obese or overweight and/or overweight and experiencing co-morbidities and complications, including psychosocial issues.

Goal two was to be addressed by MEND (Mind, Exercise, Nutrition, Do It!)¹⁰, an evidence-based program from the United Kingdom. MEND was selected to be part of the Initiative because it was community-based and considered to be ideal for children who were overweight or obese and did not need the intensive services of Shapedown BC. MEND is a family-based program that provides free healthy lifestyle and learning activity sessions for children. It was adapted in 2011 to align with Canadian nutrition and policy guidelines and was being implemented in the provinces of Alberta and Saskatchewan.

Finally, the third goal was to be met through the BC Ministry of Health's DietitianServices@HealthLinkBC and the Physical Activity Line (PAL). Both of these telehealth-based services offer specialized pediatric healthy weights coaching.

Once the program interventions were confirmed, the Childhood Obesity Foundation established specific program objectives for the Initiative, which were to:

1. expand the Shapedown BC program to all health authorities
2. introduce MEND in BC
3. provide integrated telehealth support through DietitianServices@HealthLinkBC and the Physical Activity Line (PAL)

Detailed descriptions for two of the three intervention programs are provided in Sections 4.0 (Shapedown BC) and 5.0 (MEND), including eligibility criteria, screening, curriculum, evaluation and outcomes.

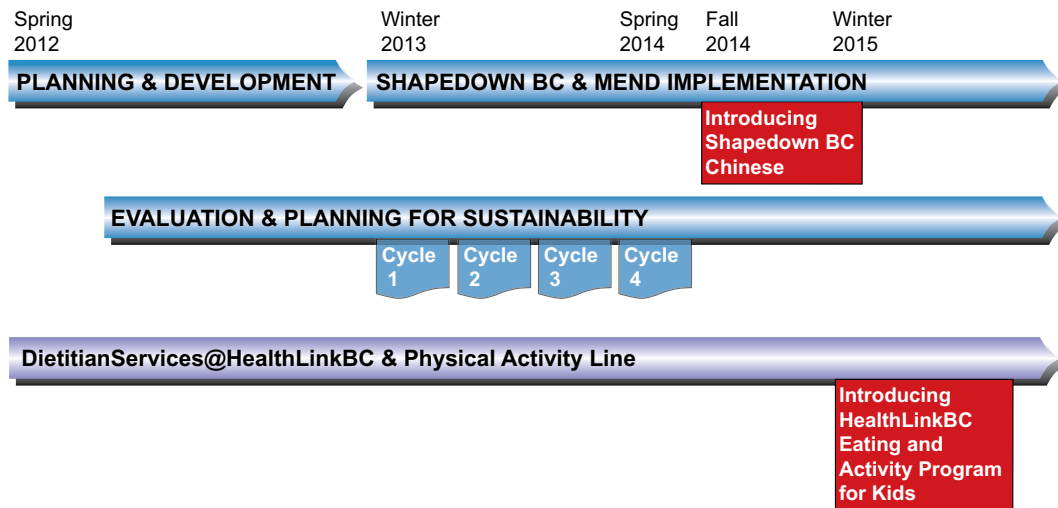
In February 2015, the Ministry of Health launched the third program under the Initiative; integrated telehealth services. The HealthLink BC Eating and Activity Program for Kids (HEAPK) is a free, telephone-based intervention to help BC children, teens and their families reach healthy weights and improve their overall health and quality of life. This program utilizes evidence-based best practices and is particularly suited to families who cannot access an in-person program, or who need additional support. By reducing geographic or resource-based barriers to accessing an in-person program, HEAPK can reach children and families in rural and remote areas of BC. This third intervention under the Initiative is out of scope for this evaluation.

Timelines and key milestones

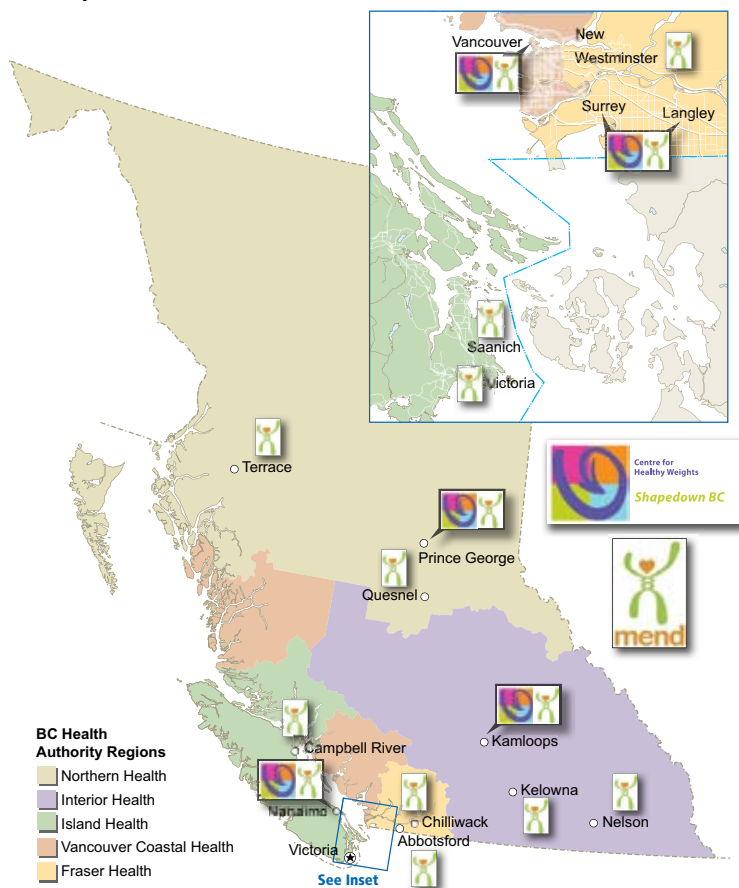
The Initiative's project concept, plan and infrastructure were developed within ambitious timelines; the new Shapedown BC and MEND programs were successfully implemented within the first year. The Initiative's first four program cycles are included in the evaluation and this report presents cumulative evaluation findings for Shapedown BC and MEND programs delivered from Winter 2013 through Spring 2014.

¹⁰ Unless otherwise noted, all references to MEND pertain to MEND in BC.

Childhood Healthy Weights Intervention Initiative Timeline and Key Milestones



Demonstration Project Sites for Shapedown BC and MEND January 2013 to June 2014



A demonstration project

The Initiative is considered to be a demonstration project¹¹. This term acknowledges the Initiative's focus on learning, adaptation and quality improvement. Other terminology used throughout this report is defined in Appendix A.

Since the Initiative was introduced, MEND has been offered in 17 sites around the province. Shapedown BC has been available in five locations¹², one site in each health authority region. Vancouver, Surrey/Langley, Prince George, Kamloops and Nanaimo have offered both MEND and Shapedown BC¹³.

This Initiative is grounded in the principle that families are the core of the change strategy to address healthy weights. Over the past three decades, family-based approaches have been found to be the preferred intervention to address childhood obesity. Family-based interventions rooted in behaviour theory have achieved better results than those theoretically connected to family systems theory in terms of treatment effectiveness [7].

¹¹ Demonstration projects "provide the means to introduce and experience innovative ideas and approaches and prepare the way for replication and up-scaling" [19].

¹² Although it is out of scope for this evaluation, since Fall 2014 a cultural and language adaptation of Shapedown BC for the ethnic Chinese has been offered in a sixth location; in Richmond BC through Vancouver Coastal Health.

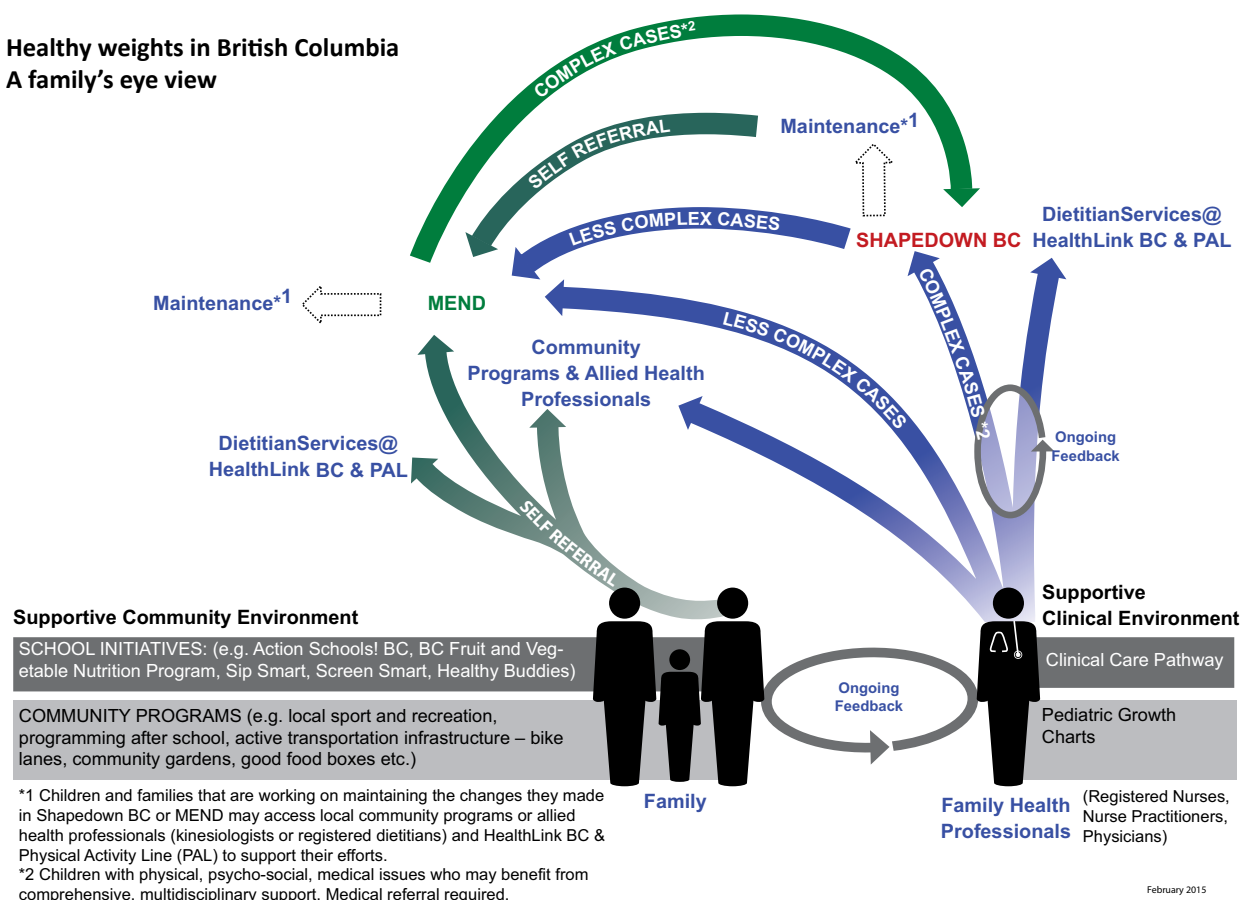
¹³ The map shows demonstration project site locations up to the end of Cycle Four in June 2014. There have been some changes in demonstration sites in subsequent program cycles.

The Initiative's approach is aligned with new guidelines from the Canadian Task Force on Preventive Health Care to help prevent and manage obesity in children and youth under age 18. These new guidelines recommend regular growth monitoring (height, weight, BMI) using the WHO growth charts for Canada. They also recommend that primary care practitioners should offer or refer children aged two to 17 who are overweight or obese to structured behavioural programs aimed at achieving healthy growth [9].

The three-pronged Initiative offers multiple pathways for families to follow, including moving back and forth between services depending on need, as shown in the Exhibit following. As well, the Initiative recognizes the importance of access to supportive community and clinical environments that contribute to families' success during and after the program.

The Initiative offers multiple pathways for families to follow

Healthy weights in British Columbia A family's eye view



Although the demonstration phase is scheduled to conclude in March 2015, intervention programming is continuing. The Ministry of Health has introduced the HealthLink BC Eating and Activity Program for Kids (HEAPK) as a new service and Shapedown BC is ongoing under the leadership of the Centre for Healthy Weights, Provincial Health Services Authority. And, during 2015/16, provincial leadership for MEND is being transitioned from the Childhood Obesity Foundation to the Provincial Health Services Authority.

The evaluation findings generated at the end of each program cycle supported the Initiative's continuous improvement efforts. This cumulative final evaluation report will help inform the Childhood Obesity Foundation's recommendations to sustain these programs into the future, and program planning and quality improvements going forward.



HealthLink BC Eating and Activity Program for Kids (HEAPK)

This program helps BC kids (aged zero to 18) reach healthy weights and improve their overall health and quality of life. Using a variety of materials tailored to meet the needs of each family, program staff (pediatric registered dietitians and qualified exercise professionals) will focus on supporting behaviour changes for healthy eating, active living and lifestyle habits. Throughout this telephone-based program, clients and their families will discuss their health priorities and gain new skills.

3.0 METHODOLOGY

3.1 Evaluation Overview

This report presents evaluation findings for Shapedown BC and MEND.

The evaluation examined issues of Reach, Effectiveness, Adoption, Implementation and Maintenance, which is often referred to as the 'RE-AIM' Framework. Appendix B presents a full list of the issues examined and Appendix C cross-references program-specific key findings by RE-AIM evaluation category.

The evaluation was comprehensive, using multiple lines of evidence and both process and outcome evaluation practices. Data were collected and analyzed from a variety of qualitative and quantitative sources including participant surveys, reports, stakeholder interviews, the Shapedown BC database, MEND's Operations Management and Monitoring System (OMMS)¹⁴, and other sources.

Planning and site set up for Shapedown BC and MEND began in 2012. For Shapedown BC, the evaluation examined planning and recruitment materials from January 2013 to June 2014. It also examined group intervention delivery from April 2013 through June 2014. Thus, for Shapedown BC, the evaluation examined:

- referrals and intake assessments completed over 18 months (January 2013 to June 2014)
- 10-week group sessions delivered over 15 months (April 2013 to June 2014)

For MEND, the evaluation includes information on:

- planning, recruitment and group intervention delivery of MEND 7-13 programs delivered over 15 months (April 2013 to June 2014)
- planning, recruitment and group intervention delivery of MEND 5-7 programs delivered over five months (February 2014 to June 2014)

The evaluation used information gathered over four Initiative cycles:

Cycle One – Spring 2013 April - June	Cycle Two – Summer & Fall 2013 July - December (Shapedown BC) September - December (MEND)
Cycle Three – Winter 2014 January - March	Cycle Four – Spring 2014 April - June

The evaluation was based on the approaches outlined in the *Province-wide Childhood Healthy Weights Intervention Initiative Project Evaluation Plan*¹⁵ and guided by the following principles:

- conducted with a focus on understanding 'real world' issues involved in implementation and sustainability of proven interventions in BC jurisdictions
- conducted using program-appropriate evaluation protocols
- leveraged program staff activities and program data to support the evaluation
- met generally accepted standards for publication
- aligned with national and international standards and indicators

All data collection procedures were approved by the University of Victoria and University of British Columbia Human Research Ethics Boards.

¹⁴ Operations Management and Monitoring System (OMMS) is used to organize, deliver and monitor MEND programs.

¹⁵ The *Province-wide Childhood Healthy Weights Intervention Initiative Project Evaluation Plan* (April 2013) is available under separate cover.

3.2 What Is Not In Scope?

Shapedown BC and MEND program staff have continued to gather a broad range of data for clinical and performance management purposes. These data are outside the scope of this evaluation.

It should be noted that although the primary target was geographic expansion, in 2014, a cultural and language adaptation of Shapedown BC for the ethnic Chinese has also been undertaken as part of the Initiative. It is also not in scope for this evaluation. The Centre for Healthy Weights: Shapedown BC plans to evaluate this component in 2015/16.

Finally, although telehealth services are currently being delivered to BC children and families, evaluating these services is not in scope. The HealthLink BC Eating and Activity Program for Kids (HEAPK) will be evaluated at a later date.

The Initiative includes about two years of program delivery. Although out of scope for the evaluation, over the long term the childhood healthy weights intervention programs are intended to contribute to these ultimate outcomes:

- healthier BC children and youth
- reduced chronic disease
- reduced direct and indirect health care costs

The intent is to achieve these outcomes within five to ten years—beyond the timeframe of the Initiative.



Long term outcomes

Over the long term the childhood healthy weights intervention programs are intended to contribute to:

- healthier BC children and youth
- reduced chronic disease
- reduced direct and indirect health care costs

These long term outcomes are anticipated within five to ten years of delivery of these programs.



