

Best Practices for Child Nutrition Programs

**BEST PRACTICES FOR CHILD NUTRITION PROGRAMS:  
A REVIEW OF THE LITERATURE**

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For

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December 1, 2004

## ACKNOWLEDGMENTS

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## **Best Practices for Child Nutrition Programs: A review of the literature**

### **Introduction**

As part of the Ontario Child Nutrition Program Evaluation Project, the following literature review presents a summary of the findings from research studies and program evaluation literature related to best practices. The best practices for child nutrition programs (CNPs) evolved from a consultation process with child nutrition experts, program coordinators, educators, parents, and volunteers from across Canada facilitated by BREAKFAST FOR LEARNING in 2000. Stakeholders identified the following components as the best practices for CNPs.

*Access and Participation*

*Parental Involvement, Consent, Partnerships, and Collaboration*

*Inclusive and Efficient Program Management*

*Food Quality*

*Safety*

*Financial Accountability*

*Evaluation*

The identification of best practices for CNPs is the first step in establishing a benchmark against which program delivery among diverse program models can be measured. A challenge to this literature review has been that little research exists to validate the best practices for CNPs. To date the best practices have not been used to conduct a systematic evaluation of CNPs. Further, research to substantiate the best practices for CNPs has not been conducted to date. Therefore, the present review is limited by insufficient research evidence. However, various aspects of the best practices are mentioned in program documents, need assessments, and evaluations of CNPs. The present review contains references to literature relevant to each best practice framed within the broader context of evaluations of school- and community-based programs aimed at providing a nourishing meal to students, particularly within Canada. Hopefully this review will be the first among many other reviews to come that will present current knowledge concerning the best practices for CNPs, particularly as found among Canadian programs.

In addition to the summaries of best practice literature, the review briefly describes findings of studies in the areas of breakfast consumption and cognitive functioning and the development of school nourishment programs in Canada. These studies and those related to best practices are situated within the larger body of work examining school meal programs and their impact on students' health and educational outcomes. It should be noted that throughout this

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review, school meal programs, school-based nourishment or school nourishment programs, and CNPs are used interchangeably in reference to meals served to children in schools. Thus, this review serves two purposes: to contribute to the growing body of research into school nourishment programs in Canada; and to present evidence substantiating the best practices for CNPs.

The review is divided into two sections. Section one presents main findings from the literature related to the best practices for CNPs. Section one is subdivided into seven subsections; each pertains to a best practice. Section two contains a discussion of targeted versus universal breakfast programs. Findings of studies linking targeted and universal breakfast to scholastic achievement, classroom behaviour, and attendance are presented in section two. However, only studies since 2000 examining the effects of breakfast on scholastic achievement, affective state, and classroom behaviour for well-nourished and malnourished children and literature on school nourishment programs will be included in this section. Further, section two builds on the review of literature prior to 2000 pertaining to the effect of classroom behaviour, performance, and consumption on scholastic performance by Andrea Papamanadjaris (2000) and the review by Brian Hyndman (2000) on school nourishment programs in Canada. Finally, it is proposed that breakfast programs that contain elements of best practices as defined in this paper are effective health and educational interventions. By substantiating best practices, it is hoped they can serve as the standards for future systematic evaluations of CNPs across Canada.

## Search Method

A search of scientific studies was conducted using a combination of the following key search terms: child, children, student, school, nutrition, breakfast, feeding, meal, omission, skipping, consumption, cognitive, ability, memory, recall, short-term, long-term, problem-solving, academic, achievement, test, and performance. The search for the literature above was limited to studies after 1999. For a search of program evaluation literature, a combination of the following key search terms was used: child, children, student, school-based, community-based, school, breakfast, feeding, meal, nutrition, programs, responses, federal, provincial, policy, participation, access, barriers, rates, parent, parental, contribution, involvement, stigmatization, perception, teacher, principal, volunteers, teachers, roles, management, effective, reciprocity, leadership, ownership, education, health, promotion, age, serving, size, guidelines, finances, accountability, food, purchasing, strategies, sustainability, funding, best practices, socio-economic status, ethnicity, suburban, urban, employment, and demographics. The following databases were used to derive citations from the list of terms above: MEDLINE, CINAHL, PSYCHINFO, and ERIC. References from retrieved articles provided additional source for scientific studies and reports.

The author did not use criteria to assess the quality of the references in this review; therefore, the reader should not make assumptions regarding their soundness. Additional sources for relevant literature include references from retrieved articles, the BREAKFAST FOR LEARNING resource library, e-mailed updates from Nutrition News, Google search engine, and the websites listed below:

PubMed

<http://www.ncbi.nlm.nih.gov>

BREAKFAST FOR LEARNING

<http://www.breakfastforlearning.ca>

United States Department of Agriculture (USDA) Food and Nutrition Services (FNS)

<http://www.fns.usda.gov/fncs/>

Canadian Public Policy On-line

<http://ottawabureau.com/CanadianPublicPolicy/>

Food Research and Action Centre (FRAC)

<http://www.frac.org/>

National Institutes for Nutrition

<http://www.nin.ca>

## **SECTION 1. Best Practices: A Summary of Findings from the Literature**

Best practices in health promotion are “those sets of processes and activities that are consistent with health promotion values / goals / ethics, theories / beliefs, evidence, and understanding of the environment, and that are most likely to achieve health promotion goals in a given situation.” (Kahan & Goodstadt, 2001) A best practice is one that is consistently observed to be a component of successful programs. Empirical data from actual practice, case studies, evaluation, and other applied research inform best practices.

A scan of the literature reveals that for child nutrition programs, the key characteristics that lead to program success can be placed under the headings universality, parental involvement, effective management, nutritious food and nutrition education, safety, financial accountability, and evaluation. This section of the review is divided into seven subsections each pertaining to one of the best practices. Each subsection contains a summary of the literature related to the best practices used by BREAKKFAST FOR LEARNING as a result of the consultation in 2000.

### 1.1 Access and Participation

Access and participation is best defined by asking the question, “Who is served?” This question informs the approach to child nutrition program (CNP) delivery. For example, the methods used to inform children and parents about the program and program operating time determine to some extent which children and how many of them attend the program. Further, the availability of resources that facilitate inclusion and diversity also determines program demographics. The list below contains criteria that have been used to define the Access and Participation Best Practice.

Best Practice	Criteria
Access and participation	<ul style="list-style-type: none"> <li>▪ Universally accessible – program allowing any child to participate</li> <li>▪ Program operates three to five days per week during the school year</li> <li>▪ A minimum of 45 children or 20% of the school population participating in the program</li> <li>▪ Language services available to allow ethnic and cultural diversity</li> </ul>

#### Universally accessible – program allowing any child to participate

A program where any child in the community may participate is said to be universally accessible. School meal programs or nourishment programs that target children based on specific criteria are considered targeted programs (Papamanadjaris, 2000). Programs aimed at providing a nourishing meal to children from low-income households can be said to be targeted programs. Reports of findings from program evaluations conducted in the United States show that school breakfast programs targeting students from low-income households experience lower participation rates than programs that are universal (McLaughlin et al, 2002; Peterson et al, 2003). Therefore, universal breakfast programs were proposed as a means of reaching greater numbers of children who need the program and increasing the general participation levels of CNPs.

Universal programs do not specify participation criteria but operate to make provisions that allow any child to participate. Providing an open and accessible program is viewed as a method of reaching those children who are or may be at risk of malnutrition (Government of [New Brunswick], 2000a; Minnesota Department of Children Families and Learning [MDCFL], 1998). Evaluations of universally accessible programs have shown that they are effective in addressing the perceptions of social stigma that may be associated with breakfast programs (Hess

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et al, 2002; McLaughlin et al, 2002; MDCFL, 1998; New Brunswick, 2000a). Hence, targeted and universal program delivery models affect participation levels in CNPs. However, other factors contribute to the level of participation within a CNP.

Program evaluations of school nutrition programs have identified a number of factors that influence rates of student participation in school-based CNPs. Bus schedules, student tastes, tardiness, long commutes, and students' perceptions that the breakfast program is for poor children have been identified as barriers to participation (MDCFL, 1998; Reddan et al, 2002). Serving breakfast in class makes a school breakfast / snack program accessible to all children (Abell Foundation, 1998; Hess et al, 2002; McLaughlin et al, 2002; MDCFL, 1998). In an evaluation comparing schools in Minnesota with the School Breakfast Program to its modified counterpart, the Universal School Breakfast Program, researchers found that providing breakfast or morning snacks after the start of the school day improved participation (MDCFL, 1998). Although the majority of breakfast programs in this evaluation served breakfast before the start of classes, the highest participation rates were found among programs that served breakfast in class after the start of the school day (Peterson et al, 2003). Further, serving breakfast in class had a positive impact on participation in the Maryland Breakfast Program (McLaughlin et al, 2002). Eliminating the meal fee or reducing the amount students pay for food also increased participation (Hess et al, 2002; MDCFL, 1998).

### **Program operates three to five days per week during the school year**

If an objective of a CNP is to improve children's nutritional intake, then operating less than five days of the week undermines the efforts to meet this objective. Further, if the school meal is provided to enhance learning and children are in school five days per week, then the school meal should be available every school day. Among the CNP documents reviewed, the majority of school meal programs operate three to five days per week (New Brunswick, 2000a; Hess et al, 2002; Kids Eat Smart Foundation Newfoundland & Labrador [KESFNL], 2002; Le Club des Petits Déjeuner du Québec [Club des Petits Déjeuner], 2002; McLaughlin et al, 2002; MDCFL, 1998). Dietary assessments indicate that the availability of a school breakfast program five days per week contributes positively to students' diet (Bhattacharya et al, 2004; Fox et al, 2001).

### **A minimum of 45 children or 20% of the school population participating in the program**

Evaluations of the federal programs in the United States and smaller regional programs within Canada have highlighted that breakfast program participation rates range from 9% to more than 90% (Coalition for School Nutrition, 2001; Glacken, 2002; Hess et al, 2002; Human Resources Development Canada, 2002; MDCFL, 1998; Government of New Brunswick, 2000a; Street & Kenway, 1999; Thoburn et al, 2002). For example, in Glacken's (2002) survey of schools in the Yukon and Northwest Territories / Nunavut, school food program participation ranged from three to 360 students. Forty-six out of a total of 52 schools (88.5%) said that the average number of students participating in a school food program by territory was 69.2 in Inuvik, 121.6 in Southern Northwest Territories, and 144.7 in Yellowknife.

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Increased student need for breakfast during colder winter months improved attendance at breakfast programs in New Brunswick's Healthy Minds breakfast program pilot. It seemed that breakfast was viewed as an option to staying outdoors during colder winter months (New Brunswick, 2000a). Further, added financial stress before and after Christmas and due to higher heating costs during colder weather influenced breakfast program attendance. Increased awareness of the program within the student body influenced participation rates in the program (McLaughlin et al, 2002; New Brunswick, 2000a; Reddan et al, 2002).

### **Language services available to allow ethnic and cultural diversity**

To be inclusive of cultural diversity, language services, such as translated program information and interpreters, should be a part of the nutrition programs. Among the program literature, only programs located in ethnically and culturally diverse locations mentioned cultural diversity and the use of language services to accommodate this type of diversity were seldom mentioned (Toronto District School Board, 2003). Strategies mentioned in the program literature for facilitating ethnic and cultural diversity are including foods from a variety of cultures and special food days featuring foods from various cultures (BREAKFAST FOR LEARNING, n.d.). In the United Kingdom, a survey of breakfast club stakeholders indicated that religious and cultural diversity were considered important to program planning and delivery, particularly with regard to foods served, supervision of children, and program activities (Thoburn et al, 2002).

### **Access and participation key points**

- Participation rates in breakfast and morning snack programs in Canada and the United States are between 9% and 90%.
- Programs that target children who are poor have lower participation rates than universally accessible programs.
- A number of evaluations of breakfast programs show that universally accessible programs avoid stigmatizing students who are poor and ensure greater rates of participation than targeted programs.
- Providing breakfast or morning snacks after the start of the school day and served in class improves participation rates. To increase participation, program organizers should offer the program at a time when most students are present and recognize barriers to participation, such as transportation, cost, time, location, and language.
- Among the documented programs that were reviewed, the majority of programs operated between three and five days per week.

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- Among Canadian programs, language services were most often mentioned in the literature from programs located in ethnically and culturally diverse urban centres.

## 1.2 Parental Involvement, Consent, Partnerships, and Collaboration

Parental involvement, consent, partnerships, and collaboration are elements of effective program management that contribute to successful programs. This includes the involvement of parents as volunteers and, their participation on coordinating program committees. Having a coordinating program committee made up of parents, students, school staff, community members, volunteers, and local business representatives, such as grocers, is the first step in addressing sustainability. This last point will be discussed under best practice pertaining to financial accountability. Taking a collaborative partnership approach contributes to a sense of community ownership for programs. The criteria for this practice are listed below.

Best Practice	Criteria
Parental involvement, consent, partnerships, and collaboration	<ul style="list-style-type: none"> <li data-bbox="565 785 1312 856">▪ Parental involvement in the day-to-day program planning and delivery</li> <li data-bbox="565 884 1312 1054">▪ Coordinating program committee (Reflects community collaboration and diverse partnerships made up of parents, community members, students, and volunteers. In addition, the committee must also include the participation of the principal, vice-principal, or a teacher.)</li> </ul>

### Parental involvement in the day-to-day program planning and delivery

Parental involvement was a feature of child nutrition programs (CNPs) in Canada, the United Kingdom, and the United States (Le Club des Petits Déjeuner du Québec [Club des Petits Déjeuner] 2002; Glacken, 2002; Harrop & Palmer, 2002; Kids Eat Smart Foundation Newfoundland & Labrador [KESFNL], 2002; Peterson et al, 2003; Manitoba Council on Child Nutrition [MCCN], 2001). In a survey of CNPs across Europe, respondents for schools in 24 European countries indicated that parents and students participated in planning meals with kitchen staff at schools and that this involvement created ownership of the choices made (De Boer, 2003). Parental involvement demonstrates a supportive environment for children (Edward & Evers, 2001). Further, researchers and program evaluators found that parents who became involved with their children’s breakfast program overcame feelings of stigmatization (Edward & Evers, 2001; Harrop & Palmer, 2002). However, parents need to be informed if they are to be involved in programs. Peterson and associates (2003) in their evaluation of Minnesota’s Fast Break to Learning Program, a universal-free school breakfast program, suggested that parental involvement may be influenced by the means used to inform them about the program. Principals and teachers indicated the various ways in which parents were informed of the program, such as through school newsletters, school district communications, and parent-teacher meetings (Peterson et al, 2003).

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Parents who are involved with CNPs exemplify positive regard for nutrition and volunteerism. Parental involvement is important in CNPs, particularly since they can act as role models of attitudes and behaviour toward food and can reinforce healthy eating behaviours at home (American Dietetic Association, 1995). Not only are parents' attitudes toward healthy eating important but also their attitude toward having their child participate in a school meal. An example of the impact of parents' attitude toward a CNP and its impact on their children's participation is drawn from a study of the National School Lunch Program (NSLP) in the U.S. The study of parental beliefs toward the NSLP found that parents' intention to encourage their children to participate was correlated with their children's participation in the program (Lambert et al, 2002). In addition, the Lambert and associates study found that when parents perceived the food served as healthy, they supported the programs. Other researchers have found that parents whose children participate in breakfast programs generally have positive attitudes toward these programs (Peterson et al, 2003). Beyond supporting programs by allowing their child to participate, parents contribute by volunteering.

Parents are also volunteers. Several reports indicated that parents were involved as program volunteers but in limited numbers (Brown, 1993; Club des Petits Déjeuner, 2002; McIntyre & Dayle, 1992; McIntyre et al, 2001). Parents were involved in serving food and program delivery in Canadian programs (Glacken 2002; Grennier, 2002; McIntyre & Dayle, 1992). However, parents' work schedules and attitudes can act as barriers to their participation as volunteers in a program. Although parents' involvement with CNPs seems to contribute to program success, the roles that parents see for themselves within programs may also present barriers to their participation. Parents in Pennsylvania who participated in focus groups regarding their attitudes toward the School Breakfast Program indicated that they did not perceive a major role for themselves in promoting school breakfast programs, however, school administrators indicated that parental support is critical (Penn State, 2003). Further, there may be a link between parents' self-esteem and their participation. Parental participation can contribute to parents' self-esteem (Edward & Evers, 2001) and can be seen as another means of demonstrating concern for their child's activities. Thus, parental involvement via volunteerism is linked to their attitude toward programs and the role that they see for themselves.

### **Coordinating program committee**

Local community-based partnerships characterize many of the CNPs in Canada (Henry et al, 2003; Hyndman, 2000; KESNFL, 2002). As part of this approach to operating CNPs, coordinating committees guided daily program operations, such as menu selection, budgeting, purchasing, and fund-raising. Some coordinating committees were also the program delivery staff. Typically, volunteers, community members, students, parents, principals, and others participated on coordinating program committees or community boards where they exist (BFL, 2003b; Club des Petits Déjeuner, 2002; McIntyre & Dayle, 1992). Having a coordinating committee reflecting diverse partnerships contributes to program sustainability. A coordinating committee provides space for parents, students, school staff, and community members to provide input into programs, ensures that the program is responsive, builds accountability for outcomes and builds ownership for the program (Monahan, 2004; Thoburn et al, 2002).

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In her scan of school-based nourishment programs across Canada, Monahan (2004) reported that a community capacity building approach, such as local committees, were key to the success of school-based nourishment programs. Study participants indicated that the community involvement was necessary to mount and sustain programs (Monahan, 2004). Community-based initiatives, such as the Better Beginnings Better Futures (BBBF), use a collaborative community-based model that lends to their success (Peters et al, 2000). BBBF, a multisite education and social prevention initiative in communities across Ontario, include CNPs as a component. Parental involvement and collaborative partnerships are central to the success of the BBBF-affiliated CNPs.

### **Parental involvement key points**

- Parental involvement was found in CNPs in Canada, the United Kingdom and the U.S.
- Researchers found that parental involvement demonstrates a supportive environment for children.
- Parental involvement helped some parents overcome feelings of stigma.
- Outreach strategies, such as the ways in which parents are informed of the program, influence their participation rates.
- In most Canadian programs, parents are involved with program committees as volunteers.
- Coordinating program committees are examples of a collaborative partnership to program delivery and planning that contributes to a successful program.

### 1.3 Inclusive and Efficient Program Management

Successful programs have a coordinator responsible for attracting, organizing, and training volunteers, managing budgets, and acting as a community liaison. In order to retain highly skilled and knowledgeable program coordinators, compensation should be provided. Both the program coordinator and volunteers should be trained in safe food handling practices to prevent food poisoning. As well, staff and volunteers should receive training in first aid, menu planning, budgeting, bookkeeping, effective purchasing, and on including multicultural content in programs. In order to encourage continued volunteer service and community support for the program, appreciation should be shown to volunteers and supporters. Successful programs are those that build in a system to recognize volunteers and supporters.

Best Practice	Criteria
Inclusive and efficient program management	<ul style="list-style-type: none"> <li data-bbox="609 825 1338 919">▪ A qualified coordinator who is compensated accordingly (Plays the central role of organizing volunteers, managing budgets, and acting as a consistent community liaison.)</li> <li data-bbox="609 957 1317 1020">▪ Resources in place to attract, train, and support staff and volunteers</li> <li data-bbox="609 1058 1263 1121">▪ A system in place to recognize volunteers and other supporters in the community</li> </ul>

#### **A qualified coordinator who is compensated accordingly**

This best practice criteria states that the coordinator is to play a central role in organizing volunteers, managing budgets and acting as a consistent community liaison (BREAKFAST FOR LEARNING [BFL], n.d.). In Canada, child nutrition programs (CNPs) are coordinated by compensated and volunteer program coordinators (Glacken, 2002; Manitoba Council on Child Nutrition [MCCN], 2001; Government of New Brunswick [New Brunswick], 2000a). In Manitoba, approximately one-third of breakfast programs have a coordinator who is paid to organize and deliver programs (MCCN, 2001). However, the number of paid coordinators is considerably lower in other jurisdictions. For example, in a region of northern Ontario only 14.6% of the CNPs were run with the assistance of a hired cook. However, larger government-funded programs, such as those in the United States, hire food service workers to organize and deliver programs. Food service workers are trained in food safety, first aid, menu planning, budgeting, and effective purchasing (Hess, 2002; McLaughlin et al, 2002; MDCFL, 1998; Oakley et al, 1995).

### **Resources in place to attract, train, and support staff and volunteers**

Among CNPs in Canada, school staff, parents, students, and community members are involved as volunteers. These volunteers perform one or all of the following tasks: plan program menus, purchase food, prepare and deliver meals, and clean up before and after meals in a number of CNPs in Canada (Le Club des Petits Déjeuner du Québec [Club des Petits Déjeuner], 2002; Grennier, 2002; Kids East Smart Foundation Newfoundland & Labrador [KESFNL], 2002, MCCN, 2001; New Brunswick, 2000a). Dietitians provide assistance and training in menu planning to programs in Canada and in the U.S. (Club des Petits Déjeuner, 2002; KESFNL, 2002; McLaughlin et al, 2002). Ongoing training with updated nutrition information and menu planning so that menus encourage healthy eating among program participants, particularly with regard to the consumption of fats, is recommended (Oakley et al, 1995; Story et al, 2002).

### **A system in place to recognize volunteers and other supporters in the community**

CNPs that depend upon volunteers and supporters also recognize the contributions that these individuals and organizations make (BFL, 2002; KESFNL, 2002). BREAKFAST FOR LEARNING (BFL) annually recognizes the contribution of CNP volunteers during National Volunteer Week. In appreciation for more than 30,000 CNP volunteers throughout Canada in 2003, BFL encouraged program coordinators to recognize volunteers by awarding bronze, silver and gold pins supplied by BFL to volunteers who have served for two, five, and 10 or more years respectively (BFL, 2003a).

The Toronto Partners for Student Nutrition hosts an annual volunteer appreciation event for individuals who give freely of their time, talent, and energy to more than 300 student nutrition programs in the City of Toronto. Kids Eat Smart Foundation Newfoundland & Labrador established the Apple Award, an award program that publicly acknowledges program donors and volunteers through the media and in their newsletter (KESFNL, 2003). In addition, the Apple Award program recognizes organizations whose employees volunteer for breakfast programs in Newfoundland and Labrador. Similarly, corporations and municipalities acknowledge their employees for volunteering for school meals programs (City of Toronto, 2004) through newsletters and the Internet.

School board newsletters attribute program success to the role of volunteers (Halifax Regional School Board, 2004; Ottawa-Carleton District School Board, 2004). “Student thank-you’s, certificates, and acknowledgement of volunteers in school program newsletters and public ceremonies” are some of the suggestions offered in the Toronto District School Board’s A Guide to Setting Up and Running a School Nutrition Program (Toronto District School Board, n.d.). Some CNPs build volunteer recognition into their program budget (New Brunswick, 2000a). Other examples of volunteer appreciation include stipends or incentives, such as bus fare and reimbursement for mileage, and events, such as dinners, day trips, and / or other gifts (Deer Lake, 2004).

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### **Inclusive and efficient program management key points**

- The majority of CNPs in Canada do not have paid program coordinators but rather rely on volunteer program coordinators.
- In the U.S., government funding provides paid program coordinator positions.
- BFL and other funders provide funding that enables programs to remunerate program coordinators.
- Dietitians assist program coordinators with training in menu planning, food safety, and healthy eating.
- CNPs and their sponsors recognize the contribution of volunteers through acknowledgment in newsletters, websites, by giving certificate gifts, and hosting special events honouring volunteers.
- There is no literature documenting that paid coordinators increase program quality.

### 1.4 Food Quality

Serving foods that significantly contribute to a nutritious diet is central to providing breakfast to students. However, to do this, programs must have criteria in place to guide the type and amounts of foods served to students to meet their needs. What is planned and served in child nutrition programs (CNPs) is dependent upon the knowledge and skills of the program coordinator and program committee and adequate financial resources to purchase foods. Although providing a nutritious meal is the focus of school breakfast, educating students on healthy eating practices is important as well. A program teaching students about the benefits of eating a nutritious meal, the food groups and amounts that should be consumed daily, choosing a variety of foods, and balancing nutrition with physical activity lays the building blocks for healthy lifestyle practices into adulthood. Thus, the menu is a menu for learning – one that provides the nutrients that facilitate students’ learning and that teach students healthy eating through modelling healthy eating for them.

