Informing Physician Communication with Children Regarding Weight: Family Perceptions and Motivational Interviewing Tools

by

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A thesis submitted in conformity with the requirements for the degree of Doctor of Philosophy

Institute of Medical Science
University of Toronto

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Abstract

The goal of this research was to understand perceptions of children with obesity (study 1), their parents (study 2), and physicians (study 3) regarding weight-related communication in primary care through qualitative methods. These perceptions informed a randomized clinical trial (Motivational Interviewing (MI) vs. education) (study 4) addressing physician identification and communication about weight in primary care.

Studies 1, 2, and 3: Separate focus groups and individual qualitative interviews with 35 children with obesity (5-17 years of age), their 42 parents and 12 primary care physicians were completed. The aims were to understand how the three participants of weight-related discussions in primary care perceived communication and obesity management. Data analysis was completed using the fundamental descriptive method for content analysis. Children identified factors perceived to hinder and promote positive attitudes towards weight-related behaviour change. Parents identified familial factors and feelings, perceived physician practices (parent-physician interactions and child-physician interactions), and recommendations from parents. Physicians identified barriers to weight management, how they cope and their needs for addressing weight with children.

Study 4: The aim of this randomized controlled trial of MI vs. education-based training for primary care physicians was to improve the identification of obesity and communication with children with obesity, and to determine the efficacy of the MI training on MI skill retention. Outcomes included changes in rates of BMI calculating, tracking and identification of obesity, change and retention of MI scores in those randomized to the MI group. Factors associated with primary outcomes were also identified. This study indicated that primary care physicians are a
difficult group to engage as subjects for training interventions. Collective physician training in management of obesity is effective at improving BMI calculation and obesity identification rates. The MI training curriculum can be applied in a brief session and group format and results indicate adoption and maintenance of MI scores on empathy, collaboration and autonomy support.

The studies in this thesis identify areas where communication about weight in primary care can be targeted. They highlight a potential for MI training and adoption of technique as means of improving counseling confidence. It also identifies challenges in physician enrollment and participation in trainings.
Acknowledgments

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Thank you to the University of Toronto and the Hospital for Sick Children for the opportunity to pursue my PhD studies and for facilitating my learning.
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<td>MI</td>
<td>Motivational Interviewing</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>CMA</td>
<td>Canadian Medical Association</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>TTM</td>
<td>Transtheoretical Model</td>
</tr>
<tr>
<td>LDL</td>
<td>Amount of cholesterol in circulating low-density lipoprotein particles</td>
</tr>
<tr>
<td>TPB</td>
<td>Theory of Planned Behaviour</td>
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<tr>
<td>HBM</td>
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1 Thesis Overview

1.1 Overview of background and rationale

Obesity, once thought to be a condition of adulthood, is now prevalent in children of all ages. It is associated with co-morbidities, and is one of the most important public health problems today. Various contributing factors have been identified, including an increase in consumption of energy dense foods, decreased time spent doing physical activity, and an increased time spent in sedentary pursuits such as screen time activities. Research has demonstrated that children’s weight can be reduced when they change these behaviours. Primary care physicians (physicians) are at the forefront of the process of identifying and treating obesity in children; yet, research has shown that physicians are not effectively and consistently addressing weight with their pediatric patients. Motivational Interviewing (MI), a collaborative conversation style for strengthening a person’s own motivation and commitment to change [1], has been used to support weight-related behaviour change among both adults and children. MI may be an effective tool for physicians as they engage with overweight patients and their parents.

Patients often turn to their physicians for guidance and support and believe it is their physician’s role to manage chronic medical conditions such as obesity. The current research sought to better understand the communication processes among children with obesity (Chapter 4), their parents (Chapter 4), and physicians (Chapter 5). More specifically, it used three qualitative studies to identify the different expectations, perceptions, and communication preferences of the triad of stakeholders addressing childhood obesity in primary care. The results of these qualitative studies were used to inform a randomized clinical trial (Chapter 6) that addressed the feasibility and efficacy of an MI based intervention with education alone in changing the way physicians address obesity with their pediatric patients.

1.2 Understanding Stakeholder Perspectives

This thesis tells a story of perceptions, needs, and obstacles expressed by children with obesity, their parents, and physicians. Studies 1, 2, and 3 used a qualitative approach to increase our understanding of how children with obesity, their parents, and a group of physicians, respectively, perceive the communication that takes place during the medical management of obesity in children. In the first two studies, separate focus groups and individual interviews for
children and parents explored the perspectives of children with obesity of both groups (Chapter 4). Study 3 involved focus groups with family physicians and pediatricians (physicians; Chapter 5).

1.3 A step towards improved communication, self-efficacy, and obesity management in primary care: Supporting physicians with education and ‘know-how’ in identifying and motivating overweight kids.

Perspectives from Studies 1-3 were merged with obesity management strategies reported in the literature to develop the educational material for Study 4 (Table 1). The training curricula for the two arms of the randomized clinical trial were obesity management education and MI for brief patient encounters (Study 4, Chapter 6). Physicians were randomized into one of the arms and completed a MI retention questionnaire. A patient chart audit was also completed for each physician in his or her office at baseline, 6 and 12 months. Study outcomes included documentation of body mass index (BMI) calculation, its tracking, and documentation of obesity identification.
Table 1. Description of Individual Studies Comprising the Current Thesis

<table>
<thead>
<tr>
<th>Study</th>
<th>Chapter</th>
<th>Participants</th>
<th>Methods</th>
<th>Research Purpose</th>
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<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>Children with obesity</td>
<td>Qualitative focus groups and individual interviews</td>
<td>Explore child perspectives about interaction with physicians regarding weight in primary care</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Parents of children with obesity</td>
<td>Focus groups and individual interviews</td>
<td>Explore parent perspectives about interaction with physicians regarding weight in primary care</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>Family physicians and pediatricians in primary care</td>
<td>Qualitative focus groups</td>
<td>Explore physicians’ perspectives about communicating with children with obesity and their families regarding weight in primary care</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>Family physicians in primary care</td>
<td>Randomized trial comparing MI intervention to education only to improve physician’ rates of identifying and communicating about obesity with children</td>
<td>To and evaluate physician’ rates of identifying and communicating about obesity with children</td>
</tr>
</tbody>
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1.4  Research Roles and Responsibilities

The research described in this thesis is the compilation of work done by Maya Obadia (PhD Candidate). For all the studies, Maya Obadia’s roles began at conception and design. Maya moderated all the focus groups and interviews for studies 1-3 (with the exception of 1 focus group with physicians which was moderated by Dr. Patricia Longmuir). She also analyzed all the transcripts. For study 4, Maya Obadia also coordinated the trainings (MI and education). Maya
Obadia and Dr. Denise Ernst taught the MI trainings and, concurrently Dr. Brian McCrindle taught the educational trainings. Both Dr. Denise Ernst and Maya Obadia are MI trainers trained under the Motivational Interviewing Network of Trainers. Maya Obadia with the assistance of study volunteers completed the data collection for study 4. Maya Obadia and Cedric Manlhiot collaborated and completed the quantitative data analyses. Maya Obadia completed the synthesis and write up of this thesis under the guidance of the thesis committee.
2  Background / Present State of Knowledge/ Rationale

2.1  Determinants of Obesity in Children

The prevalence of obesity has reached epidemic levels with 11.7% of Canadian children ages 5-17 years identified as obese (BMI >95 percentile), and 19.8% as overweight (85<BMI percentile<95) [2]. The percentage of overweight children between the ages of 4 and 5 years in the United States has approximately doubled since the 1970s. Furthermore, an estimated 17% of children including adolescents were considered to be overweight and 33.6% were at risk [3]. Data collected in the National Health and Nutrition Examination Survey (2009-2010) in the US found that 12.1% of children between 2 and 5 years old were obese [4], as well as 18% of children and adolescents between the ages of 6 and 19 years [4]. European countries showed a similar trend. An alarming issue is that obese children tend to become obese adults, facing an increased risk of diabetes, heart disease, orthopaedic problems, and many other chronic diseases [5, 6]. Obesity and co-morbidities will only add to the already overburdened health care system. The cost of obesity in Canada has been conservatively estimated at 2.4% of total health care expenditures, equating to approximately $2 billion [7].

Several factors have been identified as contributors to the obesity epidemic in children. There has been a decrease in consumption of fruits and vegetables, with less than 5% of Canadian children consuming five servings of fruits and vegetables a day [8, 9], along with an increase in consumption of sugary drinks [10]. A sedentary lifestyle is another factor, as sedentary Canadian boys are more likely to be obese than their more active counterparts [8]. Over a third of Canadian children (aged 6-11) reported having more than two hours of screen time each day. Screen time is defined as the amount of time spent watching television, playing video games, and using the computer. These children are twice as likely to be overweight or obese than children who report only one hour or less of daily screen time [8, 11].

In order to reverse the trend of increasing childhood obesity, it is important to identify those at risk and target these behaviours. Physicians have a role to play in addressing these behaviours
while treating children with obesity.

2.2 Recommendations for Treatment of Obesity in Children

It has been recognized that physicians are integral to the identification and treatment of weight issues, and several organizations have published best practice guidelines. For example, the Canadian Medical Association published recommendations for physicians’ roles in the treatment and prevention of obesity in the 2006 Canadian Clinical Practice Guidelines [12]. Other published practice guidelines include the National Institute for Children’s Healthcare Quality’s implementation guide from the Childhood Obesity Action Network (US) [13], the Pediatric Obesity tool kit provided by the Blue Cross and Blue Shield Associations (US) [14], and the Healthy Active Living Initiative for Children and Youth (Canada). Although these guidelines are aimed at geographically different communities such as Canada and the US, they cover similar topics, including: recommendations on assessing medical and family history; performing physical examinations; measuring heights and weights; calculating, plotting, and tracking Body Mass Index (BMI); ordering laboratory tests for glucose, lipids, and liver function; dietary and physical activity assessments; and addressing child/family’s readiness for change when incorporating Motivational Interviewing [12-14].

The current thesis primarily utilized the recommendations from the Canadian Medical Association’s (CMA) 2006 Clinical Practice Guidelines to formulate recommendations. The CMA guidelines include obesity treatment strategies for children with a BMI between the 85th and 95th percentiles (overweight), and greater than the 95 percentile (obese) [12, 15-17].

BMI has been widely accepted as a diagnostic tool in determining a child’s overweight/obesity status, as it is a reasonable proxy for weight status measurement in children and adolescents [18, 19]. BMI normative values used for Canadian children are those from the World Health Organization (WHO) [17]. Overweight in childhood, defined using BMI percentile cut offs, is a strong predictor of obesity in young adulthood [20]. Furthermore, physicians who use BMI as an assessment tool are more likely to accurately rate the weight status of their pediatric patients than those who use height and weight charts separately [21]. Despite their success, there has been some controversy about the use of BMI as a surrogate for measuring adiposity. Suggested alternatives include waist circumference, since those with heightened waist-to height ratios have
increased cardiometabolic risk factors [20, 22]. In fact, recent evidence exists for the use of waist circumference to height ratio as a measure of adiposity, since it is associated with cardiometabolic risk for overweight and obese adolescents [23]. A waist circumference to height ratio below 0.5 is considered healthy [23]. However, the lack of normative data, high risk of measurement error and time required to administer the waist circumference to height measurement contribute to its lack of use, result in BMI percentiles being the recommended tool for clinical care [24, 25].

Despite consistent treatment recommendations, survey studies in the US have shown that only 22% of physicians report using BMI charts regularly [21, 26] and this may be an overestimation as it is likely that physicians who agree to participate in obesity studies have a pre-existing interest in obesity [21]. Research has indicated that measuring and charting BMI is a good method for physicians to identify patients who are overweight and obese, however it is most often utilized when patients are extremely overweight [16] and not at earlier points of intervention.

2.3 Physicians’ Roles in Medically Managing Childhood Obesity

Physicians have access to, and can identify, children at risk and are pivotal players in the treatment of childhood obesity. In Ontario, between 2002 and 2004, there were 46 pediatrician visits per year per 100 children aged 0-17 years [27]. In Ontario, family physicians also see a significant number of children with 9912 general practitioners and 362 pediatricians who provided primary care to nearly 3 million children between 2003 and 2005 [28]. In adult populations, patients who were advised to lose weight by their physicians were significantly more likely to make a behaviour change. This suggests that physicians can use their respected role for facilitating behaviour change [29]; however, physicians do not see themselves as successful in this role. Despite the reported behaviour changes by their adult patients, physicians have reported low self-efficacy in counseling overweight children and their families. They feel they do not have sufficient influence over their patients to motivate lasting long-term changes [30]. Physicians have reported several barriers to the prevention and treatment of obesity in children including: lack of obesity training during medical school and residency, lack of consensus between patient and physician about who is responsible for the treatment, lack of confidence in the effectiveness of treatment options, concerns regarding triggering patient-
physician relationship breakdown, inability to cope with the scale of the childhood obesity problem, feeling that advice giving has little impact, challenges maintaining a balance of treatment without instilling further psychological problems in the child, lack of self-efficacy in counseling abilities, time and/or resources constraints, running out of time, lack of adequate knowledge to provide counselling, poor availability of efficacious interventions, and lack of reimbursement for these services [11, 16, 30-37]. Physicians have also indicated that using BMI charts as a visual tool to initiate discussion has contributed to their limited success with children of both sexes [26, 38] and that BMI chart use may not be needed for children with BMI percentile above 95% because they ‘know obesity with they see it’ [39]. Longitudinal plotting of BMI in primary care setting may target early identification which can lead to opportunities for communication about weight [39]. Despite the fact that physicians have adopted an almost fatalistic perception that nothing works [30], many of these barriers could be addressed by additional training [40]. Results from a randomized trial of physicians receiving an educational toolkit to increase use of BMI to screen for obesity in children suggests that comprehensive professional guidelines and continuing medical education were the preferred tool for improving how they treat children with obesity [40]. This same trial indicated mailing an educational toolkit can affect their self-reported practice and has a physician response rate of 40% [40], an improvement from that of others’ [37].

2.4 Families’ roles and opinions about physicians’ management of obesity

2.4.1 Parental Contribution and Perceptions

Parents also play a crucial role in obesity treatment, since they serve as role models and are involved in the day-to-day routines of their children. They significantly influence eating habits, level of physical activity, and time spent in sedentary pursuits [41-43]. Despite this some parents have limited understanding that being overweight or obese can lead to psychological consequences as well as physical ones [41].

In an opinion survey about childhood weight, parents of school students identified themselves as influencing children’s weight in a number of ways: permissiveness, being too tired from working all day and not having the time to instil good eating habits, being a poor role model, not
providing enough support and fearing for their children’s safety [37]. These survey results are supported by other literature that discusses parents as role models, supporting the finding that children are more likely to lose weight when their families lose weight together [44] and parents’ general feelings of concern for their children and helplessness in managing childhood obesity [41, 42]. Therefore, the views of parents need to be included in the child’s behavioural change process.

Parental views and opinions are also important in building relationships between families and the children’s physician. For example, parental preferences in their child’s medical care become more relevant when a child is already struggling with weight [45]; therefore physicians have an opportunity to engage parents of children with obesity. Parents also expect physicians to raise the issue of weight and providing weight-related advice [46]. In interactions with their child’s physicians parents perceived a lack of feedback regarding weight as an indication that a problem did not exist and therefore no needs for parental concern or alarm [47]. From this, the take home message is that communication between families and physicians is integral to identification and treatment of a weight issue.

2.4.2 Including children in discussions about weight

Children have reported various motivations for improving their own weight status. These include: wanting to fit in, being bullied, and a lack of physical strength and endurance relative to their peers [48]. Children have also identified some barriers to changing their behaviours, such as difficulty adhering to lifestyle restrictions and lack of confidence [48]. Alarmingly, included in these barriers to making changes for children are their physicians’ behaviours, particularly the feeling of not being heard [48].

Exploring overweight children’s preferred means of communication is warranted and may provide insight into how to engage in dialogue about weight and health. Focus groups in health research regarding cancer and developmental delay have shown that groups can be used to establish an appropriate method of communication that accounts for the perspectives of pediatric patients and their families [10-12]. Similarly, exploring overweight children’s’ preferred means of communication should provide insight on how to engage in a successful dialogue about weight and health.
2.5 Use of Behavioural Techniques to Improve Medical Management of Obesity in Children

In the past, physicians have welcomed further training opportunities such as Continued Medical Education sessions on ways to address overweight in their pediatric patients [25]. They have also expressed an interest in resources they can share with their patients [32]. Unfortunately, there are few current opportunities for physicians to receive such training [49, 50]. In fact, training in counselling children and their families about weight management is in great demand.

The use of counselling techniques such as Motivational Interviewing (MI), *a collaborative conversation style for strengthening a person’s own motivation and commitment to change* [51], has recently been incorporated into the training of medical students and residents in the US [52, 53], indicating recognition of the importance of such skills. The technical definition of MI is: *A collaborative, goal-oriented style of communication with particular attention to the language of change. It is designed to strengthen personal motivation for and commitment to a specific goal by eliciting and exploring the person’s own reasons for change within an atmosphere of acceptance and compassion* [51]. The atmosphere of acceptance and compassion is appropriate for primary care medical offices. Medical students have demonstrated ease in learning brief MI over a two hour period when provided with a specific protocol [54]. Practicing physicians participating in training have reported that MI is more effective than traditional advice-giving [25]. This being the case, physicians may incorporate it into their practices with no additional time requirement [25]. In order to incorporate MI, physicians must create a balance among following, guiding, and directing their patients towards change [55]. “Directing” involves mostly communicating to patients in the form of advice with little input from the patient, while a “following” approach involves almost no direction or advice from the physician [55]. Using a “guiding” approach is preferred, since it creates a balance between using active listening and reflection, and with permission, informing the patient of the medical information that is essential for their health. This approach facilitates the patient’s readiness and intrinsic motivation to make change [55].

2.5.1 Motivational Interviewing

Assessing readiness for change is an important step towards achieving effective counselling strategies that elicit the behaviour change required for the prevention and treatment of obesity in children [55]. Readiness for change is a construct of the Trans-Theoretical Model (TTM) and
Stages of Change [56]. This model stipulates that behaviour change occurs through a series of six stages, and is not continuous, with people often relapsing to a previous stage [56]. The readiness for change construct has played an integral role in the development of MI [57]. MI assumes that behaviour change is affected more by motivation than information and recognizes that the individual is a necessary partner in his or her own health behaviour change [36, 37]. MI’s first phase, building motivation for change, coincides with TTM’s pre-contemplation and contemplation stages. Progressing through the preparation, action, and maintenance stages of the TTM can be achieved by utilizing tools specific to MI’s second phase of strengthening the commitment to change [55, 57] (Table 2). Training physicians with patient-centered tools such as the TTM stages of change, so that they can target their counselling to the patient’s level, has been shown to be effective in increasing physician self-efficacy [58].

**Table 2. Phases of Motivational Interviewing and the Corresponding Stages of Change from the Trans-Theoretical Model [51,52]**

<table>
<thead>
<tr>
<th>Motivational Interviewing</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building motivation for change</td>
<td>Strengthening commitment to change</td>
<td></td>
</tr>
<tr>
<td>Trans-Theoretical Model</td>
<td>Precontemplation</td>
<td>Contemplation</td>
</tr>
<tr>
<td></td>
<td>Preparation</td>
<td>Action</td>
</tr>
</tbody>
</table>

MI helps individuals work through their problems by taking a positive perspective. It uses techniques drawn from existing models of psychotherapy and behaviour change theory [59]. A safe relationship is established between the patient and interviewer where the tone is encouraging rather than confrontational [59]. The goal is to make the patient come to terms with the consequences of their behavioural choices and for them to make conscious efforts to change when ready.

Motivational interviewers use four key strategies. The first is eliciting what the patient already knows about obesity and ways to treat and prevent weight gain is a strategy that empowers the patient and allows the physician to use consultation time more efficiently [55]. Reflective listening, the second step, helps the patient through the self-discovery process and displays empathy [59]. If the interviewer is met with resistance, he or she explores its cause and follow up
with agenda setting and asking permission, as means of rolling with resistance. Here the interviewer must resist the righting reflex, the tendency to correct or provide prescriptive advice [55, 57, 60]. The patient feels more in control by playing an active role in deciding what will be discussed or what goals they would like to attain. Another strategy, eliciting self-motivational statements, creates a voice for the patient and fosters a greater success rate [55, 60].

The success of physicians administering MI to their pediatric patients requires proper training and practice. This can be challenging due to a professional background with a righting reflex approach that lacks counselling and communication skills, and time limitations to do the MI [60]. A physician may typically have up to 10 minutes with a patient; yet, a number of studies across health behaviours have shown that intervention effectiveness typically increases with contact time [60]. To alleviate this problem, physicians have begun to use shorter intervention methods but repeated contact with the patients, allowing new behaviours to form and build and provide constant support [60]. Furthermore participation in a MI training via co-active life coaching suggests that perceived autonomy and competence, attitude towards practitioner efficacy to facilitate behaviour change and attitude towards behaviour change in routine care among practitioners (nurses, pharmacists, social workers and dieticians) improves indicating promise for a MI training with physicians in primary care [61]

2.5.2 Brief Motivational Interviewing and Behaviour Change

Historically, MI was initiated as part of substance abuse treatment and was practiced by psychologists during lengthy counselling sessions [57]. Since then, brief MI interventions have been adapted for use in clinical settings by various health care professionals experienced with MI methods [55]. Techniques used during these brief interventions include:

- Diminishing resistance – Responding to patient resistance to change with client-centred empathetic listening [55].
- Developing discrepancy – Providing movement towards change by eliciting statement from patients that suggest an inconsistency between his or her behaviour and core values [55].
- Triggering behaviour change using open ended questions and reflections that focus on the patient’s statements of change, which enhance motivation for
MI uses open ended questions, affirmations, reflections, and summaries to facilitate change [55]. Reflections (paraphrasing meaning and feelings, including but not limited to demonstrating inconsistencies) can be useful in demonstrating to the patient that the physician is listening and diminishes any assumptions made by either physician or patient [55]. By exploring the person’s values, interests, and concerns, the patient’s autonomy, collaboration and evocation of ideas is supported. MI has been adapted for behaviour change including, but not limited to, adherence to treatment, weight loss, lowering of lipid levels, increasing physical activity, improving HbA1c levels (measure of a person’s average levels of blood glucose over the past 3 months, used for diabetes management), adherence to asthma medication, and smoking cessation [39].

**Previous Research and health outcomes: children and adults**

MI has been successful with adult patients making various health behaviour changes [62]. A randomized control trial with 217 overweight women undergoing obesity-treatment sought to improve weight and glycemic control outcomes. This study reported that those women who were randomized to receive five MI sessions had significantly more weight loss (-4.7±5.4 kg vs. -3.1±3.9 kg, p=0.003) (6 and 18 months) and reduced HbA1C (reduced by 0.8±1.12% vs. -0.5±1.12%, p=0.002) (6 months) than women who received an attention control. A randomized trial of a 1011 adults at 14 churches receiving either information (control), self help strategies, or self help and MI sessions reported that the group receiving MI ate significantly more fruits and vegetables daily compared to baseline, (0.79 vs. 0.16, p<0.01, and 0.60 vs. 0.10, p<0.01, respectively) [63]. In evaluating the impact of MI using Co-active life coaching skills with adults with obesity, participants attributed increased self-confidence, learning to cope with life in a healthy matter, putting self-first, and learning to step outside of their comfort zone to the training [64]. Therefore this study provides support for the MI model to effectively support families dealing with life factors that contribute to obesity in children.

There is also promising data on its use with children and adolescents [59]. In a pre-post intervention design study, MI was used with assessments of readiness for change in an effort to reduce LDL-C (amount of cholesterol in circulating low-density lipoprotein particles) among
adolescents through adherence to a diet. Children who received MI sessions had a significantly decreased caloric intake from fat, and consumption of dietary cholesterol, and also reported being satisfied with the counselling [65]. When used with diabetic adolescents, MI interventions were focused on awareness, building alternatives, problem solving, making choices, goal setting, and avoidance of therapeutic confrontation. At the end of the randomized controlled trial comparing MI treatment and support only (control), the mean hemoglobin HbA1c in the MI group was significantly lower than in the control group, and this difference was maintained at the 24-month measurement. The group of adolescents receiving MI counselling also reported significantly higher life satisfaction, lower life worry, experienced less anxiety, and had more positive wellbeing [66]. These psychosocial benefits are the driving force of continued intrinsic motivation. Randomized controlled trials comparing brief repeated MI counselling sessions and smoking cessation advice demonstrated success, with a greater proportion of children making quit attempts following MI sessions [59, 67]. A randomized trial aimed at reducing cavities in 240 children ages 6 – 18 months with parents either receiving information or information and six telephone-based MI sessions showed that the children in the MI group had significantly less carious lesions than those children in non-MI group (0.71 vs. 1.91 new carious lesions, p<0.01) [68]. A study investigating the use of MI vs. standard care for 152 adolescents (13-17 years of age) with positive blood alcohol levels treated in an emergency department reported that adolescents who screened positive for problematic alcohol use at baseline had significantly more improvement on 2 of 3 alcohol use outcomes (average number of drinking days per month and frequency of high-volume drinking) if they received MI compared with standard care. These studies indicate that MI is an effective tool for helping children and adolescents to manage chronic disease with positive behaviour change.

### 2.5.3 Motivational Interviewing and Obesity in Children

Promoting a healthy body weight in children is another area where MI has been successful. The ‘Go Girls’ study was a church-based nutrition and physical activity program for 123 overweight African-American adolescent girls utilizing a moderate (20-30 min) and high-intensity (40-60 min) MI regimen. Although the group receiving 40 to 60 minutes of MI did not have a significantly larger decrease in BMI, their BMIs were 0.5 kg/m² lower [59]. This non-significant trend remains clinically significant for girls whose age-adjusted BMI percentile cut point is on
the cusp between overweight and normal weight [18]. A feasibility study evaluating the efficacy of an MI program administered by pediatricians and registered dieticians showed no significant differences in BMI between those children who did not receive MI, those who had a single MI session, and those who received four MI sessions [69]. This study did not randomize physicians into treatment groups, which may have contributed to the lack of a significant difference [69]. Nevertheless, participation and support from health care providers have demonstrated support for physicians as recipients of MI training and their abilities to administer the technique. When doing so, it is important to re-educate or re-stimulate the physicians’ learning, as it has been shown that when physicians learn MI its use dissipates 6 months following training [70]. Learning and using MI adherent tools such as: asking open-ended questions, resisting giving advice without permission, is a communication behaviour change in itself for physicians. Positive reinforcement, and repeated practice are necessary components of maintaining MI adherence. However, like behaviour change models, physicians may relapse into previously used methods and even to different stages of change [51].