4.1 Shapedown BC Overview

Shapedown BC is a clinically-based, effective [10] weight management program that helps children and teens and their families recognize and overcome challenges to active living and healthy eating. Children between six and 17 years old with a BMI-for-age above the 97th percentile or over 85th percentile for age with co-morbidities or other complex medical or social profiles are eligible¹⁶. A medical referral is required.

Shapedown BC uses best practice standards in pediatric weight management according to the *Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity in Adults and Children*. The Shapedown BC team consists of a dietitian, mental health professional, physician, exercise specialist and administrative assistant. A comprehensive multidisciplinary assessment determines a family's readiness to fully participate and be successful.

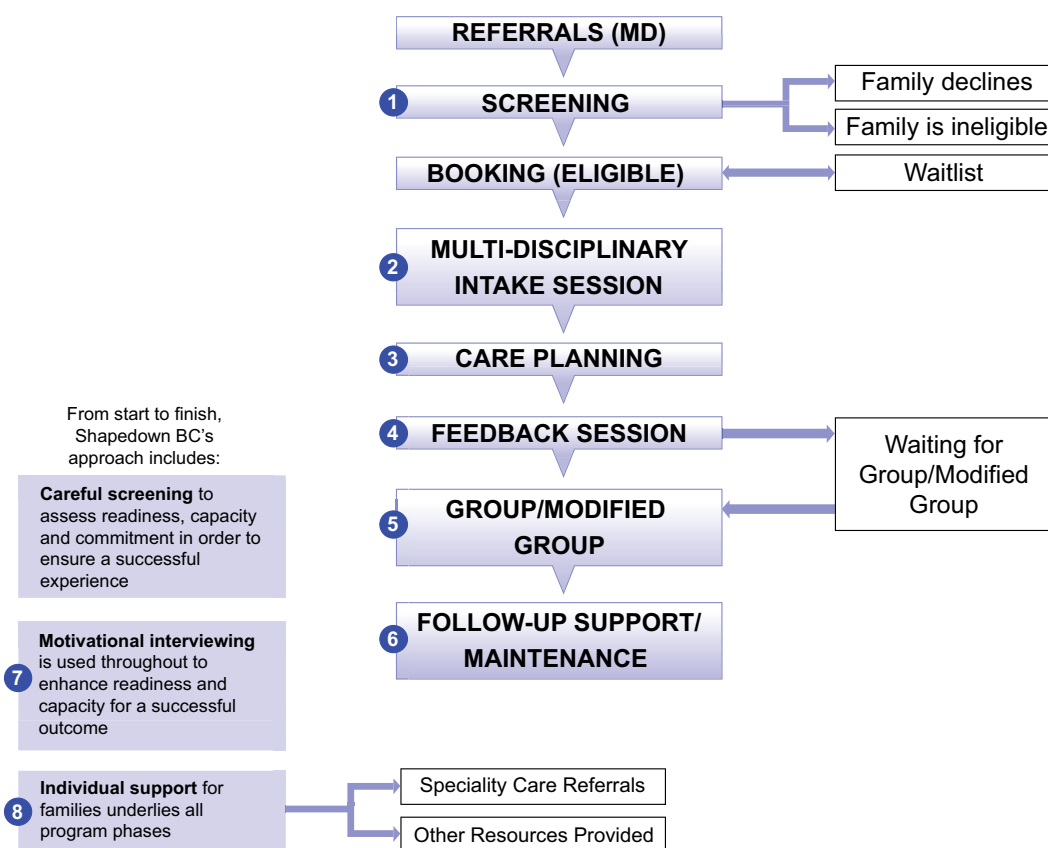
The intervention is available to families as individual counselling and group programs, or as a modified group program¹⁷. Group interventions (up to 15 participants per group) are age clustered for children age six to eight, nine to 11, 12 to 13 and 14 to 17 years. Follow-up support is available to all participants. In addition to the 10-week program, participating families are given free passes to their local YMCA or BC Recreation and Parks Association (BCRPA) member recreation centre for a period of three months after program completion.

Multiple components of the Shapedown BC program inform the family's journey through the program model. Touch points describe points in time when participants and program staff interact throughout the program, as presented following.

¹⁶ Families were ineligible to participate if their child or teen's BMI was too low, age was outside the range of programs offered, and/or the family could not commit to having a parent attend every session.

¹⁷ Modifications of the Shapedown BC 10-week group program are occasionally offered to meet the needs of families who are unable to participate in the group program due to the child's developmental, behaviour or learning needs. The modifications may involve working with parents as the agents of change, or combinations of individual and group sessions, with or without the children involved.

Shapedown BC program flow with touch points 1 to 8



The Centre for Healthy Weights at BC Children's Hospital (Provincial Health Services Authority) is the provincial resource centre for Shapedown BC. Based in Vancouver, it has provided Shapedown BC since 2006 and is participating in the Initiative as a program site. The Initiative expanded Shapedown BC to four new regional health authority sites¹⁸, thus, programming was offered in five health authority geographic regions.

Shapedown BC group interventions delivered by site (English)

Health Authority	Site	Group Interventions Delivered				Total
		Cycle One Apr – Jun 2013	Cycle Two Jul – Dec 2013	Cycle Three Jan – Mar 2014	Cycle Four Apr – Jun 2014	
Provincial	<i>Vancouver— BC Children's Hospital (established 2006)</i>	1	3	2	2	8
Fraser	<i>Surrey (start up Fall 2012)</i>	1	1	2	1	5
Interior	<i>Kamloops (start up Fall 2013)</i>			1	1	2
Island	<i>Nanaimo (start up Fall 2012)</i>	1	2	1	1	5
Northern	<i>Prince George (start up Fall 2013)</i>			1	1	2
Total		3	6	7	6	
Total number of group interventions delivered						22

¹⁸ This evaluation reports on demonstration project sites up to the end of Cycle Four in June 2014. There have been some changes in demonstration sites in subsequent program cycles.

From April 2013 to June 2014, the Shapedown BC program delivered 22 group interventions at the five sites. In total, 171 children/teens commenced these 10-week interventions.

4.2 Shapedown BC Evaluation Findings

This section presents the findings of the evaluation of the Shapedown BC component of the Initiative between January 2013 and June 2014. While planning and site set up for the Initiative began in 2012 the evaluation examined planning and recruitment materials starting from January 2013. It also examined group intervention delivery beginning in April 2013. Appendix C cross-references Shapedown BC key findings by RE-AIM evaluation category.

4.2.1 SHAPEDOWN BC REACHED DIVERSE FAMILIES

Families access Shapedown BC through physician referral¹⁹, following which they undergo a screening process to determine if they may benefit from the program. Accordingly, it is important that physicians, primary care providers and parents²⁰ have an understanding of childhood obesity and the availability of Shapedown BC programming in their community.

Shapedown BC staff used a diverse array of communication strategies to raise awareness about their programs between January 2013 and June 2014. Province-wide communication strategies targeted provincial organizations, particularly for physicians (including pediatricians) who make referrals. These strategies also reached out to other health care providers, community organizations and families through presentations and booths at conferences as well as media articles and interviews. In addition, all five Shapedown BC sites used a variety of strategies to communicate information about their programs. These included mail outs, email outs, in-person presentations or meetings, disseminating brochures as well as website postings and updates. These strategies targeted physicians, other health authority staff, dietitians and nutrition services staff, schools and educators, related community programs and parents. As a long-established site, the BC Children's Hospital program continued with its existing marketing and awareness strategies.

The thirty referring physicians surveyed for the evaluation felt adequately informed about Shapedown BC. They noted that the most frequent family reactions they saw were positive and appreciative, though some families expressed concern about the time commitment involved.

Some communication strategies were more successful than others. For example, outreach to physicians and agencies that provide clinical and social services to families worked well. Newspaper and magazine promotion was considered to be less successful. Some stakeholders perceived the required scope and intensity of marketing and awareness activities to be under-estimated and under-resourced.

In total, 555 children and teens were referred to Shapedown BC between January 2013 and June 2014. Shapedown BC program staff completed telephone screening calls with 471 of these referrals. Almost three-quarters (73%) of these screened individuals were invited to participate in the program (eligible) and 17% declined.

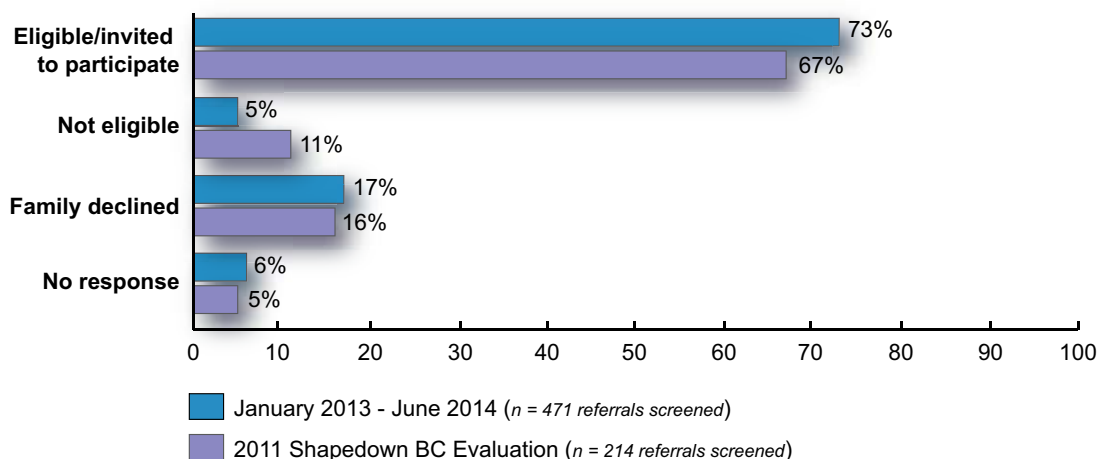
Similarly, in a 2011 evaluation of Shapedown BC [10], 67% of the 214 individuals referred were invited to participate in the program (eligible) and 16% declined as presented following.

As illustrated in the program flow diagram in Section 4.1, the Shapedown BC program provides a child or teen and his or her parents with a four-hour multi-disciplinary assessment of their individual family situation and specific needs. This assessment is conducted by a team of professionals (physician, mental health specialist, dietitian). The care planning process that follows involves the physician, dietitian

¹⁹ Physicians refer most participating children/teens, however Shapedown BC also receives a few referrals from other health care practitioners.

²⁰ Throughout this report the term 'parents' is used to describe parents and non-parent caregivers, which includes grandparents and legal guardians.

Approximately two-thirds of referrals screened were eligible/invited to participate, similar to a previous Shapedown BC evaluation

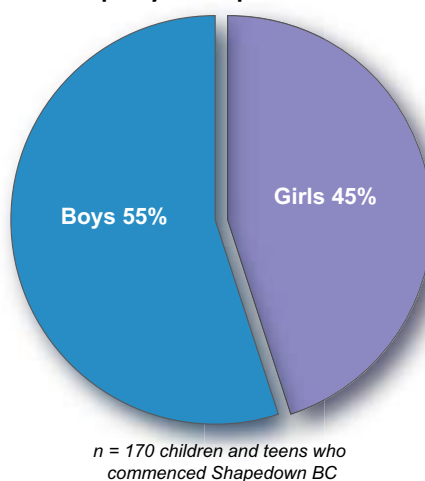


and mental health specialist who conducted the family intake assessment. This process provides each family with a care plan – a synthesis of all the assessment information along with suggested steps for managing their identified issues. The subsequent feedback session for the family involves the mental health specialist, the dietitian and the family. This team conference takes one hour in which the health professionals review the results of the intake assessment with the family and discuss the care plan. The final step at this meeting is to determine the appropriate intervention option. This assessment process can help families determine their future options – whether or not they are interested in continuing with the program.

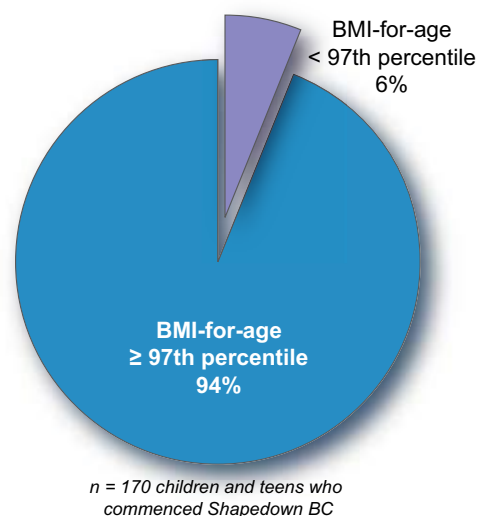
Shapedown BC teams completed 323 comprehensive intake assessments between January 2013 and June 2014. The teams completed care plans and feedback sessions with almost all of these children and teens. The teams provided 246 referrals to specialists or community services. Fifty-four responding children, teens and parents reported satisfaction with their initial care planning and were looking forward to the programs (though parents more so than their children and teens).

In total, 171 eligible children and teens participated in 22 Shapedown BC group interventions between April 2013²¹ and June 2014. The evaluation analyzed intake information available for 170 of these 171 children and teens. Diverse families participated in Shapedown BC. A sample of demographic information on participating children and teens is illustrated in the charts following.

Boys and girls participated almost equally in Shapedown BC



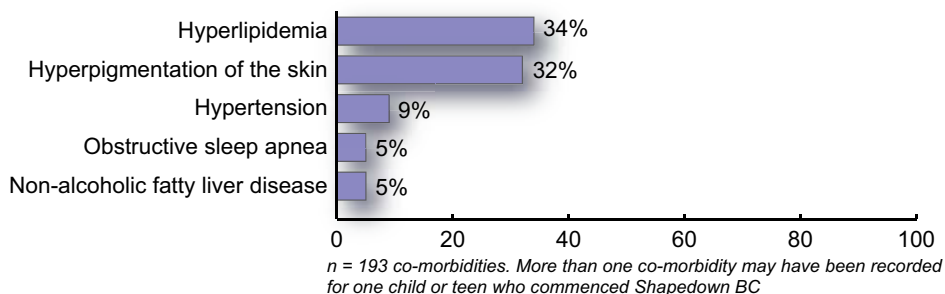
Almost all Shapedown BC children and teens presented at intake with a BMI-for-age at 97th percentile or above



²¹ Programs sites delivered the first Shapedown BC group interventions in April 2013.

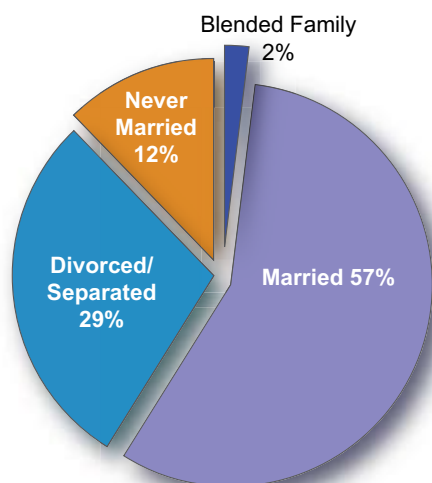
Among the children and teens who commenced group interventions between April 2013 and June 2014, the medical co-morbidities most frequently recorded at intake are presented as following. Children and teens also presented at intake with a variety of psychological co-morbidities.

The most common co-morbidities recorded for Shapedown BC children and teens were hyperlipidemia and hyperpigmentation of the skin

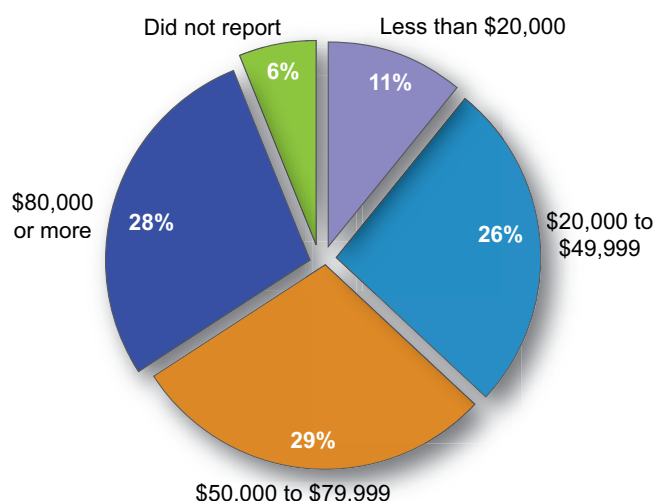


A sampling of demographic information on participating Shapedown BC families is presented in the charts following²².