<b>Best Practice</b>	<b>Criteria</b>
Food quality	<ul style="list-style-type: none"> <li data-bbox="435 890 1442 995">▪ Nutritious food in sufficient quantities available to meet the needs of the children (A breakfast must provide foods from at least three different food groups of Canada’s Food Guide to Healthy Eating).</li> <li data-bbox="435 1024 1442 1163">▪ Quality assurance (Nutrition and food safety is provided by registered dietitians and public health inspectors with training in safe food handling practices to prevent food-borne illness and menu planning to ensure adequate calories and nutrients in menus.)</li> <li data-bbox="435 1192 1442 1268">▪ Nutrition education support within program sites promoting lifelong healthy eating habits for children</li> <li data-bbox="435 1297 1442 1325">▪ Multicultural content to reflect the cultural diversity of the community</li> </ul>

#### **Nutritious food in sufficient quantities available to meet the needs of the children**

Programs should ensure that sufficient quantities, variety, and nutrients are available within program menus that meet the nutritional needs of children. The best practice standard for breakfast is that it should consist of a variety of foods from at least three different food groups. Snacks should consist of two out of the four food groups. To encourage CNP coordinators and program committees to plan nutritious menus, BREAKFAST FOR LEARNING (BFL) recommends that menus are also based on Canada’s Food Guide to Healthy Eating in planning breakfast program menus (BREAKFAST FOR LEARNING [BFL], n.d). BFL reviews menus upon submission of the grant proposal and returns menus that are not consistent with requirements.

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Conversely, the United States federal nutrition standards for the School Breakfast Program require that breakfast must provide approximately one-fourth of the RDA for important nutrients, such as protein, calcium, iron, vitamin A, vitamin C, and calories (United States Department of Agriculture [USDA], 2000). The United States Department of Agriculture's (USDA) Food and Nutrition Service (FNS) sets the standard for nutrition in school meal programs, such as the National School Lunch and the School Breakfast Program. Further, the USDA recommends that all school meals should meet the USDA's Dietary Guidelines for Americans. The guidelines include the following: eating a variety of foods; limiting total fat to 30% of calories and saturated fat to less than 10% of calories; a diet low in cholesterol; plenty of vegetables, fruits, and grains; using salt and sodium in moderation; and eating a diet rich in fibre (USDA, 2000). In addition, the School Breakfast Program's nutrition guidelines include standards for food variety, portion sizes, and nutrients.

Fox, Crepinsek, Connor, and Battaglia (2001) in their assessment of school meal menus examined the daily average for food groups served in the School Breakfast Program in the U.S. These researchers found that across all breakfasts, 92% of elementary schools, 86% of secondary schools, and 90% of all schools included milk in their menus. Students had the opportunity to select a specific type of milk. Across all breakfasts, 89% of elementary schools, 86% of secondary schools, and 88% of all schools included at least one fruit, juice, or vegetable in their menus. Across all breakfasts, 97% of elementary schools, 99% of secondary schools, and 98% of all schools included two servings of breads and bread alternatives, two servings of meat and meat alternatives, or one of each in their menus (Fox et al, 2001). More than two-thirds of all daily breakfast menus included two or more bread or grain products (different types of cold cereal were counted as one choice). Among all daily breakfast menus, 72% included no meat or meat alternative items (other than those that might have been included in a combination entrée).

Generally, breakfast should comprise up to 25% of the daily energy intake (Evers, 1995). Research shows that the average breakfast menu in school meal programs supply 24% of total food energy (Story et al, 2002). In terms of calories, the School Breakfast Program in the U.S. requires that their breakfast meet a minimum standard for total of 554 kcal (Fox et al, 2001). However, many School Breakfast Program menus may fall below the recommended minimum 554 kcal standard for breakfast (Fox et al, 2001). For example, a breakfast consisting of apple juice, cold cereal, and milk only amounts to 287 kcal. Among children who consumed a mid-morning snack, the highest proportion (68.8%) consumed a breakfast meal that had less than 200 kcal, while 31.2% that ate less than 200 kcal at breakfast did not consume a mid-morning snack. Among students who did not consume a mid-morning snack, 42.3% ate breakfast with more than 400 kcal (Evers, 1995).

### **Quality assurance**

To ensure that menus meet dietary guidelines, programs are encouraged to work with local public health dietitians in developing CNP menus (BFL, n.d). Dieticians can assist programs with maximizing the nutrient value in meals in a cost-effective way. In communities across Canada, public health dietitians provide nutrition education, menu planning support and food safety tips to CNPs (Coalition for School Nutrition, 2001; Manitoba Council on Child Nutrition, 2001; McLaughlin et al, 2002). In the U.S., all schools that have school meal programs must have a yearly food safety inspection by a state or local government agency responsible for food safety (FNS, 2004). Further, the regulations concerning the School Breakfast Program also suggest additional training for staff in schools where menus do not meet nutrient requirements.

### **Nutrition education support within program sites promoting lifelong healthy eating habits for children**

Nutrition education is a component of various school programs in schools with meal programs (Glacken, 2002). Promoting healthy eating is a component of school curriculum taught in physical education and health, home economics, science and other subjects. Nutrition education activities include articles in newsletters, guest presentations by nurses and dietitians, life-skills classes, cooking classes, particularly those introducing vegetarian and ethnic food, health days and health fairs (MCCN, 2001). Healthy food choices are a component of school nutrition policies and guidelines (Grennier, 2002). Students' knowledge of nutrition improved after the introduction of the nutrition program.

### **Multicultural content to reflect the cultural diversity of the community**

BFL encourages programs to introduce foods from diverse cultures, to adopt themes, and to recognize and celebrate significant cultural holidays. Many programs offer food alternatives reflecting the dietary needs of children from various cultural and religious backgrounds. For example, programs in Toronto offer Halal products for Muslim students (Toronto District School Board [TDSB], n.d.). Introducing children to foods from a variety of cultures encourages them to try different foods and to eat a variety of foods from the four food groups (BFL, n.d.; Health Canada, 2001). Inviting parents to prepare cultural foods on celebration days is one way to increase their participation and to recognize cultural diversity (TDSB, n.d.).

### **Food quality key points**

- In Canada, BFL encourages child nutrition to base menus on Canada's Food Guide to Healthy Eating.
- Breakfast should consist of a variety of foods from at least three out of four food groups, however, since no systematic evaluation of CNPs across Canada has been conducted to date, the number of breakfast programs meeting this criterion is not known at this time.
- The School Breakfast Program offers a variety of foods from the four food groups; however, milk products, and vegetables and fruit categories offered less selection in a majority of schools than was offered from the grain products category. Meat and meat alternatives were not offered in the majority of School Breakfast Program sites across elementary and secondary schools except as part of a combination food, such as breakfast sandwich (Fox et al, 2001).
- In the U.S., the school breakfast must meet a minimum criterion of 554 kcal. However, evaluation findings indicate that the mean nutrient and calorie values for school breakfast may fall below 554 kcal.
- The average breakfast provided 24% of the daily recommended dietary intake energy.
- Studies indicate that children to whom a school breakfast program is available consume a better overall diet as measured by component sub-scores on the Healthy Eating Index.

### 1.5 Safety

A safe environment is necessary to reduce the risk of food-borne illness, to encourage healthy eating, and to ensure that children are protected from harm. For example, food safety is concerned with the presence of adequate numbers of trained adults to supervise children, ensuring food is free of harmful food-borne bacteria through safe food handling, and a clean safe environment for food preparation and food consumption.

Best Practice	Criteria
Safety	<ul style="list-style-type: none"> <li data-bbox="431 604 1425 667">▪ A safe, hygienic, welcoming, and well-supervised environment with a minimum of one adult to every 15 children</li> <li data-bbox="431 705 1338 737">▪ First aid training provided to the coordinator to assist in handling injuries</li> <li data-bbox="431 774 1312 837">▪ Appropriate facilities provided at no cost to the program by a school or community centre</li> <li data-bbox="431 875 1435 938">▪ A letter of agreement signed by the principal of the school outlining all aspects of the program and the responsibilities of each party</li> </ul>

#### **A safe, hygienic, welcoming, and well-supervised environment with a minimum of one adult to every 15 children**

To have a well-supervised child nutrition program (CNP), there should be one adult to every 15 children. In some Canadian programs there is one adult to every 15 to 20 children (Le Club des Petits Déjeuner du Québec [Club des Petits Déjeuner], 2002). However, many snack programs held in classrooms and cafeterias may have many more children for every adult present. The concern with adequate numbers of adults to supervise children during breakfast was voiced by teachers and food service workers in an evaluation of a universal breakfast program in the United States (Peterson et al, 2001). Further, finding enough adults to supervise children, particularly during in-class breakfast served after the start of the school day, is a challenge (McLaughlin et al, 2002). There is no other evidence suggesting that this is the ideal ratio for a CNP. Further, in many school boards, the average classroom size for elementary school children exceeds 20 students (Government of Ontario Ministry of Education, 2004). Thus, it may be difficult for programs that are served in classrooms to achieve this best practice criterion.

#### **First aid training provided to the coordinator to assist in handling injuries**

The best practice guidelines suggest first aid training should be provided to the program coordinator to assist in handling injuries (BREAKFAST FOR LEARNING, n.d.). However, this has yet to be documented as a practice within Canadian programs, although it may in fact be a practice of many programs. BREAKFAST FOR LEARNING recommends first aid training for the nourishment program coordinators. This training, however, is not mandatory. It should be noted that in most schools, a number of staff members are trained in first aid.

**Appropriate facilities provided at no cost to the program by a school or community centre, and a letter of agreement signed by the principal of the school outlining all aspects of the program and the responsibilities of each party**

Breakfast was most often served in the classroom followed by the gym, hallway, and lunchroom / multipurpose rooms (Grennier, 2002; Manitoba Council on Child Nutrition, 2001; McLaughlin et al, 2002; Government of New Brunswick, 2000a; Peterson et al, 2001). Other program sites included the library and cafeteria. A letter of agreement was not mentioned in the breakfast program reports.

**Safety key points**

- Programs are challenged with finding enough adults to supervise the number of children participating in meal programs.
- First aid training is not considered mandatory for program coordinators, although it is recommended. Most schools have a number of staff trained in first aid who can assist in case of emergency.
- School eating facilities were limited and program participants eat in hallways, gymnasiums, and classrooms.
- A letter of agreement was not mentioned in any of the reports, but it is assumed that partnerships exist to provide space for programs.

### 1.6 Financial Accountability

Financial accountability is concerned with how finances are generated to support child nutrition programs (CNPs), sources of funding, how finances are effectively managed, and plans for the long-term sustainability of programs. In the United States, long-term sustainability of CNPs is addressed through federal and state funding of breakfast programs. In Canada and the United Kingdom, program sustainability has been addressed through the creation of partnerships between schools, local businesses, and community organizations.

Best Practice	Criteria
Financial accountability	<ul style="list-style-type: none"> <li data-bbox="548 674 1442 743">▪ Parental financial support, including contributing toward the cost of the program</li> <li data-bbox="548 779 1442 877">▪ Effective accounting system in place and training provided:                             <ul style="list-style-type: none"> <li data-bbox="591 814 1442 846">- budgeting to efficiently utilize funds; and</li> <li data-bbox="591 846 1442 877">- bookkeeping to ensure fiscal accountability management.</li> </ul> </li> <li data-bbox="548 913 1442 972">▪ Effective purchasing to ensure dollars are spent most effectively</li> </ul>

#### Parental financial support, including contributing toward the cost of the program

Across Canada and in the U.S., parents contribute toward CNPs in a variety of ways (Manitoba Council on Child Nutrition [MCCN], 2001; Hess et al, 2002; Minnesota Department of Children Families and Learning [MDCFL], 1998). For example, survey participants in Manitoba reported that parents contributed toward programs by paying fees for meals, donating food, and / or equipment (MCCN, 2001). In particular, however, parental financial support is considered integral to sustaining programs (BREAKFAST FOR LEARNING, n.d.). In most programs in Canada, parents are expected to and do contribute financially to programs (Hyndman, 2000). Further, funding models for a number of CNPs in Canada include parents' financial contributions (City of Toronto, 2004; Monahan, 2004). However, there is great variation in parental contributions toward breakfast and snack program budgets. For instance, the parental portion of program budgets for CNPs in Manitoba ranged between 4% and 22% respectively (MCCN, 2001). In the U.S., the amount that parents contribute toward school meal programs is based upon family income status (Hess, 2002; MDCFL, 1998).

### **Effective accounting system in place and training provided**

**Budgeting.** The U.S. government provides \$1.5 billion US in funding to the School Breakfast Program (FRAC, 2004). Federal contribution during 2001-02 school year was \$1.15 US for each free meal, and \$0.85 US for each reduced-price meal, and \$0.21 US for each paid meal (Hess et al, 2002). States also provide millions of dollars in funding to breakfast programs so that children can receive a free or reduced-price breakfast (Hess et al, 2002; FRAC, 2004; McLaughlin et al, 2002). For example, the Minnesota Legislature gave \$5 million to US the Fast Break for Learning Program, a universal-free school breakfast program serving 40,000 school children in 326 schools across Minnesota (Peterson et al, 2001). During the 1990s, programs in Atlantic Canada had estimated budgets of between \$2,000 and \$8,000 (McIntyre et al, 1999). In 2003, 350 programs (220 sites) with approximately 70,000 students that are a part of the City of Toronto's Student Nutrition Program received funding from a total program budget of \$4,337,378 (City of Toronto, 2004).

**Bookkeeping.** Breakfast costs per meal served ranged from \$0.74 to \$0.90 (Government of New Brunswick [New Brunswick], 2000a; Human Resources Development Canada [HRDC], 2002; McLaughlin et al, 2002). In the Saskatchewan Community School Program, the current funding level is approximately \$0.36 per child per day, but the cost for a fully funded school nutrition program is \$0.52 per child per day (HRDC, 2002). Between 1998 and 2003, the City of Toronto Student Nutrition Program, after analysis of actual food cost, changed their approved food costs per child per day for elementary school student nutrition programs as follows:

- Breakfast (three food groups) from \$0.85 to \$1.17
- Snack (two food groups) remained at \$0.65
- Snack (three food groups) from \$0.65 to \$1.07
- Lunch (three food groups) from \$2.00 to \$1.78

Thirty percent of these costs could be used to cover program supplies, resources, and coordinators. Increases encouraged programs to serve more milk and other calcium-rich foods (City of Toronto, 2004).

### **Effective purchasing to ensure dollars are spent most effectively**

In Canada, Le Club des Petits Déjeuner du Québec (2002), to save on costs, used centralized purchasing. Bulk purchases made through local grocers, particularly those who deliver, help to keep costs low (New Brunswick, 2000a).

Although sustainability is not referred to among the best practice criteria, it can be considered a major component of financial management. Cost sharing partnerships between provincial and municipal governments, school boards, and parental contributions provide financial support for programs, thereby contributing to program sustainability. According to the funding model for the Toronto Community Partners' Student Nutrition Program, the Province of

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Ontario and the City of Toronto should each contribute 24% toward the annual budget for the Toronto Student Nutrition Programs, while 52% should come from parents and fund-raising (City of Toronto, 2004). In Saskatchewan, a grant from the Saskatchewan Department of Education (Saskatchewan Education) provides funding to some nutrition programs in communities across the province. Various programs sell food items and gifts to raise funds for programs (Grennier, 2002; MCCN, 2001).

In a survey of 24 European countries, 10 countries including Spain, Finland, and Poland reported that daily meals are subsidized for all children through national, local or school level subsidies (De Boer, 2003). In the U.S., the School Breakfast Program is sustained through federal and state funding (Hess et al, 2002) and U.S. Department of Agriculture commodities (Briefel et al, 1999). In Canada, provincial governments in British Columbia, Manitoba, Ontario, Quebec, New Brunswick, and Newfoundland and Labrador have dedicated funding to CNPs in their respective provinces (City of Toronto, 2004; Kids Eat Smart Newfoundland and Labrador, 2002; Le Club des Petits Déjeuner du Québec, 2002; MCCN, 2001; New Brunswick, 2000b). Some municipal governments and district school boards across Canada provide funding to CNPs (Gillis, 2002; Monahan, 2004). In particular, school boards' contributions toward programs through in-kind contributions of space and personnel count as major donations toward program sustainability. Further, program partners' confidence in a program's sustainability may be linked to whether or not school boards play a major role within the program. For example, program coordinators located in Nova Scotia whose programs were run by the school board felt more confident that their programs could be sustained in years to come (McIntyre & Dayle, 1992). Thus, having adequate and consistent support by governments, partnerships, school boards, and parents is central to sustaining CNPs.

### **Financial accountability key points**

- For the 2001-02 school year the U.S. federal government provided \$1.5 billion US toward its School Breakfast Program.
- The federal Canadian government at present does not provide funding toward school meals.
- Across Canada, provincial governments contribute varying levels of funding toward CNPs.
- Although parents contribute toward the cost of programs in the U.S., federal and state funding of the School Breakfast Program provides for subsidies to low-income families based on income criteria. Proof of income is required.
- There is no systematic program of subsidies to offset parental contribution among programs in Canada as no criteria exists to determine eligibility for free or subsidized meals (Henry et al, 2003).

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- Across the literature, the proportion of program budget generated from parental contribution is dependent upon the amount of income generated from other sources.

In the U.S., the cost of the average breakfast served in the School Breakfast Program ranged between \$0.74 and \$0.90 US.

### 1.7 Evaluation

The standard for the best practice of evaluation is ongoing and yearly evaluation of the program. Measuring program success, documenting milestones, assessing program processes and outcomes are ways in which the program committee can evaluate the state of the child nutrition program (CNP). Evaluation should be built into the planning and implementation of the program.

<b>Best Practices</b>	<b>Criteria</b>
Evaluation	▪ Ongoing and yearly evaluation of the program

In Canada, systematic evaluations have been difficult to conduct because of the diversity of programs and the fact that no set criteria existed prior to 2000 (Hyndman, 2000). The majority of systematic program evaluations of CNPs have been conducted in the United States. For example, systematic evaluations have been conducted on the School Breakfast Program, the Universal School Breakfast Program, state-run programs such as the Fast Break for Learning in Minnesota, and programs in Massachusetts, Maryland, California, and internationally, the School Breakfast Clubs in the United Kingdom, and breakfast programs in Peru and Jamaica.

Large school breakfast programs, such as those in the U.S. and the United Kingdom, have assessed program participation, safety, cost of meals per student, program finances, food quality, attitudes toward programs, and level of participation in programs (Peterson et al, 2003, 2001; McLaughlin et al, 2002; Thoburn et al, 2002; Street & Kenway, 1999). Program evaluations conducted for programs such as the Universal School Breakfast Program and Fast Break for Learning have led to increased funding due to demonstrated positive outcomes for students and decreased cost per student to individual schools (McLaughlin et al, 2002; Peterson et al, 2003).

Other examples of CNP evaluations are the studies examining the impact of breakfast on test performance and attendance conducted in Jamaica (Grantham-McGregor et al, 1998) and Peru (Pollitt, 1995). Among the literature reviews presented by previous researchers (Briefel et al, 1999; Hyndman, 2000; Jacobson et al, 2001; Papamanadjaris, 2000; Pollitt, 1995), a central theme has been the impact of breakfast on students' scholastic performance, learning, cognitive performance, classroom behaviour, and mood. Although the effect of breakfast is inconclusive, much of the research indicates that breakfast in school improves the learning atmosphere and classroom behaviour. Further, cultural differences in food habits and behaviour should be considered in evaluating program effectiveness. A study by Michele Houde Nadeau found a relationship between eating breakfast and attention in class that would have been overlooked if the cultural differences had not been considered (National Institute of Nutrition, 1993).

### Key program evaluation findings

This section contains findings from evaluations that are presented under headings reflecting the best practices. There is little in the literature regarding the studies examining the value of evaluation to CNPs beyond what is presented in this section.

**Participation.** Program evaluations that examine the impact of program models on participation have found that program participation rates improved by offering breakfast to all children, in class, as part of a school-wide policy, free of charge (McLaughlin et al, 2002; Peterson et al, 2003). Other evaluations have found that school nourishment programs increase the attendance rates of students in Jamaica and Peru (Pollitt, 1995), while the availability of nourishment programs in public schools through the academic year increases the probability that children will eat breakfast and improve their educational status (Pollitt, 1995).

**Nutrition intake.** School meals contribute to greater intakes of milk, meat, vegetables, and grains, and for variety on the Healthy Eating Index (HEI), a United States Department of Agriculture (USDA)-based index, among participants. Basiotis and associates (1999) found that among children in low-income households those who ate a school breakfast had higher HEI scores for grains, vegetables and fruit, milk products, and variety than children who did not eat breakfast. Among children in both low- and high-income households, those who ate breakfast had a statistically better overall diet as measured by the HEI. Overall, school-based meal programs increased dietary intakes of micronutrients and variety of foods (Basiotis et al, 1999; Cook et al, 1996; Nicklas et al, 1998).

Dwyer and associates (2002) assessed the food intake of previous participants aged 14 years old in the Child and Adolescent Trial for Cardiovascular Health (CATCH). CATCH participants (treatment) compared with controls aged 14 years old had higher HEI scores, food component subscores (except vegetables and fruit), and on variety if they were also school meal participants. School meals had a positive effect evident in higher intakes of vitamin A, riboflavin, calcium, phosphorus, and magnesium. Among school meals consumed by participants, those meals with higher fat, saturated fat, cholesterol, and sodium contents received lower nutrient component subscores on the HEI. It should be noted that the school meal could be breakfast or lunch.

Students participating in programs that serve breakfast free to all students after the start of the school day and in class are more likely to consume a nutritionally substantive breakfast than children who participate in a breakfast program served before the start of school in a cafeteria, and where fees are based on family income (McLaughlin et al, 2002). In Gleason and Sutor's study (2001), School Breakfast Program participation is associated with higher intakes of food energy, calcium, and phosphorus both at breakfast and overall.

The availability of the School Breakfast Program improves the quality of calories consumed as indicated by increased scores on the HEI, reduced calories from fat, and reduced probability of low fibre intake (Bhattacharya et al, 2004b). The School Breakfast Program reduces the probability of micronutrient deficiencies of vitamins C and E and increases the

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probability that children meet the USDA's recommended intakes for iron and potassium (Bhattacharya et al, 2004a). Program participants eat more fruits, drink more milk, and consume less saturated fat than those who do not eat breakfast or have breakfast at home (Hess et al, 2002; Gordon & McKinney, 1995). Further, school meal participants had higher scores for milk, meat, vegetables, grains, and variety on the Healthy Eating Index (Dwyer et al, 2002).

The menus offered by the School Breakfast Program provide one-fourth or more of key nutrients children need daily, no more than 30% of calories from fat and 10% of calories from saturated fat. Also, 90% of School Breakfast Program menus in the 1998-99 school year in elementary and secondary schools met or exceeded the School Breakfast Program standard of one-fourth of the RDA for all target nutrients, such as protein, vitamin C, and calcium (Fox et al, 2001). An evaluation of breakfast programs served in elementary schools in the School Nutrition Dietary Assessment Study II (Fox et al, 2001) found less than 30% of the calories came from total fat. However, average calorie levels fell below the one-fourth RDA benchmark ranging from 23% of the RDA elementary school students and 20% for secondary students (Fox et al, 2001).

**Safety.** Evaluations of breakfast programs in Canada and the U.S. indicate breakfast is served in a variety of places. Classrooms, gymnasiums, hallways, lunchrooms, and multipurpose rooms were respectively most often reported as the places where breakfast is served. In a survey by the Manitoba Council on Child Nutrition (2001), respondents commented on the appropriateness and quality of the location for the school meal program. The evaluation participants said that their school facilities were too small, unsanitary and that they lacked appropriate equipment such as a fridge, stove, and dishwasher (2001). Regarding program inspections, Breakfast Clubs in the United Kingdom were inspected on a four-year cycle (Street & Kenway, 1999; Thoburn et al, 2002).

**Funding.** Evaluations of the School Breakfast Program included looking at the cost effectiveness of providing a free breakfast to all students compared with the sliding scale based on a student's household income. CNPs that adopted the universal-free school breakfast program model were able to reduce expenditures on the School Breakfast Program by replacing the yearly application sent to parents with one that covered four years, thereby reducing paper work. Further, these programs had higher rates of participation that allowed them to purchase more food that resulted in lower costs per student. Increased funding was provided to schools that provided more meals (McLaughlin et al, 2002).

Beyond the findings of the evaluations mentioned above, there is little mention of evaluations of program structures and adherence to program goals, mandates, and objectives. The previous sections highlighted key findings, a review of program evaluations, and research reflecting the best practices for CNPs. The following section contains a summary of major findings from evaluations and research pertaining to breakfast consumption and scholastic achievement. The final section of the review contains a discussion of targeted versus universal CNPs and their relevance to education and health policy.

**SECTION 2. Benefits, Costs, Education and Health Policy Considerations of  
Child Nutrition Programs**

Previous sections of the present review highlight the literature pertaining to best practice criteria for child nutrition programs (CNPs), and child nutrition programs (CNPs) relating to breakfast and scholastic performance. This section of the paper contains a discussion of the overall benefits of CNPs and universal versus targeted breakfast programs to overall nutrition and to school performance, and their contribution to the quality of life for students in an ever-changing society. A question that we will revisit throughout this section is, “Are the benefits of providing a school meal program worth the costs?” This question is asked to assess the value of school meal programs as health and educational interventions worthy of policy consideration.