MI has been recognized as an effective approach to treating a wide range of behavioural, developmental, and social disturbances in children within a pediatric setting. Research suggests that pediatricians and parents tend to overestimate the ability of younger children, and underestimate the ability of older children, to understand illness-related concepts. MI with younger children needs to be adapted to the child’s causal reasoning, language ability, self-understanding, and environmental context [71]. One solution is to intervene in the parents’ weight-related risk behaviour as means of benefiting their children by using tools such as: open ended questions, summary questions, and joining with the child in the treatment [71]. Furthermore, physicians may have to utilize more questions than reflections for younger children in order to get a response [59]. Since research suggests that both pediatricians and parents have tendencies to underestimate the ability of older children and to overestimate the ability of younger children in their ability to understand illness-related concepts [71], phase two of MI will need to be addressed in a specific and developmentally appropriate manner. Even though MI with children may require some modifications for childhood developmental stages, children can advocate for their own health and are likely to benefit from its use. Using MI with adolescents can utilize the adult MI model more seamlessly than with younger children because in some cases the MI can be done with the adolescent alone and not with the parents [1, 55].
2.6 Rationale

Overweight/obesity in children is an important growing public health concern that needs to be addressed. Recommendations for physicians have been established as means of improving rates of obesity identification and treatment, yet they are not always followed \[72\]. Using qualitative methods, the current thesis was designed to add to the existing literature regarding perceptions of children with obesity and their parents, specifically in the context of communication with their physicians (Studies 1 and 2). Including perceptions of children and parents from the same families, specifically about how obesity is addressed in primary care provides is a unique contribution to the literature. Physician barriers to communicating about weight with children in primary care were also investigated (Study 3). Addressing how physicians cope with the barriers and their needs as they pertain to the barriers to communicating about weight with their pediatric patients is an invaluable contribution. This thesis delves into the perceptions of the triad of the childhood obesity management stakeholders to establish areas of commonalities and contradictions among children, their parents and physicians in order to inform MI training.

The MI literature indicates substantial support for its use in weight-related behaviour change and how it is accepted by health care providers \[48, 55\]. Therefore, teaching physicians a curriculum of MI for brief sessions was deemed appropriate and was the content of Study 4. A feasibility trial in training physicians in MI for addressing reduction in weight in children suggests that MI training was positively received. A lack of comparative training for physicians in the control group resulted in larger drop out rates. Therefore this study proposed an education-based control group with similar time commitment \[69\]. Utilizing a randomized-control trial, a quantitative technique, complemented the previous studies on MI. Study 4 aimed to evaluate the efficacy of MI training, versus education only, on three outcomes: identifying obesity, and calculating and tracking BMI, as recommended by 2006 Clinical Practice Guidelines. The findings from these studies may have important clinical implications for health care providers in primary care.
3.1 Transtheoretical Model [56]

The constructs associated with the Trans-Theoretical model (TTM) include the stages of change, decisional balance, self-efficacy, and processes of change. This theory assumes that no single theory can account for behaviour change, which is a process that unfolds over time, in a sequence of stages. These stages are open to change and a person often reverts to previous stages. Specific processes apply to each of TTM’s stages.

At each of the five stages posited by Prochaska and DiClemente (precontemplation, contemplation, preparation, action and maintenance) an evaluation of the costs and benefits of change is made [56] (Figure 1). The varying self-efficacy levels often influence this evaluation. Processes of change take place throughout this cycle and include consciousness raising, dramatic relief, self and environmental re-evaluation, self-liberation, helping relationships, counter conditioning, reinforcement management, and social liberation (Table 3). The TTM stage that the child is at is related to the processes involved. An understanding of this by physicians would be invaluable in facilitating behaviour change for their pediatric patients.
Figure 1. Processes of change that mediate progression between the stages of change for obese children according to the Trans-Theoretical Model and Stages of Change [51]

<table>
<thead>
<tr>
<th>Processes of Change that Mediate Progression Between the Stage of Change for Obese Children</th>
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<tbody>
<tr>
<td>Stages of Change</td>
</tr>
<tr>
<td>Precontemplation Contemplation Preparation Action Maintenance</td>
</tr>
<tr>
<td>Processes</td>
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<tr>
<td>Consciousness</td>
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<tr>
<td>raising</td>
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<tr>
<td>Dramatic Relief</td>
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<tr>
<td>Environmental</td>
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<tr>
<td>reevaluation</td>
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<tr>
<td>Self-reevaluation</td>
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<tr>
<td>Self-liberation</td>
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<tr>
<td>Counterconditioning</td>
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<tr>
<td>Helping relationships</td>
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<tr>
<td>Reinforcement</td>
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<tr>
<td>management</td>
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<tr>
<td>Stimulus control</td>
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</table>
Table 3. Definitions of the Constructs of the TTM [51]

<table>
<thead>
<tr>
<th>TTM Construct</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consciousness raising</td>
<td>Increasing awareness through acquiring information, education and personal feedback regarding the healthy behaviour.</td>
</tr>
<tr>
<td>Dramatic relief</td>
<td>Feeling fear, anxiety, or worry because of the unhealthy behavior, or feeling inspired and hopeful when hearing about how other people’s ability to change to healthy behaviours.</td>
</tr>
<tr>
<td>Self and Environmental</td>
<td>Realizing that the healthy behaviour is an important part of who they are and want to be and that their unhealthy behavior affects others. Realizing that more positive effects can be made by changing.</td>
</tr>
<tr>
<td>Evaluation</td>
<td></td>
</tr>
<tr>
<td>Self-liberation</td>
<td>Believing in their own ability to change and acting on that belief with commitments and recommitments.</td>
</tr>
<tr>
<td>Helping relationships</td>
<td>Finding people who support their decision to change</td>
</tr>
<tr>
<td>Counter-conditioning</td>
<td>Replacing unhealthy ways of acting and thinking for healthy ones</td>
</tr>
<tr>
<td>Reinforcement management</td>
<td>Increasing rewards coming from positive behaviours and reducing those that come from negative ones.</td>
</tr>
<tr>
<td>Social liberation</td>
<td>Realizing that society supports healthy behaviours more than unhealthy ones.</td>
</tr>
<tr>
<td>Stimulus control</td>
<td>Using reminders and cues that encourage healthy behaviours to substitute the cues that facilitate the unhealthy ones.</td>
</tr>
</tbody>
</table>
3.2 Theory of Planned Behaviour [56]

The Theory of Planned Behaviour (TPB), an extension of the theory of reasoned action, focuses on theoretical constructs concerned with individual motivational factors [56]. These are determinants of the likelihood of performing a specific behaviour [56]. In the TPB, attitude towards behaviour, subjective norms, and perceived behavioural control lead to behavioural intention. Behavioural intention is the most important determinant of behaviour, which subsequently leads to change. Attitude towards behaviour are influenced by behavioural beliefs and evaluations of behavioural outcome. Subjective norms are influenced by normative beliefs and motivation to comply. Perceived behavioural control is affected by control beliefs and perceived power (Figure 2).

**Figure 2. Theory of Planned Behaviour Adapted for Informing Focus Groups with Obese Children [56]**

In the context of this study, TPB indicates that in order for a child with obesity to possess the intention to make behaviour changes that may lead to a healthier body weight, he or she has to believe that making healthy choices will be associated with a reduction in weight. This belief
must also be in line with how he or she values this outcome. In the context of communication in primary care, a child must believe that his or her physician approves of the change, and must be motivated to behave in a way that is consistent with what the physician thinks is correct. A child will have to take into account the perceived likelihood of obstacles or opportunities to facilitate the behaviour change and their power in overcoming the condition above.

The focus groups with the children and the parents were informed by the TPB. This theory encompasses the child’s own attitudes (attitude towards behaviour), the authoritative role that the physicians play in the management of obesity in children (subjective norms), and the ways physicians can empower children to overcome the obstacles that stop them from making desired behavioral changes (perceived behavioural control). Investigating perceptions and needs of children with parents in communicating with physicians regarding weight allows for an understanding of attitudes, desired positive subjective norms, and a perception of the child’s sense of perceived behavioural control. The information from the focus groups can be utilized to improve such constructs among children with obesity, thereby increasing the behavioural intention, which may eventually lead to children improving their health [10, 73].

### 3.3 The Health Belief Model [56]

The Health Belief Model (HBM) provides a theoretical framework for the perspectives of the parent participants regarding their child’s weight. It is believed that people will take action to control an unhealthy condition (their child’s obesity), if they believe that a course of action that is available to them (their physicians’ recommendations) would be beneficial in reducing the susceptibility or severity of their child’s obesity [56]. The constructs of the HBM indicate that individual perceptions along with modifying factors affect the likelihood of action. Parents have a heightened sense of perceived severity of their child’s weight status as evaluated by both medical (health risk) and social consequences (self-esteem). The modifying factors for parents include the child’s and their own weight-related health status, sex, ethnicity, personality, and socioeconomic status. These factors, along with their child’s increased weight and symptoms, contribute to the perceived threat of disease for their child. According to the HBM, parents of children with obesity are likely to see that the perceived benefits of achieving a healthy body weight are greater than the barriers; therefore, parents are ready for behaviour change to occur. The HBM underlies the qualitative research with parents of children with obesity since child and
parental life situations (modifying factors) have a relationship to the perceived barriers associated with their communication about weight with their child’s physician (Figure 3).

Figure 3. Health Belief Model Adapted for Informing Behaviour Change Needs for Parents of Children with Obesity [56].
4 A qualitative approach to understanding the perspectives of children with obesity and their parents regarding the medical management of obesity

4.1 Introduction

The communication opportunity between a child with obesity, his/her parent, and their physicians is often missed due to many factors, including a lack of physician self-efficacy in counseling children about obesity. Determining the perspectives of obese children and their parents regarding their communication with physicians and how it can be improved is invaluable in improving the efficacy of primary care physicians.

Qualitative methods are particularly useful when the goal is to understand different perspectives about a certain phenomenon [74]. Qualitative research provides an understanding that is richly textured and addressed to the social context, and makes it an appropriate choice for understanding the perspectives of children, parents, and physicians. Both focus groups and individual interviews have been used in other investigations regarding perspectives about perceived practices of health care professionals [36, 48, 75]. Furthermore these methods would best generate a detailed description of how communication about weight in primary care is perceived.

Understanding the needs and perceptions of individuals involved in weight-related communications in primary care is useful because emotions, obstacles, and state of minds that contribute to a phenomenon can be addressed. Integrating the different points of view generates a more complete description and understanding of where obesity communication could be improved. When these perceptions are obtained in a group environment, opinions are agreed upon or refuted and generalizations within contexts can be made [74].

The perceptions of children with obesity, their parents, and physicians regarding obesity management in primary care all surround an underlying expectation that a health behaviour change needs to be made.
4.1.1 Purpose of the study

The purpose of these first two (Study1 and 2) qualitative study with children and adolescents with obesity and their parents, was to learn about their perspectives, including the preferences and barriers, regarding their interactions with primary care physicians with respect to weight and health. The goal was to get a better understanding of these perceptions and to utilize them to inform physician communication behaviours in primary care.

The questions to be answered through this research are:

**Child-related research questions:**
1. How do children and adolescents with obesity view themselves in the context of their weight?
2. How do children and adolescents with obesity perceive the care and advice of their own physicians in relation to their own weight and health?
3. How does perceived physician advice and recommendations affect the way children and adolescents with obesity choose to make health behaviour change?
4. How do children and adolescents with obesity formulate recommendations for improvements of communication of weight management in primary care?

**Parent-related research questions**
5. How do parents of children and adolescents with obesity view their child in the context of their weight?
6. What are the perceptions of parents of obese children and adolescents regarding the care and advice of their child’s physicians in relation to their child’s weight and health?
7. How do parents of children and adolescents with obesity perceive physician advice and recommendations, and how does it affect the way parents facilitate weight-related behaviour change?
8. What do parents of children and adolescents with obesity recommend for improved communication with their child’s physician regarding weight and health?
4.2 Methods

4.2.1 Rationale for Research Approach

The perceptions of children with obesity and their parents about how their weight and related health were managed in primary care were investigated using a constructivist approach. In constructivism, the aim is to study the multiple realities constructed by people and the implications for their lives and interactions with others [74]. The perception of the communication among children with obesity, their parents, and their physicians are likely to represent different realities and implications for all the individuals involved. Therefore, a constructivist approach was appropriate to gain an understanding of the perceptions of the families regarding their physicians.

Constructivist Approach

A constructivist approach is one that differs from a positivist view of traditional science. In traditional science, there is one truth that relates to a specific situation. In contrast, a constructivist view posits that there are many truths. This approach suggests that each person’s way of making sense of their situation is as valid as any other, and therefore what is ‘real’ is constructed from the influence of the interactions (with physicians) that are taking place [74, 76]. In the context of a child with obesity and his/her parents receiving weight management advice, a constructivist researcher assumes that a child’s choice to listen, follow advice, and/or make behaviour change is influenced by many factors that may themselves be different at various points in time or settings. The behaviour change process, according to Prochaska’s theory [56], is complex and includes relapse into earlier stages as an inherent part of the process. For example, a person may progress through the different stages and reach readiness or action phases but then relapse back to contemplation [56]. This change is expected and inherent to Prochaska’s stages of change theory. Given this attribute of the behaviour change process, the confounding variables that potentially could influence the child and family, and the change that occurs over time, a constructivist approach would be most appropriate for the qualitative portion of my research.

Benefits of qualitative research methods

In order to investigate the perceptions of interactions children with obesity and their parents had with their physician, qualitative methods were utilized. In qualitative methodology, data are not
in the form of numbers and statistics but rather words, opinions and pictures. Qualitative methods provide an opportunity for integration of the social context with an explanation of the hows and the whys of a given phenomenon. From a constructivist view, qualitative focus groups and interviews provide the most relevant approach to investigating perceptions, beliefs, and perspectives of obese children and their parents about medical management of obesity in primary care and where room for improvement may be present. Since the social context of their experiences extends to participation in the research project, the influence of the researcher on the process through which the data is generated may have incorporated personal experiences, biases and expectations (described in subsequent sections).

These qualitative studies highlighted an opportunity to discover information and meaning from participants that are not necessarily observable (as are height, weight, physician recommendations) by a positivist researcher [74]. Furthermore, qualitative methods are useful in that they facilitate the development of the meaning that a participant attaches to their experiences [74]. These methods are also a great way to develop theories, generate new areas of research, collect in-depth information about a specific topic, or complement quantitative methods [77].

4.2.2 Research design

Information for understanding child and parent perceptions was collected through a combination of focus groups and individual interviews. Group discussions were proposed to allow the researcher to evaluate individual opinions that were supported and refuted among the group [74]. Two sets of focus groups were conducted, one with children with obesity and the other with their parents.

Individual interviews were not initially planned for this study. They were introduced as a method of qualitative inquiry when it became evident that female adolescent participants were not willing or comfortable discussing their experiences in a group setting. Parents of adolescent girls with obesity made contact with study staff, indicating that their daughters were not comfortable discussing weight-related topics in a group and would prefer to discuss these topics privately. The decision to change methodology for this sub-group of the participants was part of the iterative process common to qualitative inquiry [74, 78].
Maya Obadia moderated the focus groups and interviews, with the help of research assistants. The study staff knew none of the participants. Subsequent sections provide a detailed description of the methodology for focus groups and individual interviews, along with their analysis.

4.2.3 Research Participants

Participant Recruitment

In order to increase the probability that the findings of this research would represent the opinion of the larger population of children with obesity and their families, a purposive sample of children with obesity was used [77]. The goal of purposive sampling is to identify participants whose perceptions are of interest to the topic under study [79]. It is often used because it is a powerful tool for identifying cases with rich information [79]. Such cases would allow for theoretical generalizability of the results.

A purposive sample of children with obesity was obtained through the following recruitment procedure. Participants were recruited for focus groups and individual interviews through advertisements in a local newspaper distributed free of charge to public transit riders in the greater Toronto area, in order to access children and youth with obesity from varying geographical areas. The advertisement was run three times in three consecutive weeks. It was placed in the health, crosswords, and main news sections. The location of the advertisement was changed to maximize the potential to attract families of obese children with variable socio-economic status and interests. The advertisement had the title of ‘help for overweight kids’. This statement was accurate, as following their participation in the focus groups and interviews parents were able to ask questions of experts in medical management of childhood obesity at The Hospital for Sick Children, Toronto. The advertisement utilized the word ‘overweight’ rather than ‘obese’ since parents tend to underestimate their child’s weight and it also minimizes the social stigma for the child and parents [80-83]. Therefore in conversation with families before, during and after the focus groups, the term overweight was used as a surrogate for the diagnostic term ‘obese’. Since for the audience of this research (medical community) the two terms represent two different diagnostics, ‘obesity’ (BMI percentile ≥95%) and ‘overweight’ (85% ≤ BMI percentile < 95%), they are each used in the current thesis with the definitions above. Parents provided the researcher with the child’s date of birth, height, weight, and medical
conditions (parent reported). The researcher used this information to calculate the child’s BMI percentile according to the charts of the World Health Organization [17].

**Inclusion criteria for focus groups**

1. Children and youth between 5 and 17 years of age
2. BMI percentile ≥ 95% (parent report of child height and weight, WHO curves).
3. No comorbidities as a result of obesity
4. No known developmental delays (Parent report)
5. Patient of the same primary care physician for a minimum of 2 years

The age range was wide in order to get at the variety of perceptions across the age span in childhood and adolescence and to inform a subsequent study. Children with obesity-related comorbidities were excluded, to focus only on the child and parent’s experience with communication about weight with physicians in primary care. Being a patient of the physician for at least 2 years was set to allow for some relationship to be present. Recruitment was limited to children with obesity, since physicians are more likely to address weight communication when a child already has obesity [84].

When parents or children called to participate, questions pertaining to the inclusion criteria were asked. Those who met the criteria were given options from pre-set dates for focus groups (based on age and sex) and appointment was scheduled. Parents received a reminder phone call 2 days prior to their appointments.

**4.2.4 Focus group methods**

**Rationale for Focus Groups**

Focus groups have been used in the past, primarily in market research. Currently they are recognized as an effective tool for data collection [74]. Their feasibility with school-aged children with medical conditions has been established more recently [77, 79].

Focus group methodology was chosen because it encourages discussions between participants, which often leads to group realization and insight that would not necessarily have been identified [74]. It has also been suggested that group interviews as opposed to individual interviews are more effective in eliciting a detailed response because participants don’t feel pressured to answer
every question [77]. In group discussions, important issues are raised and extreme views are often identified and clarified among participants [74]. Finally, focus groups are useful in developing questionnaires or informing further studies with appropriate wording and content [79] and have been previously used with children in research related to health information.

Focus group environments

Focus groups were held on weekend mornings. Upon arrival, the participants were introduced to the research staff and to each other. Focus group goals and methods were explained to each child and their assent to participate was obtained. Parents provided informed consent for both themselves and their child, according to the requirements of the hospital’s Research Ethics Board. The researcher, a child life specialist (who provides play activities for children), and two assistants taking notes of key points of verbal and non-verbal behaviours were present. Focus groups for children were held in a play room and they were provided with drawing materials and other toys in order to provide an experience in a more comfortable setting [79]. Focus groups for parents were held separately so that the children and parents could speak freely about their feelings and concerns without influencing each other [85].

Recruitment

Upon recruitment, as well as during focus groups, parents identified that they wanted help to manage their child’s weight. It was explained to them that although this was not the purpose of their participation, the research team would provide an opportunity for them to pose questions to the team (nurse practitioner, dietician, and physical activity specialist). Parents were provided with a 45-minute session following both the parent and the child focus groups. Of all the parents who called to participate in the research, only one family did not meet the inclusion criteria for weight: a parent called in with a child who was at the 86th percentile for BMI (age and sex specific). Three other families did not show up at their scheduled focus groups. Thirty-five children and 42 parents participated in this research.

Procedure

At the end of the focus groups, each family was provided with a copy of the book *Get a Healthy Weight for Your Child* [86], a healthy eating checklist provided to patients at the Labatt Family
Heart Centre’s lipid clinic (Appendix 1), a healthy snack (water, veggies and dip, and fruit), reimbursement for parking or transit costs, and $30. The reimbursements were provided to ensure that participants did not incur any out of pocket expenses. These were in accordance with the approval of the Research Ethics Board at the Hospital for Sick Children. The healthy snacks, book and checklists were provided to educate, empower, and help the parents of children with obesity who were struggling with how to manage their child’s obesity at home.

All focus groups were set up with chairs in a circle to encourage group discussion. Two digital recorders were placed at opposite ends of the circle to provide a backup for each other and to capture the voices at each end. The researcher explained to participants that the recorders would capture what the participants were saying and that the research assistant in the room would be taking notes on the computer that would also be used in our analysis. After all participants agreed to this, the recorders were turned on. Participants were introduced to the etiquette of the focus groups: allowing everyone a turn to speak, respecting opinions, and the fact that no answer was right or wrong. The moderator emphasized the importance of confidentiality once again. During discussions, the moderator ensured that all participants had similar amounts of time to provide their perceptions and share with the group. At the end of the focus groups, any questions were answered and potential misconceptions were clarified.

**Focus Group Questions**

These research questions (Section 3.1.2) provided an overall sense of the children’s and the parents’ current opinions of their experience with the child’s physicians. A semi-structured interview guide (Appendix 2) was used to facilitate discussion among the groups and allowed for new themes to emerge. The moderator (Maya Obadia) used this guide to prompt discussion with participants. Each question in the guide was related to one of the research questions. A question on advice to other families was important because it allowed the child and the parent to feel that they were contributing to the process as well as divulging information and desires without feeling vulnerable [74].

**Child Focus Groups**

Five semi-structured focus groups were conducted with boys and girls ages 5-12 years (2 focus groups), and with boys 13-17 years of age (3 focus groups). Focus groups ranged from 45
minutes to 2 hours in length and were facilitated by the same moderator, with two assistants taking field notes of both verbal and non-verbal behaviours. Focus groups were completed for 35 children. Topics of discussion during focus groups with children included the ways that children saw themselves relative to their peers with respect to weight. Information and advice provided to them by their physicians regarding making changes to weight was sought out, in order to understand their experiences and relate them to the emotions also reported by the children.

**Parent Focus Groups**

Parent focus groups began with an introduction and discussion about why they wanted to participate in the research, how they described their child, and their concerns regarding their child’s weight (Appendix 3). These topics were introduced to ascertain parental concern and provide context for discussions about the experience with their child’s physician. Parents were encouraged to discuss, equally, any positive and negative experiences with how their child’s physician managed their child’s weight to reduce research bias.

The parent focus group concluded with the moderator asking the participants to take on the role of the physician and provide parents with constructive advice about how to manage their child’s obesity. Thirty-six parents of 29 children participated in the focus groups, which ranged from 45 minutes to 2 hours in length; the participants did not know each other prior to their participation.

**4.2.5 Individual Interview Methods**

**Rationale for Individual Interviews**

Interviews are used to explore how a person views and contributes to their surroundings. Through individual interviews there are opportunities for learning about a person’s attitudes, beliefs, and expectations [74]. For the adolescent girls (aged 13 to 17 years), participation in focus group discussions ranged from reluctance to outright refusal. Further investigation revealed that the majority were uncomfortable having discussions about their weight and/or experience with their physicians in group settings. When the protocol was changed to include individual interviews, they were eager to participate. The parent and the child participated separately, in
consecutive interviews. The questions used for the interviews included the ones for the focus group discussion with additional prompts based on the ‘long interview method’ [87]. The long interview process is relevant when sample sizes are limited, and requires the researcher to extensively study the literature, and combine their findings with their own assumptions and involvement. The researcher must also take into account what took place in the interviews themselves and describe the findings without the influence of the literature review or his/her own assumptions [87]. This process is recommended when multiple interviews with the same individual are not available, as in the case of the six adolescent females, and has been documented to provide a similar level of data richness [87]. The ‘long interview method’ was appropriate in this scenario [87] (Figure 4).

**Figure 4. Process of the ‘Long Interview’ as Applied to Interview Development and Execution with Adolescent Girls and Their Parents [87]**

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**Interview Environments**

Individual interviews were held at the hospital on weekend mornings and weekday evenings. Upon arrival, the participants were introduced to the research staff. Interview goals and methods were explained to each child and their assent to participate was obtained. The parents provided
informed consent for both themselves and their children according to the requirements of the hospital’s Research Ethics Board. The research assistant took notes of key points as well as the non-verbal behaviours that were taking place. Parent interviews were held separately so that the child and parent could speak freely about their feelings and concerns without influencing each other. Families received the same materials and compensation as those who attended focus groups. The consent process was also the same.

**Individual Interview Questions**

Techniques from the ‘Long Interview’ suggested that both the literature search (described above) and the interview guide from the focus group discussions should be used to develop the interview questions [87]. This interview sought to answer the study research questions. Appendix 4 and Appendix 5 provide matrices of the interview questions with parents of adolescent girls with obesity and the girls themselves, respectively, in relation to the research questions to which they pertain.

**Individual Interview Design**

Each interview began with ‘warm-up’ questions used to establish rapport with the participant so that the responses to subsequent questions would provide rich and descriptive answers. Questions for the interview were open-ended, but some closed ended probes were used when necessary to clarify a point, and to gather more information. The semi-structured interview guide was used to keep the interview focused on similar questions used to facilitate discussions, while also allowing for new themes to emerge. Interviews were always completed with an opportunity for the child and the parent to feel that their opinion and advice was important and would be used to improve the knowledge base surrounding the topics that were discussed [74]. An example of questions participants were asked: “In the context of your interactions with your/your child’s physician, if you could give advice to other parents who are concerned about their child’s weight, what would it be?”

**4.2.6 Safety and Storage of the data**

Recorders were connected through a USB connection to the researcher’s hospital owned, encrypted computer. Following each interview (group and individual) the recordings were
transferred to the encrypted computer with a backup copy filed on the cardiology main drive, which is also password protected. After the researcher verified that the recordings were functional, the original files on the recorders were deleted.

Each recording was stored in the computers using a specific file name, ensuring the anonymity of the participant. For each group interview, each participant was assigned a coded identification number. The numbers were sequential, with each character representing a different identifying factor. Letters A and B were assigned to participant of focus groups and individual interviews, respectively. Male participants were numbered starting with the number 1, and the number 101 indicated female participants. The name of the file also indicated whether the participant was a child or a parent. A master list connecting the participant to their coded identification codes was kept in a locked drawer in a locked room. Only the researcher (Maya Obadia) had access to this list.

The researcher took a variety of measures to ensure that confidentiality and anonymity were maintained. At the start of each focus group, participants chose a fake name, so that they did not have to reveal their true identity to other participants while discussing personal issues. Participants were also reminded at the beginning of each focus group that discussions were confidential and were not to be discussed outside of the focus group setting. In the case of the focus groups with children, the researcher reassured the children that while they should not tell others about the conversation in the focus group, they could talk with their parents about what was said in both their own and their parents’ focus groups, as long as they did not reveal who actually made the statement. The researcher felt that this exception was valid, as it is important for children to share with their parents any statements made by other children that were of concern. Finally, in transcriptions of the audio recordings, participants’ names were removed along with any other identifying information (e.g., physicians’ names, name of child’s school).

4.2.7 Data Analysis

Reflexivity

Reflexivity is the analytic attention given to the researcher’s role in qualitative research [74]. It requires for the research to acknowledge his/her own involvement in the process and product of the research [74]. The researcher must be actively aware of the influencing factor acting upon the
researchers’ internal and external responses while being conscious of his/her own relationship to the research topic and participants. Reflexivity is aimed at describing the world view of the researcher including the researchers’ own bias at the conception of the study, while collecting data, analysis and reporting. While working on the qualitative studies described in this research there was an acknowledgement of the researchers own effect on the perceptions described by the participants, as well as the influence of the pre-existing knowledge and experience.

It is common in all research methods to find out more about a particular topic using specific analytical skills. Qualitative research also emphasizes the role of the researcher in the process that leads to and includes analysis [74]. In the analysis of the perceptions of the obese children and their parents, the impact of the researcher’s presence, assumptions, and biases were documented.

**Recordings and Transcription**

The recordings were transcribed verbatim. The transcript documents started with the initial notes recorded by the research assistant during the discussions and the researcher debriefing notes [88]. Data was analyzed using QSR International’s NVivo 7 [89]. Focus groups and interviews were coded in groupings according to age, but were coded consecutively after all interviews were completed. Parent and child transcripts were coded and analyzed separately from one another.