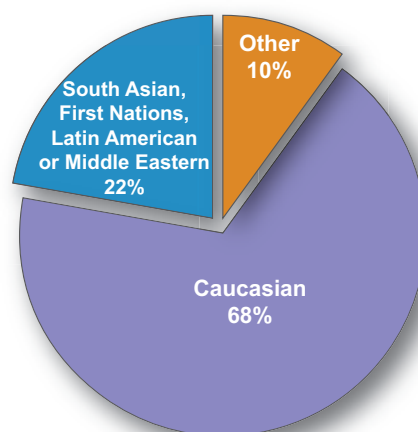
Children and teens from both single-parent and two-parent families participated in Shapedown BC



Shapedown BC families reported a range of annual household income levels



Shapedown BC families represented a variety of ethnicities

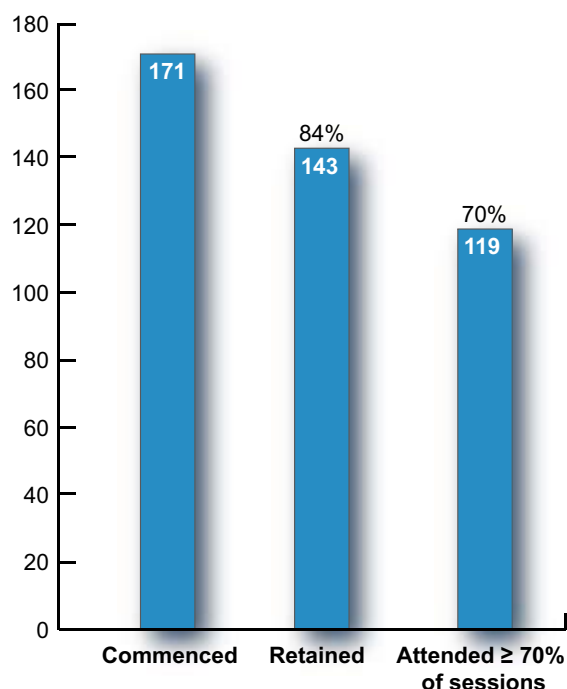


²² One family may be counted more than once in these participant charts. This would occur if more than one child in a given family participated in Shapedown BC during the period of time being evaluated.

In total, 171 children and teens commenced Shapedown BC. As illustrated following, the programs had an overall retention rate of 84% – 143 children and teens were retained during these group interventions. More than two-thirds of the children, teens and their families who commenced attended 70% or more of the group sessions. Shapedown BC programs also provided families with more than 100 individual dietitian or mental health counselling sessions.

Shapedown BC was accessible to families who met the eligibility criteria and lived sufficiently near a site location. Factors facilitating families' participation in the programs included awareness and understanding of the program, whether they had experienced 'triggers for change' such as weight affecting other areas of a child or teen's life, and logistical program characteristics (e.g., an appropriate age group cluster was offered). Factors hindering families' participation included program characteristics such as location and schedule as well as family circumstances, in particular other time commitments. The Exhibit following graphically illustrates the family journey through Shapedown BC, from when families first hear of the program through to completion.

Shapedown BC achieved high participant retention and attendance levels

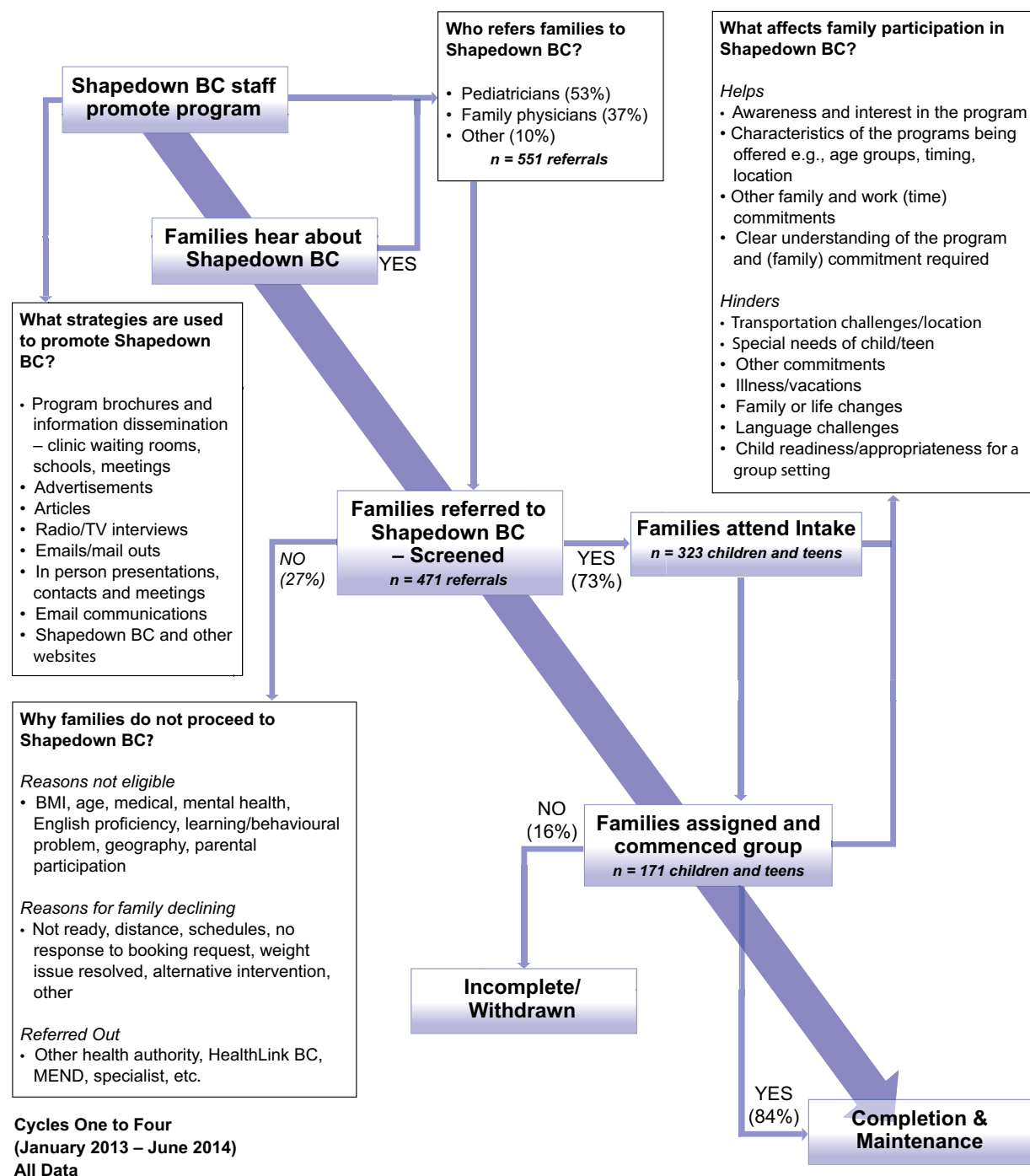


Percentages displayed are calculated based on # commenced



CHILDHOOD HEALTHY WEIGHTS INTERVENTION INITIATIVE

The family journey through Shapedown BC

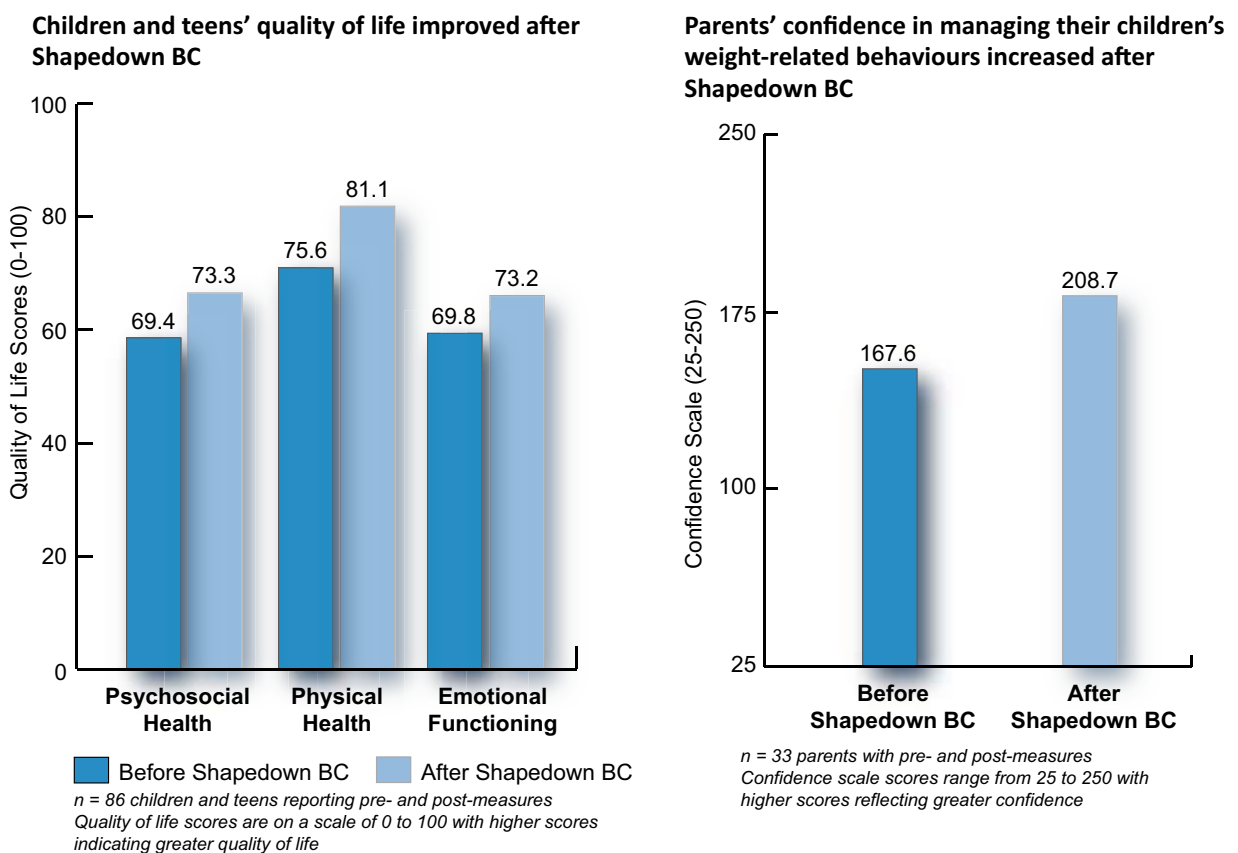


4.2.2 CHILDREN, TEENS AND FAMILIES MADE HEALTHY LIFESTYLE CHANGES DURING SHAPEDOWN BC

Among those participating in group interventions and for whom both pre-and post-measures were available, the analysis found statistically significant positive changes in:

- quality of life (using scales on psycho-social health, physical health and emotional functioning – both child, teen and parent-reported)
- confidence (using the Lifestyle Behaviour Checklist)
- anthropometric measures (using BMI and BMI z-scores)
- physical activity (using the Physical Activity Questionnaire – Children (PAQ-C))
- the physical appearance scale (of the Self-Perception for Adolescents questionnaire)
- select nutrition indicators – an increase in the consumption of other types of vegetables and decrease in consumption of fruit flavoured drinks, as well as a positive change in some family eating habits such as eating more meals with the family, less eating in front of the TV, eating fewer meals out or ordered in

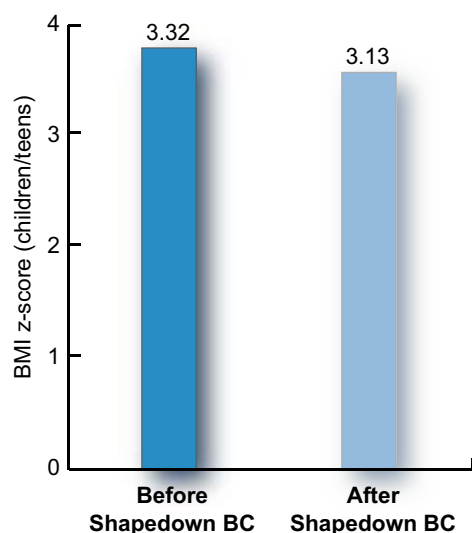
Some of these statistically significant outcomes are graphically displayed following.



"A lot of the parents don't have the skills to implement change on their own – the program gives them skills and confidence".

~ Shapedown BC program staff

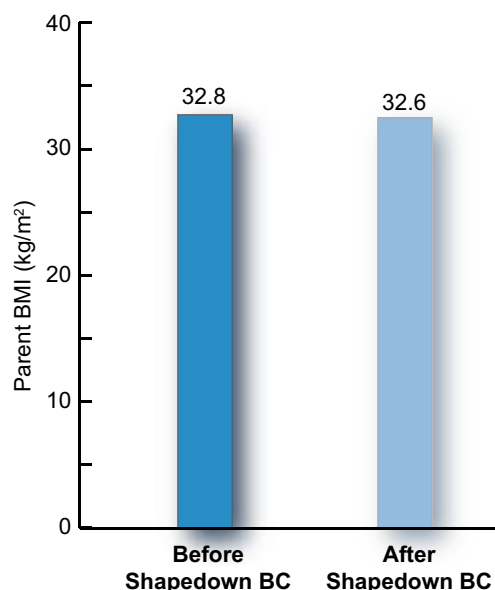
Children and teens' BMI z-scores²³ were lower after Shapedown BC



n = 122 children and teens with pre- and post-measures

Note: The size of the effect is small which is to be expected over a 10-week program

Parents also reduced BMI after Shapedown BC

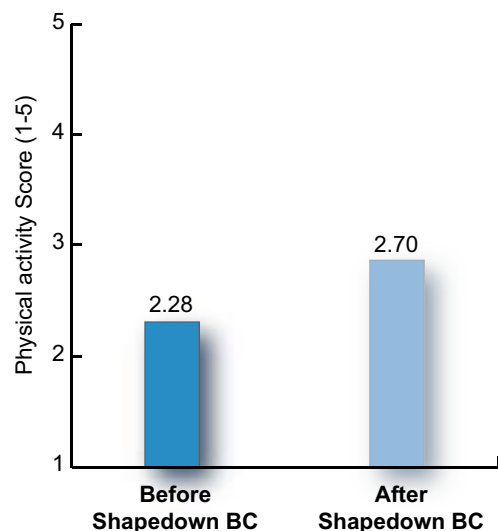


n = 88 parents with pre- and post-measures

BMI calculated from weight (kg) measured pre- and post-program and height (cm) measured pre-program

Note: The size of the effect is small which is to be expected over a 10-week program

Children were more physically active after Shapedown BC



n = 17 children with parents (jointly) reporting pre- and post-measures

Measured using the Physical Activity Questionnaire for Children (PAQ-C)

A score of 1 indicates low physical activity and a score of 5 indicates high physical activity

“We see changes in activity levels and fitness – the kids aren’t huffing and puffing anymore”.

~ Shapedown BC program staff

²³ The Z-score system expresses the anthropometric value as a number of standard deviations or Z-scores below or above a reference mean or median value. Thus, Z-score (or SD-score) = (observed value – median value of the reference population) / standard deviation value of reference population. BMI-z score is corrected for age and gender.

Some of the results of the current evaluation were similar to changes observed in the 2011 evaluation of Shapedown BC [10].

Results showed no statistically significant changes in:

- physical activity (using the Physical Activity Questionnaire –Adolescents (PAQ-A))
- the emotional eating, external eating and restrained eating scales (of the Dutch Eating Behaviour Questionnaire)
- the athletic competence and global self-worth scales (of the Self-Perception for Children and Adolescents questionnaires)
- the physical appearance scale (using the Self-Perception for Children questionnaire)
- sedentary behaviour, recovery heart rate or waist circumference
- many of the nutrition indicators including both food consumption and family eating habit indicators e.g., eating fruit, eating lettuce or green leafy salad, drinking water, eating breakfast, eating processed meals, eating pre-packaged meals, eating meals from scratch

Some of this lack of significant change may be due to small participant reporting numbers. Changes in nutrition and physical activity habits were the most common changes that parents and staff reported qualitatively after the program. They reported reduced screen time and improved family functioning next most often. Follow-up interviews²⁴ with a limited sampling of these families showed that program participants were able to maintain some of the changes they made during the program and/or added new ones.

Biggest changes made as a result of participating in the Shapedown BC program

“Trying new foods. Incorporating more vegetables. Establishing exercise routine for the family”.

“Being more active as a family. Cutting down on screen time, especially at dinner time”.

“Label reading, balance activities with time for more food prep, family time, it’s ok to say No, spend more time exercising/playing together, balance between deprivation and excessiveness”.

“More family exercise time. Better ingredients and snack choices. More awareness towards processed food”.

~ Sample Shapedown BC participant responses

4.2.3 FIVE HEALTH AUTHORITIES IMPLEMENTED SHAPEDOWN BC

Overall, those who were involved with delivering the Shapedown BC program were pleased to participate in the Initiative. Four regional health authorities and the Provincial Health Services Authority (BC Children’s Hospital) took part in the Initiative. Additional programs were delivered in Fall 2014 and Winter 2015 and more are planned for Spring 2015²⁵. Stakeholders felt flexibility was important for future expansion, particularly outside the Lower Mainland e.g., in smaller centres and in consideration of cultural communities.