## **2.1 Benefits of Child Nutrition Programs**

### **Benefits to nutrient intake**

A growing body of evidence shows that the nutritional health of children is improved by child nutrition programs, such as breakfast programs (Cook et al, 1996; Fox et al, 2001; McLaughlin et al, 2002; Nicklas et al, 1998). Data gathered from evaluations of the School Breakfast Program in the United States, provide some indication of the nutritional value of the program. The United States Department of Agriculture's (USDA) Food and Nutrition Service sets the nutritional standard for its school meals based on scientific evidence. As mentioned previously, some of the School Breakfast Program's nutritional standards include no more than 30% of calories in breakfast can come from fat and less than 10% of calories can come from saturated fat (Bhattacharya et al, 2004a). Improvements in nutrient intakes for School Breakfast Program participants have been noted. For example, Gleason and Sutor (2001) concluded that School Breakfast Program participation was associated with higher intakes of food energy, calcium, and phosphorus.

Bhattacharya, Currie, and Haider (2004b) in their evaluation of the School Breakfast Program demonstrated that the availability of the program improves the quality of calories consumed as indicated by increased scores on the Healthy Eating Index, reduced calories from fat, and reduced probability of low fibre intake. Further, these researchers also found that the School Breakfast Program reduced the probability of serum micronutrient deficiencies in vitamins C, E, and folate, while increasing the probability that children meet the USDA's recommendations for potassium and iron intakes. These researchers concluded that school nutrition programs may be an effective way to combat nutritional deficiencies and excess consumption among children and their families. The last point has great implication for children from low-income families since there is a high rate of obesity found among this population (American Dietetic Association [ADA], 2003; Boyle & Kavanagh, 2000; Jones et al, 2003; Tufts, 2004). Alaimo and associates (2001b) found a paradoxical relationship between overweight, inadequate diet, and food insufficiency among older non-Hispanic white children in the U.S. This "paradox" could be explained by insufficient exercise as indicated in inadequate muscle mass development, as was found among children living in economically disadvantaged communities in Ontario conducted by Drs. Evers and Hooper (1995). The American Dietetic Association and Alaimo and associates suggest that CNPs can help reduce childhood obesity (ADA, 2003; Alaimo et al, 2001b).

### **Benefits to scholastic achievement and student behaviour**

School performance is improved by breakfast programs (McLaughlin et al, 2002; Glacken 2002; Kleinman et al, 2002) particularly for students who are nutritionally at risk for becoming undernourished or malnourished (Brown & Pollitt, 1996; Grantham-McGregor et al, 1998; Kleinman et al, 2002; Simeon, 1998). Alaimo, Olson, and Frongillo (2001a) showed that children aged six to 11 years old who had a diet that does not meet the USDA's recommendation

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for adequate daily intake of nutrients had lower arithmetic scores. Kleinman and associates (2002) found that students who were considered at nutritional risk showed significant improvements in academic performance, psychosocial functioning, and decreases in hunger after six months participation in the Universal School Breakfast Program. Pollitt, in his studies of undernourished Peruvian boys, found the greatest gains in cognitive test scores among undernourished children (Pollitt, 1995). Other studies have found that a school meal does not have an impact on math and reading scores for well-nourished children. Thus, the relationship between learning and nutrition is not definitive (Papamanadjaris, 2000).

Although the relationship between nutrition and learning is complex and therefore inconclusive, researchers concur that school breakfast enhances school atmosphere for students (Hess et al, 2002; Jacobson et al, 2001; McLaughlin et al, 2002; Papamanadjaris, 2000; Pollitt & Matthews, 1998). For example, Peterson and associates (2003) in their evaluation of Minnesota's Fast Break to Learning Universal School Breakfast Program found that students in the schools with the program started from a lower level of achievement than students in the control schools but made greater gains in academic achievement. Other research has indicated that classroom behaviour was improved (McLaughlin et al, 2002; Government of New Brunswick, 2003) as indicated by measures of attentiveness, tardiness, and visits to the school nurse. However, one evaluation reported higher incidents of disciplinary action (Peterson et al, 2003).

### **Benefits to the school environment**

Classroom behaviour and school atmosphere improved after the introduction of school breakfast and after modifications to breakfast programs such as serving the meal in class after the start of class. Principals and teachers reported improved classroom behaviour as indicated by improved student attention, increased response to the teacher, increased pro-social behaviour, and reduced distractive behaviours when breakfast was served in class. These behaviours were seen as contributing to students' learning readiness, improved classroom atmosphere, and improved school climate (Peterson et al, 2003; McLaughlin et al, 2002).

Another way to measure whether or not the benefits of school breakfast are worth the cost of the program is to determine if the program is influencing school improvement efforts. In the third-year evaluation of the Fast Break to Learning Universal School Breakfast Program, researchers conducted a gap analysis to determine the areas where the program is successful and compared them to the areas important to school improvement. Respondents were first asked to prioritize a variety of school improvement issues on a scale of one to five, where 1 = "Not at all a priority" and 5 = "Very much a priority." Then respondents were asked to rate on a five-point scale where 1 = "Poor" and 5 = "Excellent" how the School Breakfast Program positively contributed to the school improvement efforts. Researchers examined the gap between the proportion of respondents that gave an issue top priority (rating 4 or 5 on scale) and the proportion that rated the program as contributing positively (rating 4 or 5 on scale). Approximately 99% of principals rated the highest priorities for school improvement efforts. Principals rated academic achievement as the highest priority, followed by positive school atmosphere (97.2%), reducing absenteeism (90.8%), and student attendance (90.1%). The areas in which principals rated the School Breakfast Program highest as a successful way of positively

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contributing to school improvement efforts were 1) students hungry or malnourished, 2) academic achievement, 3) students inattentive to learning, and 4) positive school climate. The gap analysis indicated that principals believe the School Breakfast Program is most positively contributing to academic achievement and positive school climate (Peterson et al, 2003).

### **Benefits to the quality of life for students while in school**

There is growing recognition that CNPs are critical to a healthy school environment and contribute to the overall quality of the school community and society (British Columbia Ministry of Children and Family Development, 2003; WHO, 1998). Since children are in school for many hours, five days per week, 39 weeks per year, there are many opportunities for influencing healthy eating and overall health knowledge and practices. As such, CNPs should be regarded as interventions that enhance students' health and learning, and that assist children to develop to their full potential (Healthy Child Manitoba, 2003). Thus, schools should be considered ideal sites for nutrition interventions. Emphasizing this point, the Ontario Society of Nutrition Professionals in Public Health (OSNPPH) working group in their Call to Action: Creating a Healthy School Nutrition Environment recommends and suggests actions for provincial ministries, school boards, and health boards in the development and continuous sustainability of school nourishment programs, such as breakfast, snack, and lunch programs (2004).

Breakfast programs should be viewed as integral parts of school policy rather than as supplemental programs. Nutrition contributes to health that contributes to learning. As the first meal of the day, breakfast can provide enough energy to complete morning tasks. However, far too many children skip breakfast for a variety of reasons that include transportation schedules, parents' work schedules, caregiver arrangements, unsupervised morning meal, or inadequate household income (City of Toronto, 2004; OSNPPH, 2004). For example, some parents leave for work early in the morning, and their children eat breakfast early in the morning often before long commutes or prior to arriving at a sitter and then school. Children are in school for many hours each day. Considering these factors, schools are well suited as sites for reinforcing the connection between nutrition and positive health and education outcomes, while ensuring children have enough nutrients to learn. Despite the nutritional and educational value of serving breakfast in school, there are criticisms of these programs.

## **2.2 Criticisms of Child Nutrition Programs**

### **Addressing family food insecurity**

Criticisms of child nutrition programs (CNPs) are based on the assumption that programs exist as interventions to address child hunger, family food insecurity, and inadequate family income (Hay, 2000; McIntyre et al, 1999; Raine et al, 2003). Even if many food programs were initiated to feed low-income children who arrive at school hungry, educators with first-hand knowledge concede the causes of breakfast skipping that go beyond poverty. Breakfast programs cannot be considered effective in addressing family food insecurity, but can be considered adequate in addressing students' short-term hunger while in school.

Other CNP critics argue that CNPs do not reduce family food expenditures. Maurer's (1984) study on the impact of school nutrition programs concluded that since children's participation in CNPs did reduce family expenditures, school nutrition programs must therefore increase the value of food obtained by participating families. In other words, parents who at the time of the study still had to contribute toward their child's participation in the School Breakfast Program were getting increased food value for the amount that they contributed toward the program.

### **Cost of providing a national school-nourishment program**

Researcher David Hay (2000) asserts that without additional evidence to adequately assess the contribution of CNPs to the alleviation of hunger, enhancing nutrition, and contributing to healthy child development while not contributing to dependency and stigmatization, CNPs should not be considered a sound social policy response for children. He suggests that governments should support the goals of creating outcome targets and key indicators to assess levels of hunger, nutrition, and food security among children, building appropriate evaluation frameworks with outcome targets and key indicators to assess current programs, and identify, document, and disseminate innovative approaches to food security. Hay's analysis is based upon the assumption that school meal programs were designed to improve family food security. Family food security would be better addressed by strategies that include increasing the amount of money available for food. Focusing exclusively on family food security ignores the factors that contribute to students' need for a nourishing meal while in school.

### **Socially stigmatizing**

Finally, breakfast programs in particular have been criticized for stigmatizing poor students (McIntyre & Dayle, 1992; McIntyre et al, 1999) for becoming institutionalized (McIntyre et al, 2001) and for creating an industry for the providers of programs. Many school meal programs evolved from a concern to feed poor children. Most school meal programs are located in areas with a high proportion of low-income families. However, programs that targeted children from low-income households also experienced low participation rates due to children and their families not wanting to be seen as needy. For example, the Universal School Breakfast Program in the United States experienced higher participation rates than did the School Breakfast

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Program. If everyone is allowed to participate, then those students most in need can avoid being singled out. The benefit of a universal school breakfast program is that it is more appealing to and encourages participation among those students who may need it the most.

### 2.3 Support for School Meal Programs in Canada and Internationally

Despite the demonstrated value of school meal programs to the overall development of children, Canada does not have a federally funded school meal program (Henry et al, 2003). Jamaica (AFSA, 2004), the United States (FRAC, 2003), and Finland (De Boer, 2003) have either direct national funding or funding directed toward municipalities for school meal programs. However, school meal programs in Canada are sustained through a mix of charitable donations, private and public sponsors, municipal, school board, and provincial funding (Hay, 2000, Hyndman, 2000; Papamanadjaris, 2000). Wal-Mart, Canadian Pacific Railway, BankRBC Foundation, Imperial Oil, McCain's, Transcontinental Media, Canadian Living Magazine, and Atlantic Grocers are some of the corporate contributors to breakfast programs across Canada through BREAKFAST FOR LEARNING (BFL) (BREAKFAST FOR LEARNING [BFL], 2003b, Hyndman, 2000; Monahan, 2004).

Provincial governments such as British Columbia, New Brunswick, Newfoundland and Labrador, Ontario, and Saskatchewan, and Yukon's territorial government provide some funding to province-wide programs. In other cases funding is provided to municipalities and school boards or to province-wide coordinating bodies such as BFL / CLF<sup>1</sup>. Although breakfast programs in Canada receive donations from corporations, and grants from provincial and municipal governments, school boards, and community donors, the need for additional, continuous, and equitable funding among a growing body of child nutrition programs (CNPs) in Canada outpaces the funding levels (Hyndman, 2000). Thus, the dependence on inconsistent and unsystematic charitable support, volunteer labour, and inefficient purchasing practices makes the sustainability of CNPs in Canada tenuous. Sustainability would be better addressed through consistent long-term funding, such as found in the School Breakfast Program in the U.S., or the school meals subsidies available in Spain, Finland, or Poland (De Boer, 2003). For example, municipalities in Finland receive subsidies from the national budget to provide school meals to all children on a daily basis (De Boer, 2003).

The School Breakfast Program is a federal program administered by the United States Department of Agriculture's Food and Nutrition Service that provides funding and commodities to each state for breakfast programs in schools. Program standards are set by the FNS including the breakfast menu. Having program standards makes it easier to demonstrate the impact that this program has on nutritional intake and academic outcomes for students. As such, School Breakfast Program evaluations substantiate the contribution the program makes toward the health and education of children. To sustain this program, a total of \$5.4 billion US of the federal government budget is dedicated to CNPs (FRAC, 2003). The School Breakfast Program is an example of the U.S. federal government's commitment to program sustainability.

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<sup>1</sup> Table 1 in Appendix B shows the breakdown of funding support for CNPs by province.

## **2.4 The Costs of School Meal Programs in the United States and Canada**

There is growing evidence that child nutrition programs (CNPs) – particularly breakfast / snack programs – are good public policy. Children should have access to healthy food choices in the school setting because of the health and educational benefits. Healthy eating in childhood positively impacts health in adulthood (Health Canada, 1997). Breakfast can help provide up to quarter of the daily nutrients needed for a healthy diet. Dietary deficiencies are linked to expensive health problems and educational problems. When universal access is provided, the most vulnerable stand to benefit as well. Providing access to programs that promote health in the general population and to at-risk groups is a goal for health policy makers. Providing programs that facilitate learning for all children is a goal for education policy makers. Universal CNPs, such as school breakfast programs, are relevant to both health and education sectors as they promote healthy eating and learning. Therefore, they should be considered good public policy.

If school meal programs are good public policy, how should they be funded? Is federal funding, like the School Breakfast Program in the U.S., the best model for supporting programs in Canada? Is provincial funding an ideal means of financing programs? Beyond funding, what are some other roles that federal or provincial governments can play in developing and sustaining CNPs? What are the costs of a federally funded meal program? When government involvement is extensive, do parents lose control over the program? To answer these questions, we will look at the costs and benefits of a centralized school meal program, the expressed values or best practices within these types of programs, and how they compare with the best practices for CNPs in Canada.

### **The cost of the School Breakfast Program in the United States**

For the 2003 fiscal year, the U.S. federal government spent \$1.6 billion US for the School Breakfast Program for a total 8.2 million children in 76,000 schools and institutions (FRAC, 2003). Among all the breakfast meals served, 82.8% were free or reduced-price meals. On average, the U.S. government spent approximately \$192 US per child for their participation in the School Breakfast Program. The program works by reimbursing schools, non-profit private schools, and residential child-care institutions for each meal that is served. For example in the 2003-04 school year, schools were reimbursed \$1.23 US for each free breakfast served, \$0.93 US for each reduced-price breakfast served, and \$0.23 US for each paid breakfast.

The Universal School Breakfast Program offers breakfast at no charge to all students regardless of income under Provision 2. Due to less paper work and simplified logistics, collecting applications for free and reduced meals only once every four years produced savings in providing this program. The key is increased volume, buying power, and economies of scale that decreased the cost of providing each meal.

Federally sponsored CNPs have trained, qualified, and paid staff that lend efficiency to programs. Staff members are trained in menu planning, purchasing, nutrition, and food safety. The Food and Nutrition Service provides standardized nutrition guidelines from which school meal staff plan menus. Nutrient standards contribute to food quality. The U.S. government

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builds in accountability by monitoring the funding given to states, which in turn monitor the dollars given to school boards. All levels of government and sponsoring bodies through which School Breakfast Program funding is filtered are responsible for financial reports showing disbursements. The program is sustained through commitment from the federal government. To ensure the quality of the program, evaluations are conducted to monitor program outcomes that include the impact of the program in terms of students' academic performance and nutritional intake, food quality, and program operations.

### **The cost of Canadian programs**

The best source of data on breakfast served in schools across Canada is from BREAKFAST FOR LEARNING (BFL). For 2004, 2,272 programs received funding from BFL across Canada. These programs served 13.6 million breakfasts and 11.5 million snacks to children across Canada. On average, there were 94 children per program participating in programs per day across Canada (BREAKFAST FOR LEARNING, 2004). Approximately 226,000 children across Canada benefit from programs supported by BFL. Funding levels were far below the level requested for program operations. For example, due to limited funding, BFL could only disperse grants totalling \$3.5 million, approximately one-third of the amount requested by CNPs, which was \$9.9 million.

BFL raises funds through the provincial and territorial government ministries, such as British Columbia, Prince Edward Island, Newfoundland and Labrador, and Saskatchewan, and from corporate sponsors such as Transcontinental Media, Canadian Pacific Railways, Royal Bank, and Wal-Mart. School boards are involved in funding and allocation decision-making through local community partnerships within each province. Allocations to programs are based on grants received, number of requests, and prioritized programs based on need.

Local community input in programs characterizes CNPs in Canada. For example, BFL encourages and supports community partnerships, which in turn supports local programs. BFL regional representatives work in partnership with public health departments, school boards, community groups, and other interested individuals within the community. Local programs are encouraged to establish and maintain program committees that plan and deliver programs. Parents, educators, local businesses, local public health dietitians, and community members participate on program committees.

Most programs do not have paid coordinators. Program coordinators may be parents whose children attend the school, school staff, or other community volunteers. Volunteer coordinators may be offered a small token for volunteering. Public health dietitians and health inspectors provide guidance and training in food quality, safe food handling, and safe environment to program coordinators and volunteers. The fact that programs are located far from each other, or in remote locations where food costs are higher, presents a challenge to many programs located in Canada's North. Without systematic funding, program sustainability is a challenge.

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So far, the evidence presented suggests that there are educational and nutritional benefits to providing a school meals program, particularly a universal breakfast / snack program for all students. The universal model has been presented as a means of meeting the needs of all students. In comparing the network of local programs that characterizes CNPs in Canada to central government-funded and government-operated school meal programs in the Caribbean and Latin America, Europe, and the U.S., it seems that centrally funded and operated programs are able to provide nutritious meals in a cost-effective manner. Further, the benefit of having a federally funded school meals program, like the School Breakfast Program, when measured against the cost of not having the health and educational benefits that quality CNPs can provide, can be enormous to health and social systems.

## 2.5 Education and Health Policy Considerations

Policy does not always proceed funding. The United States does not have a nutrition policy for children despite the existence of federal and state child nutrition programs (CNPs). The origins of these programs were in food and agricultural legislation not nutrition and health and “were only meant to be a safety net for low-income and at risk children, not the entire population.” (Lucas, 2001). Lucas further asserts that services are fragmented and not aimed at preventive nutrition and therefore she proposes a comprehensive national nutrition policy for children. She includes providing universal meal programs for all children, regardless of income, in schools and child-care settings as a goal under the strategy of food security.

Health Canada through the Office of Nutrition Policy and Promotion has developed nutrition guides for each stage of childhood development. Healthy meals should be provided throughout the day to provide nutrition and to give students the energy to be active and ready to learn (Health Canada, 1997). Further, nutritious school meals are situated within the context of physical activity and nutrition as remedies for childhood obesity, which has taken on epidemic proportions in Canada.

Although no CNP policy exists, Health Canada in *Nutrition: An Agenda for Action* (2001) suggests ways that schools can take action for promoting nutrition that includes reinforcing healthy eating practices, supporting nutritionally vulnerable populations, enhancing the availability of foods that support healthy eating, and supporting nutrition research. Providing a school meal is seen as a way to reinforce healthy eating. In this way, schools are proposed as relevant sites for these interventions. However, there has yet to be a policy statement that specifies support for school meals. The perception remains that parents are and should be responsible for breakfast. The other perception that lingers is that hungry children are poor children. So long as breakfast remains a domestic issue or school breakfast remains a program for poor children, then a national school meal program will remain a dream. Hence, the federal government indirectly addresses the concerns of nourishing poor children through implementation of policies that improve family income.

The National Children’s Agenda (Health Canada, 1997; Social Union, 1997) is a collaborative initiative between federal, provincial, and territorial governments in which a shared vision to improve the well-being of Canada’s children was proposed. As such, the National Children’s Agenda can be viewed as a “breaking down of the silos” between federal, provincial, and territorial governments (Mahon, 2001). Consultation participants emphasized the goal of providing the basic needs of children including food, clothing, and shelter to address child poverty. Although school-nourishment programs cannot be seen as interventions to address child poverty, they do meet the basic need for food, particularly throughout the school day. CNPs are well situated to meet at least some of children’s daily food intake requirements. However, the policy emphasis of the National Children’s Agenda has been preschool children.

Policy initiatives that have come out of the National Children’s Agenda are revised income benefits and tax benefits for low-income families. These are the federal government’s Canada Child Tax Credit (CCTB) and the National Child Benefit (NCB). These benefits have

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increased the amount of disposable income among low-income families where parents move from unemployment into employment. Provincial reinvestments from these benefits have provided for increased funding, child-care subsidies, and programs for parents of young children. However, supplementing family income does not necessarily address the need for meal programs in school because of the factors beyond income that contribute to children needing a meal in school. Perhaps CNPs could be part of the CCTB and NCB reinvestment made by the provinces. For example, some of the reinvestment in First Nations communities goes to CNPs (Government of Canada, 2002).

Rianne Mahon (2001), in her analysis of policies for school-aged children, suggests that greater investments are needed to ensure the well-being of people aged six to 15. Due to economic constraints, the trend in government spending has been to target spending to children considered at risk. Mahon asserts, however, that broad-based “universal” programs with provisions for special needs work best. To better utilize the resources available across government levels, there has been a move toward the integration of resources as described in the partnership between federal and provincial governments in implementing the CCTB and the NCB. Further, the emphasis on prevention is another emphasis of government interventions addressing the general health and well-being of children. Schools are seen as a hub for services and resources beyond education. In some provinces, health, education, and other departments work together to provide services and to support programs that integrate these, such as breakfast programs. A pilot of a nationally funded yet cost-effective student nutrition program should be undertaken and the processes documented and assessed. Provincial governments can provide examples of partnerships with federal departments.

It costs approximately \$1.00 per child per school day to provide a healthy breakfast or snack. The value of breakfast to overall health would amount to future savings on astronomical and ever-increasing medical treatment costs associated with diseases due to overconsumption, overweight, under-consumption, chronic undernourishment, and scholastic underachievement due to poor nutrition. A universal meals program, particularly if free, would allow all children to participate so that poor children would not feel singled out. Parents can still feed their children at home, but when they are at school, the food they would receive would reinforce healthy eating practices.

The improved nutrition, scholastic achievement, and class and school atmosphere are factors in building a sound basis for a universal school meals program. Finally, shifting a focus away from feeding poor students to providing nutritious food that would improve students’ learning would improve the perception that programs were mainly for poor students.<sup>2</sup> A universal breakfast program model increases students’ access to nutritious food.

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<sup>2</sup> This last point has been the focus of criticism of breakfast programs in particular. The main argument has been that the programs have been stigmatizing to poor children and therefore ineffective in achieving their mandate of providing a nourishing meal to poor children. By changing the focus from feeding poor children to providing a nourishing meal to all children, school nourishment program goals have become more realistic and more attractive to all parents, including low-income parents.

### Conclusion

Each year the number of child nutrition programs (CNPs) in Canada is increasing. The reasons for the increase in the number of CNPs are as diverse as the children that attend programs. For example, some reasons why it makes sense to provide a nutritious meal to all children include the following.

- Parents' work schedules make it difficult for them to supervise breakfast.
- Some children eat breakfast two to three hours prior to the start of school and have long bus rides.
- Some children are not hungry when they first awake.
- Children are not waking early enough to have breakfast at home.
- Parents are not modelling eating a healthy breakfast.
- Not having enough food at home due to inadequate household income.

Since there are many reasons beyond economic reasons, a universal school meals program would ensure that all children regardless of their background or reason for need have access to nutritious school breakfast / snack.

Due to the varied models of program delivery and the independent and localized structure of programs, finding common criteria to facilitate a systematic evaluation of CNPs in Canada was difficult. The identification of the best practices for CNPs provides a set of standards against which CNPs in Canada can now be evaluated. The best practices of access and participation, parental involvement and consent, inclusive and efficient program management, food quality, safety, financial accountability, and evaluation are elements that have been found to be elements of successful programs. For example, successful programs allow any child to participate, have parents who contribute financially and volunteer for programs, have qualified program coordinators and trained volunteers knowledgeable in menu planning, nutrition, budgeting and food safety, meet nutritional standards for breakfast, and have ongoing funding and evaluation. Although these elements have been identified to be a part of successful programs, additional research is needed further substantiate the best practices.

The impact of breakfast on learning is most pronounced for children who are nutritionally at risk. In addition, universal school breakfast programs are effective in reaching those who may be at risk, since all students within a host school can participate. Improved academic performance, classroom atmosphere, and decreased tardiness are impacts that are associated with school breakfast program participation, particularly among universal programs. In addition, improved nutritional intake has been found among participants in school breakfast programs. Adequate nutrition and learning about healthy eating habits during childhood can influence health during adulthood. Breakfast programs contribute to nutritional intake and healthy eating habits. Thus, school breakfast programs contribute to students nutritional and educational outcomes.

CNPs should be viewed as prevention strategies by health and education policy makers. As prevention strategies, CNPs are worth their cost. The investment into children's health and education can offset expensive interventions later in life.

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This literature review attempted to provide an overview of literature pertaining to the best practices for CNPs, present recent studies on the impact of breakfast programs on learning, and to provide a basis for health and policy makers to support a national CNP.

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## **APPENDIX A**

### **Summaries of Key Studies**

Summaries for key studies are presented in this section alphabetically under the following headings:

- Evaluations and Research Studies Pertaining to Food Quality Found Among Child Nutrition Program Participants
- Evaluation and Research Studies Pertaining to Nutrition and Learning
- Evaluation of Child Nutrition Programs Related to Program Delivery and Implementation
- Research Pertaining to Perceptions of Child Nutrition Programs
- Needs Assessment Literature
- Program Descriptions

Although the evaluations and research studies may not have had a focus on the best practices, results relevant to the best practices are included under best practice headings.