**Steps required to analyze qualitative data**

The purpose of analyzing data is to make sense of what people have said during group or individual interviews. The first step in the analysis is to summarize and describe the data in reference to the initial research questions. An inductive approach to qualitative analyses was used. It involves discovering patterns, themes, and categories in the data [74] and not approaching the data with preset themes. Qualitative content analysis was used to analyze the focus group transcripts for studies 1-3 [74].

Using an inductive approach, the researcher first identified key phrases and terms. Following this process, typologies (classification systems) were used to organize the data and allow for more efficient reporting of data [74]. The typologies in this data were derived from the research questions and aim of this research study. The typologies were constructed using the fundamental
qualitative inquiry theory [90, 91]. Typologies for the children with obesity and their parents differed and are reported separately. The children’s typologies were: factors perceived to hinder positive attitudes towards behaviour change, and factors perceived to promote positive attitudes towards behaviour change. Parent typologies were: familial factors and feelings, perceived physician practices, and recommendations from parents. This process of classifying the data was accomplished by the use of coding [74]. In the first round of coding, the categories were developed and then grouped in the second round. Grouping involved looking at both the convergence and divergence of the codes within the categories. Codes that were similar were represented within the same category [74]. Once the categories were set up they were analyzed for divergence, and saturation of categories was determined [74].

Interpreting Results

Interpretation of the results is the second step in analyzing qualitative data [74]. During this process, answering the question of ‘why’ the findings are what they are takes place. Using the fundamental qualitative description method, the results were linked to the research questions [90-92]. Qualitative description produces findings that are closer to the data as it is given. There has been some controversy around the use of Qualitative Description in that some researchers have suggested a lack of interpretation [91]. The interpretation is therefore valid but less interpretive and theoretical than the approach used in phenomenology and theoretical description [91, 92]. The premise is that the language used in the interpretation is inline with that of the participants under the assumption that this allows for a better representation of the data [91, 92]. Qualitative description is particularly good for health research studies where a goal is to understand patient perspectives, and findings are used to support or collaborate with quantitative studies [92].

The process of data analysis for Qualitative Description follows content analysis [74] and is described above. Key ideas and recurring themes informed the basis for the thematic frameworks, and data were segregated into the identified themes and then mapped and interpreted as a whole [93]. A situational map was used to determine how the themes of the focus groups were related to one another and how they all worked together to answer the research questions. The situational maps for children and parents are each represented separately and relate to the data described in sections 3.3 and 3.4, respectively.

Trustworthiness of the data
Qualitative research evaluates the completeness of the data not by the number of cases but by how comprehensive the data is relative to the topic being studied. Qualitative research aims to establish trustworthiness. This is based on the evidence that the interpretation of the research is an accurate reflection of the situation and persons being studied [74]. In order to achieve trustworthiness member checking (checking with participants periodically to ensure that the facilitator understands what the patient is meaning to say) and triangulation between the different data sources (notes, transcripts, reflexive journals) were performed.

**Credibility and Dependability [74]**

Credibility is how closely the participants’ perceptions and the researcher’s portrayal of those perceptions match. Dependability is similar to reliability in that it evaluates whether other researchers would derive the same results. Dependability in qualitative research is achieved when the researcher’s detailed report of the process of data collection and interpretation is described thoroughly. Conformability refers to the objectivity of the researcher.

Credibility was established by documenting the assumptions and beliefs brought to the research, and by evaluating how those assumptions influenced the research at each stage of the process. Multiple sources were used to describe the data including transcripts, field notes, and the researcher’s own reflections. ‘Member checking’ (ensuring that participants’ responses were well understood before moving on to the following topic) was completed between topics, questions, and also at the end of each focus group and interview.

Dependability was established by using rich descriptions of the data, including detailed quotes. All methods were described in detail throughout all phases of the research. These detailed methods combined with rich descriptions have demonstrated a close connection between the results and the conclusions from which they were derived. The gold standard in achieving dependability is when the necessary focus groups and individual interviews are completed so that saturation is achieved [74]. Saturation is reached when no new hypotheses or information are generated, and can be best achieved when analysis of one interview is completed prior to conducting the next [74, 93]. Achieving saturation makes it more likely that the data obtained represents a full range of opinions and issues related to the topic. Due to limited budget, time and participant registration, transcripts were analyzed after all focus groups and individual
interviews were conducted. All of the group and individual interviews were conducted by the same interviewer (Maya Obadia), ensuring consistency and increasing the reliability of the data. The purpose was to achieve breadth in the area of perceptions of children with obesity and their families regarding their experiences with their physicians in the context of weight and health. With the 35 children and 42 parents this was achieved. Despite not meeting the gold standard in saturation achievement, similar themes emerged from the transcripts. As described by Patton, “The extent to which research or evaluation study is broad or narrow depends on purpose, the resources available, the time available, and the interests of those involved” [74]. Saturation is an area of controversy in qualitative research. Bias in achieving saturation by repeating interviews has been suggested. When analyzing interviews consecutively the researcher may present a bias into the subsequent interview. Secondly, it has been suggested that researchers while conducting the interviews may not hear any new issues, and therefore not necessarily only in analysis can saturation be identified. Following each focus group and interview, all researchers were debriefed. They discussed any possibility of bias that may have been introduced. This process helped make any bias explicit so that it could be identified and considered in the analysis [94].

Conformability of the Research

In qualitative research the more familiar the researcher is with the data the more likely they are to have findings that are representative of the participants feelings and experience. Maya Obadia followed the experiences of the families and used triangulation of reflections, field notes, and transcripts in order to consistently provide the best description of the experience of the families. By being involved in the entire process she became more familiar with the data and was in contact with Dr. Katherine Boydell during this process. All themes and qualitative trees that required more interpretation were collaborated upon. The data were reliable in that they represented the experience of the families.

Transferability of the Study Results

A qualitative researcher seeks to achieve transferability of the results. This transferability (application of results beyond the subjects in the study) is a direct function of the similarity between two contexts [74]. In an effort to increase transferability, a rich description of the
approach, relevant characteristics of the study participants, and their perceptions was provided. Interpretations and analysis were compared and contrasted with other published research as a means of legitimizing this study’s findings within the scientific knowledge and implications for children with obesity, their families, and physicians.

4.2.8 Ethical Considerations

The Research Ethics Board of The Hospital for Sick Children approved the protocol described in this chapter. Assent and informed consent were obtained from the children and their parents, respectively. A second consent form relating to the digital recording of the focus groups and interviews was distributed in accordance to the requirement of the Research Ethics Board. The goals and purpose of the research were explained.

Although all institutional ethical guidelines were upheld, there are some that are implicit in the research process itself. The process of interviewing or discussing with participants about their feelings, beliefs, and expectations is one that inherently involves the possibility that the researcher may contribute to or inadvertently judge certain responses or beliefs [74]. During discussions, every attempt was made to keep responses neutral in an effort to obtain data that were true to the feelings of the participants themselves.

Discussions were emotional at times, and required compassion and empathy from the moderator. The constructs of Motivational Interviewing (empathy, autonomy, compassion) were useful in establishing rapport as well as delving into the emotional aspects of participants’ experience in a sensitive way [57].

Limitations of family perspectives study

All studies have limitations that arise due to their design, resources, and the phenomenon being studied. General limitations of focus groups and individual interviews such as researcher bias have been discussed at length in earlier sections. It is the purpose of this section to highlight other important limitations of this qualitative research.

Our sample size of 35 children with obesity and their 42 parents was one that provided rich data. In qualitative inquiry, the robustness of the sample is more important that the actual number of participants [74]. Limited resources, such as time and personnel needed to collect, analyze and
interpret data, were the obstacles that precluded us from being able to analyze the focus group and individual interviews consecutively rather than collectively, thus it cannot be claimed that saturation as traditionally defined had been reached. Nevertheless, similar themes emerged from the data despite the fact that the traditional methods of achieving saturation were not available to us.

The purpose of this study was to obtain perceptions of obese children across the developmental spectrum in order to inform a subsequent quantitative study of children and youth ages 5-17 years. Therefore, for research design reasons alone, this age range needed to be represented in the qualitative work. A reader interested in non-qualitative research may suggest that for each of the dichotomized age groups (5 to 12, and 13-17 years of age) the sample size is considered small. However, this is not the case for studies that search for emergent themes. Any discrepancies were identified through discussions with participants, and within the research team. Furthermore, these qualitative results provided information that is relevant and common to children with obesity, irrespective of age.

General limitations of focus groups and individual interviews, such as participants’ use of self-serving responses (responding in a way that enhances the way they are portrayed), interviewer reactivity (responding in reaction to their perception of the interviewer), and social desirability (responding in ways that they feel would be more important or useful to the interviewer) were taken into account and data were analyzed accordingly [74].

Studies that utilize interviews for collecting data are also limited by participant reactivity (how a participant reacts to the interviewer). In order to minimize this, focus groups and interviews were conducted by the same moderator. Advice and recommendations for parents and children regarding how to manage their child’s weight was provided following the focus group and individual interviews. A nurse practitioner (Nita Chahal), registered dietician (Helen Wong), and physical activity specialist (Patricia Longmuir) at the Cardiovascular Clinical Research Unit at the Labatt Family Heart Centre at the Hospital for Sick Children provided this expertise.
4.3 Findings from focus groups and individual interviews with obese children

4.3.1 Rationale for presentation of data

In qualitative research it is important to provide a thick description of the data being collected [74]. A part of the ‘thickness’ includes verbatim quotes that are used to demonstrate to the reader that the meaning of the opinions of the participants is closely related to the interpretation of the data. In the subsequent sections, verbatim quotes were used in a way that respects the participants’ privacy as per the ethical considerations of the Research Ethics Board at the Hospital for Sick Children. Identifying information was removed (i.e. name of school, geographical location). Labels for children that could be linked with their identity were purposely omitted.

Participants

Thirty-five children participated in the study: 20 males and 15 females ranging from 5 to 17 years of age, including n=17 (49%) between 5 and 12 years of age and n=18 (51%) between 12 and 17 years of age. The mean BMI z score (based on self-reported heights and weights) was 2.18 (standard deviation 0.72, range 1.98-4.28). BMI z score of greater than 2 standard deviations are considered obese for children [17]. Participants were assigned to focus groups based on their ages, and for adolescents their sex, in order to facilitate the discussion.

Data analysis revealed two major themes, which were labeled as factors perceived to ‘hinder positive attitudes towards behaviour change’ and factors that were perceived to ‘promote positive attitudes towards behaviour change’. Both themes have sub-themes exemplified with verbatim quotations embedded in the text and summarized in Figure 5.
4.3.2 Factors perceived to hinder positive attitudes towards behaviour change among children with obesity (age 5-17 years)

The factors perceived to hinder positive attitudes towards behaviour change among obese children were: feelings of being judged, repetitive nature of physician visits, and the physician’s use of scare tactics. Themes constitute the perception of the participants and not necessarily the actual behaviours of their physicians.
Feelings of Being Judged

Children reported that when they perceived that judgmental language was being used to describe their weight status, they no longer paid attention, resulting in a negative experience. Children attributed feelings of anger and embarrassment when they perceived that their physicians labeled them as obese, fat, and overweight. They perceived these labels to be used often and interchangeably.

“When physicians say you have a problem because it kinda sounds like something really bad is happening like you have obesity or something and that kinda like scares you. It like gets you uneasy.” (11 year old boy)

This was not limited to verbal behaviours, as physicians’ perceived body language was reported to play a large role in the judgment perceived by the children. Using silence and facial expressions during high anxiety-provoking moments in a physician-patient interaction increased the children’s perception of being judged.

“Oh there was this one time where the doctor weighed me, he just like stood there looking at it [the scale] and said ‘hmm’. And then I was just kinda like uneasy and I had no clue what he was gonna say.” (9 year old girl)

Children expressed a heightened level of being judged when they felt that their current efforts related to healthy eating and physical activity were disregarded and considered unworthy of acknowledgment. Children perceived physicians as experts and were angered when their own perceptions of efforts to achieve a healthy weight were discordant with the tone and response provided by the physician.

“Well it’s just because I thought I was doing good. Like I started eating healthy foods and stuff and I thought I was doing pretty good, but then he said that if I kept going on this way in my diet that I would get very obese, I thought I was doing pretty good.” (10 year old girl)

Children also perceived that physicians made judgmental assumptions about their inability to cope with their own weight status. It was perceived that physicians spoke to the child’s parent only, leaving the child feeling annoyed and angry. This was evident across the age groups.

“It makes me mad, cuz it’s like a wall. I’m right here just tell me! It makes me frustrated when they tell my mom stuff and not me or when they like call her after and they start talking to her and ignoring me. Well you could’ve told me that, I can handle it.” (11 year old girl)
Children under 12 years of age reported wanting to be included when in the room with the physician and their parent(s), and adolescents were resentful when they were asked to leave the room or ignored during the consultation.

“Because [when you leave the room] you don’t know what he’s going to say if it’s good or bad.” (8 year old boy)

Repetitive Nature of Physician Visits

The information exchange during physician visits played a large role in the likelihood that children would begin to contemplate changes to achieve a healthy body weight. Children described themselves as overweight based on how they compared themselves to their peers and how their clothes fit. Children expressed a great aversion to being told that they were overweight or obese at every visit, especially if they described themselves as overweight. Children reported that repetition of their weight status was unnecessary.

“You’re overweight, you’re overweight . I know that already!” (7 year old girl)

The same frustration was expressed regarding the perceived repetition of what children described as ‘typical’ advice. Children perceived themselves to be very knowledgeable about the suggestions for achieving a healthy body weight prescribed by physicians. These included limiting junk food, reducing portion sizes, and increasing physical activity. The perceived repetition resulted in a resistance to the physicians’ communication efforts about the child’s weight.

“Like what to eat, how much exercise, what I should be weighing all that kind of stuff. But I know how much I should weigh, I know what to eat and how to eat properly, um, and she tells me like what foods I should be eating, but I know that cause I looked it up.” (14 year old girl)

Children also perceived that the repetitive nature of the physician visits have continued ramifications at home. It is perceived that parents repeat physician advice regularly, resulting in a feeling of failure and helplessness and contributing to an aversion to losing weight.

“Well my dad’s always like ‘Hey don’t eat that, you’re going to gain more weight’ and stuff like that. And um yeah he tries to like help me, but then he also pushes and it gets to the point that I don’t listen anymore.” (13 year old boy)

Use of Scare Tactics
Children perceived that physicians used medical consequences of obesity to instill fear of potential illnesses. Some children identified that learning about current and future consequences of their obesity was helpful in increasing their understanding. However, most of the children perceived that the way in which the information was being delivered was problematic.

“Well you know what everyone is saying just the facts and that doesn't really mean much to anybody so it's like the emotional value it's just what you do for children, show that you care and teach about what could happen not just scare us” (11 year old girl)

Children perceived that physicians were trying to scare them with the morbidities associated with obesity, which led to feelings of panic and helplessness.

“All this crap runs in your family and they automatically assume that I will have it, and I will die at the age of 40 from a heart attack or something. I did a lot of sports and I'm still overweight...and I can't lose weight. Well there's nothing I can really do about it” (14 year old boy)

4.3.3 Factors perceived to promote positive attitudes towards behaviour change among children with obesity (age 5-17 years)

The factors that obese children perceived to promote positive attitudes towards behaviour change included: getting to know the child, and providing positive reinforcement. As in the previous theme, the results constitute the perception of the participants and not necessarily the actual behaviours of their physicians.

Getting to Know the Child

Children indicated that one way to increase their interest in healthy lifestyle changes would be for physicians to make recommendations for physical activity and healthy eating that are specific to the child’s own likes and dislikes.

“Or if they've never gone mountain climbing, or rock climbing or mountain biking, and it's what they like, tell them you know you can take a rock climbing course try it out for a day and see if you like it. This could be instead of saying ‘You know what go run, or walk;, just actually let them experience it.” (13 year old boy)
According to children, by getting to know the stresses and obstacles they face, physicians may help in improving patients’ attitudes towards behaviour change. When life events and the social context within which children live their lives were incorporated into discussions, children perceived a feeling of being understood and were more open to considering change.

“I used to eat really healthy but then my mom and my step dad broke up and uhh, it’s been kind of crazy lately, he [my doctor] got it” (15 year old girl)

**Providing Positive Reinforcement**

The use of encouragement is another way children felt physicians could help promote positive attitudes towards making behaviour changes to improve children’s weight.

“They can use positive confirmation that you can do better, like you’re okay, but you can do better.” (12 year old girl)

More specifically, children reported wanting their physicians to celebrate small successes such as an increase in height but not weight. They felt that such positive reinforcement would engender a sense of improvement and success, which would lead to even more motivation.

“Like the smaller steps can be the largest ones in the future”. (16 year old girl)

This approach, coupled with developing a good relationship with the child, was perceived to make the children feel more at ease in discussing their weight and more open to the idea of change.

“So, it’s 7 years in the making. I really didn’t feel anything different talking to my doctor about weight. Like it was just another close person [the physician] talking to me, like an uncle or something. He knows me so well.” (10 year old boy)

Children reported self-perceptions of their weight that were discordant with physicians’ perspectives. Children anchored their own feelings about weight with regards to how they compared with their peers. Perceived physician urgency to address weight was not always aligned with child perceptions of their own weight. They felt that trust in the physician-child
relationship would allow for the discordance to be addressed. This was perceived to lead to improved attitudes towards behaviour change.

4.4 Discussion of Child Focus Group

Childhood obesity is an important issue in child health. The current study highlights the fact that physicians communication behaviour can either promote or hinder a positive attitude towards healthy lifestyle changes among the participants in this study. Incorporating the views of children with obesity on patient motivation may contribute to improved communication and facilitate treatment of obesity at the primary care level.

Putting ‘perceptions of children’ in the context of the literature

There is limited research on children’s perspective on physician’ engagement in discussion about obesity in children. Research on adolescent female patients’ interactions in primary care indicates that they prefer to have medical issues explained to them by their physicians; they want physicians to be more like friends, and want to be treated like mature adolescents rather than young children [95]. Like the participants of this study, children and youth felt excluded during consultations when communication was directed exclusively to the parent or guardian [95]. This suggests that the research findings on physician communication may have broader implications than those specifically addressing obesity. The findings of this research also support the report that children want to be included in medical decision making [96]. In a study of perceptions of physicians in primary care, physicians reported that including children in discussions of medical treatment increases the child’s sense of control and improves future encounters with health care providers [97]. Children in the current study identified this as one way physicians can promote positive attitudes towards behaviour change.

This study’s child participants reported negative reactions to perceptions of being labeled as overweight, obese or fat by physicians. Both in the literature and in practice, the medical community categorizes an unhealthy body weight using BMI percentile cut-offs with terms such as obese and overweight (overweight: BMI > 85%, obese: BMI>95%) [98]. While many physicians may describe the terms, it is possible that when they use these categories to screen for
health risks, [99] it creates a perceived stigma when combined with the child’s feelings about their own weight. Interestingly, studies of physician perspectives related to weight report a perceived reduced use of the word ‘fat’ in clinical practice, and increased use of the word ‘weight’ in discussions with overweight and obese patients (26). Changes in terminology may lead physicians to use euphemisms to describe obesity such as ‘having an unhealthy body weight’. This was a source of frustration for adult patients, especially when they were combined with the term ‘obesity’ [100]. However, Post et al. showed that adults with a BMI >30 were more likely to perceive themselves as obese, and make an attempt at weight loss when their physicians identified them as overweight and obese [101].

The literature is inconclusive with regards to patients’ perception of obesity-related language used in medical consultation. The participants in our study perceived the terms fat, obese, and overweight to be used often and interchangeably. One explanation for this discrepancy is that the physicians and the children are each influenced by their own self-serving bias, evaluating ambiguous information in a way that is in line with their own self-esteem and interests [102]. This would place a negative connotation on the use of the word ‘overweight’ for the children, who see it as a source of judgment, and a positive one for the physicians as it represents a useful diagnostic cut point. Physicians should openly communicate with their pediatric patients about how the individual child prefers to have his weight discussed in order to reduce the stigma and negativity during these sensitive conversations.

All participants experienced communication from their physicians in the context of a well-child visit and reported having a good general understanding of the steps required to achieve a healthy weight (healthy eating and physical activity). Despite this, they continue to have problems with managing their weight. This is alarming but not surprising, as other studies have also shown children’s knowledge to be discordant with their health practices [103, 104]. Children are resourceful and are using technology and social media to obtain information about a range of topics including obesity [105]. Physicians can capitalize on their pediatric patients’ existing knowledge and utilize consultation time to understand and work with their patients in increasing motivation for behaviour change. This may contribute to a more positive attitude towards achieving a healthy body weight.

**Strengths and Limitations**
The findings of this research represent the opinions and perceptions of the participating children. Strategies such as prolonged engagement with the study findings, using multiple coders of the data, and member checking during group and individual interviews were put in place to establish trustworthiness of the data, and there are a number of supporting studies in other areas of research on children with chronic disease that reach similar conclusions [95, 97, 106, 107]. Limitations of the study may include generalizability. An important potential limitation of this research was that the results represent a perception of physician communication, and did not include direct observation of the communication. This study represents a first step in building a knowledge base in the healthcare field on children’s perception of their experience as it related to overweight and obesity communication in primary care practice. This requires consulting with children regarding their views and taking their description of their experiences at face value, rather than using their parents or physicians’ views of what they are experiencing [107].

**Future Directions**

This study identifies the perceptions of children with obesity on how physicians may promote and hinder positive attitudes towards behaviour. It provides novel insight into ways physicians can utilize their own patients’ perspectives to improve their interaction and clinical treatment of obesity in children. This study demonstrates the importance of including children as stakeholders of the behaviour change process in childhood obesity treatment. Future research in areas of physician and parent perceptions of this communication is warranted to complement this research. Combining these perceptions with those of parents of children with obesity can paint a more complete picture of how families can work with their physicians to manage more effectively obesity in primary care.

**Relevance to Motivational Interviewing**

The perceptions of the children in this study may also provide insight into how Motivational Interviewing could play a role in their process and feelings towards behaviour change. Wanting to be included in the conversation, and feelings of physician disregard for their current efforts for healthy weight achievement can be linked by the child’s desire for autonomy. In MI, the construct of autonomy support is important in helping patients with behaviour change because it allows the patient to feel that successes in change is due to their own efforts [51]. This construct
may be applicable to the communication process between these children and their physicians. Affirmations of the children’s efforts may assist in this empowerment process. Eliciting what the patient already knows is a tool that may alleviate the perceptions of repetitive nature of physician visits, while simultaneously empowering the child and make them feel heard. Therefore, these perceptions may inform future physician training studies. A link to constructs of MI may indicate a benefit for physician to learn such tools.

4.5 Parent focus group and interview findings

Participants

Forty-two parents participated in this study; 26 women and 16 men who were parents of 35 children and youth ranging from 5-17 years of age with a mean BMI z score of 2.18 (parent reported heights and weights) (standard deviation 0.72, range 1.99-4.28). Participants were assigned to focus groups based on their child’s ages in order to facilitate the discussion. Despite the variability across groups, the findings were generally consistent and any differences within themes that were group specific are noted in the text.

Fundamental description qualitative analysis of the data revealed three major themes, which were labeled as (1) ‘familial factors and feelings’, (2) ‘perceived physician practices’, and (3) ‘recommendations from parents’. The themes are broken down into sub-themes exemplified with verbatim quotations embedded in the text and summarized in Figure 6. Themes constitute the perception of the participants and not necessarily the actual behaviours of their physicians. These perceptions were constructed as a result of their own interactions with their child’s physicians.
4.5.1 Familial factors and feelings

Parents described having good relationships with their child’s physicians. While parents described their child’s physician to be nice and knowledgeable, they expressed disappointment in how the primary physician managed their child’s weight. When asked to describe their child’s weight status, parents uniformly described their child as ‘overweight’ or ‘very overweight’. Parents continued to use these terms throughout discussions and these terms were subsequently used as descriptors throughout discussions. None of the parents used the term ‘obese’ to describe their child. Participants identified behaviours taking place in their home and school that were
contributing to their description of their child’s weight. These included watching television and playing video games (screen time), limited physical activity, and junk food available at school and consumed when their child was not under their direct care. Parents expressed difficulties in motivating their children. Parents also worried about their child’s self-esteem associated with the stigma of being overweight. Parents discussed their children’s dismissal of parental advice and inattentiveness when parents tried to address weight issues at home. Parents reported feeling helpless. The subsequent sections describe the parents’ perceptions of the interactions with their child’s physicians; these perceptions, when combined with their own difficulties in managing their child’s weight, left parents feeling afraid and abandoned.

4.5.2 Perceived Physician Practices

Parent-Physician Interaction

Parents perceived that they were more concerned than were their physicians for their child’s future health as a result of being obese. This interaction was frustrating since parents’ main source of anxiety came from the fear of what their child’s future will be if they continue choosing unhealthy eating and activity behaviours. Parents reported either personal experiences, or those of other close family members who have suffered from some medical or emotional consequence associated with their obesity. All parents did not want their children to go through the same experiences.

“I have problems with my weight and my husband recently came out of surgery for a heart attack so I should be concentrating on us[,] but I worry that this will happen to my son.”

Parents were aware of and respected the time constraints of physicians, but felt that even during their allotted time, physicians were rushed and inattentive.

“When we talk to our physician we tend to ask questions, our voice goes up and down, we’re looking, and we’re waiting for that response! Do you understand? All they say is uha uha. They are not hearing a thing, just giving the pre-programmed response that they give to all patients.”

Advice on aiming to keep their child’s weight constant while the child grows was perceived to be particularly dismissive and described as physicians “taking the easy way out”. Parents pointed out that this may be an unrealistic aspiration for younger children.

“It may be a little unrealistic to say to a child at 9 or 10 to maintain their weight, at this age they have so much growing left to do.”
Child-Physician Interactions

Parents perceived that physicians provided information about obesity to their children during medical consultations, such as their child’s height and weight. When it was brought up, parents positively perceived physician discussions of medical consequences of obesity with their children. Parents perceived that the physician’s position of authority contributed to the effectiveness in discussing medical consequences of obesity.

“I still think that physicians should go back to the truth! Say something like: I have all the information here and I also noticed in the chart that you have a family history of heart disease, diabetes or whatever it may be. Do you realize and know that you are at a risk for A, B or C. Physicians should then tell kids about those diseases!”

Conversely, parents perceived that some physician advice about foods to avoid and increasing exercise was unhelpful, because it reiterated what they already knew.

“He gave us Canada’s Food Guide and some other information. It was done fairly quickly and was nothing that we didn't already know.”

Parents reported being frustrated by the perceived lack of initiative shown by their child’s physician in discussing their child’s weight issues. Parents uniformly reported being the ones to bring up their child’s weight problem.

“My family doctor never mentioned my daughter’s weight. I brought it up to him again after her neurologist talked to me about it. He only noticed because he had to know her weight for her medication. I had to keep bringing it up. He just didn’t talk about it with her, ever.”

While all parents reported that they were ultimately responsible for their child’s health, they were nevertheless looking for guidance and support. Parents perceived that physicians only addressed obesity and the necessary behaviour changes with them, leaving their children out of the conversation. Parents felt this undermined parental efforts in empowering their children to take responsibility for making health behaviour change.

“She only spoke to me and I was supposed to take responsibility for it [child’s obesity]. I understand I’m the parent and she’s just a kid but she also needs to understand. I've been trying to make her more aware of it, because I don't want her to live with health problems and weight problems for the rest of her life, like I have.”

