

# Education for lifestyle-based management of hyperlipidemia in children enhanced by a collaborative approach

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**BACKGROUND:** Although therapeutic lifestyle changes are first-line measures in treating pediatric dyslipidemia, current didactic approaches for healthy lifestyle education are weakened by low adherence and poor sustainability. A collaborative education program including a clinician-led group education class with motivational counseling complemented by the addition of peer role models was implemented.

**OBJECTIVE:** We sought to assess the effectiveness of motivational interviewing in collaboration with peers sharing their experience and its impact on serologic and lifestyle measures vs the conventional, didactic group education approach.

**METHOD:** Changes in lipid profiles, anthropometric measurements, nutritional scores, physical activity levels, and daily screen time after 6 months were compared both within groups and between the collaborative and the didactic approach.

**RESULTS:** We reviewed 75 children ages  $11.1 \pm 3.5$  years ( $n = 38$  didactic/ $n = 37$  collaborative). There were no group differences at baseline. Total cholesterol ( $5.79 \pm 1.65$  mmol/L vs  $5.52 \pm 1.39$  mmol/L,  $P = .02$ ) significantly decreased between the initial visit and the 6-month follow-up assessment with both approaches. Nutrition compliance scores significantly improved with both approaches (median: 5.3/10 vs 6.6/10,  $P = .004$ ), with a marginally greater improvement for the collaborative ( $+1.7/10$ ) vs the didactic approach ( $+1.0/10$ ,  $P = .12$ ). The collaborative approach was associated with greater reductions in weight percentile ( $-8.9\%$  vs  $+1.8\%$ ,  $P = .03$ ) and screen time ( $-7.0$  h/wk vs  $+1.3$  h/wk,  $P = .05$ ) and a greater increase in physical activity ( $+4.0$  h/wk vs  $+2.0$  h/wk,  $P = .05$ ).

**CONCLUSION:** Although not associated with differences in lipid profiles, the collaborative educational approach was associated with a greater lifestyle improvement than was the didactic approach over a 6-month period.

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Cardiovascular disease (CVD) is the leading cause of morbidity and mortality in industrialized countries.<sup>1,2</sup> Dyslipidemia is a well-recognized etiologic factor in the development of CVD, with evidence of the atherosclerotic process beginning at an early age.<sup>3,4</sup> CVD risk factors in children have been shown to track into adulthood, likely

because of high-risk behaviors acquired during childhood and adolescence.<sup>5</sup>

Therapeutic lifestyle changes are strongly advocated as the first-line management for pediatric dyslipidemia.<sup>3,6</sup> An expert panel report from the National Cholesterol Education Program on Blood Cholesterol Levels in Children and Adolescents<sup>5</sup> recommends lifestyle modification with diet therapy, at least for the first 3 months, as a primary approach before considering pharmacological management. Similar recommendations are echoed by the National Heart, Lung and Blood Institute, with its Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents Summary Report.<sup>7</sup> These guidelines are evidence-based and focus on the universal adoption of a healthier lifestyle, identifying children with cardiovascular risk factors, and treatment of these risk factors with a focus on lifestyle modification.<sup>8</sup>

Lifestyle modification requires a high degree of individual motivation and participation. The developmental attribute of ambivalence that frequently characterizes the children's patient population may, therefore, be a major stumbling block in the lifestyle-based management of dyslipidemia. Motivational interviewing (MI) is a patient-centered approach to help seek intrinsic motivation for changing behavior while addressing the ambivalence between present values or behaviors and future goals.<sup>9</sup> MI strategies are well established for improving adult outcomes in behavioral health-related disorders.<sup>9</sup> This method has been shown to improve self-efficacy and guide patients through their ambivalence regarding change.<sup>10</sup>

Overall, peers are recognized to have an important and perhaps greater influence on a young person's health behavior than parents or health personnel.<sup>11–13</sup> Peer education involves role modeling by sharing knowledge and experience.<sup>14</sup> This approach is an alternative to the traditional adult "authority" or "expert" figure model<sup>15</sup>; its success has been attributed to the belief that children may prefer to present health education themselves and receive it from their peers.<sup>16</sup>

The aim of this comparative consecutive intervention study was to evaluate the effectiveness of a newly introduced collaborative peer approach in facilitating lifestyle behavior change, in addition to the use of MI counseling, as a means to lowering cardiometabolic risk in children with dyslipidemia. This collaborative approach was compared with the conventional didactic clinician-led group educational approach.

## Methods

### Design and study subjects

The collaborative approach included a group of 37 newly diagnosed and untreated consecutive dyslipidemia patients who participated from May 2008 to December 2009 and were evaluated for change in cholesterol levels and behavior.

These patients were compared with 38 consecutive patients seen immediately before May 2008 and managed through a traditional didactic approach. Approval by the institutional Research Ethics Board was obtained before beginning data collection. The requirement for individual consent was waived by the Research Ethics Board committee for a retrospective study; all principles for maintaining patient and family confidentiality were followed.

### Didactic approach

In the initial approach, each patient who was registered at the Lipid Clinic at the Hospital for Sick Children received individualized information on healthy lifestyle behaviors at the time of their first clinic appointment, from the nurse practitioner, dietitian, and cardiologist. Within 3 months of the initial appointment, each family was expected to attend a mandatory group education class, which took place at a local grocery store. The education class "Education Quest Understanding in Prevention and Promotion" (EQUIPP) was implemented in May 2008. The SickKids' EQUIPP class was designed by a nurse practitioner and dietitian, and its aim was to improve adherence and sustainability in making lifestyle changes for the management of dyslipidemia through education and family involvement. This class was designed by integrating concepts from Pender's health promotion model<sup>17</sup> and Bandura's social cognitive theory of human functioning with respect to the dynamic interplay among personal, behavioral, and environmental influences.<sup>18</sup> The objective of this class was to touch on information about hyperlipidemia, review the importance of a heart healthy lifestyle, and to provide a grocery store tour with a focus on label reading to make it easier to make healthy food choices going forward. Unfortunately, attendance level for the EQUIPP class was low, possibly because it was not a high priority for patients. Second, because we were limited in the number of new patients we could see in one clinic, the wait list was growing as more and more people were being referred to us. It was apparent that because of these 2 issues, we needed to change our current practice in order to address compliance and patient care in a timely manner.

### Collaborative approach

To address the issues of our didactic approach, we wanted to make significant changes to ensure that our wait list times would be addressed as well as ensure that our patients' level of compliance to lifestyle/behavioral changes increased. Both Pender's model and Bandura's social cognitive theory emphasize the unique characteristics and motivations of individuals, as well as a process of self-exploration, as guiding foundations for initiating behavioral changes. Based on this framework, the EQUIPP class sought to use the addition of motivational interviewing and peer influence in its educational methods. Although motivational interviewing harnesses a patient's internal motivation for making behavior changes, peer-role modeling and the sharing of

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