### **Evaluations and Research Studies Pertaining to Food Quality Found Among Child Nutrition Program Participants**

**Alaimo, K., Olson, C. R., & Frongillo, E. A. (2001a).** Food insufficiency and American school-aged children's cognitive, academic and psychosocial development. *Paediatrics*, *108(1)*, 44-53.

**Purpose:** To investigate the associations between food insufficiency and various outcomes for children and teenagers aged six to 11 and 12 to 16 years in the United States.

**Participants:** Children and adolescents between six and 16 years old.

**Methods:** Researchers analysed data from the third National Health and Nutrition Examination Survey. Children were classified as food-insufficient if the family respondent reported that his or her family sometimes or often did not get enough food to eat. Regression analysis tested associations between food insufficiency and cognitive, academic, and psychosocial measures in general and then within lower-risk and higher-risk groups.

**Results:** Food-insufficient children aged six to 11 years had significantly lower arithmetic scores and were more likely to have repeated a grade, seen a psychologist, and had difficulty getting along with other children.

**Conclusion:** Additional support needed to increase access to food for American families.

**Basiotis, P. P., Lino, M., & Anand, R. (1999).** Eating breakfast greatly improves schoolchildren's diet quality. *Nutrition Insights*, 15, December 1999.

**Objective(s):** To examine the impact of eating breakfast at the School Breakfast Program to the quality of children's diet.

**Participants:** The sample consisted of 1,295 children aged six and 18 years in low- and higher-income households participating in the Continuing Survey of Food Intakes by Individuals.

**Methods:** To examine the effects of the School Breakfast Program on school-aged children, the researchers collected data via the Continuing Survey on Food Intakes by Individuals that was collected between 1994 and 1996 on children aged six to 18 years. The Healthy Eating Index (HEI) was used to assess diet quality. The HEI consists of 10 components. Five components measure the degree to which a person's diet conforms to the United States Department of Agriculture's Food Guide Pyramid's serving recommendations for the major food groups: grains, vegetables, fruits, milk, and meat. Four components measure the compliance with dietary recommendations for total fat, saturated fat, cholesterol, and sodium intake. One component measures food variety. Each component has a maximum score of 10 and a minimum score of zero. The maximum HEI score across all 10 components is 100. High scores indicate intakes close to the recommended ranges or amounts, while low scores indicate less compliance with the recommended intakes. An HEI score of 80 or above is considered a good diet, a score between 51 and 80 is considered a diet in need of improvement, and a score below 51 is considered a poor diet.

**Results:** Among the children in low-income households that were sampled, 67% ate breakfast at home or some place other than school, 19% at breakfast at school, and 14% did not eat breakfast. Among children in high-income household, 82% ate breakfast at home or a place other than school, 16% did not eat breakfast, and 2% ate breakfast at school. Children in low-income and high-income households who ate breakfast had a higher overall HEI score than children who do not consume breakfast. Across all groups of children, the HEI score indicated that their diets needed improvement.

Among children in low-income households who ate breakfast at school had:

- A statistically significant higher HEI score, 67, than children who ate breakfast at home or elsewhere (63) and than children who did not eat breakfast (57)
- Significantly better component scores for grains, fruits, milk products, and variety than children who did not eat breakfast
- An average fruit score of 5.4, compared with 2.1 for those who did not eat breakfast
- An average milk score of 8.8 compared with 4.4 for children who did not eat breakfast
- A variety score of 9.0 compared with 6.2 for low-income children who did not eat breakfast
- A significantly lower HEI score for saturated fat (3.7) than children who ate elsewhere (5.4).

Milk is a required food in the School Breakfast Program and fruit juice is one of the most frequently served foods in the School Breakfast Program. However, the lower scores for saturated fat may be linked to schools serving sausages and butter, foods that are higher in these fats. Among children in high-income households, those who ate breakfast (not at school) had a better total fat score (7.5) than those who did not eat breakfast (6.4). Children in high-income

households had the highest overall HEI score (68) followed closely by children in low-income households who ate a school breakfast (67).

**Conclusion:** Across all groups, children who ate breakfast had a statistically significantly better overall diet, as measured by the HEI. Component HEI scores for grain, fruit, milk, and variety were higher for all children who ate breakfast. However, children who ate a school breakfast had even higher component HEI scores for milk, fruit, and variety. Children who ate a school breakfast had an even better overall diet.

**Bhattacharya, J., Currie, J., & Haider, S. J. (2004). Breakfast of champions? The school breakfast program and the nutrition of children and families. Retrieved September 15, 2004, from <http://www.econ.ucla.edu/people/papers/currie/more/sbp-june152004.pdf>**

**Objective(s):** To examine the effect of the availability of the School Breakfast Program on nutrition for children attending the program and their families.

**Participants:** School-aged children who attend schools that have the School Breakfast Program and children who attend schools without the School Breakfast Program.

**Methods:** Data was collected from the National Health and Nutritional Survey. The researchers used a difference within differences strategy. Students with access to the School Breakfast Program were compared to those without by analysing the differences between students surveyed during the regular school year and summer, and comparing these differences across schools with and without the School Breakfast Program. The researchers examined serum measures of nutrients and intakes based on dietary recall data. Nutrient intakes for preschool children and adults in homes with a school-aged child were scored using the Healthy Eating Index (HEI).

**Results:** The School Breakfast Program assists students in developing good eating habits, increases scores on the HEI, reduces the percentage of calories from fat, and reduces the probability of low fibre intake. The School Breakfast Program reduces the probability of serum micronutrient deficiencies in vitamins C and E, and folate, and it increases the probability that children meet the United States Department of Agriculture's recommended intakes of potassium and iron. There was no effect on total calories. Households with school-aged children, preschoolers and adults have healthier diets and consume less fat when the School Breakfast Program is available.

**Conclusions:** School nutrition programs may be an effective way to combat nutritional deficiencies and excess consumption among children and their families. The whole family benefits from the School Breakfast Program. Studies that focus only on the child who is enrolled in the School Breakfast Program may underestimate the size of the program's benefits.

**Bhattacharya, J., Currie, J., & Haider, S.J. (2004).** Evaluating the impact of school nutrition programs: Final report. Retrieved September 15, 2004, from the Economic Research Service website: <http://www.ers.usda.gov/publications/efan04008/>

**Objective(s):** To estimate the efficacy of the school nutrition programs in improving a broad range of dietary outcomes by comparing the nutritional status of students and their families during the school year with the status when school is out.

**Participants:** The sample consisted of 4,841 children and youth aged five to 16 years participating in the third National Health and Nutrition Examination Survey (NHANES III), who met the following criteria:

- were attending school or on vacation from school;
- whose parents responded to a question regarding whether school lunch and school breakfast were available;
- who answered the dietary questionnaire; and
- who participated in the physical exam.

**Methods:** Researchers captured nutritional data using 24-hour dietary recall and analysed dietary data using the Healthy Eating Index (HEI) and recipe analysis. In addition to the dietary recall, the researchers used data from the physical exam and the laboratory exam that are components of the NHANES III to capture blood serum levels for vitamins A, C, E, folate, and cholesterol. Variables were created to indicate nutrient deficiencies and cholesterol excess. Standard medical textbook definitions were used to set the cutoff values for abnormal serum levels. Researchers used a difference in difference strategy that entailed a comparison between children with School Breakfast Program availability and children without School Breakfast Program availability during the school year and during summer vacation. To measure the impact of the School Breakfast Program availability on other household members, the researchers examined impact of School Breakfast Program on the income to poverty ratio for four groups: low-income households with an income to poverty ratio of less than 130% of the poverty line, the medium-income group with an income to poverty ratio between 130% and 185% of the poverty line, and the higher-income group with an income to poverty ratio greater than 185% of the poverty line.

**Results:** The availability of the School Breakfast Program improved dietary quality as indicated by the percent of total calories from fat, rates of vitamins C and E, and folate deficiencies. School Breakfast Program availability increased the HEI by 3.90, an amount that represents a 6% increase of the population mean and reduced the prevalence of children being low for vitamin C by seven percentage points, an amount that was twice as large as the population prevalence. The availability of School Breakfast Program was most beneficial to children in the middle and upper part of the income distribution. School Breakfast Program availability had an impact on the overall dietary quality of adults, but these effects are somewhat concentrated among the higher-income families. The authors warn that these results should be interpreted with some caution. Confounding factors include geography that was highly collinear with season due to the data collection methods that were used.

**Conclusions:** Children who have a school breakfast program available consume a better overall diet, consume lower percentages of calories from fat, are less likely to have a low intake of magnesium, and are less likely to have low serum levels of vitamin C and folate. Therefore, the availability of the School Breakfast Program has beneficial effects for children.

**Cook, J. T., Ohri-Vachaspati, P., & Kelly, G. L. (1996). Evaluation of a universally-free school breakfast program demonstration project, Central Falls, Rhode Island [Abstract]. Medford, MA: Tufts University.**

**Objective(s):** To assess the impact of a universally-free school breakfast program implemented in Central Falls, Rhode Island, in four areas: 1) school breakfast participation, 2) overall breakfast consumption, 3) nutritional intakes at breakfast, and 4) school absence and tardy rates.

**Results:** A universally-free school breakfast program led to a significant increase in school breakfast participation, especially among at-risk children. The number of children who started school without breakfast was reduced. Participants' nutrient intakes improved. Children who participated had lower rates of absences and tardiness.

**Dwyer, J., Cosnetino, C., Li, D., Feldman, H., Garceau, A., Stevens, M., Perry, C., Hoelscher, D., Webber, L. S., & Zive, M. (2002). Evaluating school-based interventions using the Healthy Eating Index. *Journal of the American Dietetic Association, 102(2), 257-259.***

**Objective(s):** To assess the quality of the diet consumed by students participating in the National School Lunch and School Breakfast Program using the Healthy Eating Index (HEI). The HEI is a 10-component score consisting of five food groups in the United States Department of Agriculture (USDA) Food Guide Pyramid; recommended four nutrients in the Dietary Guidelines for Americans; and food variety.

**Participants:** The sample consisted of 1,532 Grade 8 students formerly participating in the Child and Adolescent Trial for Cardiovascular Health (CATCH) in Minnesota, California, Texas, and Louisiana.

**Methods:** Using a 24-hour dietary recall procedure, students reported foods consumed from the previous day. The number of food servings eaten from each of the five food groups was compared with the USDA Food Guide Pyramid's recommendations for number of servings by age and sex groups. Students received a HEI score out of 10 for eating the recommended number of servings or more from the Food Guide Pyramid. Students who ate nothing received an HEI score of zero. Students who consumed  $\leq 30\%$  of energy from total fat received an HEI score of 10, but those consuming  $\geq 45\%$  of energy received an HEI score of zero. Higher intakes of cholesterol were scored lower ( $\geq 450$  mg = 0) and conversely, lower cholesterol intakes  $\geq 300$  mg were scored 10. The researchers calculated nutrient levels in a similar manner to calculating the HEI. The researchers used a mixed model ANCOVA with the HEI scores. Adjusted HEI scores by sex, study site, race/ethnicity, membership in the CATCH intervention or the control group, and participation or non-participation in school meals were calculated from the fitted model.

**Results:** HEI scores did not vary by membership in the CATCH treatment group. However, this group had a significantly higher fat and saturated fat sub-scores. HEI and food component sub-scores with the exception of fruit sub-scores were significantly higher among school meal participants. School meal participants' nutrient component sub-scores were lower than non-participants with the exception of sub-scores for cholesterol and fat. Boys had higher food group sub-scores than girls for grains, vegetables, and meats; on nutrient sub-scores for cholesterol and sodium; and on variety. By site, the highest HEI scores were found in Minnesota (64.8), followed by California (62.0), Texas (60.3), and Louisiana (57.3) respectively.

**Conclusion:** HEI scores for the sample ranged between 51 (poor) and 80 (satisfactory) with means at the lower end of those reported for boys and aged 11 to 14 years in the Continuing Survey of Food Intakes for Individuals (CSFII). Children who formerly participated in CATCH had higher HEI scores for fat (higher scores for lower fat intake) indicating long-term effects of this intervention on eating behaviour. School meal participants had greater total HEI scores and sub-scores for milk, meat, vegetable, grain, and variety along with greater intakes of vitamin A, riboflavin, calcium, phosphorus, and magnesium. However, school meals participants also had lower sub-scores due to increased intakes of fat, saturated fat, cholesterol, and sodium.

**Fox, M. K., Crepinsek, M. K., Connor, P., & Battaglia, M. (2001). School nutrition dietary assessment study II: Summary of findings. Report to United States Department of Agriculture, Food and Nutrition Service, Massachusetts: Abt Associates, Inc. Retrieved June 12m 2004, from the United States Department of Agriculture, Food and Nutrition Services, Office of Analysis, Nutrition, and Evaluation website: <http://www/fns.usda.gov/oane/menu/published/cnp/files/sndaIIfind.pdf>.**

**Objective(s):**

For the 1998-99 school year:

- Determine the average nutrient composition of United States Department of Agriculture (USDA) meals currently served to students during a typical school week in elementary and secondary schools.
- Determine whether the average nutrient composition of meals differs depending on the menu planning option used.
- Determine the current availability and nutrient content of low-fat meals (meals that provide no more than 30% of calories from fat).
- Determine the major food sources of calories and key nutrient in breakfast and lunch meals.
- Examine the number of food choices offered to students participating in the National School Lunch Program (NSLP) and / or School Breakfast Program on a daily basis.
- Examine the variety of foods offered in the NSLP lunches and School Breakfast Program breakfast and identify foods that are offered most frequently.
- Determine the type of alternative food sources available to students who do not eat the NSLP lunch or School Breakfast Program breakfast or bring food from home, and the types of food offered through these channels.
- Determine the changes in the composition of the NSLP and School Breakfast Program meals since school year (SY) 1991-92, when the School Nutrition Dietary Assessment-I (SNDA-I) study was conducted.
- Determine whether conclusions about the nutrient composition of school meals differ depending on whether the nutrient analysis is weighted or unweighted.

**Participants:** Cafeteria managers (1,075 participants) and school food authorities (SFAs) directors (430 participants).

**Methods:** Surveys were mailed to cafeteria managers in sampled schools. In addition, cafeteria managers completed a written menu survey that provided information on the foods offered to students as well as the number of servings of each food that was actually served to students during a specified five-day period (target week) between late September and mid December 1998. Survey respondents provided information on local school food service operations, including the availability of a la carte foods and the other non-USDA meal options. The menu survey captured nutrients, portion sizes, number of portions served for lunch and breakfast. Other survey instruments included the Daily Meal Counts Form that captured the number of reimbursable meals served each day during the target week by category (fee, reduced-price, paid). Meal Service Questionnaire captured food service operations, prices for meals, type of meal service offered and availability of other food sources such as vending machines.

**Minimum nutrition standards.** To evaluate the nutrient content of school meals, the researchers used the nutrition standards defined in the NSLP and the School Breakfast Program regulations as set by the USDA. For breakfast, this standard included one-fourth of the RDA for calories, protein, vitamins A and C, calcium, and iron, 30% or less of total calories from fat, 10% or less of total calories from saturated fat. The minimum calories for breakfast for children in kindergarten to Grade 12 is 554 calories (kcal), protein 10 (gm), vitamin A 197 (mcg RE), vitamin C 13 (mg), calcium 257 (mg), iron 3.0 (mg). The optional calories for breakfast for children in grades 7 to 12 are 618 (kcal). The minimum nutrition standard for lunch for kindergarten to Grade 6 is that it should be one-third of the RDA and have 664 calories (kcal), protein 10 (gm), vitamin A 224 (mcg RE), vitamin C 15 (mg), calcium 286 (mg), and iron 3.5 (mg).

The other standard used was the Nation Research Council's Diet and Health Recommendations. For breakfast and lunch, the total calories that should come from carbohydrates should be more than 55% of total calories. For breakfast, cholesterol should be 75 mg or less, and for lunch it should be 100 mg or less. Sodium should be 600 mg or less for breakfast and 800 mg or less for lunch.

SFA directors participated in a telephone interview and provided information on menu planning practices, enrolment, numbers of students approved for free and reduced-price meals and district-level food service operations. Interviews lasted approximately 20 minutes and were conducted between September 1998 and March 1999.

## **Select results for School Breakfast Program menu nutrient analysis**

### **Food groups and variety**

**Milk.** Across all breakfasts, 92% of elementary schools, 86% of secondary schools, and 90% of all schools included milk in their menus. More than eight out of 10 daily School Breakfast Program menus provided students with the opportunity to select a specific type of milk. The type of milk most frequently offered in both elementary and secondary schools was unflavoured 1% milk, followed by unflavoured 2%, and 1% flavoured milk. Among elementary school breakfast menus, 58% included one or more types of flavoured milk compared with 73% of secondary school menus.

**Fruit, juice, or vegetable.** Across all breakfasts, 89% of elementary schools, 86% of secondary schools, and 88% of all schools included at least one fruit, juice, or vegetable in their menus. More than half of all School Breakfast Program menus offered a choice of fruit, juice, or vegetable (more than one). Among elementary schools, 10% of the menus had four or more fruit, juice, or vegetable options, compared with 16% of secondary school menus. Over half of the elementary school menus limited student choice to one fruit, juice or vegetable offering compared with 40% of secondary schools. For all schools, the median number of fruit, juice, or vegetable choices offered per day was two. Schools offered a median of three different items in the fruit, juice, or vegetable category across a week indicating that some items were offered more than once per week. Juice was most commonly offered in the fruit, juice, and vegetable group

with citrus juice offered most often. Sixty-five percent of all elementary school menus and 81% of all secondary school menus included one or more citrus juices. A little more than half of all menus offered non-citrus juice.

**Breads and bread alternatives (e.g. toast, bagels, cereal, pastries, muffins, pancakes, or waffles).** Across all breakfasts, 97% of elementary schools, 99% of secondary schools, and 98% of all schools included two servings of bread, two servings of meat, or one of each in their menus. More than two-thirds of all daily breakfast menus included two or more bread or grain products (different types of cold cereal were counted as one choice). More than a third of all menus included three or more choices. Secondary school menus offered the greatest number of options in this category; 24% of all daily breakfast menus in secondary schools included four or more breads or bread alternatives. Across all schools, the median number of daily bread / bread alternative choices was two and the median number of different items offered across the week was six. For meals to be reimbursed, students were expected to choose two bread / grain items. Cold cereals were offered in approximately seven out of 10 menus in both elementary and secondary schools. More than one in five breakfast menus included bread / toast, bagels, English muffins, or other plain breads. About 30% included pastries (danishes, doughnuts, sweet rolls, etc). One out of five menus offered pancakes, waffles, or French toast.

**Meat or meat alternatives.** Among all daily breakfast menus, 72% included no meat or meat alternative items (other than those that might have been included in a combination entrée). When offered, there was generally one meat or alternative option available. Separate meats or meat alternatives were offered in 28% of all breakfast menus, with secondary schools including them more often than elementary school menus.

**Combination items.** Most common combination entrée offered was a breakfast sandwich (eggs, cheese, bacon / sausage, bread) in 45% of secondary schools, and 29% elementary schools. Among all schools, other combinations included pizza (10%) or pancake-wrapped sausage (5%).

### **Average nutrient content of breakfasts served to students**

**Nutrient content relative to RDAs.** School Breakfast Program breakfasts served in 1998-99 met or exceeded the School Breakfast Program standard of one-fourth the RDA for all target nutrients. Elementary school breakfast met or exceeded one-fourth (25%) the RDA for the following (except calories):

- 23% of RDA for calories (below standard of one-fourth of RDA)
- 52% of RDA for protein (exceeding one-fourth of the RDA)
- 39% of RDA for vitamin A
- 81% of RDA for vitamin C
- 43% of RDA for calcium
- 37% of RDA for iron

Elementary school breakfasts provided an average of 23% of RDA for calories while providing more than 35% of RDAs for all key nutrients. School breakfasts provided 81% of the RDA for vitamin C for elementary school students and 72% for secondary school students. The average

breakfast served in more than 80% of all schools provided less than one-fourth of students' daily energy needs (i.e., fewer than 20% of all schools met the School Breakfast Program standard for calories). Only 8% of secondary schools met the minimum School Breakfast Program calorie standard for breakfast served to secondary students. More than 90% of breakfast served in all schools, met the one-fourth RDA benchmark for protein, vitamin C, and calcium. Fewer secondary schools (78%) than elementary schools (99%) met the standard for calcium. Both iron and vitamin A tend to occur in concentrated amounts in a limited number of foods, therefore a smaller percentage of schools (80%) satisfied the School Breakfast Program standards for both. Mean levels of these nutrients were roughly comparable across all school types; however, the RDAs for middle school and high school students are greater.

Twenty-two percent of elementary schools met the nutrition standard of one-fourth of the RDA for total calories in the average breakfast. The percentage of schools in which the average breakfast served to students provided one-fourth or more of the RDA was 22% for total calories, 22%, 100% for protein, 95% for vitamin A, 98% for vitamin C, 99% for calcium, and 93% for iron.

**Percentage of calories from total fat and saturated fat.** The percentage of calories for fat in elementary school breakfast was 26.5% (of total calories); therefore, the breakfasts served in elementary schools met the School Breakfast Program standard for calories ( $\leq 30\%$  of total calories). However, breakfasts served to elementary students contained slightly higher (10.1% versus 10%) than standard calories for saturated fat. Seventy-five percent of elementary schools met the standards for fat and saturated fat versus 64% of secondary schools, and 71% of all schools.

**Cholesterol, sodium, and carbohydrate content.** Elementary schools satisfied the National Research Council's recommendations for cholesterol ( $\leq 75\text{mg}$ ), sodium ( $\leq 600$ ), and carbohydrates ( $>55\%$ ) content. Elementary school breakfasts served to students contained 43 mg cholesterol, 574 mg sodium, and 61.5% carbohydrates. Eighty-five percent of elementary schools satisfied the standard for cholesterol; 63% satisfied the standard for sodium; and 82% of elementary schools satisfied the National Research Council's recommendation for percent of calories from carbohydrates.

**Friedman, B. J. & Hurd-Crixell, S. L. (1999).** Nutrient intake of children eating school breakfast. *Journal of the American Dietetic Association*, 99(2), 219-221.

**Objective(s):** To evaluate the nutrient intake of children eating school breakfast by assessing actual breakfast consumption of students.

**Participants:** School children (316) aged five to 12 years.

**Methods:** Using a visual plate-waste technique, Friedman and associates (1999) determined that the food intake of elementary students who participated in the School Breakfast Program at three schools in their study had nutrient intakes that fell below the United States Department of Agriculture (USDA) requirements.

**Results:** Saturated fat intakes exceeded recommended levels, while the recommended levels of iron and vitamin C were met, but vitamins C and A were below level. The menus analysed met the USDA requirements for protein, calcium, and vitamin C, but exceeded recommendations for total fat and saturated fat. Although fortified dry cereal and toast option met the requirements for vitamin A and iron, the entrees only provided 70% and 90% of these nutrients. Either entrée only provided an estimated 80% of the energy requirement. Students consumed 60% of the energy offered by the School Breakfast Program menus and 50% of the USDA energy requirement. However, the total fat percentage of actual intake was 31% and saturated fat intake was 15%. Although these children may have been served a nutritious meal, they did not actually consume the recommended nutrient levels but exceeded fat levels. Actual intake varied significantly from that which was offered. Energy intakes fell below the USDA requirements while saturated fat intakes exceeded the recommendations. Children were able to meet the recommended levels of iron and vitamin C, but fell short for calcium and vitamin A.

**Conclusion:** It is difficult to plan a breakfast menu to meet recommended energy and nutrient levels for students without exceeding total and saturated fat. Friedman and associates (1999) recommend mid-morning snacks for young children to boost energy intake and increase intake of micro-nutrients, particularly as they may not be able to consume 500 kcal in a single breakfast meal. Whole fruits rather than juice were recommended to boost fibre and vitamin A, and whole grain products to boost iron and fibre. Lastly, programs should offer foods that are high in nutrients rather than high-energy food. This analysis suggests that continued evaluation and redesign of school menus are required to help children meet the USDA dietary guidelines.

**Gleason, P., & Sutor, C. (2001). Children's diets in the mid-1990s: Dietary intake and its relationship with school meal participation. (United States Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition and Evaluation, Report No. CN-01-CD1) Alexandria, VA: USDA. Retrieved September 17, 2002, from <http://www.fns.usda.gov/oane/MENU/Published/CNP/FILES/ChilDietsum.html>**

**Objective(s):** To describe the diets of school-aged children in the United States as of the mid-1990s, examine relationships between children's participation in the school meal programs and their dietary intake, and examine changes in dietary intake between the periods 1989-91 and 1994-96.

**Participation:** The sample consisted of 2,700 children aged six through 18 years who also participate in the Continuing Survey of Food Intakes by Individuals (CSFII).