4.5.3 Recommendations from Parents

Participants identified key tools that they believed, if implemented, would improve the way discussions around obesity in children are communicated primary care. Parental
recommendations were aimed at changing the whole communication process, which they perceived would improve by implementing the changes listed below.

**Need for Education**

Parents recommended that their children’s physicians should further their education in ways to address obesity. While parents were satisfied with how their child’s physician handled other medical problems, they felt that physicians need to enhance their knowledge in how to effectively discuss obesity with children and improve the sensitivity of their communication. Parents thought that physicians may benefit from training in using children-friendly language. Learning about the emotional aspects of food and obesity as it pertains to their child was an important area which parents felt physicians could improve on. Paying attention to the potential life situations that may be contributing to a child’s increase in weight was also recommended.

“So maybe they need to have more training, to have specialty in family counseling with children with weight issues. Doctors need to see that there is an epidemic and that we need people to specialize in these areas.”

**Motivate**

According to parents, there is a difference between providing information and motivating their child to change. They felt that their family would benefit from help in motivation. Parents perceived that their children needed motivation for behaviour change and that they themselves needed tools to motivate their children at home. Parents emphasized that this should be done by the physician who has an established relationship with the family, and not delegated to an allied health professional.

“A medical doctor is basically an educator and a person who is supposed to push us to be healthy. If they are going to keep passing us off to someone else we’re just gonna have a vicious cycle”
Include the child

Parents recommended that children of all ages should be included in conversations to facilitate the continuation of support at home.

“The way through the kids is just to talk, talk, talk. It doesn’t necessarily mean that they’re going to get what you are saying, but they just need to be in the conversation.”

Parents recommended that the physician needs to speak to the children at a level that they can understand when trying to provide information as means of motivating families. Parents felt this would be effective in establishing rapport and moving the children forward towards behaviour change.

Ask more questions: focus on life events

Parents also felt life events such as divorce, a death in the family, and social issues at school should be addressed and recognized as triggers that may be affecting and contributing to their child’s obesity. Parents perceived that physicians did not demonstrate enough empathy to be able to deal with underlying emotional aspects. Parents wanted empathetic statements that may provide an environment where children could feel heard, and not blamed for their obesity.

Parents reported that by asking questions, physicians would make both themselves and their children feel listened to and understood.

“Physicians should try to say something like, ‘I understand that you have a lot going on! Is there something wrong?’”

Follow Up

Parents reported being frustrated in the absence of a follow up, even at times when obesity was addressed. Parents empathized with their children’s physician’s busy schedule, but felt that continued follow-up and monitoring would be beneficial. Parents felt that this would make them feel more supported and the continuity of care would have the potential to improve their child’s changes to his/her life style.

“There is no follow up! You see the doctor once and if she’s not sick again you wait till the year after. I was hoping she would make another appointment; she never brought it up again.”

4.6 Discussion of parent focus group

Putting ‘perceptions of parents’ into context of literature
Obesity is a growing child health concern that affects both children and their family support systems. Parental involvement in the treatment of obesity in children is essential for positive outcomes [108, 109]. The current study demonstrated that concerned parents of children with obesity look to their child’s primary care physicians for dealing with their child’s weight. Parents perceived disappointed with current physician communication regarding their child’s obesity. Parents made recommendations that if implemented could contribute to a positive response from their children in making behaviour change to manage their obesity.

Focus groups and individual interviews were both used in this research and their transcripts were analyzed collectively. Individual interviews are meant to provide an in-depth rich description of a phenomenon, while focus groups are meant to provide participants with an opportunity to agree about or refute a specific topic. Interviews were put in place to maximize the number of families who participated in the research. In this scenario, the methods of McCracken’s “The Long Interview” were utilized, incorporating the literature, the researcher’s own assumptions, and probes from the focus group into the individual interview questions [87]. This method is valid even when sample sizes are low, and both maximizes the breadth of the interview and eliminates the need for repeated interviews [87].

Parents’ recommendation for physicians to include their child in the conversation about healthy weight was perceived to result in a promotion of health behaviour change that could possibly be sustained outside the physicians’ office. Parents perceived that having their child actively participate in discussions about their weight with their physician would contribute to the child’s understanding the urgency behind making changes. Presence during consultations about obesity in children has been previously identified as being important to parents [47]. Emphasizing active participation during consultation is a subtle, and specific, component proposed by the results of this research. By gauging their patients’ participation in the conversation, physicians may facilitate how the counseling is received. Since parents have identified obesity as a medical condition that needs to be addressed by a physician [47] physicians can capitalize on the communication opportunity that may present itself if children are more engaged.

Parents suggested that physicians further their education, specifically to being more sensitive and to improving their communication about obesity. This has been previously identified in the literature on obesity in adults as a necessary aspect of its management [110]. An increase in
amount of training received on obesity counseling was associated with discussing weight issues with more patients [111]. More specifically, sensitivity training incorporated into counseling techniques has been previously identified by physicians and overweight children as a useful way to improve the patient-physician interaction in the medical management of obesity in children [112]. Literature on communicating ‘difficult’ medical information also provides insight into engaging in dialogue with parents of overweight children [113]. More specifically, using euphemisms, and not making the assumption that someone else has already spoken to the parents, were identified as particularly helpful [113]. These are tangible areas that are informative for both practice and research.

Parents in this study were concerned about how the stigma of being overweight would affect their children’s self-esteem and future. They felt that their concerns were dismissed, and they perceived negatively the physicians’ use of indirect advice, such as ‘little to no weight gain with growth in height’ as a way to treat obesity. They did not question its validity; just felt it was ineffective, especially for younger children for whom this may not be realistic. Conversely, parents in another study reported a concern with the terms ‘overweight’, and suggested using the euphemism of ‘gaining too much weight’ as an alternative [47]. This suggests that despite good intentions, physician use of euphemisms may be interpreted. Determining how each parent and their overweight child would like obesity (and other medical conditions that require sensitivity) to be addressed could maximize how advice is accepted, and allow for physicians to engage in dialogue about healthy behaviour [114, 115].

A recent study indicated that parents were more likely to make a change in weight management for their child when they believed that their child was overweight and that the weight was a health concern [45]. The perspectives of the present study support these findings as these parents had the will, but not the skills, to work with their children’s primary care providers [45]. The perspectives identified in this research can be useful to physicians in facilitating communication that accord with their pediatric patients’ and their families’ needs.

**Strengths and Limitations**

In qualitative research, participants provide their perceptions of certain phenomena and the researcher integrates the thematic summary into the context of the real world. The findings of this research represent the opinions and perceptions of concerned parents of children with
obesity. In order to establish trustworthiness of the data, prolonged engagement with the study findings, using multiple coders of the data, and member checking during group and individual interviews were put in place. Despite all efforts, there remain some limitations, including the fact that the results were perceptions of physician communication, and did not include its direct observation. Therefore, it is not possible to make conclusions about actual practice but rather how practice is accepted and perceived. Qualitative research methods including focus groups and individual interviews aim at reaching saturation, which is achieved when the researcher is no longer hearing new information from study participants that pertains to the phenomena being explored [93]. The analysis of one transcript is ideally completed before conducting the next focus group or interview. Limits in time and funding precluded us from achieving this ideal state. Despite this, the themes were similar across the individual and group interviews.

The current study was one with many strengths, both in its methods and its findings. The population of parents of children with obesity had experience with obesity management in primary care, and therefore the environment provided a setting for rich and thick data. The themes that emerged from discussions with parents of children of different ages were consistent, indicating that major concerns and preferences for how obesity could be addressed may not be affected by the age of the child. Parents identified areas of strength and weakness relating to their perception of how their child’s physician addressed obesity, and also made recommendations for physicians.

The research findings suggest that the families participating in this research may have a selection bias based on advertising. As parents of children with obesity, they may have had many encounters with physicians about their child’s weight. Given that their children remained overweight, this self-selected group of parents may have been susceptible to ‘groupthink’ that focused on the perceived negative behaviours of their children’s physicians. Their participation in the research itself may suggest that parents of children with unresolved obesity, who have been unsatisfied with their child’s weight management in primary care, were more likely to be candidates. Perhaps a subsequent study, which focused on parents of children with BMI percentiles of 85% and/or even healthy weight children, would provide an appropriate comparison group.
Parents explicitly requested that physicians provide motivational tools, rather than information-based advice often considered redundant. They reported being knowledgeable in general information pertaining to reducing their child’s weight, including diet changes. However, other research has shown that parents tend to be overly confident in their knowledge of their overweight children’s dietary requirements, and underestimate the need for further education [116]. Regardless of this confidence, parents may still lack important information. Physicians can utilize their limited time to evoke parental knowledge and address potential misconceptions. Motivational Interviewing literature indicates that the process of eliciting information from parents, providing information, and listening is useful in short patient encounters, and may improve communication, thus contributing to more motivated families [55].

**Integrating child and parent perceptions**

Children with obesity and their parents shared some common concerns, but also had some discordant perceptions regarding how their physicians communicated about weight. Both children and their parents described themselves as overweight, and avoided using the term obese. Children and parents both perceived the importance of including the child in communications regarding weight. Parents wanted their child to share in the responsibility and children wanted to feel included. The children perceived advice on healthy eating and physical activity as typical advice, and parents stated that physicians should not focus on such advice that was already known and understood by the families. Focusing on life events or emotional aspects related to weight were recommendations that were agreed upon by both children and their parents. This would also deter from the perception that visits were repetitive. Among the many perceptions described by the families a major discordancy existed. Parents felt that physician discussions with their children regarding obesity-related morbidities would motivate their child to make a health behaviour change. Conversely, children perceived the use of the medical consequences, to be a scare tactic tool used unsuccessfully to motivate them. According to the Health Belief model the parents are experiencing a heightened sense of susceptibility for their children, resulting in a desire for action to take place [56]. However, according to the Transtheoretical model, if the child is not contemplating change, external motivators would not necessarily be successful in getting them to achieve a change [56]. The children need to have a perceived behavioural control (Theory of Planned Action) in order to make changes and this also is not achieved through information perceived as scare tactics.
**Future Directions**

An area for future research would be to better understand how parents are socially affected by their child’s obesity [80, 117]. At an institutional level, including parents as stakeholders may enlighten medical education. These implications are hypothetical until more research is done to evaluate recommendations from parents and determine how they are accepted and translated into practice. Future research should include the perspectives of primary care physicians’ experiences managing obesity in children in order to thoroughly describe the triad of interaction.

**Relevance to Motivational Interviewing**

The parents who participated in this research had a positive general perception of their child’s primary care physician, but had some suggestions and opinions regarding how the physician managed their child’s weight. Parents identified areas for improvement for both their child’s and their own interactions with the physicians, which may be addressed using Motivational Interviewing (MI) tools and constructs. Parents recommended for physicians to motivate rather than just inform their child. Physicians can utilize this recommendation and empathetically engage the children and their parents in conversations. By eliciting what families already know parents can feel heard and life events or emotional difficulties may be addressed. Other MI tools such as active listening and asking more questions, may make referrals to allied health professionals when appropriate, perceived more favourably. Therefore, the MI approach may be relevant and could be applied to the needs of these parents.
5 Perspectives of primary care physicians on their own medical management of childhood obesity; what are the challenges and what do they need?

5.1 Introduction

Obesity has become more prevalent in Western society in the last two to three decades [3, 35]. Physicians consider it to be one of the most difficult situations to overcome in children [118]. Obesity co-morbidities include type 2 diabetes mellitus, hypertension and dyslipidemia, all of which lead to heart disease. The increased prevalence is due to “overconsumption of high caloric foods and sedentary lifestyles”[119] or “supersizing of our diet and downsizing of activity” [118].

Physicians have recognized that childhood and adolescent overweight and obesity are more than just a medical issue [11]. Social causes have been also identified, such as sedentary lifestyles, socioeconomic status, quality of consumed food, and media advertisements. Parents also play a crucial role. As primary caregivers, they set an example by influencing eating habits and physical activity levels [11].

Families look upon physicians for help to treat obesity in children. Communication about weight plays a vital role in the management of obesity in child health. Even though physicians believe that they play an important part in weight management, they also feel they have not influenced the patient enough to make lasting long-term changes [30]. This includes a hesitation in bringing up the topic due to unknown reactions of parents [36], a lack of time, adequate knowledge to provide counseling, poor availability of efficacious interventions and lack of reimbursement for these services [16]. Furthermore, the parents themselves can be overweight, which may make approaching the topic difficult [11].

Twenty-one physicians from 15 different practices participated in individual interviews. Physicians reported that obesity was ultimately the patients’ responsibility and that obesity was perceived differently by the patients [30]. It is as if patients wanted the doctors to fix the problem which they themselves created [30]. They described being frustrated by patient expectations, which were at times discordant with their values as physicians. Many studies have described
barriers to treating obesity in children. Since it was the intention of this research to address communication in primary care about weight it was necessary to get a deeper understanding of physician awareness of the barriers and how they cope as a result. An in depth description of this process is limited in the literature.

**Purpose of the study**

The purpose of this qualitative study was to learn about the perspectives, including the barriers, of physicians regarding how obesity is managed in their practice and their communication with families.

The research questions to be answered through this research are:

1. What are the ways that physicians currently manage obesity in their pediatric patients?
2. What are the barriers to effective identification and communication about obesity and how are they managed?
3. What do physicians feel would assist them in better managing obesity in primary care?
4. How do the barriers and needs contribute to the efficacy and motivation of physicians in discussing or bring up obesity during medical visits?

**5.2 Methods**

**5.2.1 Research Approach and Rationale**

The perceptions of physicians regarding the management of pediatric obesity in primary care were investigated using a constructivist approach. Details of this approach are explained in Section 3.2.1. Constructivism was appropriate since exploring the reality of physicians is one of the realities in the triad of communication about weight and health in primary care. Qualitative focus groups were chosen because of their ability to describe perceptions, beliefs, and perspectives.
5.2.2 Research Design

The goal of the focus groups was to identify perceived promoters, barriers and needs that physicians can have in the context of how they communicate with children and their parents who are struggling with obesity. Group discussions were proposed to allow the researcher to evaluate individual opinions that were supported and refuted among the group [74]. Two sets of focus groups were conducted and the information from the focus groups was then used to inform the training content for a clinical trial with physicians (Study 4, Chapter 5). The fundamental qualitative descriptive method was used to guide the analysis and interpretation (described in Section 3.2.2).

5.2.3 Research Participants

Participant Recruitment

Physicians were recruited to participate in the focus groups by a letter that was sent to all physicians in the GTA, using a mailing list obtained from the College of Physicians and Surgeons of Ontario. Physicians were instructed to contact the coordinator (Maya Obadia) if they were interested, as well as if they were not so that the researchers would not follow up with them. Follow up phone calls were made and interested physicians chose which of the available focus groups dates they could attend.

Inclusion Criteria

1. Participants had to be either a family physicians or pediatrician practicing in primary care.
2. Family physicians must have a pediatric population of at least 15 % of their practice to ensure sufficient interaction with children and parents.

5.2.4 Focus group methods

Focus Group Environments

Focus groups were held at the hospital on weekday evenings. Focus groups goals and methods were explained and each physician provided informed consent according to the requirement of the Research Ethics Board at The Hospital for Sick Children. Maya Obadia moderated one focus
group and Patricia Longmuir moderated the other. Patricia Longmuir was a PhD Candidate at the time and has extensive experience with moderating focus group discussions. The focus groups were held in a classroom at the hospital.

Focus groups were set up as a round table discussion. One digital recorder was placed at each end of the table to capture voices at both ends. Focus group etiquette and procedures have been previously described in Section 3.2.4.

**Procedure and Reimbursement Following Participation in Focus Group**

Following each focus group, each physician was provided with reimbursement for parking or transit costs and $50. The reimbursement was provided to ensure that participants did not incur any out-of-pocket expenses and was in accordance with the approval of the Research Ethics Board at the Hospital for Sick Children.

**Focus Group Questions**

A semi-structured interview guide was used to facilitate discussion among the group and allowed for new themes to emerge (Appendix 6). Each question in the guide was related to one of the four research questions (Section 4.1).

**5.2.5 Safety and Storage of the Data**

Measures for the safety and storage of the data have been described elsewhere (Section 3.2.6). Within each focus group discussion each participant was assigned a coded identification number. The numbers were sequential, with each character representing a different identifying factor. Letters X and Y were assigned to participants in the first and second focus group, respectively. Family physicians were numbered with the number 1 and pediatricians with the number 101. A master list that connected the participant to their identification codes was kept in a locked drawer in a locked room and only the researcher (Maya Obadia) had access to this list. Measures for anonymity and confidentiality were put in place and described in section 3.2.6.

**5.2.6 Data Analysis**

When analyzing the perceptions of physicians, documentation of any bias and assumptions were recorded. Focus group recording and transcription methods, as well as the inductive approach
used for data analysis, followed the same protocol as for focus groups with children with obesity and their parents. (Section 3.2.7)

This process identified physician typologies including: barriers, coping strategies and needs. The coding process for this study is the same as that described in Section 3.2.7.

**Interpreting Results**

The results of the focus groups with physicians followed the fundamental descriptive methods that have been previously described in Section 3.2.7.

5.2.7 Ethical Considerations

The Research Ethics Board of The Hospital for Sick Children approved the research protocol described in this chapter. Informed consent was obtained from the physicians. A second consent form relating to the digital recording of the focus groups and interviews was obtained in accordance with the requirement of the Research Ethics Board. Goals and purpose of the research were explained.

5.2.8 Trustworthiness of the data

Measures of the trustworthiness of qualitative data include credibility, dependability, conformability, and transferability. These constructs are well described in section 3.2.9. Measures to establish these were put into place in the same manner as for focus group data for children and their parents.

5.3 Findings from focus groups with primary care physicians

**Participants**

Eight family physicians and four pediatricians participated in the study. Participants were assigned to focus groups based on their availability to attend on the pre-determined date. Data analysis revealed three themes which are labeled as barriers, coping strategies, and needs. Each theme has sub-themes exemplified with verbatim quotations embedded in the text and summarized in Figure 7.
Figure 7. Summary of physicians’ perceptions regarding their experience in communicating about weight with children with obesity and their families.
5.3.1 Barriers

**Contributions of Families**

The physicians in this study identified that management of obesity in children should address the entire family, as often obesity is not limited to just one child.

“I feel that it’s not just the kids. It’s the whole family issue. Most of the obese parents produce obese kids and they just don’t know themselves how to control the portions”

Despite the fact that physicians identified parental concern, physicians perceived that at home children are eating larger portions, drinking sugary drinks, and spending their time in sedentary pursuits. This was perceived as parents turning to them for help and yet not taking responsibility for their own contributions to the problem.

“You know this juice I think is the biggest poison; juice and pop. You know every kid in the mall has it. You see a baby in the stroller with a juice bottle”

Physicians felt that there were multiple factors contributing to children making unhealthy food choices or consuming larger portion sizes. Parents having busy work schedules with late hours, perceived parental fears of unsafe neighborhoods, and obesogenic foods readily available and advertised were mentioned. However physicians were surprised that parents are not more stringent with their children when it comes to healthy eating and exercise. Physicians felt that parents should assert more control.

“I think it’s also lifestyle, they have no time. This is why all the fast food hype, its fast”

Physicians described attempting to discuss obesity with both the child and the parent in the room. Physicians perceived these efforts to be thwarted, as follow up appointments were often not attended by the families.

**Confusion about Obesity Measurement Tools**

Physicians described a variety of tools that they use to measure a child’s weight and height to inform them about the child’s risk for obesity. Growth charts and height for weight charts were the preferred methods for physicians. Physicians did not report frequently using BMI charts during their consultations with their patients. They also seemed unclear about which of BMI or waist circumference was supposed to be used as a diagnostic tool for obesity.
“Maybe I have some misconception. I don’t have the BMI for each patient and I hardly do it, because in the whole population it’s not the focus. Isn’t the push now to get into waist circumference? So there are mixed messages.”

Regardless of method, physicians were confident that they could identify the children who were overweight, especially if those children were their patient for a long time.

**Low Counseling Self-efficacy**

Physicians perceived themselves as having low self-efficacy in counseling families who were struggling with weight. Emotional factors such as bullying, and social issues, were particularly hard for physicians to counsel, and they referred to their lack of training with such sensitive topics.

“I don’t know how to do it. They come and tell me my eating is all emotional. You know this is where I am stuck basically. I don’t have training in this area.”

Physicians reported relying on intuition and personal experience, using what has worked with their own families, when making attempts to counsel families. These were not always perceived as effective and physicians reported not saying anything most of the time.

**Patient cultural and socioeconomic status**

When treating children with obesity, physicians perceived cultural traditions as barriers to communicating about weight. Physicians perceived that families from cultures with customs surrounding energy dense foods to be more resistant to advice about making healthier food choices. Physicians perceived that some cultural norms equated chubbiness with health.

“They will keep bringing the child when they are really healthy and keep saying you know my child is not putting on weight. When the child is young they want to see the child very chubby; obese really”

Physicians also perceived communicating about portion size adherence to be difficult with families living in multi-generational homes. Physicians perceived this as a barrier to the retention of their advice.

“A lot of them live with grandparents ones who were in the war when you didn’t have food you were poor and therefore super skinny. If you had all the money in the world you were fat. Simple as that.”
Lack of time and compensation

Physicians reported a lack of time to address obesity with children since appointment times were not long enough to address the issue. Physicians also felt that even if they had more time it would probably not be enough.

“Usually they are there for another visit and it comes up there is just no time.”

Physicians perceived not being compensated enough for counseling general health topics, let alone weight issues in children.

“It’s [counseling] a real constraint because of the way the compensation schedule is. The structure is that time is not compensated. It’s always a battle of how you do it in your office. So you have them come back but a lot of the times the ground you gained in the first interview is lost or they don’t come back.”

5.3.2 Coping Strategies

Avoidance

Physicians described avoiding the topic of weight with children. Reasons for avoiding discussions included low self-efficacy, and recognizing that talking about such topics made the children feel bad. Physicians did not want to contribute to this feeling.

“So I am not sure and therefore I don’t go much into it; maybe because I don’t have a solid idea. I just don’t want to make them [families] feel worse.”

Refer, Refer, and Refer

Physicians felt that in order to cope with the barriers that prevent them from effectively communicating about weight with their pediatric patients, they often refer to dietitians and community programs for obesity in children.

“Referring to the dietician is the easiest way to go! The kid often says I don’t want to go to the dietician. I refer anyways.”

Physicians perceived that referral was often a stalling mechanism. They perceived that families did not often book or attend appointments with a dietician.

“My patients don’t always book their appointments [with the dietician] but all I can do is give them the contact”

Perceived Effective Strategies
Physicians in this study described many difficulties in managing obesity and addressed the mechanisms they used to deal with the barriers. However, they also were able to report specific tools or behaviours that they perceive to have a positive reaction from their patients. Physicians perceived that avoiding the term obesity and talking to the parents with the child in the room were ways that discussions can be made more positive. Physicians perceived that bringing up medical consequences of obesity was effective in getting the families’ attention.

“We talk more about healthy lifestyle. I don’t use the term obesity. So I bring it up more to mom and dad, but the kids are in the room as well. They seem to be paying attention.”

In order to establish rapport and get the children to relate, physicians reported discussing how the child fit in their clothing, or the type of sports the child was interested in. They perceived this to be practical advice and not just vague instruction to increase the amount of time doing physical activity. Physicians reported sharing their own successes and challenges in achieving a healthy weight.

“I find that I can use my own personal weight as a positive counseling tool. I had an injury and before this I was very very active. Being unable to exercise has resulted in weight gain. I try to hopefully help them understand that it’s not just food. It is also activity level and it’s a lifelong commitment not just a onetime thing.”

5.3.3 Needs

Physicians in this study discussed what they feel would help them to deal with their pediatric patients more effectively.

Training

Physicians expressed an interest in receiving training regarding counseling families about weight. They also felt that training on how to communicate with families, rather than clarification of the information they would need to provide, would be more relevant.

“If we could just find out what to say, how to talk to them, to make them listen”

Changes to reimbursement policies

Physicians perceived that obesity management in children is a timely task requiring long-term management over multiple counseling sessions. They reported that reimbursement for this time would assist them in finding the time to book such appointments.
“We don’t get paid for this work so it’s hard when it’s a process that requires so much time.”

Resources

Physicians described their office as already so strapped for time and financial resources. They welcomed a full information package regarding weight in children that can be given to patients.

“If I had the money I would hire a university student to collect all the resources available and make packages. My practice just can’t afford this.”

They also wished for resources in the community for handling obesity in children. Specifically, they felt that a peer support program for these children would be beneficial.

“These programs just don’t seem to be working. What the kids need is to hear from other kids kind of like a peer support program.”

Relationships between themes

The relationships between themes are depicted in Figure 7. Physicians described the barriers (in red) that they feel prevent them from addressing obesity in children as effectively as they could. Within the barriers, system factors (lack of time and compensation, lack of clarity regarding measurement tool confusion) accentuate the barriers of self-efficacy, dealing with families, and culture. The barrier of low self-efficacy is one that has been linked to the difficulties in addressing obesity with families and dealing with cultures.

Physicians reported that they deal with barriers by coping, using referrals and avoidance. They talked about specific tools that have anecdotal evidence of success in their practices (indicated in green arrow). The link between barriers and physicians’ coping mechanisms was the process of recognizing being overwhelmed when addressing obesity with their pediatric patients and their families.

Physicians reported a desire to improve, thus linking their perceived unsuccessful coping strategies and their needs. Physicians indicated that further training in counseling would be beneficial and at the same time perceive concern about being compensated for the time it would take to effectively counsel.
5.4 Discussion of physician focus group findings

The current study demonstrates that physicians are concerned about obesity in their pediatric patients and at the same time struggle with both system and personal barriers to effective weight management. Physicians identified coping strategies used to counsel families regarding obesity in children. These are perceived as not effective. In general, physicians perceived that opportunity for more training in counseling children with obesity, improved community programs, and changes to compensation schedules allowing for reimbursement would assist in improving how they communicate with families regarding weight.

Putting ‘perceptions of physicians’ in context of the literature

Interestingly, physicians perceived that parents can become more responsible and stringent regarding the foods their children consume and the amount of time spent doing physical activity. Other qualitative studies have also identified parental resistance as a difficult barrier to overcome [120] and some have even suggested that the physicians’ role is to raise the issue but that obesity is a family problem, not a medical one [30, 36]. Conversely, a quantitative research study from Australia reported that 93% of physicians agreed that childhood obesity was a medical problem and that general practitioners had a role in its management [121]. This discrepancy in results is one that requires further investigation and needs to be resolved, as developing curricula for physician training would be ineffective if physicians are not receptive to treating children with obesity in primary care.

Barriers such as lack of time, resources, training and compensation were common to both the participants in this research and to others’ [3, 30, 36, 75, 122], with lack of compensation heavily emphasized among the participants in this study. In Ontario, physicians are not reimbursed specifically for counseling about obesity, with limited time allotted for counseling on all medical issues per patient per year. No changes to the Ontario physician reimbursement schedule have currently been put in place. However, even if these changes took place, physicians would have other limitations such as time, low counseling self-efficacy, and lack of training. Until these barriers are addressed, changes to compensation schedules may be unlikely as evidence linking compensation to treatment success would still be required.
The methods by which obesity is identified was a point of confusion for the physicians in this study and in others [75]. A lack of clarity and self-efficacy in counseling about obesity was also found [30]. Difficulties in initiating conversation about obesity and the sensitivity around the issue are other areas that participants reported in both this research and in others [11]. Physicians concede that their medical training, which did not include obesity counseling skill development, has not prepared them for counseling about obesity and reported more training as one of their needs. As obesity has become a child health concern worldwide, it would be presumed that obesity counseling training should become a part of medical education. However, qualitative studies with residency program directors have reported that structured training is not currently offered, suggesting a great need for the development of a curriculum [123, 124]. Such training curricula for medical students and residents may result in a population of physicians with higher self-efficacy in counseling [123]. They could benefit currently practicing physicians as well.