4.2.4 MOST PARTICIPANTS AND STAFF EXPRESSED HIGH LEVELS OF SATISFACTION WITH SHAPEDOWN BC

Between January 2013 and June 2014, program staff delivered all the Shapedown BC curriculum at each of the five sites. All staff were trained and received site visits (for quality review and to support

²⁴ Family follow-up telephone interviews were conducted on a small sample of participants four to eight months after program completion (for both Shapedown BC and MEND).

²⁵ For a variety of reasons, the Prince George Healthy Children and Families: Shapedown BC program is not running in 2015. Northern Health plans to stay connected with developments and opportunities in healthy weights programming.

“The information that was provided about eating, portion size, label reading, different types of ingredients/names was really useful. Membership to the YMCA was extremely beneficial w/o it i don’t think it would be possible to get the children to be so active”.

~ Shapedown BC parent

professional practice). Regional sites reported they valued the training and ongoing support provided by the Centre for Healthy Weights, as well as communicating with peer networks. Program staff suggestions for change were associated with quality improvement of a satisfactory program. They included taking steps to streamline the data collection process.

Shapedown BC’s delivery was adapted in various ways to:

- better fit with health authority operational requirements
- better meet participant needs
- coordinate with nearby MEND programs (where co-existed)

According to staff and participants, the *most* useful or valuable aspects of the programs were some of the nutritional and physical activities. They also found information or exercises for personal and family development to be useful or valuable, along with some aspects of how the programs were delivered e.g., the group sessions and family member participation. Their *least* useful or valuable aspects were the goal setting or tracking sheets and/or other paperwork aspects.

A few program aspects were mentioned by staff and participants as both *most* valuable and *least* valuable – these included the goal setting or tracking sheets and the family fun at the grocery store activity.

As displayed following, most (90%) of the 173 program participants who completed feedback forms agreed they found the information provided by the program’s components helpful to them for staying on track with their Shapedown BC goals. Parents gave more positive ratings to these components than did their children and teens.

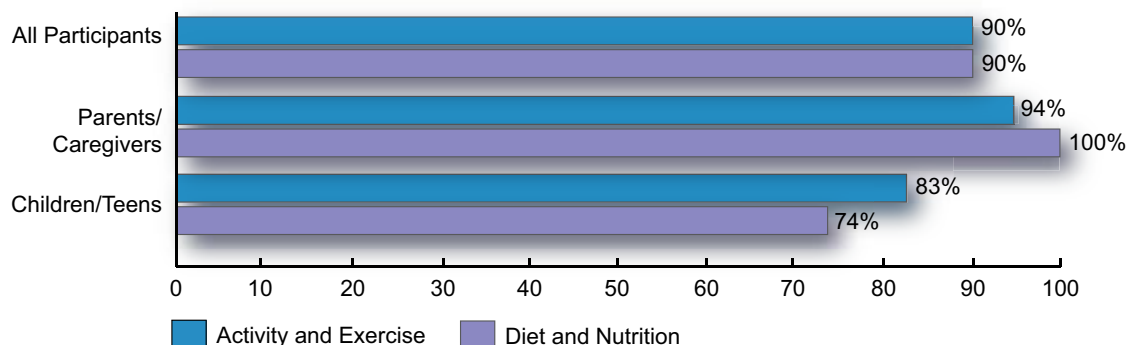
“Group discussion, group exercise, realignment of family to same goals, it’s not about fault but changes, including child so they learn to make own decisions”.

~ Shapedown BC parent

“Tracking sheets. I found it discouraging when the goals weren’t met. Sometimes goals were not attained due to schedule or injury which was discouraging looking at the sheet at week end”.

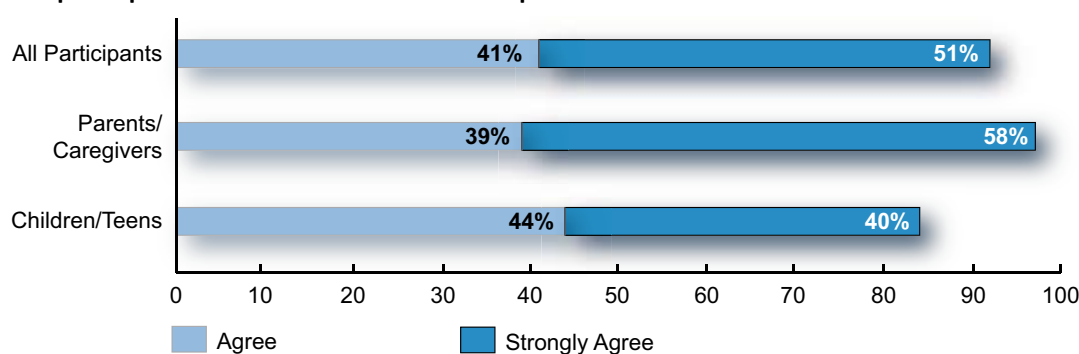
~ Shapedown BC parent

Participants found activity and exercise, diet and nutrition information helpful for staying on track with their Shapedown BC goals



n = 103 parent/caregivers and 70 children/teens responding to Participant Feedback Forms
Participants providing a level of agreement rating of 4 or 5 on a 5-point scale, where 1 is 'strongly disagree' and 5 is 'strongly agree'

Most participants were satisfied with their Shapedown BC interventions



*n = 103 parent/caregivers and 70 children/teens responding to Participant Feedback Forms
Participants providing a level of agreement rating of 4 or 5 on a 5-point scale, where 1 is 'strongly disagree' and 5 is 'strongly agree'*

Most (92%) of 173 participants completing feedback forms expressed overall satisfaction with their interventions. The program's retention rates also indicate satisfaction among these participants. Referring physicians surveyed reported high overall satisfaction levels. Stakeholders reported satisfaction with the program's approach but had concerns about limited eligibility and the extent of unmet regional needs outside the communities where the programs were delivered. Some health authority representatives perceived that a weight management approach, such as used in Shapedown BC, is inherently weight biased (e.g., eligibility criteria include BMI) and therefore is not aligned with health authority direction for healthy weights.

Linkages now in place include those with other health authority staff, primary care providers, the YMCA and municipal recreation centres, the MEND program and agencies that support families in the community. Stakeholders interviewed identified opportunities for enhancing linkages that include:

- more integration into clinical and referral pathways
- better coordination with MEND
- improved linkages with agencies that support families in the community
- support for the Chinese language Shapedown BC program being developed in Vancouver

4.2.5 STAKEHOLDERS PROVIDED SUGGESTIONS FOR SUCCESSFUL LONGER TERM IMPLEMENTATION OF SHAPEDOWN BC

The Initiative successfully expanded Shapedown BC to four new health authority sites, providing province-wide support for families whose children have significantly departed from the healthy weight trajectory. Stakeholders interviewed reported desirable conditions for successful longer term implementation of Shapedown BC including:



Chinese Language Shapedown BC

In September 2014, the Centre for Healthy Weights – Shapedown BC, in partnership with Vancouver Coastal Health, launched Shapedown BC in Cantonese and Mandarin. Significant adaptations were put in place to ensure cultural and language relevance while maintaining fidelity to the protocols of the original model. The Chinese language program completed its first delivery cycle in Winter 2015; the response has been overwhelming.

-
- a single point of contact for families to identify appropriate intervention programs
 - ongoing support from the Centre for Healthy Weights
 - providing continuing maintenance support to BC families

Stakeholders interviewed also suggested future considerations for Shapedown BC including:

- more communications and stronger connections with physicians, other primary care providers and community programs
- more flexibility to accommodate smaller communities and broader population groups (e.g., First Nations and Punjabi-speaking families)
- protocols for special case interventions
- navigation support for ineligible families

4.3 Shapedown BC Conclusions

Shapedown BC is an effective, quality program. Overall, families who committed to attending were highly satisfied with the program and made significant changes towards a healthier lifestyle. Regional relationships are being established. Diverse participants who were eligible accessed the programs in their communities. Children, teens and their families received comprehensive, multi-disciplinary care planning, group interventions and referrals to other services. Potential program enhancements include reducing data collection requirements, advancing communication and engagement initiatives and exploring modified service delivery models with other sub-populations.

A Shapedown BC Family's Journey

“Before Shapedown, our child weighed 205 pounds and our family doctor recommended a cholesterol medication. We have a medical family history of diabetes and heart disease (as a matter of fact we lost a child to due to congenital heart disease) and now we are afraid that our other child’s health is also at risk. This is why we were referred to your program. Because of Shapedown’s guidance and positive way of encouraging teens to make a lifestyle change our child now weighs 171 pounds and is much happier. Our child gained a lot of self-confidence, self esteem, is more sociable and is excelling academically. Even my husband and I lost a significant amount of weight because of healthy eating and an exercise routine. We all go to YMCA together to exercise and participate in their programs for “our bonding time” as a family... You all made a big difference in our life”.

~ Shapedown BC parent



5.1 MEND BC Overview

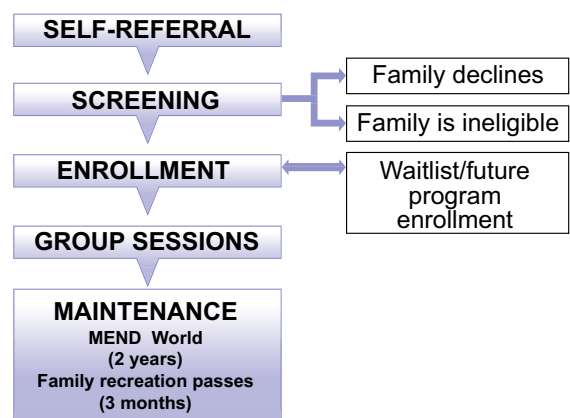
MEND (Mind, Exercise, Nutrition, Do it!) is a community-based program intended to support children who are just departing or are off the healthy weight trajectory. It helps families to increase healthy eating and physical activity behaviours that promote healthy weights. This evidence-based program from the United Kingdom (UK) is for children who do not need the intensive services of Shapedown BC. MEND programs are age-specific and BC is implementing the MEND 7-13 and MEND 5-7 programs. In 2011, MEND was adapted to align with Canadian nutrition and physical activity guidelines.

MEND in BC is working in association with Healthy Weight Partnership, Inc. (HWP), the exclusive representative of MEND programs in North America. HWP licensed the Childhood Obesity Foundation to establish, manage and deliver MEND in BC during the Initiative. MEND is managed by the Childhood Obesity Foundation through a provincial team (created for the duration of the demonstration project) including a MEND provincial manager at the Childhood Obesity Foundation and two regional coordinators provided through agreements with the YMCA of Greater Vancouver and BCRPA. In turn, these organizations have entered into agreements with their associated organizations to deliver MEND programs in selected demonstration sites.

MEND is offered for free by trained leaders with recreation and/or health backgrounds. The programs run for 10 weeks and are delivered throughout the province by local teams out of venues such as recreation centres and schools. Sessions occur on evenings and/or weekends. Topics covered include behaviour modification, active play and healthy eating, with an emphasis on putting learning into action.

Families self-refer to the program and are eligible for MEND 7-13 if their child is between seven and 13 years and has a BMI-for-age above the 85th percentile. Families are eligible for MEND 5-7 if their child is between the ages of five and seven and above the 85th percentile or are at risk. At risk is defined as having a family member who is overweight or obese or identified issues with physical inactivity and/or unhealthy eating. The program requires

MEND program flow



both the child and at least one parent to participate²⁶. Parents can take turns attending MEND with their child. Parents complete a medical screening form during the first session to confirm there are no contraindications for their child to participate in physical activity sessions. Families proceed through the program as outlined in the program flow diagram on the preceding page.

In addition to the 10-week program, participating families are given free passes to their local YMCA or BCRPA member recreation centre²⁷ for a period of three months after program completion. Families are also given two years of access to 'MEND World', an online resource for maintaining and creating new healthy lifestyle changes after finishing the program.

MEND interventions delivered by site

Health Region	Site Host Agency	Programs Delivered by Cycle				Total Programs Delivered	
		One Apr – Jun 2013	Two Sept – Dec 2013	Three Jan – Mar 2014	Four Apr – Jun 2014	5-7	7-13
Northern	Prince George YMCA of Northern BC	7-13	7-13		7-13		3
	Terrace City of Terrace			7-13			1
Interior	Kelowna YMCA of Okanagan	7-13	7-13		7-13 5-7	1	3
	Nelson Regional District of Central Kootenay		7-13	7-13			2
	Kamloops Kamloops YMCA-YWCA			7-13	7-13		2
Island	Saanich District of Saanich	7-13	7-13	7-13	7-13		4
	Campbell River Strathcona Regional District		7-13	7-13	5-7	1	2
	Nanaimo City of Nanaimo			7-13	7-13		2
Fraser	Langley Township of Langley	7-13	7-13	7-13	7-13		4
	Chilliwack Greater Vancouver YMCA		7-13	7-13	7-13		3
	Abbotsford City of Abbotsford			7-13	7-13		2
	New Westminster City of New Westminster				5-7	1	
Vancouver Coastal	Langara Greater Vancouver YMCA	7-13	7-13		7-13		3
	Strathcona Strathcona Community Centre Association		7-13		7-13		2
Total by program						3	33
Total number of programs delivered						36	

Note: MEND 7-13 sites were established in Quesnel and Vancouver (downtown core) and a MEND 5-7 site was established in Victoria. These sites did not deliver programs due to low registration

²⁶ Families were ineligible to participate if their child's BMI was too low, age was outside the range of programs offered, and/or the family could not commit to having a parent attend every session.

²⁷ For MEND reporting, these are referred to as 'recreation passes'.

From April 2013 to June 2014, MEND delivered a total 36 programs; 329 children commenced MEND 7-13 and 25 commenced MEND 5-7.

5.2 MEND 7-13 Evaluation Findings

This section presents overarching evaluation findings on MEND 7-13 programs delivered between April 2013 and June 2014. Appendix C cross-references MEND key findings by RE-AIM evaluation category.

5.2.1 MEND REACHED A BROAD DEMOGRAPHIC

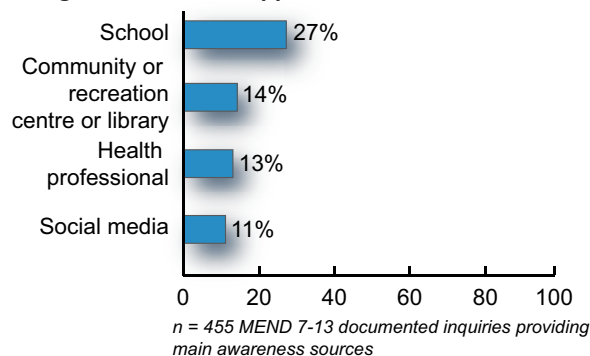
A wide variety of strategies were used to promote MEND locally and provincially. These included sharing targeted information with key audiences and community champions and encouraging them to share information with their established networks.

Recruitment efforts resulted in 553 documented²⁸ inquiries to MEND sites about the MEND 7-13 programs. The most frequently reported inquiries about MEND arose as a result of school-focused promotion (e.g., newsletters, posters, staff members). While schools were the source of many documented inquiries, it is important to note that stakeholders interviewed identified that school-based promotion was not successful in all communities.

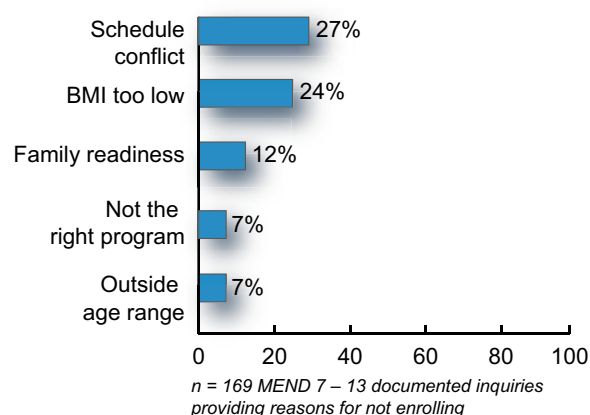
In total, 351 eligible children enrolled in MEND, and 329 (94%) of these children commenced the program. Schedule conflicts were the main reasons families did not enroll in MEND. Some stakeholders who raised concerns about weight stigma theorized that weighing the children or discussing weight would negatively impact enrolment.

Participating families came from diverse educational, ethnic and socioeconomic backgrounds. MEND families appeared to have some characteristics that are representative of British Columbians²⁹. For example, according to the 2011 census, of all BC families with children at home, 27% were single parent families, which is the same (27%) as families of MEND participants. Similarly, according to the 2011 National Household Survey, 27% of British Columbians were members of visible minorities, compared to 30% of MEND participants. According to the 2011 National Household Survey's BC population subset, five percent of British Columbians were of Aboriginal identity, compared to 11% of MEND participants. Some of these key demographic findings, along with gender, child BMI, parent education and household income, are illustrated following.