**Methodology:** Children completed two non-consecutive days of dietary intake interviews. Parents assisted children aged six to 11 years in reporting their intakes; older children reported their food and beverage consumption independently. School meal participation was determined according to the foods the student reported having obtained and consumed from the school cafeteria on that day. To determine the proportion of children that met various dietary standards, the researchers used unbiased estimates of the distribution of the usual food intake among study participants. To obtain the estimates, the researchers used statistical methods with the data based on two non-consecutive days of dietary intake for each participant. The 1989 RDA or Adequate Intakes (AIs) were used to assign reference standards to nutrients other than the B vitamins, phosphorus, and magnesium. Estimated Average Requirements (EARs) were assigned to the B vitamins, phosphorus, and magnesium. To examine the relationship between school meal participation and dietary intake, researchers obtained regression-adjusted mean food and nutrient intake estimates after controlling for observable characteristics of participants and non-participants.

**Results:** School meal programs provide between 19% to approximately 50% of the daily food energy. School Breakfast Program participation is associated with higher intakes of food energy, calcium, phosphorus, and vitamin C. Compared with non participants (90%), School Breakfast Program participants' regression-adjusted mean food energy intake is 96% of the RDA. Participants met reference standards for vitamins C and B12, thiamine, and calcium due to higher intakes of milk and fruit.

Breakfast, compared with lunch, tends to be substantially higher in nutrient density for vitamins and minerals. Intakes of fat, saturated fat, and sodium for breakfast are closer to the recommended amounts. Children's mean intakes of most vitamins and minerals exceed the RDA. However, intakes of vitamin E, zinc, and folate are less than the RDA. Nearly all children meet the reference standard for most B vitamins, but many children of all ages are at risk of inadequate intakes of folate, magnesium, zinc, and vitamins A and E. In addition, a large proportion of children have calcium intakes well below the AI level. Most children take fewer than the recommended number of servings of the five major food groups, especially in relation to their energy requirements. Only 2% of children met the United States Department of

Agriculture's Food Guide Pyramid serving recommendations for all five major food groups. The number of children meeting the number of food group servings are 14% for fruit, 17% for meat, 20% for vegetables, 23% for grain, and 30% for milk. Low percentages of children met the recommended intake for total fat, saturated fat, fibre and sodium. However, young children are most likely to meet the recommendations for sodium and fibre.

**Conclusion:** Improvements in the school meal programs can be a positive step in promoting healthy eating among children. In particular, improvements are needed to promote children's intakes that are consistent with dietary recommendations related to intake of fat, saturated fat, sodium, and fibre.

**Gordon, A. R., & McKinney, P. (1995). Sources of nutrients in students' diets. *American Journal of Clinical Nutrition*. 61(1S), 232S-240S.**

**Objective(s):** To describe foods consumed and nutrients derived from specific foods by participants and non-participants in the National School Lunch Program and the School Breakfast Program.

**Participants:** A sample of 3,350 children in grades 1 through 12.

**Methods:** Data were derived from 24-hour dietary recalls of 3,350 children in grades 1 through 12, collected as part of the School Nutrition Dietary Assessment Study.

**Results:** School Breakfast Program participants were more likely than non-participants to consume milk and fruit juice, leading to higher intakes of calcium and magnesium, and they were three times more likely to eat meat, leading to high intakes of fat and sodium.

**Conclusion:** Results suggest that the school meals can improve a child's nutrient intakes but that care must be taken to prepare meals that do not exceed the dietary guidelines for fat and sodium.

**McKinney, P., Hirschman, J., Sinn, M., & Eadie, R. M. (1999). Eating breakfast: Effects of the School Breakfast Program. Retrieved December 19, 2002, from the American School Food Service Association website: <http://www.asfsa.org/childnutrition/research/breakfast.asp>**

**Purpose:** To investigate whether the availability of the School Breakfast Program increases the likelihood of a child eating breakfast.

**Methods:** These authors report a review literature on the prevalence of breakfast consumption (eating or skipping). Researchers identified three definitions for breakfast that include self-reports of breakfast consumption or any food or beverage consumed after waking in the morning; intake of food energy greater than 10% of the RDA; and consumption of food from at least two or five main food groups. The five main groups in this review include: 1) milk and milk products, 2) meat and meat products, 3) grain products, 4) fruits and fruit juices, and 5) vegetables and vegetable juices.

**Results:** Findings among studies defining breakfast as food from at least two of the main food groups and 15% of RDA reported lower rates of breakfast consumption as compared with studies where breakfast was defined as any food or beverage. One in 10 students had a breakfast that was equal to or exceeded the School Breakfast Program's recommendation of three of four food groups and energy intake of 25% of RDA. The rates of breakfast consumption declined as the definition of breakfast became more robust. The highest consumption was found among breakfasts defined as any food, but lowest among breakfasts defined as food from two food groups and intake of food energy greater than 10% of the RDA. When breakfast is defined as food energy greater than 10% of RDA, the likelihood of eating breakfast is significantly higher for low-income students attending schools with a school breakfast program than for students attending schools without a school breakfast program. As the definition of breakfast becomes more robust, the percentage of low-income children who consume breakfast increases in schools with a school breakfast program compared to schools without it. The more robust the definition of breakfast becomes the percentage of students who eat breakfast declines.

**Conclusion:** If breakfast is defined as any food or breakfast consumed, the availability of a school breakfast program is not associated with an increased likelihood of eating breakfast. As the definition of breakfast becomes more robust, the availability of a school breakfast program for low-income students is associated with an increased likelihood of eating breakfast. The estimated effects of school breakfast program availability on the likelihood of eating breakfast are largest for low-income elementary school students.

**Nicklas, T. A., O’Neil, C. E., & Berenson, G. S. (1998). Nutrient contribution of breakfast, secular trends, and the role of ready-to-eat cereals: A review of the data from the Bogalusa heart study. *American Journal of Clinical Nutrition*, 67(4)(Suppl), 757S-763S**

**Objective(s):** To conduct a longitudinal assessment of the nutrient intake of children participating in the Bogalusa Heart Study.

**Participants:** Ten-year-old children in Bogalusa, LA.

**Method:** This evaluation studied 1,254 10-year-old children over a 15-year period (1973 to 1998). Nutrient intake was assessed by 24-hour dietary recalls.

**Results:** During the first six years of the study, the number of children skipping breakfast increased; but this number was reduced after a school breakfast program started. Children eating breakfast had greater intakes of energy, protein, and carbohydrate, while the percentage of energy from fat decreased. Fewer school breakfast participants fell below the RDA for vitamin A and D, riboflavin, thiamine, calcium, magnesium, and zinc than the children who ate breakfast at home did. Nutrient intakes also improved milk intakes.

**Conclusion:** This evaluation supports the important role of the School Breakfast Program on the nutritional status of school-aged children.

**Nicklas, T. A., Weihang B., Webber, L. S., & Berenson, G. S. (1993). Breakfast consumption affects adequacy of total daily intake in children. *Journal of the American Dietetic Association, 93*, 886-891.**

**Objective(s):** To assess breakfast consumption patterns for 10-year-old children.

**Participants:** A sample of 467 10-year-olds in the years 1984-84 and 1987-88.

**Methods:** 467 10-year-old children were interviewed in the 1984-85 or 1987-88 school year. Consumption patterns were then related to average daily nutrient intake patterns.

**Results:** More white children and girls ate breakfast at home, whereas more black children and boys ate breakfast at school. Sixteen percent of all children skipped breakfast. Breakfast consumption made a significant contribution to the child's average daily nutrient intake. The average total energy intake was significantly lower for children who either skipped breakfast or who consumed breakfast at home, than for children who ate at school. Children who did not eat breakfast were not able to make up for the lack of nutrients at other meals.

**Conclusion:** Breakfast is important to overall diet quality and adequacy in school-aged children.

**Story, M., Snyder, P., Anliker, J., Sabo, L. C., Weber, J. L., Ring, K., Platero, H., & Stone, E. H. (2002). Nutrient content of school meals in elementary schools on American reservations. *Journal of the American Dietetic Association, 102* (2), 253-256.**

**Objective(s):** To examine nutrient content of school meals (breakfast and lunch) over a five-day period in elementary schools serving American-Indian children and to compare nutrients provided in school meals with the United States Department of Agriculture (USDA) nutrition criteria.

**Participants:** Elementary school children in 41 schools located on seven Indian reservations in three Southwest United States. The average percentage of students receiving free or reduced-price meals was 90%.

**Methods:** For five consecutive days in spring 1997, complete descriptions of food items, serving size, and amounts served were collected for all menu items in 41 schools. Nutrition facts labels were collected from all vendor products. Nutrient summary files for all recipes, vendor products, and menu items over the five-day period were combined to generate average nutrient composition of lunch and breakfast meals. Data were analysed using a weighted nutrient analysis based on the nutrient composition of the food and the number of students who took the food. Means and standard errors for nutrients were calculated for school breakfast and lunch meals. SAS was used to analyse data.

**Results:** For all nutrients, except folate, school lunches provided more than one-third of the Dietary Reference Intakes (DRI) for children aged nine to 13 years. Lunches provided half of the daily DRI for most vitamins and minerals. The average school lunch provided 33% of total energy from fat, which exceeds the USDA standard of  $\leq 30\%$  energy from fat. Two-thirds of all schools provided lunches that had up to 35% of energy from fat. Breakfast provided an average of at least one-fourth of the DRI for all nutrients, with the exception of folate. Breakfast provided close to half of the DRI for several vitamins and minerals. The mean energy value of school breakfasts (485 kcal) was lightly below the USDA goal of 500 kcal. The median (50<sup>th</sup> percentile) for energy in breakfast meals was 474, indicating that about half of the schools in the study were below the USDA goal. The mean percent for energy from fat was 29%. Two-thirds of the schools met the goal of 30% or less of energy from fat.

**Conclusions:** School breakfast on reservation schools met the Dietary Guidelines goal for total fat, as the average proportion of food energy from fat was 29%. In general, school breakfasts contain less fat and saturated fat than lunch because breakfasts are not required to include meat or a meat alternative. The average breakfast provided 24% of the daily recommended intake for energy. The mean percent of energy for saturated fat was 13% for lunches and 12% for breakfasts in the schools on American-Indian reservations, while the USDA study yielded 15% for lunches and 14% for breakfast. The average school lunch and breakfast on American-Indian reservations exceeded the USDA goal for saturated fat.

## Evaluation and Research Studies Pertaining to Nutrition and Learning

**Brown, R. S. (1993).** *An evaluation of the pilot joint school food programs in the Toronto board of education.* Toronto: Research Services, Toronto Board of Education.

**Objective(s):** To monitor the implementation of the pilot during its first year; and to ascertain possible changes in behaviour, attitude, and knowledge of students of the original eight participating schools.

**Participants:** Three-thousand students enrolled in kindergarten to Grade 8 and adults who were key informants involved with the food program, teachers, and other staff.

**Methods:** Data collection took place between October 1991 and June 1992. Data collection involved: two questionnaires given to separate groups of students, one for primary grades (kindergarten to Grade 3) and the other for junior / intermediate grades (grades 4 to 8); focus groups with key organizers of food programs in eight original school sites; questionnaires given to teachers and other staff; questionnaires given to parents of students participating in the program from two schools conducted in English, Chinese, Vietnamese, and Tamil; and site visits to several schools. Student questionnaires administered twice to students in the eight original schools in January / February, and again in late June 1992.

**Results:** One-fifth of students responding to the survey said that they do not eat anything before the start of classes. Students' knowledge regarding nutrition principles improved after the nutrition program was introduced. Students liked the food that was offered during the snack program more than the food offered during breakfast and lunch. Most students participated in the food programs offered in their school. Greater numbers of students participated in the snack program than in the breakfast or lunch programs. Primary school students said they had more time to eat during the snack (81% in January, 87% in June) compared to breakfast (57% in January, 65% in June). No measurable differences were found in children's food preferences after the introduction of the program. School records indicated that rates of absences decreased from 5.1% to 5.0% and rates of tardiness decreased from 2.2% to 1.9%. Focus groups said that programs were started in response to observations of students arriving at school hungry. Parents contributed financially to programs; however, other forms of participation, such as volunteering for the program, were limited. Food preparation facilities were inadequate. Teacher support was necessary for programs to continue. Focus group participants reported improved behaviour, increased socialization, and increased effectiveness in class. Respondents to the staff and parents' questionnaires reported that they support the program. Staff and parents said that giving students well-balanced meals and keeping children from feeling hungry were thought to be the most important program goals. School staff responded that they thought these goals were achieved. The majority of school staff (84%) and parents (68%) felt that hunger was a problem for school children in Toronto. Three-quarters of staff thought hunger was a problem for students in their school.

**Grantham-McGregor, S. M., Chang, S., & Walker, S. (1998). Evaluation of school feeding programs: Some Jamaican examples. *The American Journal of Clinical Nutrition*, 67(supplement), 785S-789S.**

**Objectives:** To determine the impact of school breakfast on scholastic achievement and classroom behaviour.

**Participants:** Jamaican children aged eight to 11 years who were determined to be undernourished and adequately nourished in four schools. Participating schools had  $\geq 25\%$  of the student population with weight-for-age below  $-1$  SD of the National Center for Health Statistics references.

**Methods:** A cross-over design was used in which classrooms of children received either a government breakfast or a placebo (a piece of orange). After week one, the researchers took baseline measurements of cognitive function (visual search, digit-span forwards, categorical fluency, and speed in decision making) and classroom behavioral observations (talking, moving with out permission, and answering teachers' questions). The reverse treatment was applied to after another two weeks and measures taken again.

**Results:** Nutritional status had no significant effect on the cognitive function tests. However, undernourished children performed significantly better on categorical fluency tests after they received breakfast, whereas, adequately nourished children had no change in scores. Cognitive tests showed no other significant main effects of treatment or treatment group interactions. Classroom behaviour was determined by the state of the school. Better organized schools saw improved attention with breakfast whereas poorly organized schools saw behaviour deteriorate.

**Conclusion:** Undernourished children's cognitive function is enhanced if they eat breakfast. Schools that are better equipped with adequate numbers of desks and chairs, room between students, with one class per classroom contributed to an orderly atmosphere with less talking between students and fidgeting, better attention paid to the instructor. Children who ate breakfast in the better schools had the highest cognitive scores.

**Kids Eat Smart Foundation Newfoundland & Labrador. (2002). Kids eat smart foundation Newfoundland & Labrador annual report 2000-2001. St. John's: Kids Eat Smart. Retrieved December 12, 2002. <http://www.kidseatsmart.ca/appleawards.htm>.**

**Name of program:** Kids Eat Smart Clubs

**Goal:** “Nutritious food for children so they can learn better.”

**Program description:** Breakfast, snack, and lunch in schools through Newfoundland and Labrador operating daily and serving 5,000 children in 147 Kids Eat Smart Clubs with 4,000 volunteers. Regional working groups provide recommendations for decision-making to a board of directors. Partnerships involve individual volunteers; local community groups; local, regional, and provincial governments; local grocers who store and deliver food; businesses contribute notions, logo-clothes, donations, and other items toward a Full Belly Basket. Tickets are sold on the basket, and the funds raised are kept in that club.

**Evaluation objective(s):**

- 1) To assess the principals’ perceptions of the impact of Kids Eat Smart programs on student behaviour.
- 2) To assess program delivery from the perspective of program coordinators.

**Evaluation participants:** Principals and program coordinators in Kids Eat Smart sites.

**Method:** Two mail surveys, one sent to coordinators, and the other sent to principals.

**Results:**

**Attendance.** When asked if they felt that school attendance had improved for students participating in the program, 52% of the principals who responded to the survey agreed and another 13% strongly agreed it had.

**Academic performance.** Among the principals that indicated they agreed that academic performance had improved, 44% agreed while 17% strongly agreed.

**Attention span.** Almost three-quarters of the principals agreed (26% strongly agreed and 47% agreed) that attention span had improved for students participating in the program.

**Disruptive behaviour.** Thirteen percent of the principals surveyed disagreed with the statement “Disruptive behaviour has decreased for students participating in the program.” Most principals were unsure that disruptive behaviour had decreased. Only 13% strongly agreed, while 30% agreed that disruptive behaviour had decreased for students participating in the program.

**Positive socialization.** All principals (61% strongly agreed and 39% agreed) indicated agreement with the statement that the program had increased positive socialization among students.

**School atmosphere.** All principals agreed (44% strongly agreed and 57% agreed) that the program improved overall atmosphere of the school.

**Stigmatization.** All principals (100%) said there was no stigmatization of students participating in the program. All principals surveyed indicated that they would recommend other schools start a child food program. Among program coordinators, (88%) also felt there had not been any negative reaction from members of the school community toward the program. Program coordinators (96%) reported that the community is aware of the program. Coordinators (75%) reported that the community had reacted positively to the program and 79% of coordinators reported that the community had not reacted negatively to the program. Ninety-six percent of coordinators felt that the administration were supportive of the program. Eighty-three percent of coordinators reported that the community had indicated a commitment to support the program. However, 8% said that the community had reacted negatively to the program.

**Participation.** The majority (83%) of program coordinators surveyed felt that they were successfully reaching who are most in need.

**Perceptions of universality.** The majority of principals (96%) indicated that they believed participants perceived the program as universal as opposed to singling out high-risk children.

**Parental involvement.** Parents of participating children were reported to be among the program's volunteers by 83% of the coordinators. While 48% of coordinators indicated that parents of non-participating children were volunteers.

**Inclusive and efficient program management (volunteer).** Forty-eight percent of coordinators reported that their program had more than 20 volunteers compared with 9% of coordinators who reported one to five volunteers. Eighty-three percent of coordinators reported that volunteers included parents; 48% of coordinators reported volunteers were parents of children not participating in the meal program; 39% reported teachers were volunteers; 65% reported students were volunteers; and another 42% reported volunteers included others. Among coordinators surveyed, 88% reported that they had enough volunteers and another 78% reported that recruitment had not been a problem for their program

**McLaughlin, J. E., Bernstein, L. S., Crepinsek, M. K., Daft, L. M., & Murphy, J. M. (2002). Evaluation of the school breakfast program pilot project: Findings from the first year of implementation. Special Nutrition Programs Report No. CN-02-SBP. Alexandria, VA: United States Department of Agriculture (USDA) Food and Nutrition Service Office of Analysis, Nutrition, and Evaluation. Retrieved April 23, 2003, from the USDA Food and Nutrition Service office of Analysis, Nutrition, and Evaluation website: <http://www.fns.usda.gov/oane/MENU/Published/CNP/FILES/BreakfastYr1Sum.pdf>.**

**Objective(s):**

- To assess the effects of the availability of universal-free school breakfast on breakfast participation and selected student outcome measures (dietary intake, cognitive and social/emotional functioning, academic achievement tests, school attendance, tardiness, classroom behaviour and discipline, food insecurity, and health).
- To document the methods used by schools to implement universal-free school breakfast and determine the effect of participation in this program on administrative requirements and costs.

**Participants:** Children who attend schools with either the universal-free school breakfast (79 treatment schools) or with the regular School Breakfast Program (74 control schools) located in Alabama, Arizona, California, Idaho, Kansas, and Mississippi and teachers and principals at treatment and control schools.

**Methods:** Schools in six school districts (Alabama, Arizona, California, Idaho, Kansas, and Mississippi) were randomly assigned to implement the universal-free school breakfast (79 treatment schools) or to continue to operate the regular School Breakfast Program (74 control schools). During spring 2001, the following data were collected: dietary intakes, cognitive function, and height and weight of 4,300 students across the treatment and control schools; school records for school years 1999-00 (pre-implementation) and 2000-01; interview responses from school district staff; and parent and teacher data.

**Results:**

**Participation and dietary intakes.** Participation in the Universal-Free School Breakfast Program nearly doubled from 19% to 36% in treatment schools (universal-free school breakfast) for a gain of 17 percentage points. However, student participation in the regular School Breakfast Program (control schools) only increased from 19% to 20%. The greatest increases were among students who were paid-eligible participants rather than the free and reduced-price participants. Less than 4% of elementary school students in both the treatment and control group skipped breakfast altogether. Few students (focus groups with grades 4, 5, and 6 students), teachers (interviews), or principals (interviews) in either treatment or control schools reported stigma that associated breakfast participation with students from low-income households. The majority of teachers, 91% and the majority of principals, 89% responded that they had observed no evidence of stigma associated with breakfast in their schools. Participation was much higher in treatment schools in which students ate breakfast in classrooms (65%) than when they ate in a cafeteria or other non-classroom settings (28%).

**Breakfast.** For the sake of measuring breakfast consumption, breakfast included any foods eaten between 5:00 and 10:30 a.m. Students in treatment schools (80%) were more likely to consume a nutritionally substantive breakfast than students in control schools (76%) consisting of food from at least two food groups and greater than 10% of the RDA for food energy. Students in the treatment schools (7%) were more likely than control school students (4%) to consume two or more substantive breakfasts in a week. There was almost no difference in the food and nutrient intake of treatment and control school students at breakfast or over the course of the day. The majority of students in both treatment and control schools had 24-hour dietary intakes that were adequate for vitamins and minerals and exceeded 80% of the RDA for food energy and protein, but did not meet the dietary recommendations for total fat, saturated fat, or sodium. Treatment school students consumed 12 mg less cholesterol per day on average than did control school students. Both the treatment (17%) and control (18%) school students were similar in prevalence of obesity. Treatment school breakfasts were just as likely as control school breakfasts to meet School Breakfast Program nutrition criteria for food energy, target nutrients, and total and saturated fat. All students in both treatment and control schools were served the same items for breakfast. There was no significant difference between treatment and control schools in the serving of hot breakfasts (offered one to two times weekly during winter exclusively).

**Cognitive functioning and academic achievement test scores.** Treatment and control students had similar scores on a cognitive test assessing a range of cognitive functions including attention, short-term and long-term memory. There were no differences in math and reading score gains across all grades between treatment and control school students.

**Other measures (school attendance, tardiness, social / emotional functioning, food insecurity, and health status).** There were no differences between treatment and control school students for cognitive and social / emotional functioning, academic achievement, attendance, tardiness, food insecurity, body mass index, and health status. There were a few differences found on the behaviour ratings of oppositional behaviour and measures of school disciplinary incidents that were in the negative direction indicating worse outcomes for students with access to universal-free school breakfast. Differences were statistically significant, but small. Treatment school teachers compared with control school teachers had a significantly higher oppositional score (52.3% versus 51.5%) on the Conners' Teachers Rating Scale. The score indicated that students who had universal access were more likely to break rules, interact negatively with authority figures, becoming more easily angered and annoyed than others their age. However, there were more disciplinary incidents among control school students

**Impact on program administration.** Among staff affected by the implementation of the universal-free school breakfast food service workers and custodial staff saw the greatest increase in workload, followed by office staff and teachers (in-class breakfast). Principals at treatment schools were more likely to report increased breakfast supervision (56%) and increased staffing (37%) as changes to school operations after the implementation of a universal school breakfast program than were control school principals (35%, 22%).

**Costs.** Increased breakfast participation resulted in lower per meal labour costs in treatment schools. Combined labour and food costs per breakfast were 11% lower in treatment (\$0.80 US), particularly when breakfast was served in class (\$0.74 US) than control schools (\$0.90 US).

**Conclusion:** The availability of a universal-free school breakfast nearly doubled breakfast program participation. However, its impact on dietary intake or school performance may have been minimal due to the fact that breakfast skipping was low among the students in both control and treatment schools. The availability of universal-free school breakfast was not related to students' likelihood of meeting daily dietary requirements and other recommendations. Two additional years of study will determine whether the availability of a universal-free breakfast will have an impact of students' outcomes.

**Minnesota Department of Children Families and Learning. (1998). School breakfast programs energizing the classroom: A summary of the three-year study of the universal school breakfast pilot program in Minnesota elementary schools. Roseville, MN: MDCFL. Retrieved May 2, 2002, from <http://www.nal.usda.gov/fnic/schoolmeals/States/energize.pdf>.**

**Objective(s):** To determine the impact of school breakfast on children's school performance including discipline, test scores, attendance, and other measures of educational achievement.

**Number of schools participating in the evaluation:** Six elementary schools across six communities in Minnesota.

**Methods:** Using a multi-methods approach, researchers gathered information on: teachers' perceptions of the students' attentiveness at the start of the day and mid-morning; the number of referrals to the principal's office due to discipline problems; program participation rates; visits to the nurse's office; students' test scores; and parents' reactions to the program.

**Results:**

**Learning readiness.** The Universal School Breakfast Program contributed to students' learning readiness. Learning readiness was defined by student attentiveness and incidents of disciplinary actions as reported by teachers and the number of nurse visits as reported by nurses. Teachers reported increased student attentiveness (more energy at the start of the day and less complaints about mid-morning hunger). Teachers reported improved student behaviour sending fewer children to the office due to discipline problems. School nurses reported fewer visits to their office due to minor headaches and stomachaches, e.g. the number of visits to the nurse's office dropped to 5% in the 1995-96 school year from 34% in the previous year. Researchers found a general increase in the composite math and reading percentile scores among Grade 6 students after three years of participating in the Universal School Breakfast Program. Among the parents surveyed 91% agreed or strongly agreed that the program had a positive effect on their child.

**Access and participation.** Student participation in the School Breakfast Program in the schools participating in the evaluation form a baseline rate of 12% to between 75% and 93% after the introduction of the Universal School Breakfast Program. The program was integrated into the educational schedule for all students.