**Strengths and Limitations**

The present qualitative study used a semi-structured interview guide with the aim of encouraging physicians to express their own views regarding communication and treatment of children with obesity. This design emphasizes physicians’ own perspectives, while minimizing the assumptions and biases of the researcher. Limitations in funding and amount of time physicians were willing to commit precluded the recruitment of a larger sample size. Despite this, common themes emerged from the data, which were at times discordant and concordant with the families (Chapter 3), and other physicians’ perceptions from the literature. A larger scale qualitative study of physician beliefs and experiences with a physician observation component could be beneficial. Furthermore, it is likely that the participating physicians may have had pre-existing knowledge of the relevant literature. This should be taken into consideration when making conclusions.

The research findings demonstrate that physicians are very interested in improving their abilities in managing obesity in primary care. Their concern and desire to improve may be heightened, as participation in this research may indicate a larger desire for help than that of the general physician population. Furthermore, the barriers expressed by the physicians in this study were common to those reported in the literature. Themes that emerged from discussions with physicians were consistent, indicating that barriers, coping strategies and needs were similar to both the family physicians and pediatricians participating in this study.
Integrating child, parent and physician perceptions

As the third stakeholder in the communication regarding weight in primary care, physicians have put forth a great effort to work within their barriers to address obesity in children. Like the families, physicians reported to avoid using the term obesity. This agreement is concordant with that in the literature [100]. Physicians reported utilizing specific physical activity interest of the child to establish rapport with the child. Children seemed motivated by those efforts. Parents and children wanted this to be taken one step further in addressing life events that may be contributing to the weight issue. Physicians’ reported low-self efficacy regarding counseling is a barrier to such communication. While physicians reported having the children in the room when discussing weight, both parents and children perceived that including the child in weight discussions would be even more effective. Using the medical consequences associated with excess weight was reported to being effective in getting the families’ attention during medical consultations. While parents were in agreement, the children were not. Perhaps, efforts to discuss such morbidities should be done more sensitively or even elicited from the child [51]. Physician coping mechanisms of referring children with obesity to allied health professionals were perceived by both physicians and parents as stalling mechanisms. Obtaining more training for counseling families regarding weight was concordant to physician and parental perceptions, and may result in less referral for stalling purposes.

Future Directions

The perspectives brought out in this research support existing literature and are relevant to many audiences. For physician audiences, the findings may normalize feelings of low-self efficacy and ability in child weight management. Physician use of anecdotal experience with their own weight management highlights the importance of physician health behaviours, and their opportunity to become role models. Parents and children may appreciate physician efforts and become more aware of how families can make changes in home and social environments. This research provides insight regarding curriculum and training development for continued medical education departments at medical institutions. It also suggests the potential for evaluating whether increases in compensation for physicians to counsel on obesity, a fee incentive, would improve outcomes. Therefore, before progress can be made, many aspects of how obesity in children is managed in
primary care need to be addressed. Interventions targeted towards physicians, without solutions to some of the barriers, may be deemed counterproductive.

**Relevance to Motivational Interviewing**

Challenges to counseling children with obesity and their families were described in this research. MI training for physicians may be relevant to physician communication and may address both empathy and motivational difficulties in counseling. Physicians expressed barriers in counseling motivational and emotional factors associated with childhood obesity, and expressed a desire for further training. Their concern about time was a factor. MI is a good communication tool for medical professionals who are limited in time. When used effectively, even short durations of contact can have effects on behaviour change. Eliciting what the patient already knows about reasons and ways to achieve a healthy body weight allows physicians to address paucities and misinformation, more effectively using their time. Perceptions of physicians, children and parents merged with MI tools and construct informed the curriculum for the MI intervention for improving how childhood obesity is managed in primary care.
6  Supporting physicians with education and know-how in identifying and motivating overweight kids (SPEAK I'M OK): Results from a randomized control trial.

6.1  Introduction

Prospective, randomized clinical studies on physician training to effectively manage pediatric obesity are limited. Despite this, physicians have expressed a desire for further training specifically around communicating and motivating children with obesity and their families. Motivational Interviewing (MI), is a communication method effective in eliciting change which leads to behaviour change [55]. Its effective adoption by various health care providers and the ability to see motivational changes in short interactions with patients, makes it a suitable tool for physicians to use in primary care [55]. BMI, has been identified as a useful classification tool. Its use for identifying and monitoring obesity in children is an integral part of the 2006 Canadian Clinical Practice guidelines for childhood obesity management. An emphasis on adoption of these guidelines specifically around use of BMI integrated into MI adherent tools would have the potential of increasing obesity identification while utilizing communication opportunities more effectively.

The present randomized control trial added to the literature a comparison of MI tools and education based interventions on outcomes of identifying children with obesity, a necessary step for discussion initiation to take place. A novel, and important, aspect of this study was that the MI skills emphasized during the training sessions could be easily incorporated into brief patient visits. The generated findings from focus groups with obese children and their parents and physicians (from Studies 1-3), adherence to respected guidelines for the medical management of childhood obesity, and training in specific MI tools, also made this a unique area of investigation.

For this program of research, primary care physicians were chosen to receive the training intervention as they were among the most likely primary health care providers to identify children at risk for overweight. They have also expressed a low self-efficacy in discussing obesity with children and their families [36]; therefore, they were most likely to benefit. Even
physicians who have a higher self-efficacy in pediatric obesity counselling can still have very low rates of BMI calculating, plotting, and/or tracking and identification of children as overweight [39]. As a result, an intervention study that both targets utilizing BMI as recommended and provides tools to improve the way physicians communicate about weight was warranted.

The interventions were designed to be acceptable to our participants, as physicians have indicated interest as well as a perceived need for learning how to discuss weight with their at-risk pediatric patients. The combined use of Motivational Interviewing (MI) underlined with Prochaska’s Transtheoretical model (TTM) of behaviour change provided a unique and thorough approach to physicians’ training. The combination of both TTM and MI was hypothesized to increase physician practices with respect to obesity counselling of children, as measured by the study’s outcomes.

The study described in this chapter provides new insights into the identification of overweight in children and potential barriers associated with applying new communication methods. This study also highlights a unique opportunity for early and effective intervention in pediatric obesity. It describes measured frequency of BMI calculating, tracking, and identification of obesity and efficacy of the MI training. This study received ethics approval from the Research Ethics Board at the Hospital for Sick Children.

6.1.1 Objectives

Primary Objective

The primary aim of this study was to determine the efficacy of a MI versus education-based interventions on improving physician practices in identification of obesity/overweight in children. It was also to determine effect of MI training on MI adherent scores among physicians randomized to the MI intervention group.

Secondary Objectives

The secondary aim of this study was to determine patient-related factors associated with the primary outcomes.
6.2 Methods

6.2.1 Participants

Family physicians from the Greater Toronto Area who met the inclusion criteria were contacted to participate in this research. Physicians were identified by a list from the College of Physicians and Surgeons of Ontario and were mailed a recruitment letter (Appendix 7). Interested physicians were screened for study eligibility. Physicians were targeted if they had access to children across the age groups and were in a position to identify overweight children.

**Inclusion criteria:**

1. Toronto area family physicians with membership in the College of Physicians and Surgeons of Ontario;
2. Pediatric patient population of at least 15%;
3. Available to attend pre-scheduled dates for training at the Hospital for Sick Children;
4. Provided informed consent for participation in the study.

**Exclusion criteria:**

1. No sub-specialty practice in obesity or related co-morbidities;
2. Primary physician practices in secondary or tertiary centers;
3. Physicians with walk-in practices.

**Study Setting**

The training sessions for each intervention were held in a classroom at the Hospital for Sick Children in Toronto, Ontario, Canada. During the training, physicians interacted with Maya Obadia, Dr. Brian McCrindle, Dr. Denise Ernst, and the other participating physicians. Data collection took place at each physician’s individual office.

6.2.2 Treatment Interventions

Physicians in both study intervention groups attended a training session (< 6 hours) at the Hospital for Sick Children. This time duration allowed physicians to learn and practice the necessary skills without compromising their clinical schedules. All other contact was made by phone, email, or in person at the individual physicians’ offices. The goal was to increase compliance and participation, while minimizing the staff and facility resources required. Data from physician practice audit were collected at 6 and 12 months post-training. This was
considered to be adequate time for physicians to make and then sustain changes to their practice [54]. Monthly emails with content relevant to the intervention-specific tools were sent to all participants as a reminder of their participation and skills learned in the study. The training sessions encouraged discussions and provided feedback both regularly and as requested. No additional time commitment was required from the physicians apart from the time already spent with their own patients. Physicians were enrolled in the study using a rolling admission. Participants were divided into two cohorts in order to facilitate smaller group settings and increase recruitment feasibility. The frequency and duration of each intervention was standardized across all treatment groups, so that there were no differences in length of training between the intervention groups.

**Behavioural Intervention**

The purpose of the behavioural intervention was to introduce physicians to an MI-based curriculum informed by findings from focus groups with children with obesity and their parents (Chapter 4), and with primary care physicians (Chapter 5). The MI intervention was informed by a review of the literature regarding best practice evidence for specific MI tools. The MI curriculum was a merger between the recommendations, experience of MI trainers (Denise Ernst, and Maya Obadia), the needs expressed by physicians in focus groups, and the recommendations from children with obesity and their parents. The interventions addressed physicians’ lack of self-efficacy in communicating with children and their families about weight and the use of BMI percentile as the recommended tool for identification of obesity in children.

The MI-based curriculum (EVOKE action, Appendix 8) was used to introduce the principles of MI. There was an emphasis on specific tools that could be utilized by physicians during short interactions with their pediatric patients and their parents. The Trans-Theoretical Model and Stages of Change were also introduced as relevant to increasing their patient’s integral motivation [56].

In the physician training session, the principles of MI that were emphasized included collaboration, evocation, and respecting autonomy. The EVOKE action MI-based curriculum (Table 4) included tools that have been effective in brief interventions by health care providers. The value of communicating at the child/family’s stage of change was emphasized. Both phases of MI were addressed, with the first phase focusing on tools used with those at the pre-
contemplation and contemplation stage, and the second phase with those at the preparation, action, and maintenance stages [56]. Training was led by a team of MI trainers and trainees, who used a variety of training media including: demonstration, peer practice, and simulated patient practice incorporated into the recommended medical management of obesity. Physicians were encouraged to use these tools when communicating about weight with families and to use BMI as the primary measurement and identification tool [98]. Training agenda and details can be found in Appendix 9 and 10.

Table 4. EVOKE Action

<table>
<thead>
<tr>
<th>EVOKE action</th>
<th>Principles and Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engage patients</td>
<td>• Asking permission</td>
</tr>
<tr>
<td></td>
<td>• Negotiating agenda</td>
</tr>
<tr>
<td>View the world through patient</td>
<td>• Active listening</td>
</tr>
<tr>
<td></td>
<td>• Reflect meaning</td>
</tr>
<tr>
<td></td>
<td>• Summarize</td>
</tr>
<tr>
<td>Open to patients’ ideas and beliefs</td>
<td>• Resisting righting reflex</td>
</tr>
<tr>
<td></td>
<td>• Elicit – Provide- Elicit</td>
</tr>
<tr>
<td>Know patients’ motivation</td>
<td>• Importance and confidence rulers</td>
</tr>
<tr>
<td>Explore patients’ motivation</td>
<td>• Facilitate patient problem solving</td>
</tr>
</tbody>
</table>

**Educational Intervention**

The educational intervention was based on clinical practice guidelines (Canadian Clinical Practice Guidelines, the Pediatric Healthy Weight Tool Kit, the National Initiative for Children’s Healthcare Quality and the Canadian Paediatric Society’s recommendations for healthy active living; Appendix 11) [13, 14, 19, 125], and emphasized the guidelines’ procedures for diagnosing and monitoring obesity in children. The interface of this intervention was a lecture by Dr. Brian McCrindle outlining the key points of these guidelines (Appendix 12-13). Physicians had opportunities to ask questions and engage in small group discussions. The education
intervention did not prescribe specific discussion initiation tools, although the participants were not prevented from independently changing their communication behaviour.

6.2.3 Outcomes

The primary outcomes were changes in rates of BMI calculating, BMI tracking and identification of overweight or obesity in pediatric patients from baseline at 6 and 12 month time points. Secondary outcomes included determining factors associated with the primary outcomes and determine changes and retention of MI-related scores in the physicians randomized to the MI intervention. Outcome measures were evaluated from a chart audit of pediatric patients of the participating physicians. BMI was used as the primary outcome in this study because it followed the recommendation of the 2006 Clinical Practice Guidelines as the method of choice for identification of obesity in children. The intervention trainings suggested tools to improve communication once identification has taken place.

Definitions of Outcomes

Each measure from the chart audit was recorded as a dichotomized variable (yes or no) at each of the data collection points.

1. BMI calculating – evidence that BMI has been computed with a measured height and weight.
2. BMI tracking - evidence that physicians plotted the child’s BMI on more than one visit on the included BMI charts.
3. Obesity identification – evidence of any documentation of obesity related discussions, or notes other than BMI (i.e., height-for-weight charts, growth charts).
4. MI spirit score - average of the empathy, collaboration, and autonomy support scores. The responses were scored on these scales and a mean of scores over the scales was obtained.
5. Percentage of MI adherent statements- A person is MI adherent when they utilize MI tools and statements that encompass the spirit of MI, and refrain from advice giving or correcting the person [51]. Percent MI adherence is calculated by dividing the MI adherent statements by the total number and type of statements (MI adherent and MI non-adherent) [126]. MI adherent statements are those including reflections, asking
permission, use of elicit-provide-elicit. MI non-adherent statements include but are not limited to advice giving, judging, shaming, and blaming the patient.

6. Percentage of open-ended questions- Number of open-ended questions used in responses divided by the total number of questions asked (open and closed). Closed ended questions are those that elicit a yes or no response only. Open-ended questions are those that elicit an elaborated response.

Criteria for pediatric patient charts audit

Patient charts from each physician’s office provided an objective way to measure physician documentation of identifying overweight/obese in children.

Inclusion criteria:

1. Children aged 3-17 years old; Reason for visit: well child care visit;
2. BMI percentile within the targeted range (85\textsuperscript{th} percentile and above) [98].

Exclusion Criteria:

1. Charts that did not have a measured height and weight;
2. BMI percentiles less than 85\textsuperscript{th} percentile [98];
3. Charts that were seen as walk in patients.

The age-specific inclusion criteria for this trial were chosen to cover the spectrum of children of all ages obtaining care. Well child visits were audited because physicians have allocated time for discussions with families that may not otherwise be available during acute care visits. As owners of the patient charts physicians were able to provide informed consent for the audit. In accordance with the approval of the Research Ethics Board at the Hospital for Sick Children only necessary and non-identifying information was collected.

Measurement Questionnaires and Forms

All physicians were asked to complete the same measurements during the study, regardless of the intervention group allocation. All assessments were completed at the time of intake into the study. The patient medical history audit, and Helpful Response Questionnaire were repeated at 6 and 12 months from completion of the intervention training.
Medical Office Audit - A medical office audit provided information on the proportion of pediatric patients that physicians had in their practice, age range of pediatric patients, office postal codes, and use of an electronic medical record (Appendix 14).

Physician History Questionnaire - Information on physician age, gender, number of years practicing, and training received was collected (Appendix 15).

Counselling Response Questionnaire - To assess the efficacy of the MI training component, the validated Helpful Response Questionnaire [57] was adapted for prompts regarding pediatric weight. Physicians completed this questionnaire on their own at baseline and 6 and 12 months post-intervention to evaluate the amount of time MI skills were retained (Appendix 16). This questionnaire evaluated physician responses to statements that represent conversations with their pediatric patients and their families. The six prompts requiring physician response estimated physician competency in MI skills (reflections, using open ended questions) that were taught at the MI training. Two independent coders used the Motivational Interviewing Training Integrity Manual (MITI) to score the Counselling Response Questionnaire. This manual is the gold-standard at scoring competency and proficiency of MI with scores relating to MI spirit, adherence, and use of open ended questions [126] (See below for definitions of outcomes).

6.2.4 Chart audit procedures

Medical record abstraction was used to evaluate physician obesity management practices. Paper and electronic medical records were reviewed for the period 6 months prior to the training, and 6 and 12 months post-training. Well child visits were screened for measured height and weight. BMI percent was determined by the formula, BMI=weight (kg)/height (m2), and plotted on the BMI percentile charts from the US Centres for Disease Control (CDC) charts. The CDC charts were used and not those of the World Health Organization (WHO) to facilitate data analysis since WHO charts are separated into under 5 years of age and over [127]. Only those children with BMI percentiles at or above the 85th percentile were included in the complete chart audit. No patient identifying information was collected. The relevant medical history included the patients’ date of birth, height, weight, medical conditions, documented developmental delays, recorded fasting lipid profiles, glucose tests, and/or liver functioning tests, and recommendations for obesity treatment/prevention as prescribed. These recommendations included calculating and tracking BMI, diet modification, increases in physical activity, follow-up visits regarding weight,
referral to a sub-specialist for weight control, and/or any testing for co-morbid disease (Appendix 17-18).

**Compliance**

Compliance rates were expected to be similar because both interventions required attendance at only one training session. Compliance for all interventions was promoted by incentives, including: Continued Medical Education credits, financial compensation for attendance, and monthly correspondence that reinforced tools and knowledge (Appendix 19-21).

### 6.2.5 Sample Size

Baseline BMI calculation in charts prior to the intervention is considered to be almost non-existent (<1%), any increase would be considered to be clinically relevant. Therefore sample size calculation assumes a large effect size ($f^2 = 0.35$) to be sufficient. The nested study design requires 4 class variables (office, pediatrician and intervention and within-subject variation) to model the number of charts needed per pediatricians and 2 class variables (office and within-subject variation) to model for the number of pediatricians required.

\[
y = [B3y1 \text{ (intervention)} + Ew + Eb]
\]
\[
x = [B0 + B1x1 \text{ (office)} + B2x2 \text{ (pediatrician)}]
\]
\[
z = x \text{ given } y
\]
\[
z = [B0 + B1x1 \text{ (office)} + B2x2 \text{ (pediatrician)} + [B3y1 \text{ (intervention)} + Ew + Eb]}
\]

Taking a p-value of 0.05 to be significant. All models are based on maximum likelihood estimates not least-square means. The sample size required in multivariable regression models with 2 class variables would be 39, 35 and 31 physicians in each groups for respective power of 90%, 85% and 80%. The sample size required in multivariable regression models with 4 class variables would be 49, 44 and 39 charts per pediatricians for respective power of 90%, 85% and 80%. A sample size of 45 charts per pediatricians over 35 pediatricians in each group would detect an increase of 40% in the frequency of BMI calculation at a p-value of 0.05 and a power of 85%.
6.2.6 Randomization

Random Allocation Sequence

A random allocation sequence was generated using a random number generator and allocation sequence was concealed from the researchers. The allocation sequence was concealed from the researcher in sequentially numbered and opaque sealed envelopes. A statistician not involved in physician recruitment, training, and data collection, generated the random allocation sequence and Maya Obadia enrolled the physicians into the study. The randomization was blinded to Maya Obadia until the day of the training and envelopes were stored in a locked cabinet to which access was restricted. Corresponding envelopes were opened only after the enrolled physicians completed all baseline questionnaires and arrived at the training session.

Randomization and Blinding

Simple randomization in a 1:1 ratio to the intervention groups was performed. Physicians were randomized in clusters to each intervention when more than one physician in a practice participated. Clusters were used to prevent cross-contamination between the two interventions. After assignment a study number was assigned to each physician. Data collection staff was blinded to the study IDs until after data collection was completed.

6.2.7 Statistical Methods

Quantitative data analyses were used to compare outcomes according to group allocation, as well as to describe the current BMI calculating, plotting and/or tracking practices of physicians. Descriptive statistics (means with standard deviations and frequencies as appropriate) were used to compare physician and subject characteristics. Comparisons between the MI and educational interventions were performed using generalized estimating equations (binary outcomes, analog to a logistic regression model) obtained from regression models adjusted for repeated measures (cluster=physician) through a compound symmetry covariance structure. This analysis was chosen because of the multiple subjects associated with each physician. Intervention and data collection period (as a categorical variable) were the parameters included in the model. The generalized estimated equation models adjusted for any natural differences in the ways that physicians calculated, tracked BMI, and identified obesity, by assuming that all observations (charts) per physician were equally correlated with each other. For the grouped data analysis, the
intervention parameter was removed and outcomes were compared over time relative to baseline. Factors associated with greater odds of calculating BMI were sought in univariable regression models as described above. All quantitative data analyses used a significance level of p<0.05 and were analyzed with SAS version 9.1.

6.3 Results

6.3.1 Participants

Twelve physicians (6 in each group) completed this study and were included in the final analysis. A total of 15 physicians who expressed interest did not attend their scheduled training and were not able to be reached or could not commit to booking another date. In the MI intervention group, two physicians completed the training and the questionnaires but were not compliant with the data collection aspect of the study. They were deemed lost to follow up after repeated efforts to contact and schedule data collection dates. In the education group one physician was removed from the study after randomization as they only had a walk-in patient population. This physician did not disclose this during recruitment and allocation. Figure 8 depicts the study participation.
Figure 8. Physician Participation Flow Diagram (CONSORT Diagram)

Enrollment
- Assessed for eligibility (n=1568)
  - Excluded (n=1538)
    - Not meeting inclusion criteria (n=235)
    - Interested but could not attend training (n=4)
    - Contact could not be made (n=1299)
  - Randomized (n=30)
    - Excluded from analysis (n=0)

Allocation
- Allocated to MI intervention (n=15)
  - Received allocated intervention (n=8)
- Allocated to Education intervention (n=15)
  - Received allocated intervention (n=7)

Follow-Up
- Lost to follow-up (did not allow for data collection to be completed) (n=2)
- Lost to follow-up (practice did not meet eligibility, not disclosed during retention)

Analysis
- Analysed (n=6)
  - Excluded from analysis (n=0)
- Analysed (n=6)
  - Excluded from analysis (n=0)
Two remaining male physicians completed this study. The intervention groups were balanced for having half of the physicians using paper chart and half using electronic medical records in each group. Mean age and years of medical practice were also even in each group (Table 5).

**Table 5. Baseline Data: Physician Information**

<table>
<thead>
<tr>
<th></th>
<th>MI Intervention</th>
<th>Educational Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td><strong>Male Sex, n (%)</strong></td>
<td>2, (33%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td><strong>Paper charts, n (%)</strong></td>
<td>3, 50%</td>
<td>3, 50%</td>
</tr>
<tr>
<td><strong>Age, years Mean (SD)</strong></td>
<td>45 (11.5)</td>
<td>47 (11.8)</td>
</tr>
<tr>
<td><strong>Years practicing, years Mean (SD)</strong></td>
<td>15 (8.5)</td>
<td>17 (8.9)</td>
</tr>
</tbody>
</table>

Pediatric patients with a BMI percentile greater than 85% receiving care from the physicians were included in the chart audit (as per the inclusion and exclusion criteria for patient charts). Physicians in the MI intervention group saw more children with obesity for well child visits than that in the educational group. The sex distribution was similar, and the proportion of patients with developmental delay was low in both groups. Patients’ mean age was similar between groups and across data collection points. BMI z-scores ranged from 1.6 to 2.0 (Table 6).
Table 6. Descriptive Information about the Pediatric Patients of the Physicians in Each Intervention Group

<table>
<thead>
<tr>
<th></th>
<th>MI Intervention</th>
<th>Educational Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>148</td>
<td>98</td>
</tr>
<tr>
<td>Male sex, n (%)</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>% with Developmental Delay</td>
<td>7%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Baseline</td>
<td>6 Month</td>
</tr>
<tr>
<td>Age, years Mean (SD)</td>
<td>10.3(4.4)</td>
<td>10.0(4.1)</td>
</tr>
<tr>
<td>BMI Z score Mean (SD)</td>
<td>1.6(0.4)</td>
<td>1.8(0.5)</td>
</tr>
</tbody>
</table>

There were no intervention effects on the identification of obesity, BMI calculating or tracking rates (Table 7).
### Table 7. Intervention Effects on the Primary Outcomes: Identification of Obesity, BMI Calculating or Tracking Rates

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Data Collection Period</th>
<th>MI Intervention</th>
<th>Education Intervention</th>
<th>OR (95% CI)</th>
<th>GEE Model Estimate (SE)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI Calculating</td>
<td>Baseline</td>
<td>10/68 (15%)</td>
<td>16/51 (32%)</td>
<td>0.80 (0.58 -1.09)</td>
<td>0.23(0.16)</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>6 Month</td>
<td>18/41 (44%)</td>
<td>9/38 (24%)</td>
<td>1.16 (0.75-1.80)</td>
<td>0.15(0.22)</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>12 Month</td>
<td>16/39 (41%)</td>
<td>5/9 (56%)</td>
<td>0.83 (0.57-1.20)</td>
<td>0.19(0.19)</td>
<td>0.32</td>
</tr>
<tr>
<td>BMI tracking</td>
<td>Baseline</td>
<td>7/68 (10%)</td>
<td>12/51 (24%)</td>
<td>0.91(0.66-1.24)</td>
<td>0.10(0.16)</td>
<td>0.54</td>
</tr>
<tr>
<td></td>
<td>6 Month</td>
<td>14/41 (34%)</td>
<td>4/38 (11%)</td>
<td>1.25 (0.83-1.88)</td>
<td>0.23(0.21)</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>12 Month</td>
<td>8/39 (21%)</td>
<td>2/9 (22%)</td>
<td>1.06 (0.67-1.67)</td>
<td>0.06(0.23)</td>
<td>0.81</td>
</tr>
<tr>
<td>Identification of obesity</td>
<td>Baseline</td>
<td>26/68 (38%)</td>
<td>23/51 (45%)</td>
<td>1.01 (0.72-1.42)</td>
<td>0.01(0.17)</td>
<td>0.96</td>
</tr>
<tr>
<td></td>
<td>6 Month</td>
<td>28/41 (68%)</td>
<td>24/48 (63%)</td>
<td>1.24 (0.95-1.63)</td>
<td>0.22(0.14)</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td>12 Month</td>
<td>28/39 (72%)</td>
<td>4/9 (44%)</td>
<td>1.21 (0.83-1.75)</td>
<td>0.19(0.19)</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Factors associated with calculating BMI included a pre-existing medical condition (OR: 1.13 CI: 1.04-1.24, p=0.004) and referral to a weight-related allied health professional (OR: 1.45 CI: 1.18-1.78, p <0.001). Patients with developmental delay (OR: 1.25 CI: 1.07-1.47, p=0.005), and those with a high BMI Z-score (OR: 1.073 CI: 1.013-1.137, p=0.02) were more likely to have their BMI tracked. Motivational Interviewing spirit scores (MI competence evaluation) for physicians randomized to the MI intervention significantly improved at six months compared to baseline (mean score [SD]): 3.1[0.7] vs. 2.0[0.8], p=0.03), and were maintained at 12 months (3.2 [1.0], p=0.91) (Figure 9).
Figure 9: Mean Motivational Interviewing Global Spirit Scores for physicians randomized to the MI intervention

There were no significant differences in percentages of MI adherent statements and open-ended questions across the 3 time periods (Figure 10 and 11).
Figure 10: Percentage of Motivational Interviewing adherent statements for physicians randomized to the MI Intervention

![Bar chart showing percentage of Motivational Interviewing adherent statements over time.]