MEND 7-13 inquiries most frequently came through school-based approaches



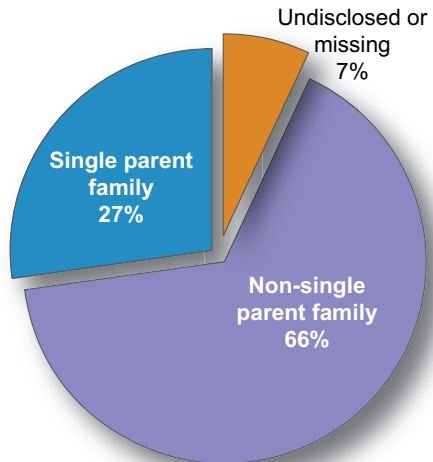
Schedule conflicts were the main reason families did not enroll in MEND 7-13



²⁸ It is likely that additional inquiries (telephone or in-person) were made to recreation centres though not recorded and shared with MEND program staff for reporting purposes.

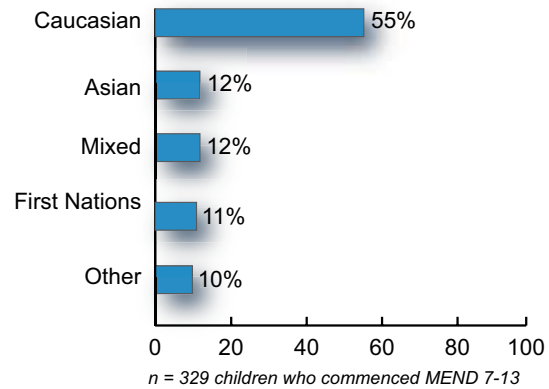
²⁹ Comparative BC data do not include proportion of undisclosed or missing data. Also, comparative BC data may use slightly different definitions or cut-offs for different categories. For example, visible minorities and Aboriginal identity BC data uses % of British Columbians "all ages" compared to % of MEND participants "children". Nevertheless, overall, MEND families had many similar characteristics to BC families.

MEND 7-13 participants came from both two-parent and single-parent families

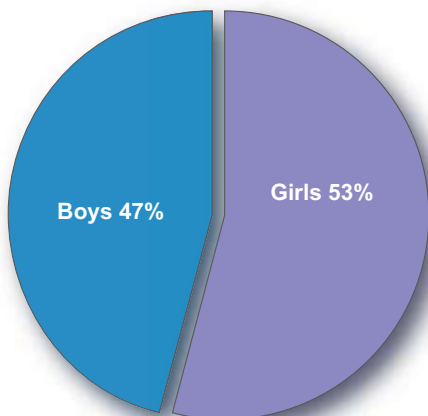


n = 329 children who commenced MEND 7-13

MEND 7-13 participants' families represented a variety of ethnicities

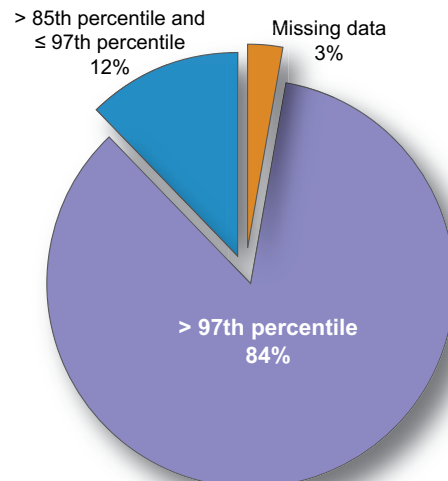


Boys and girls participated almost equally in MEND 7-13



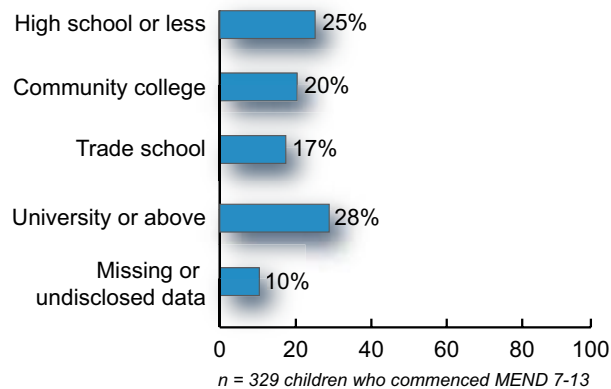
n = 329 children who commenced MEND 7-13

Most MEND participants (84%) had a BMI-for-age above the 97th percentile

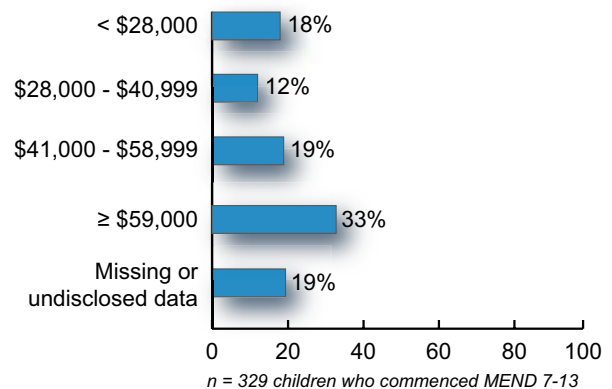


n = 329 children who commenced MEND 7-13³⁰

Parents of MEND 7-13 participants had varying education levels



MEND 7-13 families had various annual household income levels



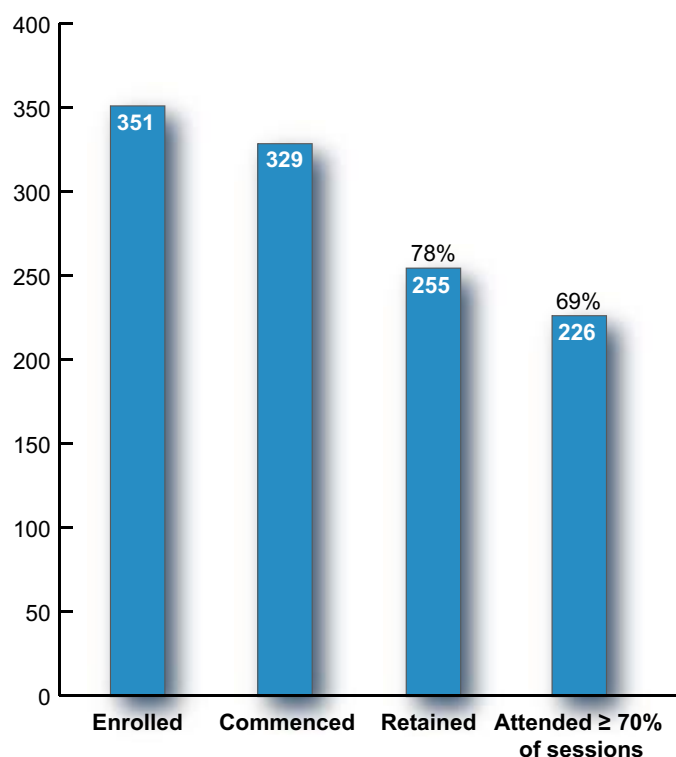
³⁰ Note: Percentages do not add up to 100% due to rounding.

Retention was high; over three-quarters of children were retained in the MEND 7-13 program. Family circumstances (e.g., not the right time for the family, sickness or other priorities) and logistics (e.g., inconvenient time of day or week, language or communication barrier, too difficult to get to) were the main reasons that families withdrew. It is important to note that no reasons were provided for about one-quarter (24%) of children who withdrew, and it is possible that the reasons these families withdrew differ from the reported reasons other families withdrew.

Finding a time and place that works for all families is challenging; what worked for some families did not work for others. However, families with strong motivation for change were very committed to participating in MEND. The program being free of cost and welcoming siblings were the most commonly reported facilitators to families' attendance.

Thus, many factors influenced families' experiences with the MEND 7-13 program. A graphic summary of the family journey—from marketing through program graduation—is provided on the following page.

Over three-quarters of children were retained in MEND 7-13



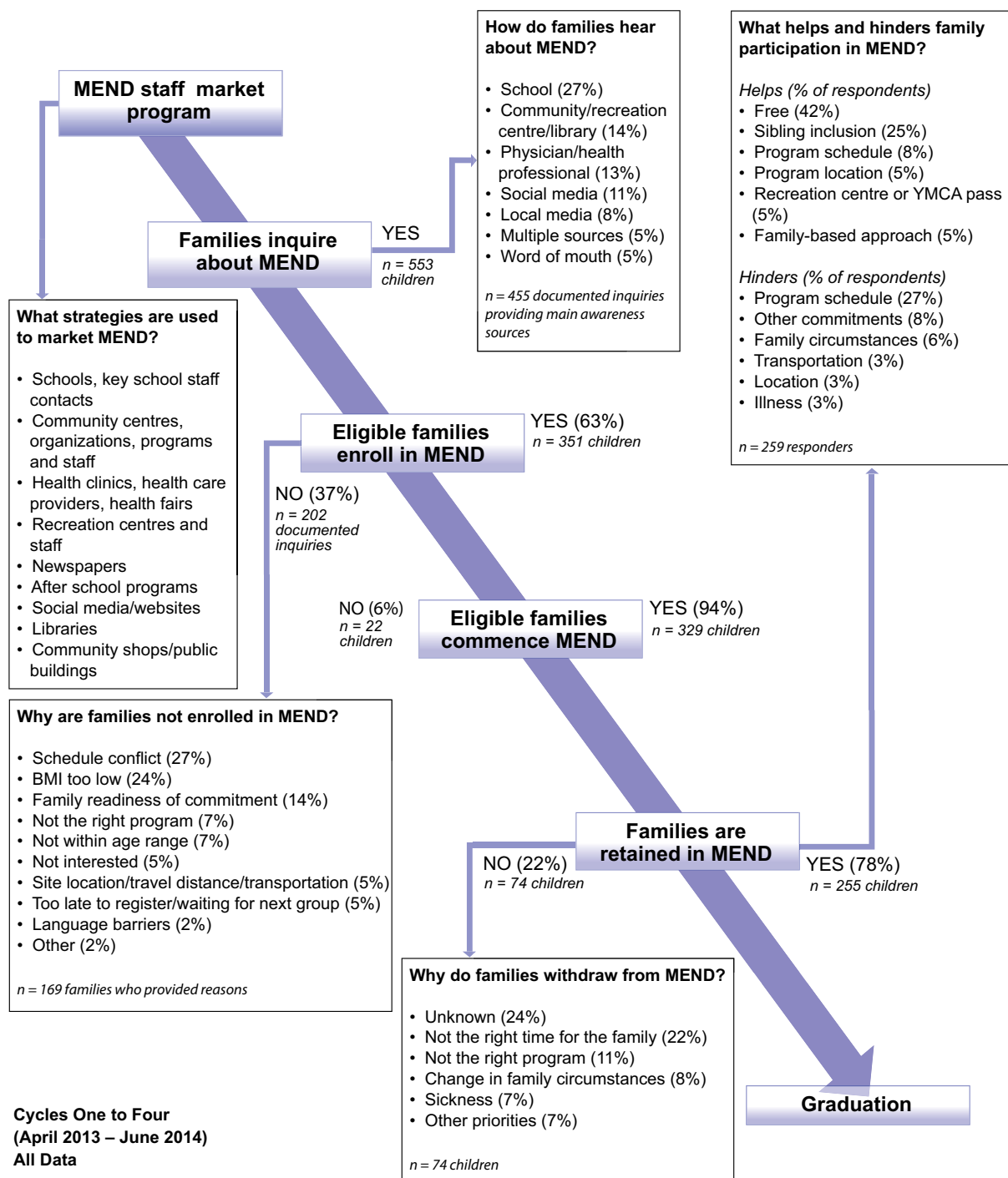
Percentages displayed are calculated based on # commenced

"The level of commitment of the parents was the biggest factor in how easy or difficult it was to attend. Those who were really committed found it easy, those that weren't found it more difficult".

~ MEND program staff

CHILDHOOD HEALTHY WEIGHTS INTERVENTION INITIATIVE

The family journey through MEND



The evaluation found recruitment to be challenging and resource intensive. For example, during Cycle One, some of the challenges were due to the project’s initial timeline; set up, marketing and recruitment activities occurred simultaneously over an approximate six week period – half the time recommended in MEND program guidelines. Program staff leveraged existing relationships to raise awareness about MEND. However, MEND host agencies had varying capacity to develop marketing materials and promote the program in their communities.

Another perceived challenge was that the need for a healthy weights intervention did not appear to resonate with some eligible families (those with children with a BMI-for-age between the 85th and 97th percentile). Only 12% of participating children were overweight; the majority (84%) were obese³¹. Some stakeholders believed that many parents do not recognize that their children are departing from the healthy weight trajectory and can benefit from an intervention, and this notion is supported by literature [11, 12].

“The BMI entry criteria was a turn off for families”.

~ MEND program staff

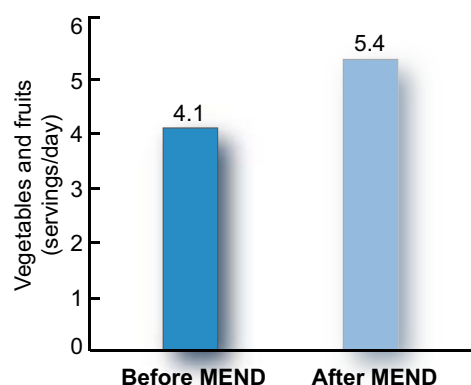
On a related note, some stakeholders suggested that subdued enrolment was due to parental concerns about stigmatizing children by ‘naming the problem’. Further, some program staff found that discussing the program’s BMI eligibility criteria³² with families was challenging. These concerns also impacted the extent of program promotion that health professionals and community groups were willing to provide.

5.2.2 MEND 7-13 PARTICIPANTS MADE HEALTHY LIFESTYLE CHANGES

Families made healthy lifestyle changes during MEND 7-13 and planned to make more changes after finishing the program. Program staff perceived that parents had increased confidence in parenting and in implementing healthy lifestyle choices. Among those participating in MEND and for whom both a pre-and post-measure were available, the analysis found statistically significant positive changes in the following:

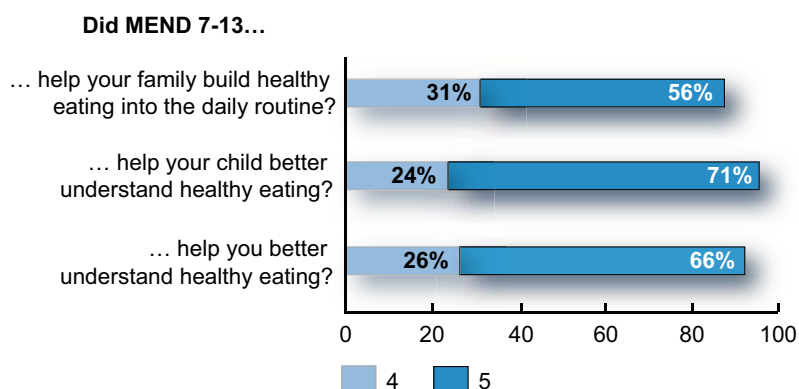
- nutrition:
 - nutrition score (measured using the MEND nutrition questionnaire)
 - servings of vegetables and fruit
 - other nutrition indicators (eating breakfast more frequently, eating more whole grains, eating less fast food or takeout, eating more meals as a family, cooking from scratch more often)

Children ate more vegetables and fruits after MEND 7-13



n = 234 children with parents reporting pre- and post-measures

MEND 7-13 helped families better understand healthy eating and build it into daily routine



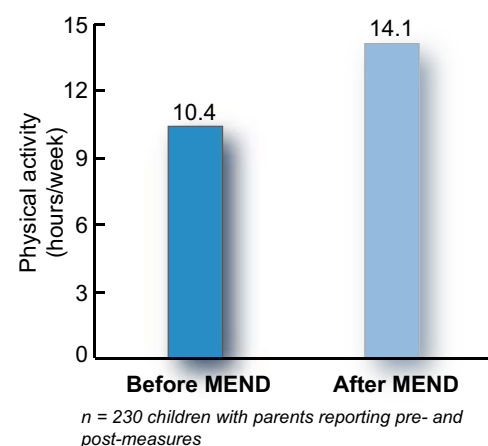
n = 259 parents responding to Family Feedback Surveys
Responses are on a 5 point scale where 1 = 'not at all' and 5 = 'definitely'

³¹ Source: OMMS Raw Data. Data was missing for three percent of the 329 children who commenced MEND 7-13. Note: Percentages do not add up to 100% due to rounding.