**Peterson, K., Davison, M., Wahlstrom, K., & Himes, J. (2001). Fast break to learning school breakfast program: A report of the first year results, 1999-2000. Center for Applied Research and Educational Improvement, University of Minnesota. [http://www.education.umn.edu/oea/New\\_Site/Reports/BreakfastStudy/FirstYearReport/BreakfastStudy.pdf](http://www.education.umn.edu/oea/New_Site/Reports/BreakfastStudy/FirstYearReport/BreakfastStudy.pdf)**

**Objective(s):** To compare Fast Break to Learning, a universal-free school breakfast program, to control schools (School Breakfast Program) on a number of variables that include: 1) administration, 2) student participation in the School Breakfast Program, and 3) statewide achievement test scores of grades 3 and 5 students in reading, mathematics, and writing for the 1999-00 school year.

**Participants:** Principals and food service personnel at schools with the School Breakfast Program and Fast Break to Learning Breakfast Program for the 1999-00 school year.

**Methods:** This quantitative study used an experimental design to compare Fast Break to Learning schools to School Breakfast Program schools (control). Separate surveys were mailed to principals and food service personnel between April 28 and June , 2000. Among the eligible schools, 313 schools chose to participate in the Fast Break to Learning Breakfast Program and were assigned to the Fast Break Group. The remaining 188 programs serving breakfast to students that chose not to be a part of Fast Break to Learning were assigned to the control group. Grade 3 mathematics and reading scores and Grade 5 mathematics, reading, and writing scores on the Minnesota Comprehensive Assessment for 1998-99 and 1999-00 were analysed. The third source of data was student enrolment and attendance at various schools during 1998-99 and 1999-00.

## **Results:**

**Administration.** Approximately 97% of principals and food service personnel surveyed agreed with the statement that there were benefits to providing a school breakfast. Fast Break schools and control schools equally reported the following barriers to participation: 1) bus scheduling, 2) lack of time, 3) taking time away from the instructional day, and 4) breakfast is for poor children. However, the perception that breakfast is for lower-income households was reported by fewer study participants at the Fast Break to Learning schools than those at control schools. Further, principals commented that stigma was not associated with participation in the Fast Break to Learning program. Finally, fewer Fast Break (15%) compared to control schools (23%) reported a need for additional supervisory staff.

**Participation.** Fast Break to Learning School Breakfast Program had an average participation rate of 46% as compared to control schools with traditional school breakfast programs that only had 12% participation. Within the Fast Break to Learning Schools, there was a 12% increase in participation by students eligible for reduced-price school meals compared to a 4% increase among student eligible for free breakfast. Forty-nine percent of the Fast Break to Learning

schools reported being able to offer some or all of the breakfast after the school day started, either in the cafeteria or in the classroom.

**Student achievement.** During the 1999-00 school year grades 3 and 5 students at Fast Break to Learning schools had improved reading, writing, and math scores on the Minnesota Comprehensive Assessment Test compared to students at control schools. In three out of four reading and math tests, a higher percentage of students in the Fast Break to Learning schools compared to students at control school tested at level 2 reading and math and had improved academic achievement. Even when Grade 5 writing scores declined across all schools in 2000, the margin of decline in scores was closer to 1999 scores for Fast Break to Learning schools compared with that of control schools.

**Funding.** Elementary schools with 33% or more of their school lunches served to students approved for free or reduced-price school meals would be eligible for funding. Schools would receive funding for 75% of the estimated loss in student payments for offering breakfast to all students at little or no charge. The Minnesota Legislature dedicated \$5 million US for the period 2000-02. In the first year, \$2.5 million US was released allowing 326 schools and 40,000 students to participate in Fast Break. Increased student participation quadrupled federal reimbursements drawn down through the School Breakfast Program at Fast Break Schools. Fast Break to Learning Programs contributed 24% of the school breakfast costs, while the federal government contributed 67% toward the breakfast cost. Other local donors provide 8% toward the breakfast program costs.

**Peterson, K., Davison, M., Wahlstrom, K., Himes, J., Seo, Y. S., Irish, M. L., & Harring, J. (2003). Fast break to learning school breakfast program: A report of the third year results, 2001-2002. Center for Applied Research and Educational Improvement, University of Minnesota. Retrieved July 23, 2003, from [http://fns.state.mn.us/FNSProg/PDFA11Prog/Resources/FastBreakToLearn01\\_02.pdf](http://fns.state.mn.us/FNSProg/PDFA11Prog/Resources/FastBreakToLearn01_02.pdf)**

**Objective(s):** To compare Fast Break to Learning, a universal-free school breakfast program, to control schools (School Breakfast Program) on a number of variables that include: 1) administration and implementation, 2) student participation in the School Breakfast Program, 3) student achievement on statewide achievement test scores of grades 3 and 5 students in reading, mathematics, and writing, 4) attendance, and 5) health and disciplinary issues for the 2001-02 school year.

**Participants:** Principals and teachers at schools with the School Breakfast Program and Fast Break to Learning Breakfast Program for the 2001-02 school year.

**Methods:** Separate surveys were mailed to 500 principals and teachers each between February and April 2002. The purpose of the first survey was to gather data on participation in, the administration of, perceived benefits of, and barriers to the School Breakfast Program. Between April 16 and May 2, 2002, a second mail survey was sent to principals to gather information on health and discipline issues at their school. Among eligible schools, 422 chose to participate in the Fast Break to Learning Breakfast Program and were therefore assigned to the Fast Break Group. The remaining 88 programs serving breakfast to students that chose not to be a part of Fast Break to Learning were assigned to the control group. Grade 3 mathematics and reading scores and Grade 5 mathematics, reading, and writing scores on the Minnesota Comprehensive Assessment for 1998-99, 1999-00, 2000-01, and 2001-02 were analysed. The third source of data was student enrolment and attendance at various schools during 1998-02.

**Results:**

### **Program Administration**

**When breakfast is served.** The majority of teachers participating in the study, 83% reported that breakfast was served before the school day. A higher proportion of control schools (94%) compared with Fast Break Schools (79%) reported that the school breakfast was served before the start of the school. Forty-nine percent of the Fast Break to Learning schools reported being able to offer some or all of the breakfast after the school day started, either in the cafeteria or in the classroom. Overall, programs that served breakfast after the start of the school day had higher participation rates (87%) compared with before school (51%). However, the barrier to implementation that teachers most often mentioned (24%) was lack of time before school. Yet, most principals said that having breakfast in class would interfere with instructional time (82%). One-third of principals said that additional cleanup time and effort would be a barrier.

**Where breakfast is served.** The majority of teachers (87%) said that breakfast was served in the cafeteria compared with only 8% of teachers who said that it was served in the classroom, and 5% who said both places. When breakfast is served after the start of the school day, 50% served it in the classroom. Principals (27%) indicated that the space needed to serve breakfast in class is a barrier to implementation.

**Who serves breakfast.** The majority of respondents (65%) indicated that aids served breakfast followed by food service personnel (46%). Teachers (21%) said contractual issues might be barriers to serving breakfast in classrooms.

**Promoting the program.** The majority of principals (83%) said that teachers were informed by announcement at a faculty meeting and 40% by district publications and newsletters. Principals reported that the most common way that parents were informed about the breakfast program was by school newsletter (83%). Students were most commonly informed by their classroom teacher (75%). A half of the teachers promoted the breakfast program through discussions in health and nutrition curriculum. One-third of teachers promoted the program to their students through a classroom newsletter. One-quarter of teachers reported they did not promote the breakfast program to students at all.

**Principal's overall assessment of the value of school breakfast.** Gap analysis indicated that principals believe the School Breakfast Program is most positively contributing to academic achievement and positive school climate.

**Participation.** Overall, the participation rate for both Fast Break and control schools has increased 20% since 1998-99. However, Fast Break schools saw the greatest increases in participation rates, from 39% in 1998-99 to 56% in 2001-02 school years, a 17% increase. Respondents (60%) said there were no criteria for student participation in the Fast Break schools since the program was offered to all students. Overall, participation rates were greatest where the breakfast program was a part of the school-wide policy with teacher input (72%) compared with schools with no set policy (45%). Participation rates were higher when teachers accompanied their classes to breakfast.

**Funding.** Elementary schools with 33% or more of their school lunches served to students approved for free or reduced-price school meals would be eligible for funding. Schools would receive funding for 75% of the estimated loss in student payments for offering breakfast to all students at little or no charge. The Minnesota Legislature dedicated \$5 million US for the period 2000-02. In the first year, \$2.5 million US was released allowing 326 schools and 40,000 students to participate in Fast Break. Increased student participation quadrupled federal reimbursements drawn down through the School Breakfast Program at Fast Break schools. Fast Break to Learning programs contributed 24% of the school breakfast costs, while the Federal government contributed 67% toward the breakfast cost. Other local provides 8% toward the breakfast program costs and other state provides 1% of the costs.

**Student achievement.** Between 1999, the first year of the Fast Break to Learning Universal-Free School Breakfast Program, and 2002, the third implementation year, Fast Break students had the greater gains in reading scores than control school students. While achievement for Fast Break students remained consistent or improved from 2001-02, achievement for control students levelled off or declined during their fourth year in the program. Fifty percent of Fast Break schools reported average scores in mathematics and reading scores on the Minnesota Comprehensive Assessment were 1,420 or above. Overall, achievement scores on grades 3 and 5 Minnesota Comprehensive Assessments have shown gradual improvements from year to year. In 2001-02, average mathematics and reading scores for Fast Break students have surpassed the 1,420 threshold. However, there is little evidence of greater educational gains by students in Fast Break Schools compared to students in Control schools between 1998 and 2002.

**Attendance.** Attendance for both Fast Break and control schools was 96% overall for grades 1 to 6 for the 2001-02 school year.

**Health and discipline.** To measure health and discipline, principals were given two tables in which they reported 1) illness by time of day and 2) location of disciplinary problem by time of day. The data collection period was April 16 to May 2, 2002. In spring 2002, minor illnesses during the morning were the most common reason and time to visit the nurse's office. During the afternoons, the most common reason was injury. In the mornings and afternoons, the classroom was the place where disciplinary problems took place. The average number of nurse visits reported increased during 2001 compared to 2002. Disciplinary incidents were slightly higher in 2002 than in 2001.

**Conclusions:** The researchers recommended that the Fast Break program should be focused on schools that are implementing the program well and have participation rates and encourage schools to make the breakfast program a schoolwide policy. Other recommendations include providing schools with a blue print of best practices and providing the breakfast program to high school students.

**Peterson, K., Davison, M. L., Wahlstrom, K., Himes, J., Stevens, M., Seo, Y. S., Irish, M. L., Holleque, K., Harring, J., & Hansen, A. (2003). Fast Break to Learning School Breakfast Program: A report of the fourth year results, 2002-2003. Minnesota: Center for Applied Research and Educational Improvement, University of Minnesota. Retrieved April 28, 2003 at [http://education.umn.edu/oea/New\\_Site/Reports/BreakfastStudy/ThirdYearReport/2003BreakfastStudy.pdf](http://education.umn.edu/oea/New_Site/Reports/BreakfastStudy/ThirdYearReport/2003BreakfastStudy.pdf)**

**Objective(s):** To develop a blue print for best practices for high participation by:

- 1) Uncovering common administrative and operational characteristics among these schools in an attempt to help explain their high levels of student participation;
- 2) Identifying ways in which teachers affect delivery of and participation in the breakfast program;
- 3) Learning teachers' perceptions of positive and negative effects of the program on student outcomes in their classrooms; and
- 4) Learning if higher participation in the breakfast program was related to higher attendance and academic achievement.

**Participants:** Food service personnel, teachers, and program participants' parents associated with Title 1 schools participating in either the School Breakfast Program (fee-based breakfast program) or the Fast Break to Learning Program (Universal-Free School Breakfast Program) with a minimum of 40% participation.

**Methods:** Data sources include: 1) personal interviews with food service personnel; 2) phone interviews with teachers; 3) focus groups with parents; 4) large scale data files; and 5) nutritional monitoring data.

**Personal interviews with food service personnel:** During spring 2003, food and nutrition specialists from the Minnesota Department of Education interviewed food service personnel at 47 elementary schools with high participation rates in the Fast Break program. Interviewers used a questionnaire capturing data on program logistics, programmatic adjustments, and communication between food service personnel and school staff and parents.

**Telephone interviews with teachers:** During spring 2003, Office of Educational Accountability personnel interviewed 24 teachers from eight elementary schools (three from each of eight schools) with high participation rates. Four metro schools (two urban and two suburban) and four from greater Minnesota (assumed rural) were evaluation sites.

**Focus groups with parents:** During spring 2003, principals at eight elementary schools (three metro and five greater Minnesota schools) were provided with information about the focus groups and asked to forward the details to parents via phone calls, school newsletters, or letters. It was left to the discretion of the principal as to how parents were informed. Principals contacted interested parents. Only parents whose children participate in the School Breakfast Program were invited to participate in the focus groups. University of Minnesota staff conducted a total eight focus groups with a total of 47 parents.

**Data files:** Three main data files were used: 1) The Minnesota Comprehensive Assessment achievement data for Minnesota schools in 1998-99, 1999-00, 2000-01, 2001-02, and 2002-03; Grade 3 mathematics and reading scores, and Grade 5 mathematics, reading, and writing scores, 2) enrolment and attendance data on Minnesota schools from 1998-03, 3) participation data indicating how often students participated in the School Breakfast Program. Participation data were merged with achievement and attendance data to see if higher participation in the breakfast program was related to higher attendance and academic achievement.

**Nutritional content data:** The State of Minnesota and the University of Minnesota Nutrition Coordinating Center conducted menu nutrient analysis for 67 Fast Break schools for academic year 2002-03. Sources of data for the nutrient analysis include menu information, copies of nutrient data on purchased prepared products, and local recipes. Menu and recipe information were entered into the Nutrition Data System for Research (NDS-R) software and nutrients were generated to conduct an analysis of the breakfast menus. The United States Department of Agriculture's School Meals Initiative (SMI) nutrient analysis is based on student selection of menu items or foods versus menu items or foods that are offered as part of the reimbursable school meals. Results for key nutrients were compared to SMI nutrition standards, reports were generated and results sent to each of the Fast Break schools along with general guidelines for planning breakfast menus.

## **Results:**

### **Program Administration**

**When breakfast is served.** Responses from food service personnel indicated 44% of schools served breakfast before the start of the school day, 24% served it after the start of school, and 31% served breakfast before and after school began. At schools where breakfast is incorporated into the school day (whether it was served before or after the start of the school day) students and staff considered it an important part of the daily routine and therefore student participation was higher.

**Where breakfast is served.** Among food service personnel interviewed, 53% said breakfast was served in the cafeteria, 16% said students eat in their classroom, and 31% said students eat breakfast in both places. A greater percentage of schools served breakfast in the cafeteria when breakfast occurs before the start of classes. When breakfast occurs after the start of classes, the place where it occurs is evenly split between the cafeteria and classroom. Lack of cafeteria space was another reason for having breakfast in class. It was noted that if schools offered breakfast to schools in their classrooms after the start of the school day it would require staff supervision in every room rather than just a couple of staff in the cafeteria.

**Roles and functions.** Auxiliary staff supervise students in the cafeteria in some schools, while in others it is a combination of administrators, teachers, and food service personnel that supervise students during breakfast in the cafeteria. When breakfast is in the class children collect and bring their food from the cafeteria to their classrooms where they are supervised by teachers. Teachers and students are responsible for cleaning up the classrooms after breakfast.

**Communication.** Twenty-eight percent of the respondents communicate with their immediate supervisor, and the majority said this happened only once per month. Eighty percent of the food service personnel said that they had an opportunity to provide input on menu choices. Only 8% sat on a menu committee that met throughout the year. Sixty-seven percent of respondents said that they communicated with the school principal and 93% thought the principal supported the Fast Break program. Food service personnel said principals were visible during breakfast, communicated regularly with parents, teachers, and students about the benefits of the program, and some even helped serve food on the serving line. Eighty-five percent of respondents said teachers are supportive of the program because of the comments teachers made to them during informal conversations during mealtimes.

Teachers who were interviewed said they provide input into program implementation and administration, particularly supervision and timing of who ate, when, and in which location.

**How is program promoted.** Among the food service personnel surveyed, 95% said that students were encouraged to participate in the School Breakfast Program via menus sent home with students, 56% indicated that posters were hung up around the school, and 37% said information sent home with students in a school newsletter. Reference to the program in classroom curriculum was another way the program is promoted to students. Respondents (89%) said that speaking to students was the most common way in which they encouraged participation. Menu selection varied and this was also credited for increased participation in programs.

During the teacher interviews, teachers spoke with individual students, encouraging them to eat at least eat something, and discussed the program with parents during parent / teacher conferences as a means of encouraging participation. Teachers included reference to the program in their curriculum on health.

In the parents' focus group, parents said that they learned about the Fast Break to Learning program through a school newsletter, information sent home with their child or distributed at registration or orientation, conversations with their children, or an announcement or article in the local newspaper.

**Teacher support for program.** Only a few teachers said that they actually eat breakfast with their students, rather, they accompany students to the cafeteria or supervised their classroom meal. Teachers who ate with their classes gained greater insight into the factors that influence classroom behaviour and academic performance through conversation with students. Three factors determine student participation: 1) student hunger, 2) menu choices, and 3) age. Older children participate less than younger children do. Where students came to expect breakfast in class, very few children did not participate. Eighty-three percent of teachers believed that the students who participated in the school breakfast were more attentive during class discussions and focused on learning curricular materials, particularly for students who did not get breakfast at home. Teachers noticed a decrease in trips to the nurses due to hunger-related illnesses, such as headaches and stomachaches.

**Parents support for program.** When parents were asked about the morning routine at their house and how well the breakfast program worked with it, the most common themes were that children often do not eat breakfast at home, either because they don't have time to eat or because they are not hungry when they first wake up in the morning. Parents in seven out of eight focus groups reported that their children enjoyed the social aspect of school breakfast and were more likely to eat a complete meal when they were surrounded by peers as opposed to eating alone at home. Parents said that they worried less about whether or not their children would have enough to eat in the morning because of the program. The program actually decreased morning fights with children over eating and eased the morning routine. Over half the parents said their children eat breakfast at school every day or most days. The reasons some children did not eat at school on a given day include child disliked food choices on a particular morning or they ate at home.

When asked what they had heard about the program, most indicated that they had not heard much about the program from other parents or from their children. Parents reported that they heard about the benefit of the number of food choices and that the classroom breakfast was appreciated and that a high percentage of children participate in the program. Better food choices were the only suggestions for improvement, such as more fresh fruit, more hot food, such as hot cereal, decreasing sugar content, increasing protein, food choices, and more whole grains and organic foods. Most parents did not express concern about the nutritional value of meals. Other suggestions were to increase breakfast time to accommodate bus schedules and translating menus into a family's native language would be appreciated. Overall, parents thought the program was beneficial but they commented that if there was a fee their child would not eat breakfast at school. The breakfast improved academic performance, opportunity for students to take medication with food, and it was a nice way for students to start their day by having a time of welcome and camaraderie among themselves.

**Participation.** Fast Break for Learning schools reported participation rates of 57% overall with a 25% increase since 1998-99. Fast Break schools have traditionally enjoyed higher participation rates since introduction. Schools that served breakfast after the start of the school day had higher participation rates than those that served breakfast before the start of the school day (88% versus 77%). The best practice schools generally were those in which the breakfast program was a part of the school culture, students were more likely to participate because of the way the program was administered (time, location, etc), and teachers and staff positive attitude toward the program. Also the longer the program is in place, the more likely students and parents are to learn about it. Prior to year four, most schools served breakfast before the start of the day. In year four, more programs served breakfast after the start of the school day. Greater participation is due to the fact that students are already in school when the breakfast is served rather than them needing to arrive early to eat breakfast.

**Attendance.** Attendance in the Fast Break schools ranged between 95% and 96% with a 1% decrease between the 2001-02 and 2002-03 school years. Attendance has remained at 96% for students eligible for reduced rate meals at the Fast Break schools since the program began in 1998. However, the attendance rate for Fast Break students in the 1998-99 school year was 1% higher than the rate for the state or for the control group. The average attendance for the 2002-03 school year was lower at the Fast Break schools than at the control group of schools or for

schools statewide. The average attendance for students eligible for a reduced-price breakfast was the same for Fast Break, control and for schools statewide in the 2002-03 school year. The average attendance for students eligible for a free meal was higher at Fast Break schools compared with the state or the control group of schools for the 2002-03 school year.

**Achievement.** Overall, the mathematics, reading, and writing (Grade 5 only) scores for grades 3 and 5 students were higher in control schools and statewide than for Fast Break students in each year since the Fast Break program began. Similarly, the percentage of students achieving levels II and III were higher at the control group of schools and schools statewide, compared with Fast Break students. However, the gains in the percentage of students scoring at or above Level II have been greater for schools involved in the Fast Break program than for schools serving breakfast on a fee-based system (control schools).

**Food quality.** Food service personnel and teachers expressed concern that meals served at school are not as nutritious as they need to be. Parents reported that the foods served for school breakfast included bagels, breakfast burrito, breakfast pizza, cereal, cheese, cinnamon rolls, doughnuts, French toast sticks, fruit, graham cracker sticks, milk, muffins, juice, pancakes, peanut butter and jelly sandwiches, breakfast bars, and yogurt. However, when compared to what parents said their children ate, the most commonly reported breakfast foods that children ate at home were toaster foods, such as strudel, Pop Tarts, scrambles, and waffles, because they are quick and convenient. Although food items served in school were similar to those served at home, parents seemed to depend on convenience foods more often than did School Breakfast Programs.

Among the Fast Break schools, simple breakfasts with a small number of foods to satisfy daily meal pattern requirement were provided. The breakfast items offered on average include:

- Milk (five times per week)
- Fruits and vegetables: fruit juice (3.9 times per week), canned and / or frozen fruit (0.93 times per week), fresh fruit (0.9 times per week)
- Grains and breads: ready-to-eat cereal, (2.6 times per week – 70% pre-sweetened); toasted bread, pancakes, waffles, or French toast (92.4 times per week); pastries, including cinnamon rolls, doughnuts, and muffins (1.6 times per week); granola bars, pop tarts, and graham crackers (1 time per week)
- Meat or meal alternatives: cheese or yoghurt (1.1times per week); meat and / or eggs (0.8 times per week); peanut butter (0.64 times per week); breakfast entrees including pizza, burritos, and similar items (0.6 times per week)

Students selected school breakfast items that provided them with one-fourth or more of the daily RDA for most nutrients with the exception of total calories and fibre. Items selected by younger students provided averages below the standards for total calories and fibre due to the lack of adjustment in the calorie standards for younger students. All 67 Fast Break schools met the standard for protein. Standards for vitamins A and C were met by 95% of schools. All but one school met the standard for calcium. The standard for iron was met by 81% of schools. When schools served fortified ready-to-eat cereal two or more times per week, the standards for vitamins A and C, calcium, and iron were met. None of the schools met the standard for dietary

fibre. On average, school breakfasts were within the Dietary Guideline requirements for total fat and for saturated fat. The mean total fat value was 13 grams and 26% of calories from fat, compared with a goal of 18 grams or less than 30% of total calories or less from fat. The mean fat value was 5 grams and 105 g of calories from saturated fat. On an individual basis, 89% of schools met the standard for total fat, 84% met the standard for saturated fat. Based on the report collected for the School Meals Initiative, Fast Break for Learning programs offer breakfasts that meet the federal standard.

**Conclusions:** Differences in achievement scores reflect the demographic differences in the makeup within Fast Break schools that were located mostly in city schools and outstate Minnesota compared with control schools that were mostly located in suburbs. Attendance rates in Minnesota schools overall are 95%, not leaving much room for improvement. There was not much difference between Fast Break school attendance compared with control schools and for schools statewide. The nutrients offered at Minnesota schools measure up to federal standards. Teachers and principals believed classroom achievement had improved since the start of the breakfast program. However, math, reading, and writing scores do not substantiate this belief, except for Fast Break schools that experienced the greatest gains in the percentage of students achieving level II in each component of academic testing. There was no effect of offering the breakfast free of charge having any impact on attendance and achievement. The most positive outcomes in attendance and achievement were for schools offering a fee-based breakfast. The next study should expand the scope to include higher than Grade 5 students since attendance declines at higher grades and the impact of serving breakfast may have greater impact on attendance.

## **Evaluation of Child Nutrition Programs Related to Program Delivery and Implementation**

**Government of New Brunswick. (2000a). Healthy minds breakfast pilot program evaluation October 1999-March 2000. Policy and Planning, New Brunswick Education. Retrieved February 24, 2002, from <http://www.gnb.ca/000/publications/polplan/breakfast/breakfast.thm>**

**Name of program:** Healthy Minds Breakfast Pilot Program

**Program goals:** To provide a basic breakfast to all hungry students in kindergarten to Grade 5.

**Where:** School District 8 (Saint John) and School District 9 (Tracadie-Sheila) in New Brunswick

**Location of programs (school, community centre):** 52 schools

**Purpose of evaluation:** To identify successes and challenges encountered in the pilot period for the Healthy Minds Breakfast Program Pilot and to identify where improvements are necessary, distinguishing between urban and rural needs.