Figure 11: Percent open-ended questions by physicians randomized to the MI intervention

![Bar chart showing percent open-ended questions over time.]
6.3.2 Exploratory Analysis

Subsequently, data was grouped and a combined analysis was performed after the removal of the intervention variable. Obesity identification rates (67% vs. 41%, p<0.001) and BMI calculation rates (44% vs. 22%, p<0.001) were significantly higher at six months and 12 months relative to baseline, but there were no differences between 6 and 12 months (Table 8)
Table 8. Obesity identification rates and BMI Calculation Rates Pre- and Post-Intervention for both groups combined

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Data Collection Period</th>
<th>Proportion of charts</th>
<th>OR Relative to Baseline</th>
<th>GEE Model Estimate (SE)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI Calculating</td>
<td>Baseline</td>
<td>26/119 (22%)</td>
<td>1.00</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 Month</td>
<td>27/79 (34%)</td>
<td>1.16</td>
<td>0.15 (0.09)</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>12 Month</td>
<td>21/48 (44%)</td>
<td>1.27</td>
<td>0.24 (0.05)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>BMI tracking</td>
<td>Baseline</td>
<td>19/119 (16%)</td>
<td>1.00</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 Month</td>
<td>18/79 (23%)</td>
<td>1.09</td>
<td>0.09 (0.08)</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>12 Month</td>
<td>10/48 (21%)</td>
<td>1.10</td>
<td>0.10 (0.08)</td>
<td>0.22</td>
</tr>
<tr>
<td>Identification of obesity</td>
<td>Baseline</td>
<td>49/119 (41%)</td>
<td>1.00</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 Month</td>
<td>52/79 (66%)</td>
<td>1.27</td>
<td>0.24 (0.09)</td>
<td>0.007</td>
</tr>
</tbody>
</table>
6.4 Discussion

**Interpretation/Context**

This study demonstrates important lessons regarding the influence of MI and education training interventions on subsequent physicians’ behaviors. There were no significant differences between the two intervention groups in rates of BMI calculating, tracking, and identifying obesity. However, for the combined intervention groups there were significant increases in the proportion of pediatric charts for which BMI was calculated, and obesity was identified, at 6 and 12 months compared to baseline. Furthermore, evaluation of MI spirit score supports the efficacy of EVOKE action curriculum.

The fact that the MI global spirit scores of physicians improved at 6 months suggests that the EVOKE Action MI training increased physician empathy, collaboration and amount of autonomy support provided. In another study, it was found that patients whose physician was rated as more empathetic had increased rates of high satisfaction than patients whose physician was less empathetic [128]. Another study has reported greater weight loss in adults with obesity when physicians’ global MI scores were high [129]. Therefore, the EVOKE action curriculum demonstrates promise for improving physician counseling spirit factors, which are included in the first two stages in learning MI [130]. No changes in MI scores from 6 month to 12 months was an expected outcome, as MI counseling skills tend to dissipate without further training [70]. In this research physicians were able to maintain their MI spirit scores. Future studies with protocols for multiple MI training sessions may be more effective at maintaining MI spirit, and improving other components of MI over time [131].

Our finding that a high BMI z-score is a significant factor for BMI tracking supports previous studies, suggesting that children with higher BMIs get followed more often than those with lower BMIs [132, 133]. This also indicates that physicians are utilizing a treatment model, rather than prevention, with children with obesity during patient visits. The rates of BMI calculation among this physician population imply that BMI percentile recommendations for screening children for

<table>
<thead>
<tr>
<th></th>
<th>12 Month</th>
<th>32/48 (67%)</th>
<th>1.26</th>
<th>0.23 (0.06)</th>
<th>&lt;0.001</th>
</tr>
</thead>
</table>


obesity have not been met yet. Other studies investigating the use of BMI percentiles for assessment of obesity in children support this finding [133, 134].

Physicians in both intervention groups were trained to calculate BMI percentile and instructed to utilize this tool when screening and treating children with obesity. Practice outcomes were dependent on documentation of the tools, including BMI, used to identify the child with overweight or obesity. It is possible that the rates are lower than expected because physicians utilized BMI as a screening tool without documenting the findings. However, since there was a larger proportions of charts for which obesity was identified than of charts which reported BMI, it is more likely that other measures of obesity other than BMI were used. The use of electronic medical records were not a factor in this study. However as primary care moves more towards electronic records and therefore BMI calculation is automatic, a shift in training curriculum would need to occur to focus more on what happens after identification has taken place. Furthermore, the primary outcome would have to change. Regardless of tools used, the training sessions of this study collectively increased identification over time points. As this study was aimed at changing physician obesity management behaviour and not necessarily changing the weight or behaviours of children with obesity, future research should address efficacy of counseling and use of BMI with an assessment of obesity in children.

**Strengths and Limitations**

Recruiting physicians into this study was difficult. Interest in the study, commitment to attending training, and adhering to data collection protocols were cumbersome. It is possible that a more comprehensive report on the components of MI and why it may be beneficial to use in primary care interactions with children about obesity might have been included in the recruitment letter. This information may have made the study more inviting for physicians who may not be aware of what MI is and the benefits that come from its use. A MI training component, following the completion of the study for those physicians who were randomized to the education intervention, may have made participation as well as completion of the study protocol more appealing. Despite the small number of physicians that attended the trainings and completed the study, this study nevertheless provides important information about the feasibility of such studies requiring physicians’ time commitments and is indicative of the competing
demands of physicians in primary care. These low participation rates made achieving power impossible despite efforts to have the calculated number of physicians allocated to the two intervention groups. Nevertheless, the results provide a trend towards efficacy of the MI intervention as well as a collective trend of improved identification of obesity in children. The cross-sectional attributes of the design of this study limited the number of charts of children with overweight and obesity that were examined. A larger study should support longitudinal data collection to obtain more well child visits per physician. Such a modification to the design could also allow for more than one MI training session. A study with more MI training sessions would also allow for more evaluation of MI skills. However, the increased time required for additional sessions may act as a barrier for physician participation.

**Conclusions**

Our findings indicate that recruitment, participation and compliance with the study requirements were lower than expected. Nevertheless, through exploratory analyses with the remaining 12 physicians our findings suggest that the EVOKE Action MI training is associated with improvements in how physicians learn MI, in those physicians who comply. Larger studies may demonstrate differences between the MI and educational interventions; however, this study ultimately suggests that the collective physician training in management of obesity in children was effective at improving outcomes. Future studies should focus on making interventions more enticing and feasible for physician participation.
7 Directions and Implications for Future Research

This study aimed to understand perceptions of the communication between primary care physicians, children with obesity and their parents. Communication in primary care is vital to how health information and medical advice is received, and fundamentally affects outcomes. These perceptions were used to develop a component for physician training in the identification of obesity, and in Motivational Interviewing tools for communicating about weight and eliciting patient motivating.

Behaviour changes for managing weight are important for child health, both physically and psychologically. Parents and children often have their own internal struggles about weight at home. The physician’s office is a place where there is an opportunity to address issues around weight with both children and parents. The results obtained through the research projects in this thesis have described both parallel and competing perceptions, as well as recommendations from the triad of individuals involved in the medical consultation. This information was ultimately used to inform the training materials for MI intervention. Both these interventions, included tools and information from pediatric obesity medical management guidelines, were aimed at improving how childhood obesity is managed in primary care.

Children with obesity and their parents reported on their interactions regarding weight with their physicians. Their perceptions of these interactions often differ from the perceptions of primary care physicians, but all three seek to improve how obesity in children is managed. The EVOKE Action intervention results provide promise in addressing the first steps in this management change and also provide direction for research areas for the future. Figure 12 provides a conceptual diagram integrating the results of the research and indicating the interactions between the different components.
Figure 12. Conceptual diagram integrating findings from studies 1-4 as they contribute to improving communication regarding weight in primary care.
7.1 Three perceptions of one conversation

The conversation about child weight and health in primary care is underlined with many personal, communication, and system barriers. Three different people with different roles and perceptions partake in the discussion about a health concern. The relationships between children, their parents and physicians are complicated with each person having different expectations. The qualitative research in this thesis sought to explore the perceptions of the communication about weight in primary care from the perspectives of the key players involved in the primary care setting. At times the themes that arose were similar within families and these perspectives were often in line with those of physicians. However, there were times where perceptions differed. This research played a role in relaying to primary care physicians the disparities between their own perceptions and how children with obesity and their families perceive their communication.

A promising finding from the comparison of the focus groups was that many of the recommendations from parents were concordant with physicians’ needs and barriers. This suggests that despite the challenges, parents and physicians are in agreement regarding some physician-related behaviours that may improve communication about weight in primary care. Despite parental and physician consensus on the use of obesity-related morbidities as means of motivating, the children in this study felt quite the opposite and saw this as an attempt to scare them into making change. Since sensitivity of language was recurrent in the children’s perceptions (discuss life events, body language, wanting encouragement), future research could provide insight into whether children are averse to the information component of the medical consequences of obesity, or the way the information is being presented. The findings in this thesis lead to a hypothesis that if the language or the way that the information was relayed became more MI adherent (elicited from the patient) perhaps children would be more accepting of the information. Physician, child and parent perceptions (Chapters 3 and 4) all lead to improved motivational communication. Results from MI training evaluation (Chapter 5) suggest a trend towards physician acceptance and learning of MI in the context of its use in brief encounters in primary care for motivating children with obesity and their families to achieve a healthy body weight. Furthermore, grouped data suggests that attending such training also improves BMI and obesity identification outcomes, which are a necessary, first step to MI
adherent discussion opportunities.

7.1.1 Familial perceptions are not always concordant

Focus group and individual interviews with children with obesity and their parents were held separately to delve into how families perceived primary care communication and management of childhood obesity. At the onset of this study the intention was to hold the groups separately so that children and parents could speak freely and so that true perceptions would arise from the discussions. As expected there were some similarities in the perceptions and needs of children with obesity and their parents. The repetitive nature of discussions about weight with physicians, along with including the child and asking more questions were areas of communication that were consistent among family members. Both children and their parents identified ‘life factors’ as contributors to the child’s weight status and thought that asking more questions would bring this to the forefront of communication. Asking open-ended questions are an integral part of Motivational Interviewing. In brief MI communications open-ended questions are key to eliciting information from the patient rather than directing the client with information or advice. The EVOKE Action curriculum heavily focused on this tool.

Parents and children had discordant perceptions about physicians providing information and advice regarding the medical consequences associated with obesity in childhood and later on as adults. Parents perceived this to ‘motivate’ their children, and children viewed this advice as a scare tactic. This particular piece of perceived advice provided by physicians is an example of how the two different theories of behaviour change proposed in this research interact (Section 6.2).

7.2 Intention doesn’t always lead to action

The physician participants in this research provided invaluable perceptions which were informative to the EVOKE Action and educational curriculums and studies. Physicians provided insight into the barriers with which they are faced, the mechanisms of how they cope with them, and their needs for providing care to children faced with obesity. The grouped data from the interventions (Study 4) suggest that attending training and gaining knowledge improves the proportion of children with obesity who get their BMI calculated and are identified by physician
as such. The physicians who completed the intervention study (n=12) were few in comparison to those recruited, and those approached. The perceptions of the physicians in this research as well as those described in the literature describe physician intention for future training in managing obesity in primary care, but are not necessarily an accurate representation of the steps to which they are willing or able to commit. Physicians are a group of individuals with limitations in time for both consultations and training. A challenge of research with physicians as participants is targeting physician interventions so that they are not limited by the same barriers that put a strain on the management of obesity in the first place. The qualitative methods described in this thesis could be utilized to obtain perceptions regarding the approach and mode of future trainings so that commitment could be improved.

7.3 Support for Theory of Planned Behaviour, Health Belief Model, and the Transtheoretical Model of Behaviour Change

7.3.1 Theory of Planned Behaviour

The theory of planned behaviour [56], suggests that in order for a child with obesity to have the intention to make behaviour changes that may lead to a healthier body weight, he or she must believe that making healthy choices will be associated with a reduction of weight and that this outcome is valued by the child. Children who believe that making healthier choices will result in a change in their weight may be more inclined to take action regarding the necessary steps to achieve this goal. Results from focus groups with children suggest that the children perceived that, despite seeing their physician as a person with authority, children may not be receiving enough of a personal incentive regarding making changes about their weight from the physicians. The perception that their physicians were using scare tactics and passing judgment about their weight and lack of ability or effort to make changes detract from establishing the subjective norm that would make the physician’s opinion about their efforts a matter of high importance. Since subjective norms lead to behavioural intention, further effort into improving the communication tone and style is recommended. Specific needs of children such as including the child in the conversation, and providing positive reinforcements by celebrating efforts and small success, may heighten the child’s perceived power over the decision to make change and
increase perceived behaviour control, thereby also increasing behavioural intention. These perceptions highlight the children’s need for autonomy, which can be supported by physicians trained in MI.

7.3.2 Health Belief Model

The Health Belief Model suggests that people will take action to control an unhealthy condition if they believe that a course of action that is available to them would be beneficial in reducing the severity of the condition [56]. Individual perceptions and modifying factors affect the likelihood of action. Parents of children with obesity reported a heightened sense of perceived severity regarding their child’s weight and health. Worrying about their child’s future contributed to this feeling, and they recommended that if physicians focused on medical consequences associated with their child’s obesity, they may also heighten how their children will perceive its severity. Some modifying factors mentioned included: screen time, eating obesogenic foods and limited time spent being active. These combined factors result in parents being ready for behaviour change to occur, despite the fact that their children may not be ready. Parental recommendations for physicians (getting more training, improving how they motivate their children, including the child in the conversation, focusing on life events, and following up on appointments where obesity was discussed) are all actions that parents hope will modify factors for the children and result in a heightened sense of severity that will ultimately result in behaviour change.

7.3.3 Transtheoretical Model

The transtheoretical model suggests that change occurs over 5 stages and that a person often reverts back to a previous stage [56]. Different processes of change take place throughout the cycle, and these processes are often linked to the stage which the person is at (Table 3).

Changes in Physician Weight Management Behaviour

Physicians participating in this research (Study 4) were likely to be at least at the contemplation stage of change regarding how they address pediatric obesity in their practices. By being aware of their own coping strategies and by participating in focus group discussions, they were experiencing consciousness raising. Participating in focus groups and having common experiences increase the dramatic relief they may have experienced. Identification of time,
measurement tools, and system barriers along with those associated with interactions with families (Figure 7), helps the physicians to evaluate their environments. Physicians may have experienced self-evaluation as they recognized their own roles in the weight-related behaviour change of their pediatric patients.

The processes suggest that physicians are moving towards the contemplation and preparation stages. This has implications for clinical practice and future research, since it suggests that physicians are ready for additional training opportunities and have highlighted areas where training or system changes should be addressed. One area, communicating with families, was addressed in this research (Study 4).

**Implicit use of TTM in EVOKE Action curriculum**

In the EVOKE Action curriculum (Study 4), physicians were introduced to and practiced skills of Motivational Interviewing. Although MI is not based on the TTM, the stages of TTM align well with the phases of MI. Training in the spirit of MI and strategic use of open-ended questions and reflections were focused on as a means of evaluating the child’s or parent’s readiness for change, so that the physician can move the change process forward, alongside the patient. This plan is more likely to result in sustained behaviour change. Significant increases in how empathetic and collaborative physicians are (MI spirit scores) may lead to a higher readiness, and potentially to a greater likelihood that the physician may be successful in communicating using MI tools and that the child may be closer to achieving weight-related health behaviour change.

### 7.4 Physicians say they want training but are they ready?

The research presented in this thesis, along with the supporting literature, emphasizes that physicians as a whole are interested and are looking for ways to improve the way that they communicate with children and their families about weight. Perceptions of physicians indicated this explicitly, and those of children and parents demonstrate an inherent flaw in the perception of communication in primary care. Despite this interest, physicians as a whole were rather difficult to recruit for this much needed type of training. Limitations in time and in compensation, described by physicians as a barrier to treating obesity in their clinics, perhaps
played a role in study participation as well. Studies examining the training of physicians who are still in the education stage of their careers would be less likely to run into this problem [123, 124]. Yet, physicians in primary care are still faced with barriers, are still coping, and have needs. Perhaps the mode in which future studies train physicians should be more flexible.

Behaviour change is a long process that can often result in a reverting back into old habits. The same way that the EVOKE Action curriculum emphasizes that tools utilized in the short time physicians had with their patients could be repeated over consecutive visits, physician behaviour change also deserves that understanding. Changing the way physicians communicate with families about weight is a behaviour change process itself. In order to be successful, studies must allow time for this change to occur and must expect times at which a physician may revert back to his or her directive approach. Efforts to change children’s weight-related behaviour in primary care may have to start with improving how physicians learn to communicate with their families.

### 7.5 Recommendations for Future Research

The results of the research in this thesis have many clinical and future research implications. Several studies have supported the need for physician training. The results suggest that children with obesity and their families perceive physician efforts in different ways, and that training physicians to better manage obesity requires a stepwise approach that may not be answered with just one training or curriculum. The results indicate that the perceptions of different stakeholders differ, but all look towards making changes. There are commonalities among the changes suggested by families and the needs perceived by physicians. Furthermore, the findings from the EVOKE Action and education curricula suggest that physicians are thirsty for knowledge and tools, but may require additional motivation to partake in such training and to learn the tools. There is a clear need to bring children with obesity, their parents and physicians together so that misconceptions about perceptions can be addressed in real-time by the participants. The knowledge gained from this togetherness is potentially invaluable for modifying and improving physician-training curricula in the future. By recruiting potential physician participants to the MI intervention, with evidence of improved outcome in identification of obesity and potentially reducing children’s weight, more physicians may participate. Future research may benefit from a qualitative assessment of the RCT and triangulation with the quantitative methods.
The next study that would follow the research presented in this thesis should include the following components to address the direction of the findings of this research. Such steps would:

**Engage stakeholders**
Hold discussions with children, parents, and physicians regarding the general themes that emerged from understanding perceptions of the participants in this research, and further investigate how children, parents and physicians react to each other’s perceptions. (Chapter 3-4)

**Address feasibility**
Understand and receive feedback regarding the MI and educational training studied in this research (Chapter 5). Make modifications regarding recruitment and feasibility that arose from the research in this study.

**Modify curriculum**
Break down the EVOKE Action curriculum into more training sessions, to specifically address the learning steps 3-8 of those required to learn MI. Add more opportunities for self-learning between training sessions and incorporate advanced training tools as physicians become more proficient. Evaluate physician skills and proficiency in MI at each training session to address areas of strength and identify where growth may be needed. Furthermore to address participation rates other means of providing the training could be adopted. For example whole medical offices could be recruited and trainings could be provided at the office location. Internet based training could also be explored.
Evaluate outcomes
Re-evaluate outcomes associated with identification of obesity (Chapter 6) compared to the educational intervention group results obtained in this thesis. Address any other outcomes associated with medical management of obesity. Provide longitudinal data collection to include evaluation of child weight change.

Interview patients
Interview patients of physicians participating in the study regarding their perceptions of the communication that took place, and report this information as a group to participating physicians to understand how the proposed study and intervention was accepted. Interview patients to understand how they perceive physicians’ communication.

Evaluate MI
Evaluate efficacy of MI with the Motivational Interviewing Treatment Integrity manual, MI tools and efficacy during actual patient interaction, as well as with the questionnaire used in this research (Appendix 16).

Engage stakeholders
Go back to the stakeholders and have discussions around the acceptance, execution, and outcomes of study. Suggest any modifications and brainstorm next steps.
8 References


89. QSR International Pty Ltd, NVivo qualitative data analysis software, 2006.


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9 Appendices
Appendix 1: Lipid clinic patient goals

Cardiac Clinic – 4 A
Lipid Clinic Patient Goals

☐ Eat regular meals and snacks. Eat breakfast every day.

☐ Aim for a minimum of __________ servings of fruits and vegetables per day. Choose a variety of colours. Do not add dressings, butter, margarine or oil. Choose fat-free salad dressings and limit the portion size. Children: 4-6/day, Teens: 7-8/day.

☐ Choose homemade foods over commercially prepared foods more often as processed foods tend to be higher in fat and salt and lower in nutrients.

☐ Choose 1% or skim milk instead of 2% or homogenized.

☐ Consume at least __________ servings of milk or milk products per day. Children: 2-4/day, Teens: 3-4/day.

☐ Choose cheese with <15% milk fat (appears as %M.F. on the label). Low fat cheese should be eaten only 2-3 times/week maximum and portion size should be limited to 1-1½ oz per serving. This includes cheese added to meals such as feta and parmesan. If you buy processed cheese, choose the fat free variety.

☐ Choose whole grain bread instead of white bread. Follow this rule for other grain products such as buns, bagels, pita breads and pasta. The label should list whole wheat as the first ingredient. Choose brown rice over white rice.

☐ Choose a higher fibre cereal that has at least 4 grams of fibre per serving.

☐ Limit juice to one 8 oz glass per day. This includes any juice boxes you drink throughout the day. Juice should be unsweetened.

☐ Avoid high fat lunch meats such as bologna, salami, mortadella and regular hot dogs. Choose chicken/turkey breast or lean ham more often.

☐ Eat at least 2 servings of fish each week such as char, herring, mackerel, salmon, sardines or trout. Young children should not eat swordfish, shark and fresh or frozen tuna (most canned is ok) more than once per month.

☐ Limit fast food to once per month, if at all. Remember this includes any food ordered into the home. When eating in a sit-down restaurant make healthy foods choices more often. For example, choose a baked potato (without all the toppings) or a salad with low fat dressing instead of french fries.

☐ Choose low fat snacks. Foods that are low in fat must have <3 grams of fat per serving. Cookies and crackers often contain palm oil (a saturated fat) or hydrogenated oils (which contain trans fats), both of which can have a negative effect on heart health. Watch serving sizes as the fat content increases with an increase in serving size. For healthy snacks try fruits and vegetables, low fat yogurt, plain air-popped popcorn or whole wheat grain products.

☐ Gradually increase your physical activity to 90 minutes daily. 60 minutes/day should be vigorous.

☐ Screen time (TV, Computer, Video Games) is only recommended 1-2 hrs/ day

☐ Other:

January 9, 2009
Appendix 2. Interview guide questions for used for focus groups with children with obesity and their relation to the study research questions

<table>
<thead>
<tr>
<th>Child Focus Group Questions</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you go to visit your doctor what kind of things does your doctor talk to you about?</td>
<td>X</td>
</tr>
<tr>
<td>What words do you use to describe yourself and the way you look? Why?</td>
<td>X</td>
</tr>
<tr>
<td>When you go to visit your doctor for your check up what happens?</td>
<td>X</td>
</tr>
<tr>
<td>What discussions if any happen around your weight and health?</td>
<td>X</td>
</tr>
<tr>
<td>Prompt: who brings it up? How do you feel about this? If there is a discussion what is being said?</td>
<td></td>
</tr>
<tr>
<td>When you talk with your doctor about weight how do you feel? What makes you feel this way?</td>
<td>X</td>
</tr>
<tr>
<td>Can you describe any things that your doctor has said or done regarding your weight during visits that had made you feel good? Ways that your doctor has motivated you?</td>
<td>X</td>
</tr>
<tr>
<td>Can you remember what words your child’s doctor uses to talk to you about your weight? How do these words make you feel?</td>
<td>X</td>
</tr>
<tr>
<td>If you could switch spots with your doctor and be there when he/she talks to other kids like you what advice would you give them about weight and health? How is that the same or different from the advice you have received? Why did you choose to give this advice?</td>
<td>X</td>
</tr>
<tr>
<td>What kind of things that your doctor could say or do would get you to think about making any changes in your lifestyle?</td>
<td>X</td>
</tr>
<tr>
<td>This covers everything that we wanted to talk about, is there anything pertaining to your experience with your child’s physicians in the context of your weight that you wanted to add?</td>
<td>X</td>
</tr>
</tbody>
</table>

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**Appendix 3. Interview guide for focus groups with parents of children with obesity and their relation to the study research questions**

<table>
<thead>
<tr>
<th>Parent Focus Group Questions</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>What topics does your child’s doctor talk to you about when you take your child to his/her yearly check up?</td>
<td>5 6</td>
</tr>
<tr>
<td>In reference to your child’s weight what words would you use to describe your child? Why?</td>
<td>X</td>
</tr>
<tr>
<td>What happens during your child’s yearly check up regarding the topic of your child’s weight?</td>
<td>X</td>
</tr>
<tr>
<td>Prompt: who brings it up? How do you feel about this? If there is a discussion what is being said?</td>
<td>X</td>
</tr>
<tr>
<td>What is your reaction to your child’s physician when he/she discusses your child’s weight</td>
<td>X</td>
</tr>
<tr>
<td>Can you remember what words your child’s doctor uses to talk to you and/or your child about weight? How do the terms or language used make you feel?</td>
<td>X</td>
</tr>
<tr>
<td>In the context of your interactions with your child’s physicians, if you could give advice to other parents who are concerned about their child’s weight, what would it be?</td>
<td>X</td>
</tr>
<tr>
<td>If you could trade places with your child’s doctor, how do you think you would initiate discussion with yourself about your child’s weight that would get you to listen?</td>
<td>X</td>
</tr>
<tr>
<td>This covers everything that we wanted to talk about, is there anything pertaining to your experience with your child’s physicians in the context of your child’s weight that you wanted to add?</td>
<td>X</td>
</tr>
</tbody>
</table>

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Appendix 4. Interview guide for interviews with parents of teenage girls with obesity

<table>
<thead>
<tr>
<th>Individual Interview Questions with Parents of Adolescent Girls</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 6 7 8</td>
<td></td>
</tr>
</tbody>
</table>

Thank you for coming in today to talk to us. In this interview we will be talking about your experience with your child’s family doctor or pediatrician. Anything that you tell us will be kept strictly confidential and we will not tell yours or your child’s doctor in the community or at Sickkids anything that you said. I will be asking you some questions. Please let me know if there is a question that you do not understand or that you want me to explain better. Also, if there are any questions that you do not want to answer that is ok too. I want you to feel comfortable and know that your opinion is important to me and to my research team. Therefore I encourage you to be honest so that we can use your experiences and that of other parents to learn more about how parents feel about their experience with their child’s doctors regarding weight and child health.

When you go to visit your child’s doctor what kind of things does the doctor talk to you about?

Prompt
- Does he/she talk to your child too?
- Do they talk to your child about anything different?
- Has your doctor ever talked to you about your child’s weight?
- In what context has he/she talked about this?

What are your concerns regarding your child’s weight?

Prompt
- Who have you discussed these with?
- How has your child’s weight affected you?
- What are the challenges you experience when dealing with your child’s weight and health?

What words would you use to describe your child and the way he/she looks? Why?

Prompt
- What factors did you take into account when you chose the word ____________?
Some parents have said that relative to people they know they are thinner or heavier than them, other parents have described their child’s activity levels, or how their clothes fit as a reference. What made you choose this word?

When you and your child go to visit their doctor for a checkup what happens?

**Prompt**
- What discussions if any happen around your child’s weight and health?
- Who brings it up?
- How do you feel about this?
- If there is a discussion what is being said?
- Who is involved in the discussion?
- What is their input?
- How does this input make you feel?

When you talk with your child’s doctor about weight how do you feel?

**Prompt**
- What is about their words/mannerisms/actions that make you feel this way?
- How comfortable are you during the times that your child’s weight is being discussed at your doctor’s office?

Can you describe any things that your child’s doctor has said or done regarding your weight during visits that has made you feel good?