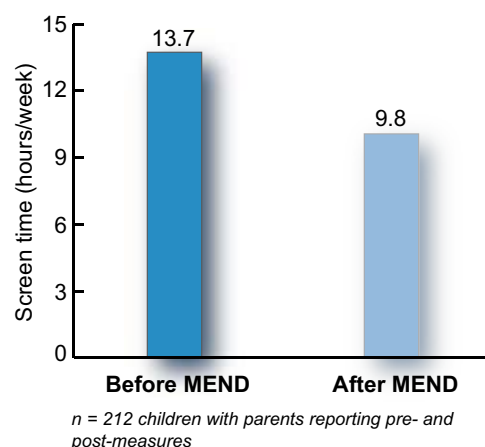
³² Children were eligible if their BMI-for-age was above the 85th percentile according to the WHO growth curves.

- **physical activity:**
 - hours of physical activity per week (parent reported)
 - physical activity score (child reported, using the PAQ-C)
- **sedentary behaviour:**
 - hours of screen time per week (parent reported)
- **psychological well-being:**
 - emotional distress (measured using the Strengths and Difficulties Questionnaire)
 - body-esteem (measured using the Body-Esteem Questionnaire)
 - self-esteem (measured using the Rosenberg Self-esteem Scale)
- **anthropometry:**
 - child BMI and BMI z-score
 - child waist circumference
 - parent BMI

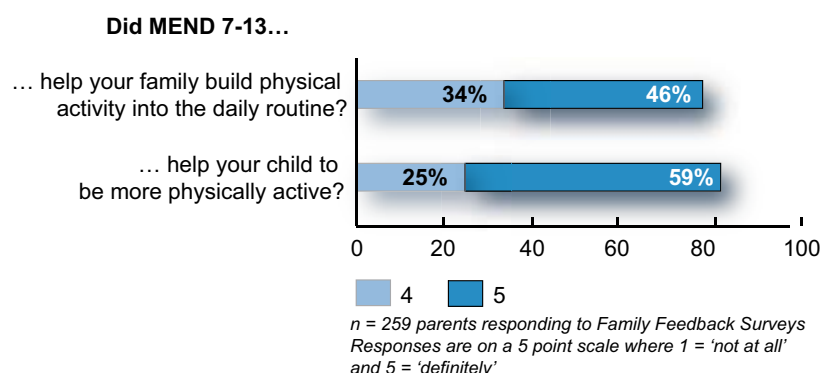
Children increased physical activity and met Canadian physical activity guidelines



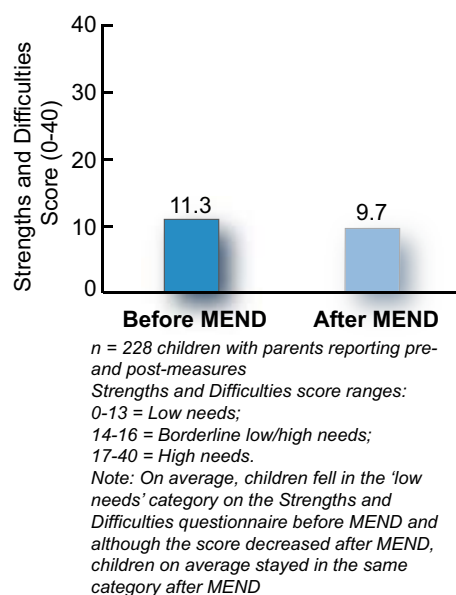
Children reduced their screen time and met Canadian sedentary behaviour guidelines



MEND 7-13 helped families build physical activity into their daily routine



Children's emotional distress was reduced after MEND 7-13



What would you tell your friends about MEND 7-13?

"That you learn about being healthy you meet friend and its fun".

"We get to play games and read labels".

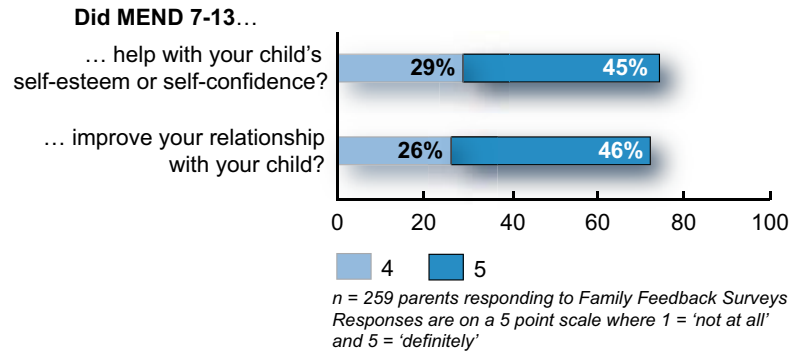
"Kind of had fun, loved the activities but not the classroom time".

"It's a lot of fun and I would go if I were you".

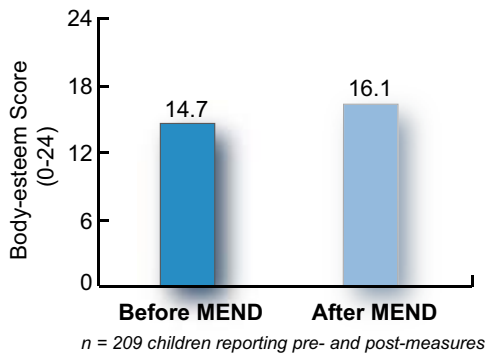
"Probably that it was a little bit fun. But I haven't and never will tell them about MEND because it's embarrassing".

~ Sample child responses

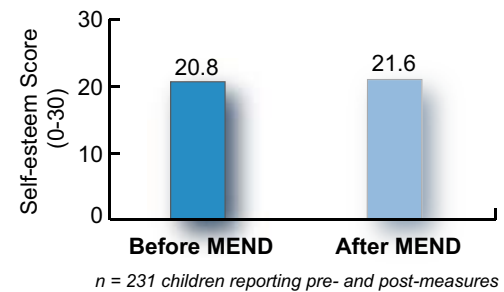
Parents felt that MEND 7-13 helped their child's self-esteem and improved their relationship with their child



Children felt better about their body image after MEND 7-13



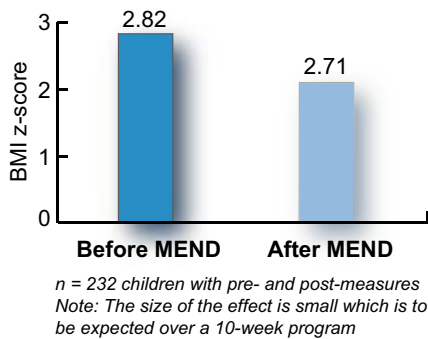
Children's self-esteem improved after MEND 7-13



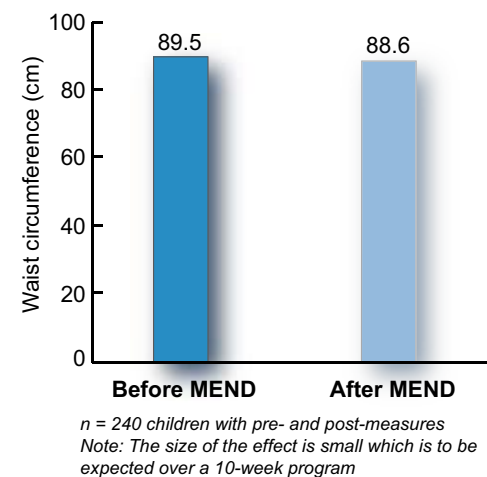
“MEND needs to focus on the right fit, right time, right place. Both parent/caregivers and children have to be willing to learn and make a commitment in order for the program to work and be successful”.

~ MEND parent

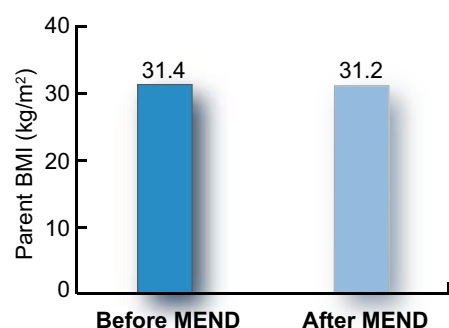
Children's BMI z-score decreased after MEND 7-13



Children reduced their waist circumference after participating in MEND 7-13



Parents' BMI reduced after MEND 7-13



n = 202 parents with pre- and post-measures
Note: The size of the effect is small which is to be expected over a 10-week program

"I just saw an 8 year old girl and her father. Together they completed the MEND program and loved it. Now both have embraced healthier lifestyles and both are on healthier weight trajectories".

~ Physician

Results showed no statistically significant changes in:

- select nutrition indicator (no change in sugar sweetened drinks consumption)
- fitness (recovery heart rate)
- sedentary activity score (child reported, using the PAQ-C)

This MEND evaluation's results are similar to the findings in other jurisdictions. A randomized control trial of MEND in the UK [13] had many similar findings to the outcomes observed in BC. Further, MEND 7-13 was delivered and evaluated in Alberta between September 2010 and May 2013. Programs evaluated were adapted to the Canadian context and are similar to those delivered in BC. Changes in MEND Alberta's outcome data were very similar to the changes observed in the MEND BC data across nutrition, physical activity and fitness, sedentary behaviour, psychological well-being and anthropometry categories [14].

5.2.3 SERVICE DELIVERY PARTNERS WERE PLEASED TO PARTICIPATE IN MEND

Overall, MEND service delivery partners interviewed were pleased to participate in MEND's implementation. Seventeen communities offered MEND programming during the scope of the evaluation (in total, for both MEND 7-13 and MEND 5-7). Additional programs ran in Fall 2014 and Winter 2015 and more are planned for Spring 2015.

5.2.4 FAMILIES AND STAFF WERE SATISFIED WITH MEND 7-13

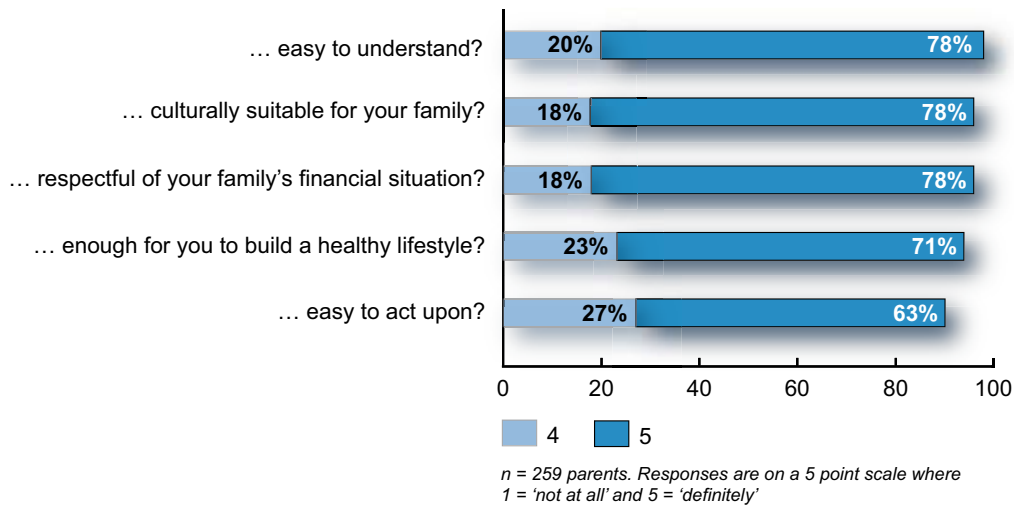
Overall, families and program staff were satisfied with MEND 7-13 and its programming. Additionally, most program staff were very enthusiastic about the program. MEND 7-13 content was perceived to be excellent; families and children in attendance were easily engaged and enjoyed participating. Both parents and children enjoyed the children's exercise sessions, and program delivery team members perceived that children gained confidence, skills and fitness. Program delivery team members also perceived that parents benefitted from and appreciated peer support from other families dealing with similar lifestyle challenges.

Program delivery teams learned how to adapt the curriculum to meet the needs of most participants. The main program adaptations involved tailoring activities to suit smaller group sizes and to accommodate families whose children spanned a wide age and developmental range. Some families did not function well in a group setting. At times difficult family dynamics and behavioural issues were challenging to manage in the group setting.

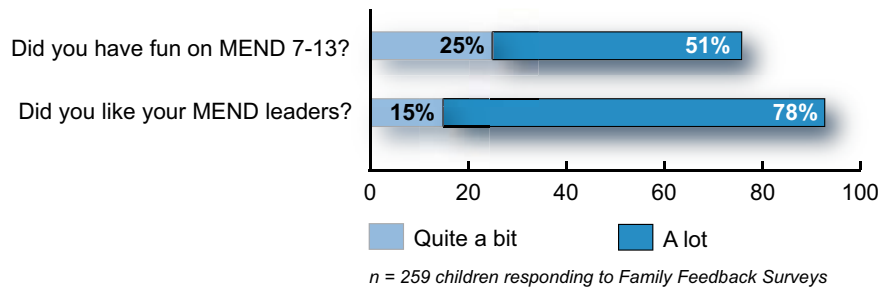
Overall, most parents who completed family feedback surveys indicated that MEND was suitable for participating families and for Canadians in general. However, some program staff perceived that

Parents reported satisfaction with the information provided by MEND 7-13

Was the information given in sessions...



Children had fun and liked their leaders



further adaptations are needed for MEND to be relevant for First Nations and food insecure families and communities. The group format was also described by program staff as less than ideal for families with multiple barriers (e.g., transportation, child care) and families with limited English language skills.

MEND 7-13 training was perceived to be positive and high quality. Suggested training improvements included providing a demonstration of a full session, and more discussion on modifying programs

and addressing behavioural issues. MEND regional coordinators were perceived to be highly valuable in assisting delivery teams to make appropriate adjustments.

“Keeping in mind that many families are food insecure, purchasing ‘new’ foods is very risky for them, because if the family doesn’t like it right away, that food and the money spent on it goes to waste”.

~ MEND program staff

Program delivery teams from seven of the eight MEND 7-13 sites interviewed reported that families were unhappy with the time and effort required of them for data collection and measurement; however, very few families specifically mentioned in their feedback surveys that they did not like the data collection.

Program staff indicated that additional preparation time was needed the first time the program was implemented. They also described the OMMS database as time consuming to use.

5.2.5 THE FOUNDATION FOR SUCCESSFUL LONGER-TERM IMPLEMENTATION HAS BEGUN TO BE ESTABLISHED

There are indications that the foundation for a successful longer-term implementation of MEND has begun to be established. MEND is in an early stage of integration with community and health services.

Program staff and stakeholders recognized that MEND's ability to serve eligible British Columbians will require a focus on adaptations to make the program more accessible to families with barriers, and to provide service closer to home (geographic locale and location in community). Stakeholders suggested that efforts to achieve greater recruitment support from health professionals would be strengthened by:

- concentrated efforts to raise awareness of the programs
- addressing concerns around MEND's approach to healthy weights
- ensuring health professionals understand how MEND fits in the clinical care pathway
- establishing mechanisms to ensure any underlying medical and psychosocial issues are identified and appropriate supports are provided

"[MEND]'s ... strength comes through integration with broader family-based programming, as part of a 'complete suite' of programs to meet community need".

~ Provincial stakeholder

5.3 MEND 5-7 Evaluation Findings

Please note Section 5.2.3 discusses the Adoption RE-AIM category and Section 5.2.5 discusses the Maintenance category, for both MEND 7-13 and MEND 5-7.

5.3.1 RECRUITMENT WAS CHALLENGING

The MEND 5-7 interventions commenced during Cycle Four of the evaluation, one year later than MEND 7-13 programs began. Based on experiences with MEND 7-13 in BC, and with MEND 5-7 in other jurisdictions, the Initiative anticipated that recruiting this younger age group would require more effort. In order to respond to anticipated recruitment challenges, MEND 5-7 broadened the eligibility criteria to include children at a healthy weight who had other risk factors. Thus, in addition to children with a BMI-for-age above the 85th percentile³³, the program accepted healthy weight children who had overweight or obese parents, were picky eaters, and/or were highly sedentary.

Broadening the eligibility criteria made it easier for program staff to discuss the program with interested families and stakeholders. Focusing program screening discussions on families' desire for healthy lifestyle changes rather than BMI was perceived by the staff as helpful in promoting the program and influenced families' decisions to enroll.

Despite the broader eligibility criteria, recruitment was very challenging, labour intensive and had limited success. While MEND 7-13 found recruitment to be resource intensive, recruitment difficulties were significantly more pronounced for MEND 5-7. Stakeholders perceived that a number of factors contributed to this, as discussed below:

- the need for a healthy weights intervention did not appear to resonate with eligible families.
 - some stakeholders believed that parents did not recognize when their children were departing from a healthy weight trajectory and could benefit from an intervention [11, 12]. In particular, some stakeholders theorized that, with this young age group, some parents felt their children would just outgrow their 'baby fat'

"The younger kids were not aware of the stigma associated with weight – they thought they were coming to have fun".