**Evaluation objective(s):** To assess the level of participation and to identify factors influencing program participation, operational issues affecting programs, major challenges to programs, partnerships, and assess the impact of partnerships on programs.

**Evaluation methods:** The evaluation consisted of three components: 1) collecting quantitative data on the number of participants, volunteers and food selection per month; 2) two questionnaires designed to capture qualitative data on community relationships, donations, and operating logistics, such as food storage, food preparation, and cleanup, perceptions of programs and suggestions for improvements; and 3) interview sessions with principals aimed at obtaining level of satisfaction with the pilot project and gain their suggestions for sustainability and future expansion of the breakfast program.

### **Results:**

**Access and participation.** The total number of participants overall was 10,474 in universal breakfast programs (including morning snack). The average rate of participation in Saint John was 17.5% and in Tracadie-Sheila was 9.1%. Programs operated daily. Participation was influenced by cold weather; awareness of breakfast program at the school; poverty; an inviting atmosphere; parental attitudes (not wanting to be viewed negatively by others because their child receives a handout); permission slips and having to raise hands in class to participate (deterrents). Programs with the highest attendance attributed this to respect shown to or by students. Integrating breakfast into classroom time and having student contribute a snack to a community snack bowl were used as less stigmatizing strategies. All children from kindergarten to Grade 5

were invited to participate. Notices were sent home to parents, announcements were made at school, teachers informing students and parents about the program.

**Parental involvement, consent, partnerships, and collaboration.** Consent not mentioned. Parents participated as volunteers and on the School Parent Advisory Committees.

**Inclusive and efficient program management.** District 9 depends on paid cafeteria staff to organize programs. Volunteers purchased food, transported supplies, planned, set up, delivered, and cleaned up for program. Principals, teachers, and volunteers were relied upon in smaller schools. Parents and community members also volunteered for programs. Program partnerships consisted of school administration, teachers, parents, and organizations such as the Legion, community police, churches, Saint John Milk Fund, Catholic Women’s League, Woodstock Food Banks, Caisse Populaire, the Co-op, Fredericton – Boys & Girls Club, Canadian Living Foundation and IODE. Yet respondents mentioned that finding daily volunteers was a challenge.

**Food quality.** Successful programs used provincial criteria for food safety, nutrition requirements, and program accessibility but with local input for program design. Respondents said breakfast menus were nutritious and easy to serve. District 8 principals stated prepackaged foods were the most convenient, such as yogurt tubes. The Department of Health and Community Services Public Health Nutritionists provide assistance with menu planning and food safety tips

**Financial accountability.** Daily food cost per student was of \$0.87. In 50% of schools, teachers ordered food with their usual food orders; in 10% bulk purchases; 68% purchased bulk from local wholesalers or local grocery store, particularly those that delivered food. Rural schools had higher food costs due to the lack of access to suppliers. Buying locally helped to establish local community support.

**Safety:** In District 9, 90% of meals are served in the cafeteria and 10% in classrooms. In District 8, 19% of meals are served in the gym, 3% in the cafeteria, 30% in classrooms, 16% in the kitchen / lunch room, 6% in the library, and 26% in other places. The Department of Education’s Community Use of Schools Policy encourages exchange of service facilitating community groups use of school facilities.

**Impact of school meals on students.** Principals reported that student behaviour and attention improved.

**Stigmatization.** Unintended labelling of students was a source of unease for some parents. Parents’ fear being labelled as inadequate and pride were reasons some parents did not send their children to programs. Respondents indicated that the public perceived programs as a waste of public resources. Some parents perceived the breakfast program as threatening their parental responsibility.

**Manitoba Council on Child Nutrition and Manitoba Health. (2001). Food and nutrition in Manitoba schools: Survey report 2001. Manitoba: MCCN.**

**Purpose:** To gather information on the state of food security and nutrition strategies in Manitoba schools and to establish baselines for future studies and evaluations.

**Methods:** A self-administered questionnaire was sent to all 713 public schools in all 54 school divisions across Manitoba in May to avoid peak periods in the school year. Elementary and junior high schools were located throughout Manitoba. School division superintendents distributed and collected the questionnaires from the teachers, administrators, counsellors, and others completing the survey. The terms “organized breakfast programs” and “organized lunch programs” were used to distinguish these feeding programs from canteens, cafeterias, supervised lunch brought from home, and special food days. The questionnaire response rate was 70%.

**Results:**

**Participation.** School meals consisted of organized breakfast programs (63 schools or 13% of the responding schools), emergency food, organized snack program (110 or 22% of schools, however time when snack is offered is not provided), and organized lunch programs. Breakfast programs operate five days per week. Among elementary schools, 54% of these schools offer a breakfast program. Proportion was not specified, however, the researchers estimated that more than 3,000 students are receiving breakfast at school.

**Parental involvement.** Parents volunteer for both breakfast and snack programs. However, only 13% of schools reported parents along with other volunteers deliver breakfast programs. Through program fees charged to and food purchases made by students, parents contribute 4% toward breakfast program funding and 22% toward snack program funding. The amount parents contribute in the way of donations or sponsorship (31% of breakfast program funding and 13% of snack program funding) is unknown.

**Inclusive and efficient program management.** School staff members were the primary program operators in the majority of breakfast programs with the occasional help of students. For nine (13%) of the breakfast programs, parents and other volunteers were the primary operators. In approximately one-third of breakfast programs, a coordinator is paid to organize and deliver the program. Occasionally, parents organized and provided the food for the snack. Paid coordinators also delivered the snack program in a number of schools. One-fifth of schools charged students for participation in the snack program.

**Food quality.** A high proportion of the breakfast programs provided choices from three of the four food groups suggest in Canada’s Food Guide to Healthy Eating. Among schools offering breakfast, 90% of programs offer fruit and fruit juice, 81% breads and cereals, 76% milk / cheese / yogurt, 43% pancakes or waffles, 42% hot cereal, 29% eggs, 18% bacon / ham / sausage, and 2% offer French fries. The most common foods offered in snack programs were milk, fruit juice, crackers, fruit, and cheese. Researchers report that in one instance the introduction of multicultural foods and exotic fruits and vegetables were offered as snacks.

**Safety.** Respondents reported meals were served in various locations all over the school. Forty-four percent of schools reported that not having a specific space dedicated for eating or having a space that was too small was a concern in judging the adequacy of school facilities for food consumption. The authors quote respondents as saying, “Students sit on the floor all over the school, eating – it’s very unsanitary.” Eighteen percent identified food handling and hygiene as school facilities issues. Schools identified that there was a lack of appropriate equipment, such as fridge, stove, and dishwasher, and using substitutes, such as paper plates and microwaves, in the classroom. Thirty-six percent of schools identified that school facilities were inadequate for food preparation, such as the lack of human resources for food preparation and supervision.

**Financial accountability.** Funding was limited. Some donations of food come from local food banks, but most food is purchased. School divisions and the school itself provide most of the funding for programs. One in five programs receive grant funding. Very few programs charge students to participate in the program. The Manitoba Provincial Government did not provide funding to breakfast programs at the time of the survey.

The sources of breakfast program funding is broken down as follows: school division (33%), donations / sponsors (31%), school (15%), granting agencies (12%), government (5%), and student fees / purchases (4%). Funding for snack programs is broken down as follows: school division (44%), student fees/purchases (22%), school (16%), donations/sponsors (13%), government (3%), and granting agencies (2%). Among all schools receiving sponsorship from food and beverage companies, 50% receive equipment, 37% receive equipment, and 20% receive other gifts. For example, schools enrolled with the Manitoba Milk Producers (two-thirds of schools have a milk program) receive sponsorship by way of small prizes and tokens. Fund-raising efforts include food sold in schools to students and those sold by students in the wider community.

**Conclusions:** Specifically related to school breakfast programs, governments should provide support for the development of school-based nourishment and education programs in Manitoba. Parents should lead efforts in reviewing and revising school nutrition and food policies and practices. Businesses should develop and support locally sustainable child nutrition initiatives through in-kind and financial donations. Health authorities should work with local schools to assess and monitor child nutrition in their region; allocate sufficient human and financial resources to address child nutrition; and mandate nutrition staff to work with schools to develop appropriate educational and support programs

**Other issues identified:** Respondents identified breakfast skipping due to: parental neglect, students getting up too late to eat breakfast, and an undervaluing by students of the need for regular nutritious meals as contributing to poor eating habits among students. In addition, the prevalence of and social acceptance of junk food, the general lack of interest in healthy eating; convenience; family eating habits; and family poverty were identified as contributing to the problem. Child hunger was ascribed to lack of parental supervision for breakfast, parents working, not having enough food at home, or child leaving for school too early in the morning.

Almost 50% of schools identified family financial concerns as the reason for child hunger in their school.

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\* The Québec Breakfast Club reported that Québec schools are coded according to the level of poverty based on family income.

**Thoburn, J., Harvey, I., Norris, N., Mugford, M., Robinson, J., & O'Brien, M. (2002). Evaluation of the effectiveness and resource consequences of school breakfast clubs in England. University of East Anglia (UEA) Norwich School of Social Work and Psychosocial Studies: Research Summaries. Norwich England: University of East Anglia, Norwich. Retrieved on November 11, 2003, <http://www.uea.ac.uk/swk/research/summaries/abc.htm>**

**Objective(s):** To examine the experiences of school breakfast club participants and their families, and the clubs' impact on nutritional, social, psychological and educational outcomes.

**Participants:** More than 6,000 children and their teachers from 30 schools; 2,260 families completed a mail survey; 46 parents participated in the case studies; 111 children provided dietary data.

**Methods:** Researchers used a survey to assess breakfast club provision. Breakfast club participants participated in a cluster randomised controlled trial to evaluate the effectiveness of breakfast clubs in terms of nutritional, social, psychological and educational outcomes. Case studies were used to generate detailed information about processes and structures and the experiences of those involved with the breakfast clubs. A child and family study using questionnaires and semistructured interviews were used to collect socioeconomic data, impact of the scheme on families, and parents' and children's satisfaction with and views about breakfast clubs. An assessment of cost effectiveness and benefits was conducted.

### **Results:**

**Access and participation.** During the 1999-00 school year, 11% of a primary school population attended a breakfast club on average. Participants and their families did not experience social stigma since clubs attracted children from a variety of household incomes. Parents' perceptions of the quality and reliability of breakfast clubs were important to sustaining clubs. In general, breakfast clubs attracted children:

- who had breakfast at home, but attended the program to socialize with classmates;
- who are fussy eaters who enjoyed breakfast at school more than breakfast provided at home;
- from lower-income households whose parents may have provided a breakfast, but parents felt the breakfast at school was of a higher quality and more varied;
- whose parents work or attend school;
- whose parents could not afford to provide breakfast; and
- whose parents could not organize breakfast.

Researchers found that the involvement of parents and young people in the design and promotion of the club helped to attract children from different ages and backgrounds. Cultural diversity was considered important when planning program delivery, menu, supervision, and activities.

**Parental involvement, consent, partnerships, and collaborations.** The researchers reported that breakfast clubs had moderate success in forming partnerships with local business, community or charitable organizations. Among the responding clubs, 14% of clubs reported

receipt of non-financial support through community partnerships. Nonfinancial support included food from supermarkets and donated equipment.

**Food quality.** Among schools that returned menu data, 90% offered cereal, 40% offered fruit, and 17% offered biscuits or pastries. Service providers felt that offering something was better than nothing and that sending a strong healthy eating message into the breakfast club at the outset may discourage children and families from using the service. Schools indicated that they offered food that they felt would most likely attract children, hence, food popularity was a deciding factor in menus. Other schools chose to introduce healthy food options and healthy eating habits to children via the breakfast club noting that healthy food choices did not conflict with the aim of attracting children. Parents commented that their children had become more receptive to new and more diverse types of food as a result of attending clubs.

**Safety.** There were concerns about the supervisory training of breakfast club staff. Children may not recognize program staff as having the same degree of authority as other school staff. Parents perceived the school breakfast clubs to be a safe, secure, and settled environment for their children.

**Financial accountability.**

- **Funding.** During the 1999-00 school year, the United Kingdom Department of Health provided funding to 253 breakfast clubs ranging between approximately \$600 and \$2,900 CDN<sup>3</sup>. The breakfast clubs also received other sources of funding through other government schemes, such as the New Opportunities Fund, Single Regeneration Budget, and the Education Action Zone and Health Action Zone. However, the majority of programs depend on the Department of Health's funding.
- **Cost.** Budgets cover staffing costs. Researchers reported that staffing costs were highest in primary schools compared with secondary schools due to the greater need for supervision. Volunteers were used to reduce staffing costs, but were not considered a sustainable means of staffing programs.

**Behaviour.** Respondents indicated that they observed children were more calm and the classroom atmosphere more settled due to the breakfast club and children eating breakfast. Teachers described children who had breakfast and who participated in the breakfast club as less anxious and disruptive, and more receptive. However, some teachers suggested that due to the increased energy gained through the breakfast at school, some children were less well behaved and more energetic. Parents said children got ready for school more quickly and with less fuss, particularly with siblings, due the breakfast club. Breakfast clubs helped to ease the pressure of families' morning routines.

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<sup>3</sup>The actual amounts allocated to the Breakfast Clubs ranged from 250 pounds sterling to 1,200 pounds sterling. Canadian currency is an approximation based on conversion rates from United Kingdom pounds to Canadian dollars on September 1, 1999 obtained from the Bank of Canada using its on-line currency converter program on the following website: <http://www.bank-banque-canada.ca/en/exchform.htm>

**Nutrition and health.** School breakfast clubs have been successful in encouraging or enabling children to eat something in the morning. The availability of a club was found to reduce the likelihood that parents reported problems getting their children to eat breakfast. Increased breakfast consumption was observed among primary-aged children. Eating breakfast with peers helped to normalize this activity for children who were less enthusiastic about eating. The importance of eating breakfast reached beyond the club's participants. The club encouraged discussions about breakfast, nutrition and healthy diet within the family.

**Concentration and learning.** Schools in the evaluation reported improvements in children's concentration, work output, and learning. Breakfast consumption, nutrient intake, and learning activities at the club were seen as contributing to improved concentration, output, and learning. Some teachers observed that children were more alert and focused, and less tired or hungry in the classroom in the morning. Some teachers expressed the view that a welcoming environment led to increased punctuality and attendance, and less disruption by late arriving students. In addition, clubs incorporated educational games and activities into their program that were seen as helping students with concentration and focus in class.

**Conclusions:** School breakfast clubs funded under the Department of Health's pilot scheme had a positive impact on the school day and may reach many families whose members are at risk of or are actually experiencing social exclusion. The clubs provide working parents with peace of mind and help reduce stress at the start of the day. Breakfast clubs encourage children to eat breakfast.

### Research Pertaining to Perceptions of Child Nutrition Programs

**Edward, H. G., & Evers, S. (2001). Benefits and barriers associated with participation in food programs in three low-income Ontario communities. *Canadian Journal of Dietetic Practice and Research*, 62(2), 76-81.**

**Objective(s):** To identify the benefits and barriers associated with participation in food programs.

**Participants:** Ten junior kindergarten to Grade 2 teachers, 21 parents, 21 Better Beginnings, Better Futures project staff, and 17 children aged four to eight years who attended breakfast programs.

**Methods:** Four key informant focus groups comprised of teachers, parents, project staff, and children were conducted in three low-income communities in Ontario. Communities were chosen because they reflected the cultural diversity of participants in Better Beginnings, Better Futures. Focus group meetings were audiotaped. There was an average of seven participants in each of the adult focus groups and an average of six participants for the children focus group. The duration of adult focus groups was approximately 90 minutes and 60 minutes for the children focus group. Focus groups were conducted in English, French, and Punjabi when needed. Two moderators conducted each focus group with one facilitating the discussion and the other taking notes. Audiotapes were transcribed in the language used in the focus groups. Non-English language transcriptions were translated into English. Content analysis identified major themes. Inter-rater agreement on text coding was 0.84 and the coefficient of reliability was 0.79.

**Results:** Participants identified the following benefits of attending activities that provide food in their community: hunger alleviation; opportunity for social contacts; the development of neighbourhood support networks; nutrition; the introduction of new foods; and learning new skills. Participants identified the following barriers and problems to participation in community food activities: parents' pride; insufficient publicity; multicultural issues; and inadequate program resources. Parental involvement as volunteers helped some parents overcome feelings of stigmatization associated with receiving food. Parent volunteers felt that a reciprocal relationship had been established and food provided compensation for time given to the program. Parental involvement in the delivery of the program also demonstrated a supportive environment for children. Attendance increased when food was offered at community programs other than those designated solely to feed people. Teachers and parents thought that their children became more attentive in school after joining the breakfast programs. The breakfast program provided staff and teachers an opportunity to discuss; share new foods with children; and role model healthy eating. Children felt they were eating nutritious food. Volunteers included children who serve and clear tables, parents, and other community members.

**Conclusion:** The authors suggest that food programs would better serve low-income communities by building in food as an essential component of programs and activities beyond those designated as food programs.

**Lambert, L. G., Conklin, M. T., & Johnson, J. T. (2002).** Parental beliefs toward the national school lunch program related to elementary student participation. *Journal of Child Nutrition and Management, fall 2002 (2), 1-9*, Retrieved December 19, 2002. <http://www.asfasa.org/childnutrition/jcnm/02fall/lambert/>.

**Objective(s):** To determine the level of correlation among parents' beliefs and intentions to encourage their elementary school children to participate in the National School Lunch Program (NSLP) and their children's actual participation.

**Participants:** Parents of children in kindergarten to Grade 3 attending 15 schools in seven states located in the American School Food Service Association's Southeast Region.

**Methods:** Focus groups were conducted with parents to identify their beliefs toward encouraging their children to participate in the NSLP. Focus group input and the Theory of Reasoned Action (TRA) was used to construct the 60 item Parent School Lunch Survey (PSLS) to measure the strength of parents' beliefs toward encouraging their children to participate in the NSLP. The survey also captured information on children's grades, genders, and the number of children in kindergarten to Grade 12 in each family. Teachers distributed the survey to students who took the survey home to their parents. The PSLS was completed by 960 parents who provided permission for the release of information regarding their child(ren)'s NSLP participation. Data collection consisted of a 30-day period (20 meals). Survey data was matched with child(ren)'s data. The school food service director collected all the PSLS instruments and mailed them back to the researchers.

**Results:** Items measuring parents' social and normative beliefs (social environment's influence on and the influence of others on the parent) showed very little influence on parents' intentions to encourage or not encourage their children to participate in the NSLP. However, there was a correlation between parents' intentions to encourage their children to participate hence their behavioural beliefs. Among respondents, 79% of parents indicated that they intended to encourage their child to participate in the school lunch. Parents' intention to encourage their child to participate in the program was strongly correlated with their child's actual participation. Parents (79%) agreed that having their child participate is good and 72% agreed it was wise. Parents (90%) agreed that their child would receive a nutritious lunch by participating in the NSLP and 98% believed that is important that their child receives nutritious lunches. Parents (98%) agreed that their child would receive healthful lunches; and 97% agreed that receiving healthful lunches was important to them. However, 56% of parents agreed with the belief their child would receive a lunch that tastes better than a sack lunch brought from home. Parents agreed (79%) that NSLP saved time and was convenient (79%).

**Conclusion:** There is a positive correlation with parents' intentions to encourage their children to participate in the NSLP and their children's actual participation. Marketing strategies should be aimed at promoting the NSLP to parents.

**McIntyre, L., & Dayle, J. B., (1992). Exploratory analysis of children’s nutrition programs in Canada. *Social Science and Medicine*, 35, 1123-1129.**

**Purpose:** To learn about the processes of initiating, delivering and sustaining such programs for hungry children in Canada.

**Objective(s):** To identify stimuli for program inception and methods of program planning, implementation and evaluation; characterize challenges to program continuation; and describe aspects of programs which either favour or reduce opportunities for community empowerment.

**Participants:** Child nutrition program (CNP) operators across Canada.

**Method:** Letters were mailed to 116 individuals known to be involved with CNPs or issues across Canada. Self-identified program operators of CNPs were asked to participate in the telephone interview about their program and to provide additional contacts that ran child nutrition programs. The new names were added to the key informant convenience sample. A trained qualitative researcher conducted the 36 in-depth telephone surveys using a semistructured interview schedule and wrote participants’ responses during and after the interview non-verbatim. After excluding four programs that did not meet the sampling criteria, content analysis was performed on interview data from the final sample of 32 CNPs.

**Results:** Twelve (37.5%) programs were created through community initiatives, 13 (40.6%) through institutional endeavours, and seven (21.9%) through the results of a study, survey, or joint effort of community, school, or government agencies. Among community-incepted programs, six were operated within the community, five operated out of a school, and one in both types of locations. Concerned citizens, teachers, governmental or health sector representatives often collaborated in identifying the need to feed children. Perceived need was often based on observation of children’s behaviour mentioned (21 out of 38 occurrences 55.3%) such as not bringing lunch, not paying school meal fees, disruptive and / or listless classroom behaviour, arriving before school started or staying after school was out, absence, or searching garbage cans for food. Poverty was cited most often as the cause for hunger in children (20 out of 44 mentions / occurrences or 45.5%). Inadequate social assistance and low-income, unemployment and the recession were attributed with causing poverty. Other reasons for child hunger included parents working outside the home, parental neglect, single parenthood, money mismanagement, and children simply arriving at school without breakfast (10 mentions). Other respondents commented on the lack of community awareness and inadequate services, such as nutrition education or guidance for parents, absence of food bank, long distances between school and home, hence long bus rides, and gaps in food services during holidays were barriers to children consuming adequate nutrition.

**Access and participation.** Universal access characterized 23 (71.9%) programs, selective in eight (25%) programs, and not stated or not applicable in five programs. Programs were equally split between charging children for school meals and those not charging a fee. Those charging waived fees or reduced fees when needed. Strategies, such as calling the program a club, waiving meal fees, not questioning children, a common lunch wagon, encouraging parents, and observing

confidentiality, had been used by programs to make them non-stigmatizing. However, program operators expressed prejudicial views regarding parents of participants, such as irresponsible, neglectful, abusive, not having the right values, lacking culture and life skills, angry households, program abusers, and unreliable.

**Type of program.** Most programs, 20 (62.5%), served lunch, five served breakfast only, one provided snacks only, and four served breakfast, snacks, and emergency snacks.

**Parental involvement, consent, partnerships, and collaborations.** Parents volunteered in only nine programs (28.1%). Community boards provided direction for the majority (26 or 81.3%) of programs. Five programs did not have a board. Boards were established specifically for 21 programs. School boards also ran programs. Only 12 (37.5%) programs operated in the community. Only 11 (34.4%) operated without paid staff. Volunteers, including parents and students, worked in (84.4%) programs. Cooperation between groups was seen as the reason for program success.

**Financial accountability.** Local businesses and municipal governments provided financial support to programs equally. Community and community-based businesses contributed more than any level of government. Foundations, churches, and charities provided funding to less than half of the programs (14 of 32 or 43.8%). Nineteen (59.4%) program operators felt certain that their programs would be in existence a year later, but 13 (40.6%) were uncertain of their existence in the following year. In particular, the majority (12 of 19 or 63.2%) of programs expressing confidence in their program's sustainability were also run by the school system and the other seven were run by community groups or agencies. Community programs (10 of 13 or 76%) were doubtful about their sustainability. Among these programs, three worked cooperatively with other agencies. Fear of stigmatization, program abuse, parental unreliability, low self-esteem, and lack of awareness and involvement in the community were seen as barriers to program continuance. Three programs reported hostility toward their program.

**Evaluation.** The majority (27 or 84.4%) of programs received feedback from participants, volunteers, staff, parents, and others. Most feedback was positive. Seventeen (53.1%) programs reported informal evaluations. Only two programs had conducted a formal evaluation and in 13 programs, no evaluation had been conducted.

**Conclusion:** CNPs have been established based upon poverty profiles of district and principals' reports, and otherwise on perception of need. Systematic needs assessments have rarely been conducted. Parental involvement remains low, while school staff involvement is high, shifting the responsibility from community to institution. Prejudicial views were seen as stigmatizing and impediments to community empowerment. Exclusion of parents is seen as reinforcing prejudice and stigmatization.

**McIntyre, L., Travers, K., & Dayle, J. B. (1999). Children's feeding programs in Atlantic Canada: Reducing or reproducing inequities. *Canadian Journal of Public Health, 90(3), 196-200.***

**Purpose:** To explore the contribution of children's feeding programs to the reduction of nutritional and broadly defined health inequities in Atlantic Canada.

**Participants:** Recipients and operators involved with children's feeding programs in Nova Scotia, New Brunswick, and Newfoundland and Labrador.

**Method:** Participant observation, interviews, and focus groups with participating children, their families, and review of program promotional literature, operational reports, and media articles were the data collection methods used for this study. Transcribed notes were analysed using NUD-IST qualitative data analysis software. Grounded theory methods included constant comparisons, inductive and logical analysis of others.