**Prompt**
- Ways that your doctor has motivated you?
- Is there any advice that made you go and think positively about your child making changes to your health and weight?

Can you remember what words your doctor uses to talk to you and your child about your weight?

**Prompt**
- How do these things make you feel?
- Do they have a positive or negative feeling to them and why?
- What else other than the words themselves made you feel this way during the conversation?
- How did the doctor’s body language or movement add to this feeling?
If you could switch spots with your doctor and be there when he/she talks to other parents and kids what advice would you give them about weight and health?

Prompt:
- How is that the same or different from the advice you have received?
- Why did you choose to give this advice?
- What is your intention when giving this advice?
- How would you want them to feel?

What are the kinds of things that your child’s doctor could say or do differently than what he/she is doing today that you think would get your child to consider making any changes in their lifestyle?

Prompt
- In a perfect world what do you think they would need in order to think about making changes?
- What kind of things do you recommend for doctors to do to help make changes for your child and for you?
- How can your doctor be a part of that support?

This covers everything that we wanted to talk about, is there anything pertaining to your experience with your child’s doctor in relation to your child’s weight and health that you wanted to add?
- Is there any other information that you feel like you want to tell me that I haven’t asked about?
- Is there anything that is not related to the things we talked about today that you want to add or ask questions about

Thank you again for answering my questions. Your answers will be used with those of other parents to help us understand the experience of children with their physicians. We hope to be able to make a difference in the way that doctors communicate with their child patients when they talk about weight and health.
Appendix 5. Interview guide for interviews with teenage girls with obesity

<table>
<thead>
<tr>
<th>Research Questions</th>
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<tbody>
<tr>
<td>Individual Interview Questions with Adolescent Girls</td>
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</tbody>
</table>

Thank you for coming in today to talk to us. In this interview we will be talking about your experience with your family doctor or pediatrician. Anything that you tell us will be kept strictly confidential and we will not tell your doctor or any of your doctors here at Sickkids anything that you said. I will be asking you some questions. Please let me know if there is a question that you do not understand or that you want me to explain better. Also, if there are any questions that you do not want to answer that is ok too. I want you to feel comfortable and know that your opinion is important to me and to my research team. Therefore I encourage you to be honest so that we can use your experiences and that of other kids to learn more about how kids feel about their experience with their doctors regarding weight and your health.

| When you go to visit your doctor what kind of things does your doctor talks to you about? | x |
| Prompt |
| • Has your doctor ever talked to you about your weight? |
| • In what context has he/she talked about this? |

| What words do you use to describe yourself and the way you look? Why? |
| Prompt |
| • What factors did you take into account when you chose the word ____________? |
| • Some kids have said that relative to people they know they are thinner or heavier than them, other kids use how fit they are, or how their clothes fit as a reference. What made you choose this word? |

<p>| When you go to visit your doctor for your check up what happens? |
| Prompt |
| • What discussions if any happen around your weight and health? |
| • Who brings it up? |
| • How do you feel about this? | x | x |</p>
<table>
<thead>
<tr>
<th>Prompt</th>
<th>x</th>
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<tbody>
<tr>
<td>When you talk with your doctor about weight how do you feel?</td>
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<td>Prompt</td>
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<tr>
<td>• What is about their words/mannerisms/actions that make you feel this way?</td>
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<tr>
<td>• How comfortable are you during the times that your weight is being discussed at your doctor’s office?</td>
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<tr>
<td>Can you describe any things that your doctor has said or done regarding your weight during visits that has made you feel good?</td>
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<td>x</td>
<td></td>
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<tr>
<td>Prompt</td>
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<tr>
<td>• Ways that your doctor has motivated you?</td>
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<tr>
<td>• Is there any advice that made you go and think positively about making changes to your health and weight?</td>
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</tr>
<tr>
<td>Can you remember what words your doctor uses to talk to you about your weight?</td>
<td>X</td>
<td>x</td>
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<tr>
<td>Prompt</td>
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<tr>
<td>• How do these things make you feel?</td>
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<tr>
<td>• Do they have a positive or negative feeling to them and why?</td>
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<tr>
<td>• What else other than the words themselves made you feel this way during the conversation?</td>
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<tr>
<td>• How did the doctor’s body language or movement add to this feeling?</td>
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<tr>
<td>If you could switch spots with your doctor and be there when he/she talks to other kids like you what advice would you give them about weight and health?</td>
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<td>x</td>
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<tr>
<td>Prompt:</td>
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<tr>
<td>• How is that the same or different from the advice you have received?</td>
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<tr>
<td>• Why did you choose to give this advice?</td>
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<tr>
<td>• What is your intention when giving this advice to the kid in your office?</td>
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<tr>
<td>• How would you want them to feel?</td>
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</tr>
<tr>
<td>What kind of things that your doctor could say or do differently than what he/she is doing today that would get you to consider making any</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
changes in your lifestyle?

Prompt
- In a perfect world what would you need in order to think about making changes?
- How can your doctor be a part of that support?

This covers everything that we wanted to talk about, is there anything pertaining to your experience with your doctor in relation to your weight and health that you wanted to add?
- Is there any other information that you feel like you want to tell me that I haven’t asked about?
- Is there anything that is not related to the things we talked about today that you want to add or ask questions about

Thank you again for answering my questions. Your answers will be used with those of other kids to help us understand the experience of children with their physicians. We hope to be able to make a difference in the way that doctors communicate with their child patients when they talk about weight and health.
### Appendix 6. Questions for focus group with physicians regarding their perceptions of obesity management in primary care

<table>
<thead>
<tr>
<th>Physician Focus Group Questions</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your experience thus far in management children with obesity in your practice?</td>
<td>1</td>
</tr>
<tr>
<td>How are you currently treating your overweight/obesity pediatric patients and their families?</td>
<td>2</td>
</tr>
<tr>
<td>What are the tools or skills have you found to be helpful or effective when talking to your pediatric patients about weight and health?</td>
<td>3</td>
</tr>
<tr>
<td>What are the barriers that make it harder for you to communicate about weight with your pediatric patients and their families?</td>
<td>4</td>
</tr>
<tr>
<td>In terms of identifying and bringing up a weight concern with your pediatric patients what barriers have you experienced?</td>
<td>X</td>
</tr>
<tr>
<td>How have the barriers contributed to your confidence in managing obesity in primary care?</td>
<td>X</td>
</tr>
<tr>
<td>In a perfect world where resources were plentiful and available to you what would you want or need to happen so that you can feel more confident to discuss obesity with your pediatric patients?</td>
<td>X</td>
</tr>
<tr>
<td>This covers everything that we wanted to talk about, is there anything pertaining to your experience with communicating with your pediatric patients who are struggling with obesity that you wanted to add?</td>
<td>X</td>
</tr>
</tbody>
</table>
Appendix 7: Physicians recruitment letter for SPEAK IM OK

Dear Dr. __________,

We would like to tell you about a research study that will directly benefit you as well as your patients. The proposed research intervention will enhance your skills of medically managing overweight children and their families. Through didactic educational sessions you will be provided with guidelines for implementing and screening for overweight, along with training on Motivational Interviewing techniques.

The proposed research study, which has received approval from Research Ethics Board of the Hospital for Sick Children, **Supporting Physicians with Education and Know-how in Identifying and Motivating Overweight Kids (SPEAK I'M OK)** will involve:

- We will be completing a pre-intervention assessment:
  - Office information audit by interviewing office staff completed by us
  - Your completion of a self-efficacy questionnaire
  - Your completion of a personal history questionnaire
  - Your completion of a Helpful Response Questionnaire
  - Patient chart audit completed by us: (BMI, Gender, Age, Height, Weight, Medical Conditions, Evidence of Medical Management of Obesity) (**The chart audit will be done in a strictly confidential manner where no identifying information about you, your patients, or your practice will be revealed**)

- You will be randomized into one of two intervention groups (Behavioural and Educational, see below)
- You will participate in an intervention training (held at The Hospital for Sick Children for 5 hours on a weekend day or weeknight)
- We will conduct interviews with a small sample of patients following their well-child care visits with their consent
- We will complete a post-intervention assessment (3 months after training)
  - This will incorporate the self-efficacy questionnaire, helpful response questionnaire, and patient chart audit

The two interventions will be:

**Educational Intervention Training regarding how to:**

- Medically manage overweight children in your practice (medical family history, calculate BMI, measure blood pressure, dietary, physical activity, and psychosocial assessment, and laboratory testing appropriate to Body Mass Index (BMI) percentile)
Participating in a workshop on BMI; how to measure and use it
Receive feedback from focus groups we have completed with overweight children and their families

**Behavioural Intervention Training will include:**
- All components of the Educational Intervention Training
- Basic fundamental training in specific Motivational Interviewing techniques as applied to promoting behaviour change in overweight and obese children and adolescents

Participation in this study will improve your personal comfort and knowledge in starting discussions with families as well as enhance your medical management skills. Your patients will also benefit from your participation. They will receive a more comprehensive assessment of the risks of their adiposity and they will be empowered to work through their ambivalences towards achieving a healthy body weight. You will be compensated for your time and will also receive Continued Medical Education credits.

We look forward to working together in order to facilitate your learning. If you should require any further information please contact Maya Obadia at healthy.weight@sickkids.ca or at 416-813-7617. Should you not wish to participate please contact us as soon as possible and we will not contact you or your office. We look forward to working with you towards improvements in battling the childhood obesity epidemic.

Sincerely,

Brian W. McCrindle, MD MPH FRCPC
Professor of Paediatrics, University of Toronto
Staff Cardiologist, The Hospital for Sick Children
CIBC World Markets Children's Miracle Foundation
Endowed Chair in Child Health Research

Maya Obadia MSc
PhD Candidate
University of Toronto
The Hospital for Sick Children
Appendix 8: EVOKE Action MI training tools

EVOKE ACTION: Motivational Interviewing Framework for Training Mentors

Engage – engage your mentees

Ask Permission

Would it be ok if …. 

Negotiate the Agenda

Today I’d like to play in the park….how does that sound…

which of these activities would you most like to do 

Which aspect if any are most important to you

View - See the world through your mentee’s point of view

Listen

Attending to the mentee (verbal and non-verbal)

Reflecting what the mentee says during interaction

Summarizing

Ask

Open ended questions

What you are listening and asking for

Evidence of strengths, Change talk, Action talk

Open – Be open to your mentee’s ideas, beliefs, and concerns: Resist the righting reflex

Righting Reflex
Tendency to provide to information to mentees when they are saying something wrong

Elicit – Provide – Elicit

Ask the mentee what they already know about a topic such as physical activity

Provide information that the mentee is lacking

Ask the mentee what they think of the new information they learned

**Know – Know your mentee’s Motivation**

**Explore – Explore options**

Facilitate mentees self-problem solving skills for incorporating physical activity and healthy eating into their day

Use key questions for moving the mentee forward to the next visit

**ACTION ...So what will you do next?**

What to do for the following visit

Choice provided to the mentee
**Motivational Interviewing**

*How it works:*

MI works by activating patients’ own motivation for change and adherence to treatment.

*The Spirit:*

<table>
<thead>
<tr>
<th><strong>Fundamental approach of motivational interviewing.</strong></th>
<th><strong>Mirror-image opposite approach to counseling.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Collaboration.</strong> Counseling involves a partnership that honors the client’s expertise and perspectives. The counselor provides an atmosphere that is conducive rather than coercive to change.</td>
<td><strong>Confrontation.</strong> Counseling involves overriding the client’s impaired perspectives by imposing awareness and acceptance of “reality” that the client cannot see or will not admit.</td>
</tr>
</tbody>
</table>

| **Evocation.** The resources and motivation for change are presumed to reside within the client. Intrinsic motivation for change is enhanced by drawing on the client’s own perceptions, goals and values. | **Education.** The client is presumed to lack key knowledge, insight, and/or skills that are necessary for change to occur. The counselor seeks to address these deficits by providing the requisite |
enlightenment.

<table>
<thead>
<tr>
<th>Autonomy</th>
<th>Authority</th>
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</thead>
<tbody>
<tr>
<td>The counselor affirms the client’s right and capacity for self-direction and facilitates informed choice.</td>
<td>The counselor tells the client what he or she must do.</td>
</tr>
</tbody>
</table>


The Four Principles of Motivational Interviewing in Health Care

R  Resist the Righting Reflex

Helpers naturally want to “right” things.

Humans naturally resist persuasion.

Ambivalence is normal and resolvable

U  Understand Your Patient’s Motivation

Patient’s reasons for change are more likely to trigger change
Express interest in patient’s goals, concerns, values

Seek out patient’s perceptions, thoughts and vision

L  **Listen to Your Patient**

The answers lie within the patient

In MI, listen as least as much as informing

Partnering with your patient through listening builds understanding and trust

E  **Empower Your Patient**

Activated patients have better outcomes

Encourage patients to participate in the consultation

Patients usually know what will work for them
**Communication styles: A continuum and some synonyms**

<table>
<thead>
<tr>
<th>Directing</th>
<th>Guiding</th>
<th>Following</th>
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</thead>
<tbody>
<tr>
<td>Prescribe</td>
<td>Enlighten</td>
<td>Go along with</td>
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<tr>
<td>Tell</td>
<td>Encourage</td>
<td>Allow</td>
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<tr>
<td>Show the way</td>
<td>Motivate</td>
<td>Be responsive</td>
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<tr>
<td>Take the reins</td>
<td>Support</td>
<td>Have faith in</td>
</tr>
<tr>
<td>Take charge</td>
<td>Take along</td>
<td>Understand</td>
</tr>
<tr>
<td>Lead</td>
<td>Elicit</td>
<td>Observe</td>
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<tr>
<td>Manage</td>
<td>Awaken</td>
<td>Take in</td>
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<tr>
<td>Determine</td>
<td>Accompany</td>
<td>Permit</td>
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<tr>
<td>Steer</td>
<td>Look after</td>
<td>Shadow</td>
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</table>

All three styles are important and useful in specific situations

Health consultations may utilize all three styles depending on the purpose and goals of the interaction

Individuals and professions may have preferences for a particular style
Learning to use and move between all three styles increases the flexibility and adaptability of the clinician.

Motivational Interviewing is considered a refined form of the Guiding style to be used when behavior change is the goal.

What is Motivational Interviewing?

Motivational Interviewing is a client-centered, directive (goal oriented) method for enhancing intrinsic motivation to change by exploring and resolving ambivalence.

Ambivalence

Feeling two ways about something is a normal, non-pathological state

Being stuck in ambivalence causes a problem to intensify and persist

Exploring ambivalence means working at the heart of the problem

The Righting Reflex

Human beings seem to have a built in desire to set things right

This “fix-it” need is particularly strong in the helping professions

The righting reflex does not work for resolving ambivalence

Learning to inhibit the RR

The Spirit of MI

Collaboration. Counseling involves a partnership that honors the client’s experience and perspective. The counselor provides an atmosphere that is conducive rather than coercive to change.
Evocation. The resources and motivation for change are presumed to reside within the client. Intrinsic motivation for change is enhanced by drawing on the client’s own perceptions, goals, and values.

Autonomy. The counselor affirms the client’s right and capacity for self-direction and facilitates informed choice.

The Principles of MI

Express empathy

Develop discrepancy

Roll with resistance

Support self-efficacy

**OARS: The client-centered core of MI**

Open-ended questions

Affirmation

Reflective listening

Summarizing
Phase I. Building Motivation for Change

Desire - I want to change

Ability - I can change

Reasons - It would help me if I changed

Need - I need to change

Recapitulation Summary
Key Question: What is the next step?

- Not ready to go forward
- Ready to go forward
  - I’m not sure about changing
  - I might change

Phase II. Strengthening Commitment

Commitment- I will change

Taking Steps- I attempted change

CHANGE
### Change Talk

<table>
<thead>
<tr>
<th>Evoking change talk</th>
<th>Responding to change talk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asking evocative questions</td>
<td>Reflect – content, meaning, affect</td>
</tr>
<tr>
<td>Exploring the decisional balance</td>
<td>Elaborate</td>
</tr>
<tr>
<td>Using the importance and confidence ruler</td>
<td>Summarize – emphasize change talk</td>
</tr>
<tr>
<td>Exploring goals and values</td>
<td>Affirm</td>
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<tr>
<td>Querying extremes</td>
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<tr>
<td>Looking forward and backward</td>
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### Resistance

Defined in terms of behaviors

A signal to change strategies

The counselor can influence the level of resistance

Low levels of resistance is associated with better outcomes

### Responding to resistance

Don’t ignore it or argue against it.

Reflect – simple, amplified, double sided
Shifting focus

Reframing

Emphasizing personal choice and control

Coming alongside

References

Creating an Action Plan

Elicit the goal.

*What are you thinking that you will do now?*

*What is the change that you would like to make?*

*Where would you like to go from here?*

Explore options.

*What ideas do you have about how to reach that goal?*

  *What kind of lifestyle changes have you been successful with in the past?*  
  *How did you accomplish that change? How do you think you might be able to apply those skills to this situation?*

  *Would you be interested in hearing about things that have worked for other people? What do you think about those? What fits with your lifestyle?*

Help the client complete the Action Planning Worksheet to take home. If confidence is below 8, encourage a change in the plan to ensure confidence.

Summarize the plan. Include the main reasons for the change and the details of the plan.
Ask about commitment – Is this what you are going to do?

Closing the Conversation

Express your confidence.

I’m really confident that you will be able to find a way to make this change. You have developed a good plan with a backup if it doesn’t work. You have had successes in the past and have a lot of strengths and skills to use in this effort. And my experience with clients similar to you is that once the decision has been made, they have found a way that works for them. I’m here to help if you need.

Show appreciation.

Thank you for your willingness to talk with me about your health and your plans to enhance it.

Listening exercises

Tell me about yourself.
Tell me about something that you currently do to keep yourself healthy.

*Below are common areas that people make changes in to help maintain their health. Which of these would you like to talk about possibly changing today? What made you choose this area?*
What are your three best reasons to make changes in this area?

If you were to be successful in making these changes, how would you go about it?

What do you think you’ll do?
Assessing Importance and Confidence Exercise

Ask about importance: How important would you say it is for you to__________? On a scale from 0-10, where 0 is not at all important and 10 is extremely important, where would you say you are?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all important</td>
<td>most important</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Backwards question: Why did you pick a 4 and not a 1?

Forwards question: What would need to happen for you to get from a 4 to an 8?

Ask about confidence: Let’s say you decided to make this change. How confident are you that you could do it? On the same scale from 0-10, where 0 is not at all confident and 10 is extremely confident, where would you say you are?”
not at all confident  
totally confident

Backwards question: Why did you pick a 4 and not a 1?

Forwards question: What would need to happen for you to get from a 4 to an 8?

Summarize

Ask: “Did I get it all?” (Do I understand?)

Ask about the next step

Where does that leave you now?

I wonder what you’re thinking about _______ at this point.

What’s the next step?

Where does ____________ fit into your future?
**Scenario # 1: Questions to be asked by provider**

Now, I want to talk with you about vegetables.

How many vegetables do you eat in a day?

You should be eating 4-5 servings of vegetables each day if you expect to be healthy.

All you have to do is add vegetables to each meal. It is easy to do.

Have you tried the carrots in the little bags? They can be taken with you anywhere.

Most reasons not to eat vegetables are just excuses. If you really wanted to do it, you would.

There is nothing we can do for you unless you are ready to get healthy.

**Scenario # 2: Questions to be asked by provider**

Would it be alright if we talked a little about eating vegetables?

On an average day, how many servings would you say that you eat? The recommended number of servings for optimal health benefits is 4-5 per day. What do you make of that?

What do you like about eating vegetables?

What do you not like about eating vegetables?

What concerns, if any, do you have about your current vegetable intake?

What changes have you noticed in your vegetable intake over the last year?
<table>
<thead>
<tr>
<th>What changes in your vegetable intake are you considering making?</th>
</tr>
</thead>
<tbody>
<tr>
<td>As your provider, I’d like to encourage you to consider eating more vegetables. I believe that you could improve your overall health and ability to fight off disease if you were to eat more of them. Of course, it is your decision. What thoughts do you have about that?</td>
</tr>
</tbody>
</table>
Appendix 9: **Behavioural Agenda**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
</table>
| MO 4:00-4:20 | Registration  
Introduce the participating physicians to the speakers and the study staff.  
Provide booklet of all handouts that will be used as learning tools in the study  
Collect questionnaires |
| BM 4:20-4:30 | Lecture on Childhood Obesity epidemic in Ontario (McCrindle)  
Statistics of the epidemic  
Cardiovascular and other consequences of childhood obesity  
Why targeting primary care physicians |
| BM 4:30-4:35 | Question and Answer period (McCrindle) |
| BM 4:35-4:55 | Medical Management of Childhood Obesity – Overview of recommendations (McCrindle)  
See attached outline for the Medical Management of Childhood Obesity  
Activities on information of mock patients: tracking BMI activity,  
Question and answer session (10 minutes) |
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:55-5:15</td>
<td>Break</td>
</tr>
<tr>
<td>5:15-5:40</td>
<td>Motivational Interviewing Training in Primary Care Practice (Ernst)</td>
</tr>
<tr>
<td>5:40-6:00</td>
<td>Debriefing of Family Focus Group</td>
</tr>
<tr>
<td>5:40-7:00</td>
<td>Motivational Interviewing Training in Primary Care Practice</td>
</tr>
<tr>
<td>7:00-7:40</td>
<td>Dinner and Motivational Interviewing Video (Discussion)</td>
</tr>
<tr>
<td>7:40-8:40</td>
<td>Motivational Interviewing Training (Ernst, Obadia)</td>
</tr>
<tr>
<td></td>
<td>Discussion about the video</td>
</tr>
<tr>
<td></td>
<td>Conversation enders</td>
</tr>
<tr>
<td></td>
<td>Affirmations and summaries</td>
</tr>
<tr>
<td>8:40-9:00</td>
<td>Conclusions and Wrap-Up (Obadia)</td>
</tr>
<tr>
<td></td>
<td>Provide an overview of the training</td>
</tr>
<tr>
<td></td>
<td>Collect evaluations</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

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## Appendix 10: Educational Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
</table>
| MO 4:00-4:20 | Registration  
Introduce the participating physicians to the speakers and the study staff.  
Provide booklet of all handouts that will be used as learning tools in the study  
Collect questionnaires |
| MO 4:20-4:35 | Explain physician focus group  
Complete consent forms |
| MO 4:35-5:40 | Physician discussions |
| 5:40-6:00 | Break |
| BM 6:00-6:20 | Childhood obesity epidemic in Ontario  
What can physicians do  
Statistics of the epidemic  
Cardiovascular and other consequences of childhood obesity  
Why target primary care physicians |
(similar to presentation in Orangeville)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
</table>
| **BM** | **6:20-7:00** Medical Management of Childhood Obesity  
Go over slides  
Follow table  
Things to discuss with the families |
| **MO** | **7:00-8:00** Dinner and That’s so raven video, and FFG Debrief |
| **BM** | **8:00-8:20** Medical Management of Childhood Obesity Cont’d  
Slides and activities for calculating, plotting, and tracking BMI |
| **MO** | **8:20-8:40** Wrap up and collect evaluations |
Appendix 11: Outline for merged medical management of obesity

Outline for Merged Medical Management of Childhood Obesity

Adapted from the 2006 Canadian clinical practice guidelines, Expert committee recommendations on the assessment, prevention and treatment of child and adolescent overweight and obesity 2007 (National Institute for Children’s Healthcare Quality), Pediatric Healthy Weight Toolkit (Blue Cross and Blue Shield of Michigan), American Medical Association Guidelines, and the Ontario Medical Association Guidelines. Canadian values for normal ranges are from the Hospital for Sick Children’s Guide to Lab Services Database.

It is recommended that all assessments be completed at minimum once yearly at the well child visit even for those children who are between the 5th and 84th percentile for BMI as anticipatory guidance.

1. Medical and family history assessment
   a. Identify familial risks for:
      i. Overweight
      ii. Obesity
      iii. Type II diabetes
      iv. High blood pressure
      v. Hypertension
      vi. Heart disease
      vii. High cholesterol
      viii. Lipid abnormalities
   b. Identify underlying syndromes/secondary complications
      i. Hypothyroidism
      ii. Polycystic ovarian syndrome
      iii. Prader-Willi syndrome
      iv. Diabetes
      v. Sleep apnea
2. **Physical Examination**
   a. **Accurately measure height and weight**
      i. Calculate and plot BMI (CDC)
         1. <5<sup>th</sup> % underweight
         2. 5-84<sup>th</sup> % healthy weight
         3. 85-94<sup>th</sup> % overweight
         4. >95<sup>th</sup> % obese (US/Cdn)
   b. **Measure blood pressure**
      i. Use a cuff large enough to cover 80% of the upper arm
   c. **General physical exam**
      i. Do not measure skin fold thickness or waist circumference

3. **Dietary Assessment**
   a. **Identify eating behaviours and food intake preferences**
      i. Prevention (5<sup>th</sup> ≤ BMI ≤ 84<sup>th</sup>)
         1. Decrease sugary drinks
         2. Increase fruits and vegetables
         3. Increase foods high in calcium and fiber
         4. Decrease foods high in energy
         5. Eat breakfast daily
         6. Limit eating out at restaurants and eating out
         7. Encourage family meals
         8. Limit portion size
      ii. Follow up in 3-6 months if no improvement
          1. Structured weight management protocol
          2. Weight loss not to exceed 1 lb/month (ages 2-11 years) and 2 lb/month (ages 2+)
          3. If no improvement 3-6 months refer to multidisciplinary team

4. **Physical Activity Assessment**
   a. **Identify daily activities and exercise patterns**
      i. Limit screen time to 1-2 hours per day
      ii. Build up to 60-90 minutes of moderate to vigorous activity daily

5. **Psychosocial assessment**
   a. **Screen for depression and assess family support and readiness for change**
      i. Role of parents in managing and supporting children’s nutrition and
physical activity as being role models

ii. Self-efficacy and assessment of readiness for change for:
   1. Nutrition
   2. Physical activity
   3. Sedentary behaviour change

6. **Laboratory Testing: BMI Specific Tests**
   a. 85th – 94th percentile + no risk factors
      i. Fasting lipid profile
         1. Cholesterol (mmol/L)
            a. 2y-17y 3.20-4.40
      ii. LDL (mmol/L)
          1. Girls
             a. 10-14y 1.76-3.52
             b. 15-19y 1.53-3.55
          2. Boys
             a. 10-14y 1.66-3.44
             b. 15-19y 1.61-3.37
      iii. HDL (mmol/L)
          1. Girls
             a. 7-11y 0.60-2.07
             b. 12-15y 0.65-2.15
             c. 16-18y 0.54-1.99
          2. Boys
             a. 7-11y 0.65-2.05
             b. 12-15y 0.49-1.97
             c. 16-18y 0.67-1.94
      iv. Triglyceride means(mmol/L)
          1. <18y 0.40-1.30
   b. 85th-94th % + risk factors (history or physical exam)
      i. Aspartate Aminotransferase (U/L)
         1. ≥10y ≤36
      ii. Alanine Aminotransferase (U/L)
         1. ≥1y ≤40
      iii. Fasting glucose (mmol/L)
         1. 3-11y 2.8-6.1
         2. ≥12y 3.3-6.1
   c. >95th % + with or without risk factors
      i. All above tests
      ii. Blood urea nitrogen (mmol/L)
         1. ≥2y 2.9-7.1
      iii. Creatinine (µmol/L)
         1. 10-13y <79
         2. ≥14y <98
Appendix 12: BMI Calculating Activity

Patient Visit

A child and his parent comes to you for their well child visit. He is 10 years of age at this visit with a BMI of 19.