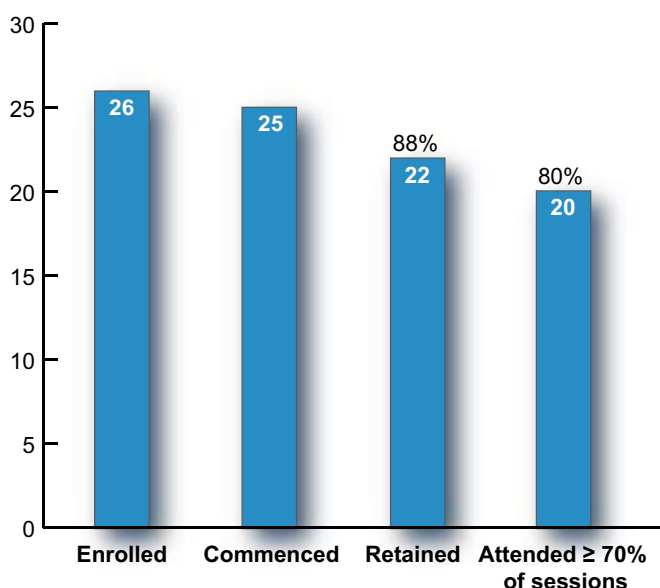
~ MEND program staff

³³ Children were eligible for MEND programs if their BMI-for-age was above the 85th percentile according to the WHO growth curves.

- some stakeholders thought that parents and care providers (e.g., program staff, school and daycare staff and health professionals) might have concerns about stigmatizing children by ‘naming the problem’
- concerns about weight stigma and challenges with talking about weight impacted the extent of program promotion health professionals and community groups were willing to provide
- primary care practitioners have limited routine contact with children ages five to seven so there were few recurring opportunities to identify issues and refer children
- in some communities there were other “competing” lifestyle programs for families who have children in this age group
- marketing materials focussed on the MEND ‘brand’, and there was no brand recognition in BC. In addition, host agencies had varying capacity to develop enhanced marketing materials

A wide variety of strategies were used to promote MEND 5-7 locally and provincially. The most frequently reported inquiries about MEND 5-7 came from community centres and schools. Twenty-five children attended MEND 5-7. Of those, 88% (22) were retained in the program. The program being free of cost and including siblings were facilitators to attendance for many families. As with MEND 7-13, finding a time and place that works for all families was challenging; what worked for some families did not work for others.

Almost all children were retained in MEND 5-7 and attendance was high



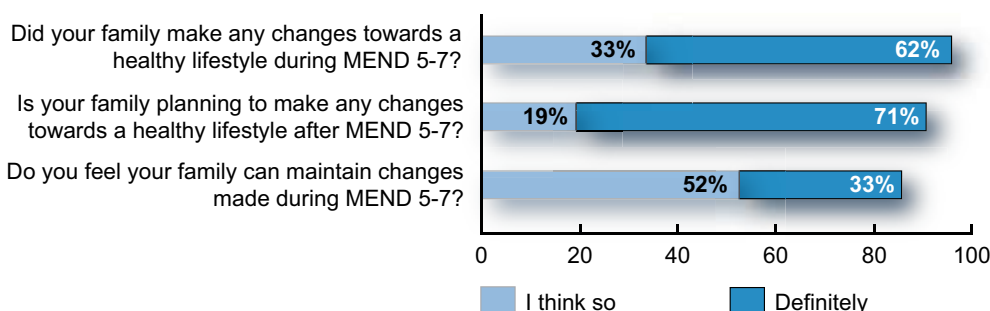
Percentages displayed are calculated based on # commenced

5.3.2 FAMILIES REPORTED MAKING HEALTHY LIFESTYLE CHANGES

Families made changes towards healthy lifestyles during MEND 5-7 and planned to make further changes after finishing the program.

Due to the small number of children who participated in MEND 5-7 and the broadened eligibility criteria, data was highly variable and analysis was underpowered to detect significant changes in most variables over the course of the program. However, statistically significant and meaningful changes were made in a few areas. These included that parents reported that, on average, children reduced their

Families made changes towards healthy lifestyles during MEND 5-7



n = 21 parents responding to Family Feedback Surveys

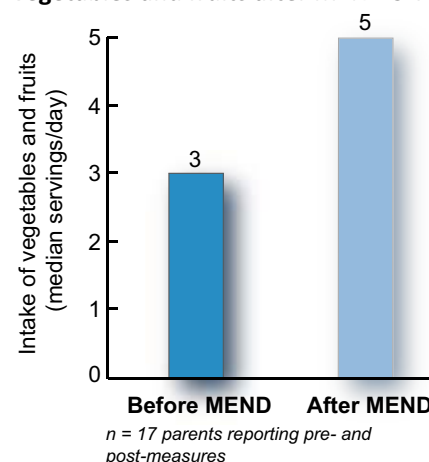
screen time by 3.7 hours per week and that they themselves increased their vegetable and fruit consumption by two servings per day after MEND 5-7.

Perhaps the most meaningful outcomes were the parental perceptions that their relationships with their children had improved, that they felt less stressed about feeding their children and that they perceived their child's confidence had increased.

Positive impacts reported by program delivery teams included that children enjoyed the exercises, and retained key MEND concepts and messages (e.g., power foods). As well, program staff believed parents benefitted from and appreciated peer support from other families facing similar lifestyle challenges.

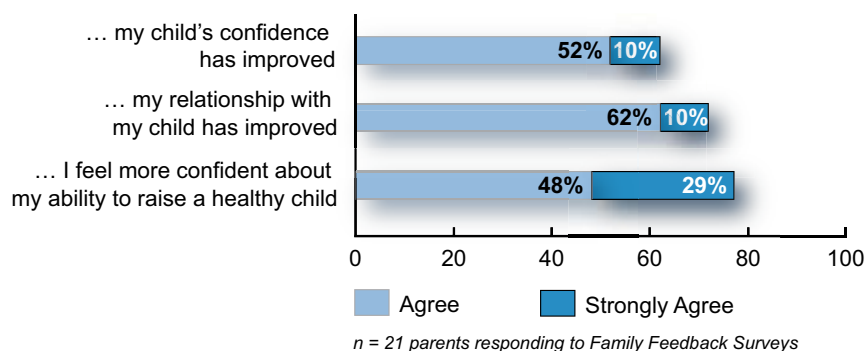
Having a desire and commitment to make lifestyle changes was perceived as the most critical factor for family success in the program. Notably, some program staff noticed families using the free recreation passes following program completion.

Parents increased consumption of vegetables and fruits after MEND 5-7



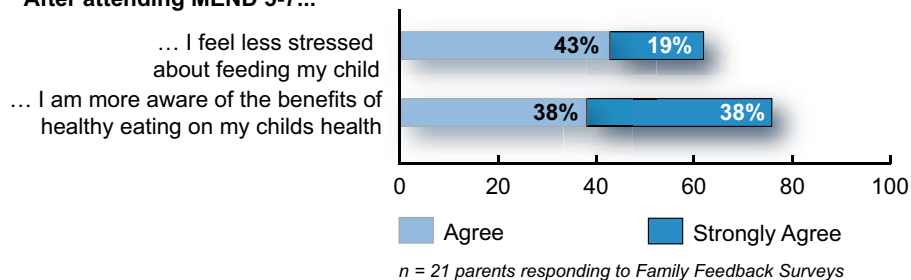
Many parents felt their child's confidence and their own parenting confidence improved after MEND 5-7

After attending MEND 5-7...



Many parents felt less stressed about feeding their children after MEND 5-7

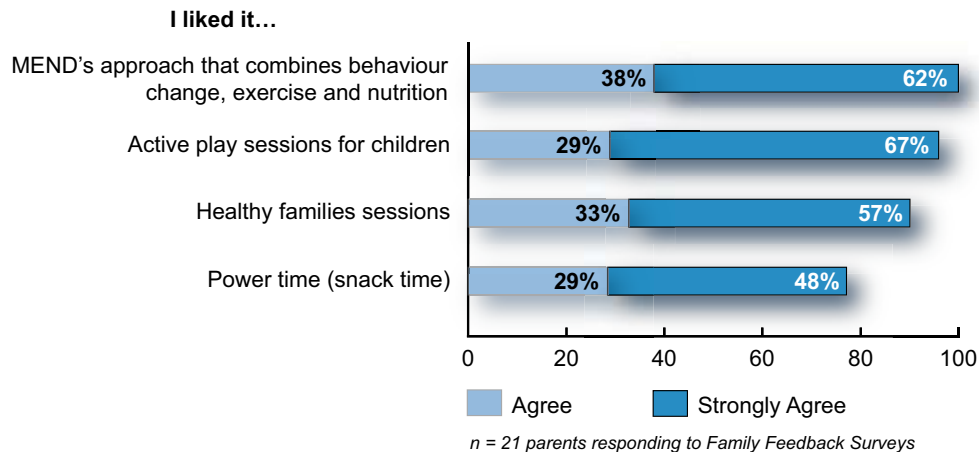
After attending MEND 5-7...



5.3.3 FAMILIES AND STAFF WERE SATISFIED WITH MEND 5-7

Overall, families and program staff were satisfied and found MEND 5-7 programming acceptable. Program content was perceived to be excellent and was well received by families and program staff. Parents and children in attendance were easily engaged and enjoyed participating.

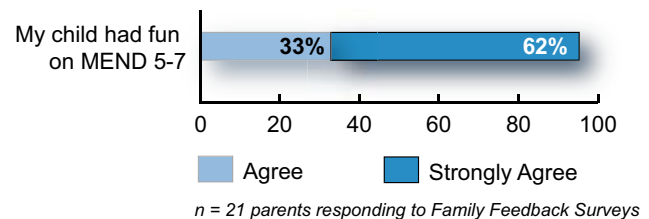
Parents highly rated the approach and program components of MEND 5-7



“So much can be done using animal actions, sound etc. which allowed the kids to be very playful. So often the kids have no idea they are exercising they just know they are having fun”.

~ MEND program staff

Children had fun participating in MEND 5-7



Overall, MEND 5-7 programs were implemented according to program guidelines. The main program adaptations involved tailoring activities to suit a smaller group and to incorporate parents into the child physical activity sessions. Program staff described the need to balance MEND's highly scripted program delivery with adaptations necessary to engage and meet the needs of participating families. Program staff preparedness, creativity, teamwork and enthusiasm facilitated successful program implementation. Program delivery teams were enthusiastic about the program and spent unpaid time preparing for program delivery. Program staff highlighted that additional time was needed to implement the program for the first time.

Program delivery teams in two of the three MEND 5-7 program sites reported that families were unhappy with the time and effort required for data collection and measurement.

Program delivery team members perceived HWP training to be positive and high quality. And, MEND regional coordinators were perceived as highly valuable in assisting delivery

“It would have been good if they let us know that it is not going to happen by the book – you have to fly on your own because parents will have difficult questions, kids will want to do different things, the fact that you have to run with it and make it your own is not part of the training – it was more on the rigid side. Our experience was the need for flexibility”.

~ MEND program staff

teams to make appropriate program adjustments. All program staff highly valued the opportunity to network and build relationships with peers.

Information provided was culturally relevant for attending families; however, the group delivery format was challenging for families with multiple barriers (e.g., transportation, child care) and families with limited English-language skills. Further, difficult family dynamics and behavioural issues were challenging to manage in the group.

5.4 MEND Conclusions

MEND 7-13 is an effective, quality program. Overall, families who committed to attending were highly satisfied with the program and made significant changes in their lifestyles. Challenges associated with recruitment need to be addressed in order for more BC families to benefit from MEND. Also, changes to the curriculum are needed to address staff and stakeholder concerns about enhancing the program's relevance for food insecure families, and First Nations families and communities, while maintaining the elements of the program that participants liked.

MEND 5-7 is in the early stages of delivery in BC. Program staff believed that although shifting the focus and eligibility criteria from BMI to lifestyle behaviours facilitated enrollment, strategies that address recruitment issues are needed in order for the program to reach more families. While it is premature to comment on the effectiveness of MEND 5-7, families reported making numerous healthy lifestyle changes. Families were highly satisfied with the program and children had fun, and this has been attributed to staff enthusiasm, creativity and teamwork.



6.0 STRENGTHS AND LIMITATIONS



The following strengths and limitations reflect the ‘real world’ practicalities of evaluating a complex, province-wide demonstration project.

Strengths

The evaluation’s external validity is high; it was conducted during the actual implementation of family-focused healthy weights programs in BC. Demographic information gathered from children, teens and their parents showed that, for the most part, those who participated in the Initiative reflected the diversity of BC families. Consequently, the evaluation findings can be generalized to other BC families who may participate in the interventions in future.

The various instruments used to measure outcomes were valid and reliable. The majority of questionnaires used to assess outcomes (e.g., psychological well-being, physical activity, sedentary behaviour, nutrition) were validated questionnaires. The physical measurements utilized to assess anthropometry were reproducible, widely-used procedures.

Both Shapedown BC and MEND were evidence-based programs implemented effectively in other jurisdictions (MEND) or in BC (Shapedown BC) prior to this province-wide demonstration project. The existing evidence helped guide evaluation planning and was useful for comparative purposes.

The data used in this evaluation are from comprehensive data sets that provided opportunities for triangulation and confirmation. Both quantitative and qualitative data were gathered from a broad range of sources including multiple categories of participants (e.g., children, teens, parents), program delivery staff, partners and stakeholders. A wide range of instruments and methods were used such as physical measures, written and telephone surveys, focus groups and individual interviews, program data such as written reports and comprehensive databases. The broad data set also provided the foundation for assessing the key components of the RE-AIM framework.

Identifying, recruiting and treating childhood obesity is complex. Recent research suggests that qualitative techniques are effective in exploring complex public health issues [15]. To help understand this complexity, this evaluation gathered and analyzed multiple lines of qualitative data, mostly through interviews.

From planning through to final reporting, the Initiative has been guided by an evaluation working group whose members bring varied perspectives to the Initiative including academic, non-profit and government.

Limitations

There was no control group for Shapedown BC, MEND 7-13 or MEND 5-7. Thus, causality of the interventions on observed changes cannot be confirmed. However, the current findings are consistent with outcomes observed in a previous evaluation of Shapedown BC [10] and in a MEND 7-13 randomized control trial [13].

The evaluation did not collect quantitative follow-up data beyond the last session of the Shapedown BC and MEND interventions. Therefore, it is unknown if changes observed and reported during the program were maintained. Family follow-up telephone interviews were conducted on a small sample of participants four to eight months after program completion. The interviews found that some families had continued to maintain the changes they had made during the program. However, the qualitative interview data cannot be directly compared to the quantitative outputs gathered before and after families participated in Shapedown BC or MEND.

Families who withdrew did not complete feedback forms at the end of the program. Some families who were retained did not complete feedback forms. Therefore, data provided in feedback forms only represents families who were retained in the program and completed feedback forms. It is not known whether families who withdrew or did not complete forms would have responded differently than families who were retained and completed them.

There was no way to assess whether BC families, in general, heard about the programs. It is also not known why families who heard about the programs and were eligible to participate in Shapedown BC or MEND did not contact the programs and, therefore, did not participate in the interventions.

For some Shapedown BC measures only a small sample were used in data analysis. And, only a small number of children participated in MEND 5-7. As a result, data analyses were underpowered to detect significant change in outcomes for these Shapedown BC measures and for the MEND 5-7 program.

An awareness of the above strengths and limitations can inform the Initiative's future scale up development and other lifestyle programs that intend to expand and evaluate programs across multiple sites.

7.0 DISCUSSION OF KEY FINDINGS

Shapedown BC and MEND are two of three components within the Childhood Healthy Weights Intervention Initiative. The province-wide Initiative provides support to children and families in their journey to achieve and maintain healthy weights. Shapedown BC serves families with children who have significantly departed from the healthy weight trajectory and may have complex medical and psychosocial issues. MEND is intended to support families with children who are just departing or are off the healthy weight trajectory. The two programs share common characteristics in their approaches to supporting BC children — both focus on families as the core of the change strategy and encourage healthy eating and physical activity to address overweight and obesity.

The evaluation found that Shapedown BC and MEND had many similar implementation experiences and outcomes. Key findings that apply across the Initiative are discussed below. Detailed, program-specific key findings are presented in Section 4.2 (Shapedown BC) and Sections 5.2 and 5.3 (MEND).

Stakeholders have described the Initiative as an ambitious undertaking. The Childhood Obesity Foundation and its partners were able to plan, launch, deliver and evaluate a community-based program that was new to BC (MEND). It also expanded and evaluated a clinical intervention (Shapedown BC) that was previously offered at BC Children's Hospital in Vancouver to four new sites around the province. The Initiative offered programming at 22 demonstration sites. This was achieved in just over two years. And, although these programs are beyond the scope of this evaluation, the Initiative supported the development of a Chinese language adaptation of Shapedown BC and the telehealth-based HealthLink BC Eating and Activity Program for Kids (HEAPK).