1. Take your BMI charts and along the horizontal axis go to 10 years of age.
2. Follow that line up until it crosses with a BMI value of 19 on the vertical axis.
3. Place a circle at this intersection.

Follow Up Visit

The same child and his parent come to you for his well child visit. He is now 11 years of age with a BMI of 21.

1. Take your BMI charts and along the horizontal axis go to 11 years of age.
2. Follow that line up until it crosses with a BMI value of 21 on the vertical axis.
3. Place a circle at this intersection.

Questions to ask yourself:

What do you notice about the increase in BMI?
What would you normally do in this case?

Why it is important to discuss BMI with pediatric patients and their families

- If BMI is explained properly patients and their families can understand its meaning.
- If you have a colour chart in your office to show your patient where in the spectrum of health their BMI falls it puts a number into context.
If BMI is plotted over time a child’s growth can be placed on a trajectory and a trend of weight gain can be followed and prevention of obesity can be achieved.
Appendix 13: Calibration and set-up

1) Erect the screens, ensuring a private area for measurement of students.

**Weight**

2) Calibrate each scale with standardized weights at each of the four weight levels (20 kg, 40 kg, 70 kg, 90 kg) at least once per week at the centralized Heart Niagara location.

**Acceptable range for calibration of scales using kilogram weights**

<table>
<thead>
<tr>
<th>Standard weight in kilograms</th>
<th>Evaluate scale is weight is more or less than as follows:</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 kg</td>
<td>&lt;19.8 kg or &gt;20.2 kg</td>
</tr>
<tr>
<td>40 kg</td>
<td>&lt;39.8 kg or &gt;40.2 kg</td>
</tr>
<tr>
<td>70 kg</td>
<td>&lt;69.8 kg or &gt;70.2 kg</td>
</tr>
<tr>
<td>90 kg</td>
<td>&lt;89.8 kg or &gt;90.2 kg</td>
</tr>
</tbody>
</table>

3) If the measurements fall outside of these ranges:
   a. Ensure the scale is set to zero before the standards are applied.
   b. Ensure the units are set to “kg.”
   c. Replace the batteries and re-try the protocol.
4) At the school site, place scale on a firm flooring (such as tile or wood) rather than carpet in the screened, private area.

**Height**

4) At the school site, calibrate each stadiometer with standardized measuring rods every morning before use.

5) At the school site, erect the stadiometer, in the screened, private area and ensure the device is perfectly vertical using the attached level.
Measurements

Weight

1) The child should remove all heavy clothing and remove their shoes. In addition, the child should remove all hair accessories at the top of the head and empty their pockets.
2) Have child stand with feet together in the middle of the scale.
3) Record weight to the nearest 0.1 kgs.
4) Record any deviations from the protocol (whether during the weight, height or waist circumference protocol) in the comments box on the student form.

Weight ranges for 14.5 year old boys and girls, in percentiles (see attached growth charts).

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th></th>
<th>Girls</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5th percentile</td>
<td>25th percentile</td>
<td>50th percentile</td>
<td>75th percentile</td>
<td>95th percentile</td>
</tr>
<tr>
<td></td>
<td>40.5 kg</td>
<td>47.5 kg</td>
<td>53.5 kg</td>
<td>61.2 kg</td>
</tr>
<tr>
<td></td>
<td>39.0 kg</td>
<td>45.2 kg</td>
<td>53.0 kg</td>
<td>59.2 kg</td>
</tr>
</tbody>
</table>
**Height**

**Measurements**

5) Have child stand on the foot marks at the base of the stadiometer. Ensure their feet are together and their heels, buttocks, shoulders, and head are flush with the stadiometer rod.
   a. Note: In the case of children with larger body types, ensure their heels and buttocks are against the wall, and estimate when the child is standing fully erect. Record this deviation from the protocol in the comment box on the student form.

6) Pull the headpiece to the crown of the head and is parallel to the ground.

7) Instruct the child to stand perfectly straight, look straight ahead, and take two deep breaths.

8) Place your hands below the child’s ears

9) During the second exhale apply gentle pressure upwards and take the measurement

10) Accurately record the height to the nearest 0.1 cm. The measurement is located where the second (moveable) stage of the stadiometer meets the first stage.
Height ranges for 14.5 year old boys and girls, in percentiles (see attached growth charts).

<table>
<thead>
<tr>
<th>Boys</th>
</tr>
</thead>
<tbody>
<tr>
<td>5th percentile</td>
</tr>
<tr>
<td>25th percentile</td>
</tr>
<tr>
<td>50th percentile</td>
</tr>
<tr>
<td>75th percentile</td>
</tr>
<tr>
<td>95th percentile</td>
</tr>
<tr>
<td>153.5 cm</td>
</tr>
<tr>
<td>162.0 cm</td>
</tr>
<tr>
<td>167.0 cm</td>
</tr>
<tr>
<td>172.5 cm</td>
</tr>
<tr>
<td>180.0 cm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>5th percentile</td>
</tr>
<tr>
<td>25th percentile</td>
</tr>
<tr>
<td>50th percentile</td>
</tr>
<tr>
<td>75th percentile</td>
</tr>
<tr>
<td>95th percentile</td>
</tr>
<tr>
<td>151.6 cm</td>
</tr>
<tr>
<td>157.0 cm</td>
</tr>
<tr>
<td>161.2 cm</td>
</tr>
<tr>
<td>165.6 cm</td>
</tr>
<tr>
<td>173.0 cm</td>
</tr>
</tbody>
</table>

**Waist Circumference**

11) Ask the child to roll up their shirt to expose their midsection. If the child refuses to do this, ensure there is a minimum amount of clothing covering their midsection and proceed with the waist measurement. Record this deviation from the protocol in the comment box on the student form.

12) Palpate the iliac crest and palpate the lowest rib. The midpoint of these two points is the closest approximation of the natural waist and will be used for the measurement.
13) Place the end of the measuring tape on this midpoint and have the child hold it in place. Ask the child to spin their body 360°, thus wrapping the measuring tape around their waist. Ensure the tape stays parallel to the floor during this process.

14) While holding the tape around the child’s waist, have the child take two deep breaths. During the second exhale, gently tighten the tape around the child’s waist ensuring the tape remains taught until the child has fully exhaled.

15) Before the child takes a third inhalation, measure the waist circumference to the nearest 0.1 cm.

16) All measurements are now complete and the child can put on their shoes, jackets, etc.
Appendix 14: Medical office audit

Medical Office Audit Form

Section A – Physician Information

A1: Physician ID:

________________________________________

Section B – Patient Statistics

B1: Number of patients currently seen by this physician: ______

B2: Age range (years) of pediatric patients currently seen by this physician: ______ to ______

B3: Number of pediatric patients currently seen by this physician: ______
B4: Age range (years) of patients currently seen by this physician: ______ to ______

Appendix 15: Physician history questionnaire

**Physician History Questionnaire**

**Section A – Physician Information**

A1: Physician Name:
________________________

A2: Age: ________

A3: Gender: Male □ Female □

A4: Practice:
____________________________________________

Street address:

____________________________________________________________

City:______________________ Province: ___ ___ Postal Code: ___ ___

Fax Number: (___ ___ ___) ___ ___ ___ - ___ ___ ___ ___

A5: Phone Number: (___ ___ ___) ___ ___ ___ - ___ ___ ___ ___

Fax Number: (___ ___ ___) ___ ___ ___ - ___ ___ ___ ___
Section B – Physician History

**B1:** Number of years in practice: ________

**B2:** Institute where undergraduate medical training was received:
_________________________________________________

_____________________________________________________ Year
graduated: ________

**B3:** Post-graduate medical training (specialty):
_____________________________________________________

Institute where post-graduate medical training was received:
_____________________________________________________

_____________________________________________________ Year
graduated: ________

Complete next question for additional post-graduate training or for a change of location of such training.

**B4:** Post-graduate medical training (specialty):
_____________________________________________________

Email:
Institute where post-graduate medical training was received:

________________________________________________________________________

__________________________________________________________ Year

graduated: ________

**B5:** Additional medical training:

________________________________________________________________________

Institute where additional medical training was received:

________________________________________________________________________
Appendix 16: Counselling Response Questionnaire

**Counseling Responses Questionnaire**

Imagine that a [Hospital Name Here] patient of their family member, during consultation, says each of the following things to you. What is the next response that you would be likely to say? In the right-hand box for each case, print (clearly please) the very next thing that you might say to your client:

<table>
<thead>
<tr>
<th>A teenager says:</th>
<th>You say:</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I watch 5 hours of TV a night, what’s the big deal. I don’t even know why my mom made me come here anyways?”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A frustrated mother says:</th>
<th>You say:</th>
</tr>
</thead>
<tbody>
<tr>
<td>“It doesn’t matter what I send with him for lunch he ends up eating both that and more food at school.”</td>
<td></td>
</tr>
<tr>
<td>A mother of a 4 year old says:</td>
<td>You say:</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>“I’ve tried everything! I can’t get her to eat vegetables. Tell me what to do!”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A 17 year old patient says:</th>
<th>You say:</th>
</tr>
</thead>
<tbody>
<tr>
<td>“My mom wants me to walk to school, but it’s slow and I’m all tired when I get to school, so I’d rather get a ride with my friends.”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A mother of a 10 year old says:</th>
<th>You say:</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I like to keep him happy and he likes snacks like most kids. So what if he is a little chubby, he’ll grow out of it when he’s older.”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A father of a teenager says:</th>
<th>You say:</th>
</tr>
</thead>
<tbody>
<tr>
<td>“No matter how many times I bug him to</td>
<td></td>
</tr>
</tbody>
</table>

175
play a sport or eat better he just gets insulted. I have no idea how to push him to be healthier.”

Appendix 17: Individual screening form

Section A – Physician Information

A1: Physician Number

__________________________________________

Section B - Patient Information

B1: Study ID Number: _____ _____ _____ _____ - ___

B2: Date of Birth (YYYY/MM): _____ _____ / _____

B3: Postal Code (1st three digits) _____ _____

B3: Gender: Male ☐ Female ☐

B4: Height: _____ cm _____ inches

B5: Weight: _____ kg _____ pounds

B6: BMI (see Box 1): _____

Box 1: Calculation of BMI

______ (kg) / _____ (cm) / _____ (cm) x 10 000 = ______
B7: BMI %: __________ %

(Track BMI on gender appropriate growth chart according to age)

First 3 digits of postal code _____ _____ _____

Section C - Eligibility

Questions C1 through C3 must be answered for all patients listed on the Screening Log Form (SCR1).

C1: Is the child between the ages of 3 and 17 years old? Yes □ No □

C2: Is the child with a BMI percentile greater or equal to the 85th percentile? Yes □ No □

If C1 and C2 are “Yes”, then proceed to the Individual Audit Form (AUD1).

Section D – Auditor Information

D1: Auditor Initials _________

D2: Date Completes (YY/MM/DD): ___ ___ / ___ ___
Appendix 18: Patient medical history audit

Section A - Patient Information

A1: Study ID: ___ ___ ___ ___ ___ ___ - ___

A2: Date of Birth (YYYY/MM): ___ ___ ___ ___ / ___ ___

A3: Gender: Male □ Female □

A4: Height: _____ cm _____ inches

A5: Weight: _____ kg _____ pounds

Section B – Diagnoses and Laboratory Measures

B1: Medical Conditions: Yes □ No □ Specify:

1)______________________________________________________
   __________
   _________
2)_________________________________________________________________
3)_________________________________________________________________
4)_________________________________________________________________
5)_________________________________________________________________
6)_________________________________________________________________
7)_________________________________________________________________

B2: Developmental Delays: Yes □ No □ Specify: -

B3: LDL cholesterol ___ . ___ ___ mmol/L      HDL cholesterol ___ . ___ ___ mmol/L

Triglycerides ___ . ___ ___ mmol/L      Total Cholesterol ___ . ___ ___ mmol/L

B4: Most Recent Fasting Glucose ___ . ___ mmol/L

B5: ALT ___ ___ U/L      AST ___ ___ ___ U/L
Section C – Physician Recommendations for Obesity Treatment or Prevention

C1: Evidence of BMI calculation  Yes  No  tracking:  Yes □  No □ Height for Weight  Yes  No  Specify  ______________________________________________________________________________________:  __________

________________________________________________________________________________________

____________

C2: Identification of obesity or overweight:  Yes □  No □  Specify:  -

____________________

________________________________________________________________________________________

____________

C3: Recommendation of diet modification:  Yes □  No □  Specify:  -

____________________

________________________________________________________________________________________

____________
C4: Recommendation of physical activity: Yes □ No □ Specify: -

__________________________________________

C5: Follow-up visits recommended for a weight problem: Yes □ No □ Specify: ______

__________________________________________

C6: Referral to a sub-specialist for weight control: Yes □ No □ Specify: -

__________________________________________

C7: Testing performed for co-morbid disease: Yes □ No □ Specify: -

__________________________________________

C8: Other obesity related treatments or prevention strategies:

1) _____________________________________________

________
Appendix 19: CME letter

TO WHOM IT MAY CONCERN:

This is to certify that ___________ attended the Supporting Physicians with Education and Know-how in Identifying and Motivating Overweight Kids (SPEAK I’M OK) on September 17, 2009.

This course was held under the auspices of The Office of Continuing Education and Professional Development, Faculty of Medicine, University of Toronto and The Hospital for Sick Children.

ACCREDITATION:

This program meets the accreditation criteria of The College of Family Physicians of Canada and has been accredited for 5 Mainpro-M1 credits.
This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification program of The Royal College of Physicians and Surgeons of Canada, approved by the University of Toronto (5 credits)

Brian McCrindle MD MPH

Staff Cardiologist, Sickkids
Appendix 20: Monthly emails MI intervention

**The Body Mass Index and Obesity in Children**

**Why it is important to discuss BMI with pediatric patients and their families?**

If BMI is explained properly patients and their families can understand its meaning. By understanding the meaning the patient can become more empowered and better equipped to make the changes necessary for improving their health. Calculating, plotting and tracking BMI are three separate components of managing obesity in your pediatric patients.

**Calculating BMI**

\[
\begin{align*}
\text{weight (lbs)} / \text{height (in)} / \text{height (in)} \times 703 & = \\
\text{kg} / \text{cm} / \text{cm} \times 10000 & = 
\end{align*}
\]

**Plotting BMI**
Plotting BMI is essential especially for pediatric patients as an absolute BMI score does not provide a full picture of the child’s risk of obesity. BMI in children is related to the child’s gender and age.

- On a gender specific BMI chart go across the bottom horizontal axis and find your patient’s age
- Follow the vertical line up until it crosses the calculated BMI score above
- Place a dot at this intersection

![BMI Chart with dots indicating BMI score]

**Tracking BMI**

By plotting the patient’s BMI on the same chart you can see the curve and slope with which their BMI is changing. This is a good preventative measure if the slope of the curve takes a steep turn. This could be a sign of non-predicted weight gain. This would be a good time to discuss with the patient their routines and behaviours which may be contributing to this weight-for-height change.
EVOKE ACTION

Motivational Interviewing Framework for Treatment of Obesity in Children

As you recall from your initial training it is possible for you to motivate your pediatric patients to think about and/or make changes in their lives to improve their health and weight status. Below is an overview of the EVOKE Action plan with examples of statements that can be used for each stage.

Engage – engage your patients

- Ask Permission
  - Would it be ok if .
- Negotiate the Agenda
  - I thought we could talk about these few things how does that sound?
  - Other kids your age thought that talking about (list a few things) would be a good idea is there anyone that you want to talk about first?
  - Which aspect if any are most important to you

View - View the world through your patient’s point of view

- Listen
  - Attending to the patient (verbal and non-verbal) (mmhm, tell me more, what else)
  - Reflecting what the patient says during interaction
  - Summarizing
- Ask
  - Open ended questions encourage discussion
- What you are listening and asking for
  - Evidence of strengths, Change talk, Action talk
I can, will, want, think

Open – Be open to your patient’s ideas, beliefs, and concerns: Resist the righting reflex
- Righting Reflex
  - Tendency to provide to information to patients when they are saying something inaccurate
- Elicit – Provide – Elicit
  - Ask the patient what they already know about a topic such as physical activity or healthy eating
  - Provide information that the patient is lacking
  - Ask the patient what they think of the new information they learned

Know – Know your patient’s motivation
- Importance scale
  - On a scale of 1 to 10 with 10 being most important how important is it for you to _________
  - Why are you a ___ and not a 0
  - What would need to happen for you to get to a (one number more than where they are)
- Confidence Scale
  - On a scale of 1 to 10 with 10 being most confident how confident are you that you will be able to _________
  - Why are you a ___ and not a 0
  - What would need to happen for you to get to a (one number more than where they are)

Explore – Explore options
- Facilitate mentees self-problem solving skills for incorporating physical activity and healthy eating into their day
- Use key questions for moving the mentee forward to the next visit

ACTION So what will you do next?
- What to do for the following visit
- Choice provided to the patient

As you interact with your patient try to keep in mind having action oriented discussions utilizing the tools provided to you in your training and in this worksheet. Remember that
if you act like you have all the time in the world you will accomplish more in a short amount of time than if you rush the patient.

Three Types of Communication:

Directing, Guiding, Following

- Prescribe
- Tell
- Take charge
- Lead
- Manage
- Steer
- Show the way
- Give advice

- Go along with
- Shadow
- Observe
- Take in
- Allow
- Permit
- Understand
Physicians have welcomed the idea of further training opportunities such as Continued Medical Education sessions on ways to address overweight in their pediatric patients. They...

It is important to remember that all three styles are important and useful in specific situations within the context of your patient interaction.

This depends on the purpose and the goals of the interaction.

Learning to use and move between all three styles increases the flexibility and adaptability of you as a clinician.

Motivational Interviewing is considered to be a refined form of the GUIDING style to be used when behaviour change is the goal.

Use of Behavioural Techniques to Improve Medical Management of Obesity in Children
would be interested in resources they can share with their patients. This is due to the fact that currently there are little opportunity for primary care physicians to receive such training. Specifically, training in counseling children and their families about weight management is in great demand. Use of behavioural techniques such as Motivational Interviewing (MI) has been used recently in training medical students and residents. This may indicate that discussions with children about obesity are an important mandate of undergraduate medical training. Medical students have demonstrated a great ability to learn brief MI over a two hour period when provided with a specific protocol. Practicing physicians participating in trainings report that MI is more effective than traditional advice giving. This being the case, physicians may incorporate it into their practices with no additional time requirement. In order to do so physicians must create a balance between following, guiding, and directing the patients towards change. Using a guiding approach is preferred, since it creates a balance between the physicians using active listening while informing the patient of the medical information that is essential for their health. This approach facilitates the patient’s readiness and intrinsic motivation to make change.

**Brief Motivational Interviewing and its use with children**

Historically, MI has been initiated as part of substance abuse treatment and was practiced by psychologists during a lengthy counseling session. Since then, brief interventions of MI have been adapted for use in clinical settings with various health care professionals experienced with MI methods[55]. Techniques used during these brief interventions include: diminishing resistance, developing discrepancy, and triggering behaviour change using particular open ended questions and selectively reflecting the elements of client speech that enhance motivation for change. MI exercises the use of open ended questions, affirmations, reflections, and summaries to facilitate change[55]. Reflections, can be useful in demonstrating to the patient that the physician is listening and diminishes any assumptions made by either physician or patient. By exploring the person’s values, interests, and concerns, the patient’s autonomy, collaboration and evocation of ideas, is supported. MI has been adapted for behaviour change including but not limited to adherence to treatment, weight loss, lowering of lipid levels, increasing physical activity, diabetes, asthma, and smoking cessation[62].
MI has been successful with adult patients making various health behaviour changes. There is promising data on its use with children and adolescents. MI was used with assessments of readiness for change in an effort to reduce LDL-C among adolescents through adherence to a diet. Children who received MI sessions had a significantly decreased caloric intake from fat, and consumption of dietary cholesterol and also reported being satisfied with the counseling. When working with diabetic adolescents, MI interventions were focused on awareness, building alternatives, problem solving, making choices, goal setting, and avoidance of therapeutic confrontation. At the end of the intervention the mean hemoglobin A1c in the MI group was significantly lower than in the control group and this difference was maintained at the 24 month measurement. The group of adolescents receiving MI counseling also reported significantly higher life satisfaction, lower life worry, experienced less anxiety, and had more positive well being. These studies indicate that MI is an effective tool for helping children manage chronic disease.

**Motivational Interviewing and Obesity in Children**

Promoting a healthy body weight in children is another area where MI has been successful. The ‘Go Girls’ study was a church-based nutrition and physical activity program for 123 overweight African-American adolescent girls utilizing a moderate (20-30 min) and high-intensity (40-60 min) MI regimen. Although the group receiving 40 to 60 minutes of MI did not have a significantly larger decrease in BMI, their BMIs were 0.5 units lower. This difference remains clinically significant for girls whose age-adjusted BMI percentile cut point is on the cusp of overweight and normal weight [18]. A feasibility study evaluating the efficacy of a MI program administered by pediatricians and registered dieticians showed no significant differences in BMI between those children who did not receive MI, ones that had a single MI session, and those who received four MI sessions. This study did not randomize physicians into treatment groups which may have contributed to the resulted lack of difference. Nevertheless, this study demonstrates strong support for primary care physicians as recipients of MI training and their abilities to administer the intervention. When doing so, it is important to re-educate or re-stimulate the physicians’ learning as it has been shown that when physicians learn MI its use dissipates 6 months following training.
MI has been recognized as an effective approach to treating a wide range of behavioural, developmental, and social disturbances in children within a pediatric setting. Since empirical research suggests that pediatricians and parents tend to overestimate the ability of younger children and underestimate the ability of older children to understand illness-related concepts, MI with younger children needs to be adapted to the child’s causal reasoning, language ability, self-understanding, and their environmental context. A suggested solution is to intervene with parents’ health risk behaviour for the benefit of their children by using open questions, summary questions, and joining with the child in the treatment[71]. Furthermore, physicians may have to utilize more questions than reflections for younger children in order to get a response. Even though MI with children may require some modifications for childhood developmental stages, children can advocate for their own health and are likely to benefit from its use. Despite this, using motivational interviewing with adolescents is easier than dealing with MI with children.

The above information was comprised of up to date studies on how Motivational Interviewing can be used in different circumstances by health care professionals. This summary demonstrates and articulates how MI can be used within the context of your brief patient interaction.
Appendix 21: Monthly emails education intervention

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Calculating BMI

\[
\text{weight (kg)} / \text{height (cm)} / \text{height (cm)} \times 10^4 = \text{BMI}
\]

\[
\text{weight (lbs)} / \text{height (in)} / \text{height (in)} \times 703 = \text{BMI}
\]

Plotting BMI

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**Keys to a Healthy Lifestyle**

5 – Eat at least five servings of fruits and vegetables daily

2 – Limit screen time to two or less hours daily

1 – Participate in at least one hour of physical activity daily

0 – Avoid empty calories (pop and sugary drinks), limit fruit juice to ½ a cup per day, encourage water and fat free milk
How to Increase Physical Activity Gradually

<table>
<thead>
<tr>
<th>Month</th>
<th>Daily INCREASE in moderate activity (Minutes)</th>
<th>Daily INCREASE in vigorous activity (Minutes)</th>
<th>Total daily INCREASE in physical activity (Minutes)</th>
<th>Daily DECREASE in non-active time (Minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>At least 20</td>
<td>+ 10</td>
<td>= 30</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>At least 30</td>
<td>+ 15</td>
<td>= 45</td>
<td>45</td>
</tr>
<tr>
<td>3</td>
<td>At least 40</td>
<td>+ 20</td>
<td>= 60</td>
<td>60</td>
</tr>
<tr>
<td>4</td>
<td>At least 50</td>
<td>+ 25</td>
<td>= 75</td>
<td>75</td>
</tr>
<tr>
<td>5</td>
<td>At least 60</td>
<td>+ 30</td>
<td>= 90</td>
<td>90</td>
</tr>
</tbody>
</table>

MODERATE Physical Activity – brisk walking, bike riding

VIGOROUS Physical Activity – running, soccer, supervised weight training
Parent Survey
FIVE-TWO-ONE-ALMOST NONE
Small Changes Lead to Big Rewards

Survey for all Patients/Families at Well Child Visits

In our office, we are interested in discussing the aspects of a healthy lifestyle with all of our families. While you and your child are waiting to see the doctor, please take a moment to answer the following questions. We will review your answers during your visit today. We realize how busy parents are and how difficult it is to do all the right things! The questions below reflect only a small number of the challenges that face families each day.

Please circle TRUE or FALSE for each question.

My child eats five or more servings of fruits and vegetables most days. TRUE FALSE
My child eats breakfast every day. TRUE FALSE
My child eats dinner at the table with the family at least two times per week. TRUE FALSE
My child eats take-out, fast food, or other restaurant food less than two times per week. TRUE FALSE
My child does not eat extra large portion sizes. TRUE FALSE
My child watches TV or videos, use the computer/Internet for non-school work, play computer games, and use instant messaging less than two hours per day. TRUE FALSE
My child does not have a TV in the bedroom. TRUE FALSE
My child participates in some type of physical activity inside or outside of school for at least one hour each day. TRUE FALSE

Note: This would include activities such as walking, household chores, or general play where you are up and moving. TRUE FALSE
My child does not regularly drink soda, sports drinks, punch, or fruit drinks that are less than 100% juice. TRUE FALSE
My child drinks fat free or 1% milk rather than 2% or whole milk. TRUE FALSE
My child drinks a 1/2 cup (4 ounces) or less of 100% fruit juice every day. TRUE FALSE

Are you ready to make any changes? Very ready
1 2 3 4 5 6 7 8 9 10

How confident are you that you can make changes? Very confident
1 2 3 4 5 6 7 8 9 10
KEY ELEMENTS
The key elements of active living and healthy eating are considered in terms of the population health promotion model, which is designed to create multi-strategic, population-based strategies.

IDEAS & STRATEGIES
Ideas and strategies that emerge are multi-strategic, population-based and evidence based.

SENSITIVITY CHECK
All ideas and strategies go through a 'sensitivity check', which assesses if they empower overweight children and their families to take positive action, are culturally aligned, as well as validate community/population readiness.

KEY ACTIONS
Key actions are only those that emerge from all stages of this process.
Calibration and set-up of Equipment

3) Erect screens, ensuring a private area for measurement of students.

Weight

4) Calibrate each scale with standardized weights at each of the four weight levels (20 kg, 40 kg, 70 kg, 90 kg) at least once per week.

Acceptable range for calibration of scales using kilogram weights

<table>
<thead>
<tr>
<th>Standard weight in kilograms</th>
<th>Evaluate scale is weight is more or less than as follows:</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 kg</td>
<td>&lt;19.8 kg or &gt;20.2 kg</td>
</tr>
<tr>
<td>40 kg</td>
<td>&lt;39.8 kg or &gt;40.2 kg</td>
</tr>
<tr>
<td>70 kg</td>
<td>&lt;69.8 kg or &gt;70.2 kg</td>
</tr>
<tr>
<td>90 kg</td>
<td>&lt;89.8 kg or &gt;90.2 kg</td>
</tr>
</tbody>
</table>

3) If the measurements fall outside of these ranges:
   a. Ensure the scale is set to zero before the standards are applied.
   b. Ensure the units are set to “kg.”
   c. Replace the batteries and re-try the protocol.

4) Place scale on a firm flooring (such as tile or wood) rather than carpet in the screened, private area.

Height
5) Calibrate each stadiometer with standardized measuring rods every morning before use.

6) Erect the stadiometer, in the screened, private area and ensure the device is perfectly vertical using the attached level.