Shapedown BC and MEND were effective after scale up in BC. Overall, children, teens and parents who committed to attending intervention programs made significant changes towards healthier lifestyles and moved towards healthier weights. Families gained knowledge and learned skills that have had a significant, positive impact on their lifestyle behaviours. The changes reported were similar to changes observed in previous evaluations of Shapedown BC [10] here in this province, and MEND in Alberta [14] and the UK [13].

Families who participated in Shapedown BC and MEND were satisfied with their interventions. Once people enrolled, the programs were well attended and retention was comparable to previous evaluations of Shapedown BC [10], MEND [13], and with interventions for pediatric chronic conditions [16]. Participating families and program staff were enthusiastic about the programs and satisfied with the content.

The Shapedown BC and MEND programs reached a diverse demographic. This included BC families from all five health authority regions. Participating families in both Shapedown BC and MEND had a variety of income levels and children and teens represented various ethnicities. Both single and two-parent families took part in the interventions. The demographic profile of the Shapedown BC and MEND participants reflect the diversity found in the BC population in general.

The Initiative offered programming for both overweight and obese participants. However, it primarily served families with children and teens who were at the uppermost end of the weight continuum³⁴; the majority of children and teens who participated in Shapedown BC and MEND 7-13 were obese.

A variety of factors facilitated family participation in Shapedown BC and MEND. These included family readiness to seek lifestyle behaviour interventions e.g., if a child's weight had been identified as a health issue or was a parental concern. Participation was also facilitated by families being aware of and interested in the interventions, and having a clear understanding of the family commitment required.

"Free program and it was made interesting for the kids. They wanted to come back."

~ MEND Parent

The characteristics of the program being offered also played a role; the age groupings, timing and location worked well for some families.

The conditions that facilitated participation for some families served as barriers for others. Eligible families who inquired about participating in either Shapedown BC or MEND provided similar reasons for not enrolling in the programs including family readiness, program schedule and transportation challenges such as distance. Family illness and family circumstances like other time commitments also hindered participation. Commonalities also existed in reasons families were ineligible for the programs. Families were ineligible to participate if their child or teen's BMI was too low, age was outside the range of programs offered, and/or the family could not commit to having a parent attend every session.

Despite significant effort being expended to disseminate information about Shapedown BC and MEND, recruitment was the greatest challenge encountered during the Initiative. Both Shapedown BC and MEND used a variety of promotional strategies to raise awareness about the interventions. Program staff mentioned that being able to draw upon established networks and the presence of community champions assisted with recruitment and promotion. Provincial stakeholder engagement strategies were initiated to raise awareness among health professionals and other stakeholders. This is consistent with the literature where researchers exploring the recruitment strategies used in pediatric obesity interventions found that attracting participants for childhood obesity programs demanded significant resources and suggested that successful recruitment for pediatric trials should use several strategies [17]. These researchers also found that active recruitment methods such as pediatrician referral, used extensively with Shapedown BC, and targeted mailings were the most successful strategies. It is possible that additional resources would have aided program promotion. Stakeholders echoed this concern and suggested that programs would benefit from increased marketing activity and coordination.

Stakeholders commented on the inherent challenges of introducing a new program to any community; sometimes it takes time for people to learn that an intervention exists and what it offers. As well, some stakeholders believed registration was subdued due to parents not realizing that their children were departing from the healthy weight trajectory. This is consistent with the literature, which states that parents do not identify their children as off the healthy weight trajectory until they have significantly departed [11, 12]. In keeping with stakeholder observations and the literature, MEND participant data provided some support for this reasoning; the vast majority of MEND 7-13 participants were obese rather than overweight.

In addition, some stakeholders wondered whether enrolment was affected, in part, by parental concerns about stigmatizing children and teens by 'naming the problem'. These stakeholders proposed that interventions targeted at overweight and obese children and teens promoted weight stigma or had an inherent weight bias. Sensitivities arose about using phrases like 'above a healthy weight' in promotional materials. Some literature suggests that weight bias may contribute to poor psychological well-being [18]. Consequently, some stakeholders had reservations about promoting the programs. It is important to note, however, that once parents experienced 'triggers for change', such as weight affecting other areas of their child or teen's life, they sought an intervention—and retention was high.

"The one thing I have learned in this program is that prevalence rates don't matter – there needs to be alignment of so many things to have families ready. Weight alone is not enough. Usually there are coexisting issues like bullying, teasing, something medical, or unhappy kids."

~ Shapedown BC program staff

³⁴ The WHO standard for overweight children is defined as a BMI-for-age between 85th and 97th percentiles; for obese children it is above the 97th percentile. Above a healthy weight is defined as a BMI-for-age above the 85th percentile, as per WHO growth curves.

And, contrary to the assumptions, participants' psychological well-being (including self-esteem and emotional distress) significantly improved after participating in Shapedown BC and MEND.

The Initiative's experience, and that of others, suggests that multiple strategies are needed to reach and attract families who can benefit from the interventions – the one-third of Canadian children and youth who are overweight or obese [3]. Getting these children into interventions before unhealthy lifestyle habits are entrenched could reduce the need for more costly treatment as they mature into adulthood. Stakeholders suggested that issues like recruitment and promotion, weight bias and weight stigma should be addressed collaboratively by the Province and its partners.

Both Shapedown BC and MEND program staff valued the training and ongoing practice and technical support they received. These include resources, opportunities to network with peers and provincial and regional coordination. This training and support helped program staff to deliver their interventions with quality and fidelity.

Shapedown BC and MEND program staff would like to see reduced data collection requirements. The evaluation was conducted within the constraints of 'real world' program delivery. It was planned to leverage data that would be regularly collected by program staff through program activities, regardless of the evaluation. Future efforts should consider the balance between overarching program management and evaluation needs and the evaluation's impact on program staff and families.

There is a desire among key partners for ongoing communication and engagement with the Initiative. Regional relationships are being established to support program sustainability. Additional programs have been offered since the conclusion of the evaluation and Shapedown BC and MEND programs will be delivered in future to support the health of BC families.

"The Initiative is breaking new ground in forging multi-agency partnerships to address serious public health issues—it needs to be recognized how unique it is that the different agencies freely come to the table. There is much learning to be done on how that works, how to support government/ community/ health care and community services collaborations on a provincial level".

~ Provincial stakeholder

8.0 CONCLUSIONS

The Childhood Healthy Weights Intervention Initiative was developed to address an identified gap in services for children and teens who were departing or had already departed the healthy weight trajectory. If they remain off trajectory, one-in-three Canadian children and youth face social and health risks during childhood that will carry into adulthood, including higher morbidity and mortality. The Initiative adopted two evidence-based interventions that were previously shown to work on a limited scale in BC (Shapedown BC) and in other jurisdictions (MEND), and demonstrated that they continued to be efficacious in a BC context. Supportive programs were delivered in 22 demonstration sites, attracting a range of families who were satisfied with the program. This evaluation showed that the successful scale up was achieved, in part, as a result of quality programming and delivery using a partnership approach.

The province-wide scale up of Shapedown BC and MEND provides a template for other initiatives and jurisdictions and sheds light on the partner-guided course corrections that are important to long-term sustainability of such programs. Innovative promotion and recruitment strategies are needed to ensure the programs reach and attract those families who need intervention services. The Initiative aims to help families shift several behavioural trajectories—some up and some down—to increase healthy eating, increase physical activity and reduce sedentary behaviour.

The Initiative successfully used a family-focused, multi-agency approach to addressing childhood obesity. The Province and BC agencies are working together to help shift the healthy weight trajectory to ensure more children are destined to become adults who enjoy positive health outcomes.

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Resources and Links

DietitianServices@HealthLinkBC: healthlinkbc.ca/healthyeating

Physical Activity Line: physicalactivityline.ca

WHO Growth Curves: dietitians.ca/Your-Health/Assess-Yourself/Assess-Your-BMI/BMI-Children.aspx

Eating Well with Canada's Food Guide: hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php

CSEP Physical Activity and Sedentary Behaviour Guidelines: csep.ca/guidelines

Childhood Obesity Foundation's Our Journey Report: <http://childhoodobesityfoundation.ca/articles-reports/>

Childhood Obesity Foundation website: childhoodobesityfoundation.ca

YMCA website: vanymca.org

BCRPA website: bcrpa.bc.ca

APPENDICES

Appendix A – Definitions

OVERARCHING DEFINITIONS

Term	Definition
Cycle One	Preparation and delivery of Shapedown BC and MEND group interventions in Spring 2013 (April – June)
Cycle Two	Preparation and delivery of Shapedown BC and MEND group interventions in summer and Fall 2013 (July – December)
Cycle Three	Preparation and delivery of Shapedown BC and MEND group interventions in Winter 2014 (January – March)
Cycle Four	Preparation and delivery of Shapedown BC and MEND group interventions in Spring 2014 (April – June). Note: MEND group interventions starting in February or March 2014 are included in Cycle Four
Demonstration Project	Demonstration projects provide the means to introduce and experience innovative ideas and approaches and prepare the way for replication and up-scaling (United Nations Centre for Human Settlements (UNCHS Habitat). 2001 p 77)
Parents	Throughout this report the term ‘parents’ is used to describe parents and non-parent caregivers, which includes grandparents and legal guardians
Participant	This report uses the general term “participant” for both Shapedown BC and MEND evaluation reporting. Participants in Initiative programs include children and parents. In limited cases, participants include other family members and friends. Where possible, the report uses more specific terminology, such as children and parents

SHAPEDOWN BC DEFINITIONS

Term	Definition
Referrals	Children/teens referred by Physicians (required in order to be considered for the program)
Referrals Out	Referrals sent to: 1) Another Health Authority; 2) Concurrent services (e.g., Healthlink, PAL); 3) Concurrent tertiary care (e.g., cardiology, GI, etc.)
Intake Assessment	Intake assessment takes place during the intake session. It is a four-hour medical, bio-psychosocial and lifestyle assessments, which provides a critical view of family readiness, motivation and capacity. The assessment also provides valuable insight into the medical and psycho-social contributors to the child or teen’s challenges
Feedback Session	Feedback session occurs two to three weeks after intake assessment. It is a one-hour meeting between the mental health specialist, Registered Dietitian and family to discuss findings and next steps. This session provides a review of the intake assessment. Often, the information shared in this session becomes the stimulus for change and will enhance readiness and thus program participation. The final step at this meeting is to determine the appropriate intervention option that will ensure the best outcome for the family.
Intervention	Group intervention or modified intervention
Individual support	Individual consultations provided by dietitian or mental health professionals. Individual consultations may be provided before, during or after the group intervention or modified intervention
Assigned to intervention (Group intervention or modified intervention)	Completed feedback session and indicated desire to participate in group intervention or modified intervention
Commenced	Attended at least one session of intervention (group or modified)

Withdrawn	Participants who communicate withdrawal from Intervention and no desire for future participation, or participants who stop attending and do not communicate why. Participants with a “closed” file after commencing intervention. Does not include participants who continue with Shapedown services (e.g., individual support consultations) post-group despite withdrawing from group or modified intervention
Attended 70% of Group intervention sessions	Attended 70% of group intervention sessions Calculated including all who commenced group intervention (including withdrawals)
Intervention Retention rate	Calculated as # of participants not withdrawn divided by # of participants who commenced

MEND DEFINITIONS

Term	Definition
Documented Inquiries	Number of families who contacted MEND programmers for info about the program or for registration. NB: this number only captures inquiries documented by programmers. It does not capture calls to recreation centre front desks or calls programmers did not record
Enrolled	Families who contacted MEND sites, and said yes to participating in MEND – this is before program starts, and therefore can include participants who say they will attend but who withdraw before the program starts or don’t ever show up. Includes a small number of healthy weight children (e.g., siblings of eligible children who participated although their BMI-for-age was below the 85th percentile cut-off criteria)
Commenced	Enrolled participants who attended at least one session.
Withdrawn	Participants who withdraw from the program or stop attending without communicating why
Retention Rate	Calculated as # of participants not withdrawn divided by # of participants who commenced
Attended 70% of sessions	Attended 70% of sessions or more Calculation includes those classified as withdrawals
Delivery partners	Key Initiative delivery partners including the YMCA of Greater Vancouver, BCRPA, participating YMCA and BCRPA member recreation centres
Host agencies	Local organizations that delivered MEND, including the City of Abbotsford, Strathcona Regional District, Kamloops Community YMCA-YWCA, YMCA of Okanagan, Township of Langley, City of Nanaimo, Regional District of Central Kootenay, YMCA of Northern BC, District of Saanich, City of Terrace, Strathcona Community Centre Association, YMCA of Greater Vancouver, City of New Westminster, YMCA-YWCA of Greater Victoria
Sites	Locations where MEND interventions were delivered
Program staff	Overarching term that includes program delivery team members, program administration staff, and the MEND provincial management team
MEND provincial management team	Includes MEND provincial manager and MEND regional coordinators
Business leads	Participating YMCA and BCRA member recreation centre staff who are not program delivery team members
Program delivery teams	Those delivering program content to families
Health authority representatives	Health authority staff who participated in health authority stakeholder interviews

Appendix B – RE-AIM Framework

Framework Category	Evaluation Question
REACH	
Awareness	How effective were the awareness, marketing and stakeholder engagement strategies in raising awareness of the interventions among the key stakeholder/referral groups?
Program Processes	How effective were program processes (e.g. eligibility criteria, screening processes, and clinical pathways) in generating appropriate referrals to the interventions?
Utilization	To what extent are the interventions (MEND, Shapedown BC, HLBC-DS) reaching the intended/eligible client population(s)?
	Within the eligible populations, who is participating in the interventions, who is not, and why?
	What proportion of families complete the intervention programming?
Access	To what extent do families, community partners, health authorities and other stakeholders consider the programs accessible to eligible families?
	What are the facilitators and barriers to referral and participation by eligible families?
EFFECTIVENESS	
	What are the direct health, activity, nutritional and psychological impacts of the programs on participants and families?
	How do these outcomes compare to those reported in previous MEND and Shapedown BC evaluations?
ADOPTION	
	To what extent are eligible organizations interested in providing the programs (e.g. RHAs, YMCA and BCRPA community sites)?
IMPLEMENTATION	
	What are the success stories, facilitators and barriers to implementing the interventions in BC?
	What are the unintended impacts (positive and negative)? Include spin off benefits
Acceptability	To what extent are the programs acceptable/meaningful to families, community partners, health authorities and stakeholders?
Quality	To what extent were the programs implemented with fidelity?
	To what extent did the training meet the trainee needs? What worked well, what could be improved?
Relevance	How were the delivery models adapted to meet the needs of different communities/subpopulations?
Satisfaction	To what extent were families, health authorities, community partners and stakeholders satisfied with the interventions?
	What are client, provider and stakeholder perceptions of the benefit and value added by the programs?
Integration	Linkages with other relevant supports and services
Cost	Cost per program; cost modelling for business model

MAINTENANCE

What are the conditions for successful longer term implementation of MEND/

ShapedownBC /HLBC-DS in the BC context?

What is the optimal model for delivery of the interventions in the longer term?

What is the optimal model for governance of the interventions in the longer term?

Contributions to system of care and outstanding gaps

Appendix C – Key Findings by RE-AIM

SHAPEDOWN BC	
RE-AIM Framework Evaluation Category	Key Finding
REACH	
Report Section 4.2.1	Shapedown BC reached diverse families
EFFECTIVENESS	
Report Section 4.2.2	Children, teens and families made healthy lifestyle changes during Shapedown BC
ADOPTION	
Report Section 4.2.3	Five health authorities implemented Shapedown BC
IMPLEMENTATION	
Report Section 4.2.4	Most participants and staff expressed high levels of satisfaction with Shapedown BC
MAINTENANCE	
Report Section 4.2.5	Stakeholders provided suggestions for successful longer term implementation of Shapedown BC
MEND 7-13	
RE-AIM Framework Evaluation Category	Key Finding
REACH	
Report Section 5.2.1	MEND reached a broad demographic
EFFECTIVENESS	
Report Section 5.2.2	MEND 7-13 participants made healthy lifestyle changes
ADOPTION	
Report Section 5.2.3	Service delivery partners were pleased to participate in MEND
IMPLEMENTATION	
Report Section 5.2.4	Families and staff were satisfied with MEND 7-13
MAINTENANCE	
Report Section 5.2.5	The foundation for successful longer-term implementation has begun to be established
MEND 5-7	
RE-AIM Framework Evaluation Category	Key Finding
REACH	
Report Section 5.3.1	Recruitment was challenging
EFFECTIVENESS	
Report Section 5.3.2	Families reported making healthy lifestyle changes
IMPLEMENTATION	
Report Section 5.3.3	Families and staff were satisfied with MEND 5-7



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