**Results:**

Out of nine programs, six were breakfast programs and three served lunches. Duration of operation for programs spanned four months to 23 years. Most programs were five to seven years old. Six programs were located in low-income neighbourhoods characterized by public housing, high unemployment, and large numbers of social assistance recipients. Three neighbourhoods were mixed income. Programs were characterized by three ideologies: equality, family, and service. Programs based on the family ideology emphasized eating together and socialization. The absence of meal fees characterized programs emphasizing equality. Serving children a nutritionally sound meal characterized the programs emphasizing service. The researchers concluded that the programs were to blame for creating a dragnet that kept program participants and their parents in a needy and dependent state. The researchers also concluded that programs deny participants and their parents their rights for refusing to hand over management of their lives to others. The researchers stated that all but two programs become professionalized and aim to expand their services by gathering larger numbers of clients / children, which in turns creates greater dependency upon the program. Only two programs resisted professionalism by maintaining simple menus and a small core group of independent operators.

**Stigmatization.** Stigma was associated internally and externally with all but two programs. Program recipients were judged as lacking social skills, being greedy or both, having poor attitudes, behavioural problems, and unacceptable manners. One child expressed they had been called "welfare bums." One board member commented that the children did not know how to use knives and forks. Researchers observed that needy children were known to providers and were given extra food and attention. Parents were described as people who gamble and use drugs and alcohol. Mothers were blamed for being neglectful if their children participated in the program. Participating parents and program providers blamed non-participant parents' perception of stigmatization and for being neglectful by not sending their children to the program.

**Access and participation.** Program participants were children aged five to 12 years. On a daily basis, three programs served less than 20 students per day and four served between 20 to 60 students. One program served 92 meals and another program served 800 meals daily. Six of seven school-based programs served less than 30% of the school population. Eight programs were open to all students of which an estimated 75% were not poor.

**Program location.** Programs were located in schools, churches, and other community sites.

**Inclusive and efficient program management.** One program was formally incorporated, two were run by large charitable organizations, four were run by the schools, and two were informally organized. Two programs had formally organized boards. Municipal, provincial, and federal governments, charities and other organizations, and individual donations provided partial funding to programs. Annual program budgets ranged between \$2,000 and \$8,000. One program accepted low-cost voluntary meal payments, while all other programs provided free meals. Four sites paid someone to operate the program on a daily basis.

**Safety.** Parent volunteers, teacher volunteers, principals, community volunteers, and paid coordinators provided supervision for meals.

**Reddan, J., Wahlstrom, K., & Reicks, M. (2002).** Children's perceived benefits and barriers in relation to eating breakfast in schools with or without universal school breakfast. *Journal of Nutrition Education and Behavior, 34(1), 47-52.*

**Objective:** To identify and compare perceived benefits and barriers related to breakfast consumption and concerns about weight among children in schools with or without a universal school breakfast program.

**Participants:** Grades 4, 5, and 6 in six Universal School Breakfast Program pilot schools (n=827) and four control schools (n=615) matched by geographic location and students' sociodemographic status.

**Methods:** Teacher administered surveys to grades 4, 5, and 6 students at one time point at the end of the three-year Universal School Breakfast Program pilot program. Students were asked to respond to a 13-item survey by selecting from responses that included very often, sometimes, and never.

**Results:** The majority of children perceived that eating breakfast provides the benefits of increased energy and ability to pay attention in school. Half of the children indicated that they never have or sometimes have time to eat breakfast in the morning. Significant differences were found when control versus non-control schools: more control schools compared with non-control schools were more positive about benefits related to having more energy and being able to pay attention to schoolwork because of breakfast.

**Conclusion:** School personnel, community, and parental involvement in educational activities promoting the benefits of breakfast may have influenced the pilot school students' perceptions of the benefits of breakfast compared with that of control schools. Reciprocal determinism, a central construct of Social Learning Theory may describe the interplay between the school environment and personnel that may have influenced students' breakfast consumption and attitudes toward breakfast. Breakfast became a normalized activity for students in pilot schools. The authors encourage the use of Social Learning Theory to promote breakfast consumption focusing on practical strategies to address barriers and encourage changes in parent and children's behaviour.

**Sampson, A. E., Meyers, A., Rogers, B. L., & Weitzman, M. (1991). School breakfast program and parental attitudes. *Journal of Nutrition Education, 23(3), 110-115.***

**Purpose:** To determine whether or not parental perceptions about the School Breakfast Program are associated with School Breakfast Program participation among low-income children.

**Participants:** Parents whose children were eligible for a free or reduced-price breakfast in Lawrence, Mass.

**Methods:** Teachers distributed parent questionnaires to all parents of children in 16 elementary schools who were registered for school years 1985-86 and 1986-87 in Lawrence, Mass. Only completed surveys from parents whose children were eligible for a free or reduced-price breakfast, registered for the school years 1985-86 and 1986-87, attended the School Breakfast Program between one and five days per week. A chi square statistic and student's t-test were used to determine whether respondents and nonrespondents or participants and nonparticipants differed on a variety of characteristics

**Results:** Sixty percent of responding parents reported that their child ate breakfast at school. Children were significantly more likely to be participants than nonparticipants if they were Hispanic as opposed to white, non-Hispanic, shared in the decision making as to where they would eat breakfast, and if they were eligible for a free meal versus a reduced-price meal. Parents of participants were significantly more likely than nonparticipant parents to feel the School Breakfast Program would save them time, energy, and family money and were less likely to feel that children should only eat breakfast at home with the family. One-third comments made by parents were supportive of the School Breakfast Program. Parents said the program provided breakfast to children whose parents did not have the financial resources to provide a proper breakfast at home; children had more energy and were learning better because they were fed at school; children got to school on time; assisted working parents who do not have time to supervise their child (ren) during breakfast, and children preferred to eat later in the morning.

**Conclusion:** Parents positive attitude toward the School Breakfast Program was associated with child's participation in the program.

**Tarasuk, V., Beaton, G. H., Geduld, J., & Hilditch, S. (1998). Nutritional vulnerability and food insecurity among women in families using food banks. National Health Research and Development Program Project Report No. 6606-5609-201. Health Canada.**

**Purpose:** To assess the food insecurity and nutritional vulnerability of one subgroup of food-bank users, women living with children.

**Participants:** The sample consists of 153 women recruited from emergency food relief programs in Metropolitan Toronto.

**Methods:** Participants were recruited from a stratified random sample of 23 emergency food hamper programs. Sampling quotas were proportional to the estimated number of eligible women using programs (agencies) within the stratum. Women were recruited within selected agencies between May 1996 and April 1997, during the third and fourth weeks of the month when requests for food assistance peak, and screened for eligibility for inclusion in the study. Sampling criteria included aged 19 to 49 years; receipt of emergency food relief at least once before the past year; presence of child under age 15 years in the household; no pregnancy; and fluency in English. The women were informed about the study goals, the \$50 incentive for their participation, and that participation was by informed consent. Of the 192 women recruited for the study, 153 interviews were conducted. Ethnograph was used to code and sort open-ended questions. Responses to the 24-hour dietary recall were converted into total energy and nutrient intakes, and food groups using the CANDI food intake analysis system.

**Results:** Among the women who participated in the study, 93.5% reported some degree of food insecurity over a 12-month period prior to the interviews. Among the participants, 26.8% of the women also reported that their children were deprived of food over the same 12-month period. The participants' diets supplied inadequate levels of iron, magnesium, vitamin A, folate, protein, and zinc. The majority of women (110 or 86.6%) reported no participation in breakfast programs or were unaware of such programs. Even if one is available, 43% of women said that they would not participate in a breakfast program. However, if the women were asked to accept a subsidy if one was offered, 68% of women said they would accept the subsidy. Concerns regarding breakfast programs included how to assess if the child is eating enough and properly, the food tastes of their children, culturally appropriate foods, and social stigma. The participants felt that breakfast could be prepared relatively inexpensively at home versus the lunch or evening meal and preferred to prepare these meals themselves.

**Conclusion:** Food insecurity among households dependent on social assistance programs is further exacerbated by the inadequacy of current social assistance.

## Needs Assessment Literature

**Coalition for School Nutrition. (2001). Survey of food and nutrition policies and services in Newfoundland and Labrador. Retrieved May 28, 2003, from [http://www.nlta.nf.ca/HTML\\_Files/coalition/survey.html](http://www.nlta.nf.ca/HTML_Files/coalition/survey.html).**

**Objective(s):** To identify existing food and nutrition policies and services in the province's schools; to develop an inventory of the schools in terms of their food service supports and programs; and to identify best practices, barriers, and challenges to school food and nutrition policies and services.

**Methods:** In October 2000, the questionnaire was mailed to all school principals in Newfoundland and Labrador. Out of the total school population, 251 (72%) principals responded to the questionnaire. The profile of food in schools was obtained by gathering data on food offered to students at schools with cafeterias, canteens, or vending machines. Foods were categorized as nutritious (e.g. Milk, fruit), somewhat nutritious (e.g. hamburgers, fruit drinks), and non-nutritious (soft drinks, onion rings).

### **Results:**

**Number and type of programs.** Approximately 30% of the schools participate in a breakfast program for their students, 25% of schools participate in a snack program and 15% in a lunch program. Forty-five percent of the schools surveyed do not participate in any school nourishment programs but many indicated a need for a program, and 25% of the schools surveyed indicated having a snack supplement program.

**Participation.** Breakfast programs had a 29% participation rate. Eighty percent of the schools with a breakfast program offer the program to students each day.

**Food quality.** Twenty-eight percent of respondents cited the introduction of a breakfast program and 13% of respondents cited the introduction of a recess/snack program as activities undertaken at the school to promote healthy eating. The food items offered most often through the breakfast program are fruit juice, milk (white and chocolate), toast, cold cereal, jam, cheese, fruit, peanut butter and muffins. Foods offered most often in the snack program were milk (white and chocolate), cheese and crackers, fruit juice, and sometimes soft drinks.

**Program management.** The most frequently mentioned operators of breakfast programs were volunteers (60%), parents (44%), schools (42%) and community groups (14%).

**Financial management.** The School Children's Food Foundation was mentioned by 75% of the schools followed by community groups (56%), school (48%), parents (48%), and volunteers (37%) as sources of funding for school breakfast programs. Sustainability issues reported by principals include lack of adequate funding for school nourishment programs, lack of subsidies for healthy food choices, lack of education for parents and students and limited food preparation

facilities and space for eating. In some isolated communities, schools are faced with a scarcity of reasonable priced, nutritious food items such as fresh fruit. Forty-seven percent of principals indicated that overall health and food choices are the top two health issues facing students.

**Conclusion:** Nourishment programs successfully offer nutritious food. Nourishment programs are described as having nutritious food. Principals responding to the survey reported that they recognized a need for school nourishment programs. In particular, 26% of those principals whose school did not have a breakfast program indicated a need for such a program.

**Glacken, J. B. (2002). Northern Nutrition Association Phase III Healthy Living School Project: Summary Report. NWT: Author.**

**Objective(s):** To identify school-based strategies addressing tobacco use, nutrition, and food security in schools across the Northwest Territories.

**Participants:** Administrators from 46 schools in 32 communities across the Northwest Territories.

**Methods:** The Healthy Living Survey was sent to 52 schools across the Northwest Territories.

**Results:**

**Number and type of food programs.** Among the survey respondents, 28.3% indicated that their school did not have a food program. Among the respondents stating that their school had a food program (71.7%), the majority (44.2%) reported that their school ran a snack program followed by a breakfast program (34.6%). Fifteen (45.5%) schools offered more than one type of food program.

**Impact of program on school performance.** Survey respondents were asked their opinion of the program's impact on school performance. The two most frequently mentioned impacts of the food program were an increase in the ability of children to learn / concentrate (35.0%) and improved school performance (17.5%).

**Other benefits of food program.** Respondents indicated other impacts of the food program such as improved nutrition (12%), more energy / motivation (11.1%), improved attitude behaviour (11.1%), improved attendance (7.9%), and increased nutrition knowledge (4.8%). Comments regarding food programs included "students are on task, happier, less discipline referrals . . . motivation to come to school on time."

**Student participation.** Across the sample of schools in this study, the average number of students participating in was 107.5. Most students were between five and eight years old (30.2%) and / or were nine to 12 years old (29.2%).

**Program management.** School staff / teachers ran most of the food programs (78.8%). Seven (14.6%) of these program were run with the assistance of a hired coordinator / cook. In addition, students (8.3%), community volunteers (6.3%), parents (4.2%), community agency / group (4.2%), district education authority (4.2%), and other individuals (4.2%) were involved in the delivery of the program.

**Financial accountability.** Twenty-six (78.8%) of the programs were funded through donations/sponsorship. Other sources of funding included federal funding (24.5%), school-based funding, BREAKFAST FOR LEARNING, school board, fund-raising, student fees / purchase, and other individuals.

**Grennier, D. (2002). Kenora Rainy River district elementary school nutrition survey results. Northwestern Health Unit. Retrieved April 5, 2003, from <http://www.nwhu.on.ca/Survey%20written%20report%20final.doc>.**

**Name of program:** Good Food for Kids

**Objective(s):**

1. Heighten awareness surrounding food and nutrition issues through both parents and elementary schools
2. Examine the need for universal and non-stigmatizing meal and snack programs
3. Promote the importance of supportive environments in schools through school nutrition policies

**Participants:** Elementary schools in northwestern Ontario

**Survey methods:** A total of 43 (72%) respondents (principals, vice-principals, teachers, lunch supervisors, secretaries, education assistants, and PTA chair) representing 11 communities, eight school boards, and a total population of 6,564 students in Kenora Rainy River District completed the Good Food For Kids survey.

**Survey results:**

**Type of meal served (breakfast, snack, lunch).** Ten universal breakfast programs, 25 lunch, and 11 snack programs were running at the time of the survey in elementary schools in Kenora Rainy River District. Forty-nine percent of responding schools reported having a meal or snack program. Programs operate daily.

**Inclusive and efficient program management.** The Northwestern Health Unit Partnership Program provides guidance for meal programs. This group is comprised of representatives from school boards, local businesses, and community members. Food preparation and serving is performed by volunteers (56%), students (44%), teachers (41%), parents (38%), and others such as hired staff, teaching assistants and caterers / restaurants.

**Food quality.** Respondents (60%) said snacks were available in their school. Snacks include granola bars, potato chips / Cheerios / nachos / popcorn, soup, ice cream / frozen novelties, and hot rods. Fresh fruit is available in four (9%) of schools more than three times a week and three schools once or twice a week. The majority of respondents (84%) said milk was available in school and 83% of schools with milk programs participate in the Dairy Farmers of Ontario Elementary School Milk Program. Chocolate milk and 2% milk were available to students most often. Special food days are promoted in 91% of schools ranging from once per year to three times per week. Nutrition policies or guidelines pertaining to food / beverage availability were in effect at 19 (44%) of schools. Four (9%) had policies relating to healthy food choices. In 84% of

schools with a policy, it is monitored most often by the principal or teachers. Sixty percent of schools allow food at recess. Items sold in schools tend to be high in fat and / or sugar.

**Safety.** The location of breakfast or snack was not mentioned, however 86% of responding schools, students eat lunch in their classroom. Alternative sites for eating lunch included gymnasium, lunchroom, and hallway.

**Financial accountability.** Among responding schools, 86% sell food to raise funds for programs. Forty-three percent of food sales come from home baking, chocolate sales (41%), cheese (24%), citrus fruits (14%), and apples (11%). Forty-nine percent of respondents sold non-food items, such as magazine, giftware, and seasonal items, to raise funds for programs. Participants pay a dollar for lunch or use Canadian Tire money. Nineteen (44%) respondents reported having accessed funding from BREAKFAST FOR LEARNING (BFL). Three schools were accessing BFL funding. Seventeen did not apply for this funding.

**Human Resources Development Canada. Results of the community mapping study for children in Prince Albert, Saskatchewan. Retrieved May 26, 2003, from [http://www.hrdc-drhc.gc.ca/sp-ps/arb-dgra//publications/research/2002docs/sask/e/sask\\_E\\_8.shtml](http://www.hrdc-drhc.gc.ca/sp-ps/arb-dgra//publications/research/2002docs/sask/e/sask_E_8.shtml).**

**Name of program:** Saskatchewan Community School Program (Prince Albert)

**Objective(s):** To bring together the school and the community so that both could focus on the problems of inadequate nutrition of school children in community schools across Saskatchewan.

**Participants:** Overview provided without details.

**Method:** Overview provided without details.

**Results:**

**Access and participation.** Universal snack programs delivered daily to 58% of the combined population of pre-kindergarten, kindergarten, and Grade 1 students in the city of Prince Albert, Sask., located in neighbourhoods identified by the Social Index as having a number of potential challenges (socioeconomic – poverty).

**Funding.** Grants from the Saskatchewan Department of Education (Saskatchewan Education) school boards, national foundations, and Saskatchewan Social Services. Current funding level is approximately \$0.36 per child per day. Estimated cost for a fully funded school nutrition program is \$0.52 per child per day.

## Program Descriptions

**Hess, D., Woo, N., Phelps, A., Parker, L., and Weill, J. (2002). School breakfast scorecard: 2002. Twelfth annual status report on the school breakfast program. Washington, DC: Food Research and Action Center. Retrieved November 28, 2002, from <http://www.frac.org/pdf/2002Breakfast.PDF>.**

**Name of program:** School Breakfast Program

**Location of programs (school, community centre):** Schools throughout the United States.

**Program goals:** To enhance successful learning by creating partnerships with schools, communities and corporations, to support all children's right of access to adequate, nutritious food.

**Type of meal served (breakfast, snack, lunch):** School Breakfast Program

**Access and participation:** School Breakfast Program participants are primarily students from low-income families. In March 2002, 8.1 million children (6.7 from low-income families) participated in the School Breakfast Program, while 27.2 million children participated in the National School Lunch Program (NSLP). Students' families must apply to receive free or reduced-price meals. Students who qualify for a reduced-price or free lunch are eligible for a reduced-price or free breakfast. For every 100 students receiving reduced-price or free school lunches, 42.9% of these students received free or reduced-price breakfasts. However, among 27.2 million students who participate in a NSLP, an estimated 18.9 million of them do not participate in the School Breakfast Program.

Ninety-five percent of schools throughout the United States participate in the NSLP, thus it is used as the benchmark for measuring school participation in the School Breakfast Program. Three-quarters of the number of schools that participated in the NSLP also participated in the School Breakfast Program. Many states require that all schools or those with a certain proportion of low-income students participate in the School Breakfast Program. Twenty states operated the School Breakfast Program in 90% or more of the schools operating the NSLP for the 2001-02 school year. Twelve states provided a free or reduced-price breakfast to 50 children or more for every 100 provided a free or reduced-price school lunch. Programs operate five days per week between September and June.

**Stigmatization.** Institution of the Universal School Breakfast is an attempt to eliminate the barriers that lead to stigmatization within the School Breakfast Program.

**Food quality.** The recommended meal should contain one-fourth or more of key nutrients children need daily; no more than 30% of calories from fat and 10% of calories from saturated fat. According to research children who participate in school breakfast eat more fruits, drink more milk, and consume less saturated fat than those who do not eat breakfast or have breakfast at home.

**Funding:** Federal contribution during 2001-02 school year was \$1.15 US for each free meal, and \$0.85 for each reduced-price meal and \$0.21 for each paid meal. Greater funding is provided to higher need schools and those in Alaska and Hawaii. Federal funding is provided to schools meeting federal guidelines for funding.

**Le Club des Petits Déjeuner du Québec. (2002). Breakfast is the abc of success. Montreal: Le Club des Petits Déjeuner du Québec.**

**Program goals:** To provide complete and nutritious breakfasts to all children arriving at school on an empty stomach as well as encourage activities for the development of personal well-being and self-accomplishment.

**Program Description:** Located in Québec, Le Club des Petits Déjeuner du Québec serves 12,000 children in 140 schools in low-income neighbourhoods\* to all students within the school. The breakfast club programs are universal. There are 150 clubs serving 1.5 million breakfasts across Quebec.

**Access and participation:** Universal breakfast program, operating five days per week.

**Parental involvement, consent, partnerships and collaboration:** Parents volunteer for the program and participate in the coordinating committee for the program. The program committee also consists of the coordinator, “the person in-charge,” a representative of the day-care services, a teacher, a member of a local community organization, the school principal, and one or two students.

**Inclusive and efficient program management:** Approximately 10 to 15 volunteers share duties for the programs. Parents volunteer for the program. Training is provided to student / staff.

**Food quality:** Menus are based on the Canada’s Food Guide to Healthy Eating and include such items as assorted juices, milk, yogurt, fresh fruit, muffins, plus a hot entrée (croissants, English muffins, ham, cheese, pancakes, bagels, cream cheese, and French toast).

**Safety:** Breakfast is served before the start of classes, on school premises and supervised by school staff. There is one adult for every 20 students.

**Financial accountability:** The breakfast club uses a centralized system of bulk food purchase through their head office and main warehouse in Boucherville. Regional offices and warehouses in Outaouais and Saguenay-Lac St. Jean serve as distribution sites. Funding sources include corporate, government, and fund-raising.

**Evaluation:** Pre-school and school-aged children provided feedback to volunteers on the impact of the breakfast program on student classroom behaviour. Seventy-three percent of students said that they attended the breakfast club five times per week. Students (48%) said that they go to the program primarily to meet friends; because their parents leave for work early (37%); for the greater variety and quantity of food offered in the program than at home (32%); and because their parents stay in bed (11%). Student responses indicated that they felt they had more energy, felt more in shape, and had improved their attention in class (33%). Other results include academic

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\* Le Club des Petits Déjeuner du Québec reported that Quebec schools are coded according to the level of poverty based on family income.

improvements, and less tardiness, absences, and complaints of stomachaches, headaches, and less aggression.

**Table 1. Sources of Support for Child Nutrition Programs in across Canada by Province and Territory.**

PROVINCE	PROVINCIAL SCHOOL PROGRAM		# SCHOOL MEAL PROGRAMS <sup>45</sup>	#CHILDREN	FINANCIAL SUPPORT
	YES	NO			
Alberta		✓	192 schools	4,568 students per day (majority breakfast) kindergarten to Grade 12	<ul style="list-style-type: none"> <li>Indirect provincial government funding to programs is provided through the Department of Learning to school divisions that allocate a portion of funding to nourishment programs.</li> <li>Department of Child and Family Services provided \$430,000 in funding to Edmonton's School Lunch Program (ESLP) in Edmonton's schools through the Early Intervention programs.<sup>6</sup></li> <li>In 2004, BREAKFAST FOR LEARNING (BFL)<sup>7*</sup> provided \$68,000 in funding to 45 schools, providing meals to 4,728 students per day.</li> <li>Programs are universally accessible, most have voluntary donation and / or are free.</li> <li>ESLP provides 11 \$1.00 lunch programs and 30 free snack programs for students in kindergarten to Grade 6.</li> </ul>
British Columbia	✓		325 schools		<ul style="list-style-type: none"> <li>Provincial government funding (Ministry of Children and Family Development) through Community Link (Learning Includes Nutrition and Knowledge).</li> <li>Community Link provides approximately \$14 million to school boards for nourishment programs (based on need).</li> <li>BFL and Directorate for Agencies for School Health (DASH) partnered to provide \$102,500 to child nutrition programs (CNPs)</li> <li>In 2004, BFL provided \$80,028 in funding to programs in British Columbia, serving 10,705 children per day in 108 programs.</li> <li>Parental support is twice as much as provincial support for programs.<sup>8</sup></li> </ul>
Manitoba		✓	63 breakfast programs in 2001 <sup>9</sup>		<ul style="list-style-type: none"> <li>No provincial funding.</li> <li>Grants from BFL were made to the Manitoba Council of Child Nutrition (MCCN) that administers grant applications and grant allocations.</li> <li>School divisions (discretionary funds) contribute 50%.</li> <li>In 2004, BFL provided \$64,050 in funding toward 45 programs serving 3,541 children per day.</li> <li>Donations and business sponsors contribute 30%.</li> </ul>

<sup>4</sup> Monahan, H. (2004). A national scan related to school-based feeding programs. Nova Scotia Office of Health Promotion.

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.

<sup>7</sup> BREAKFAST FOR LEARNING (2004).

<sup>8</sup> Directorate of Agencies for School Health. (2002). There is still a need: A picture of school meal programs in British Columbia.

<http://www.dashbc.org/resources/stillneed.pdf>. Retrieved July 16, 2003

**Table 1. Sources of Support for Child Nutrition Programs in across Canada by Province and Territory.**

PROVINCE	PROVINCIAL SCHOOL PROGRAM		# SCHOOL MEAL PROGRAMS <sup>45</sup>	#CHILDREN	FINANCIAL SUPPORT
	YES	NO			
					<ul style="list-style-type: none"> <li>Local decision making</li> </ul>
New Brunswick	✓		51 school-based nourishment programs that are universally accessible and free		<ul style="list-style-type: none"> <li>Provincial government through the Department of Education provides \$969,000 annually to school-based nourishment programs in the Healthy Minds Program.</li> <li>Province of New Brunswick also provides indirect funding through Healthy Learner Program, a joint program between the Department of Education and Health and Wellness.</li> <li>Provincial employees are a part of the BFL New Brunswick Advisory Council.</li> <li>BFL provides \$71,000 in program grants to NB programs through national granting program from corporate and private donors.</li> <li>BFL provided \$81,600 to 69 programs serving 4,923 children per day in 2004.</li> <li>Atlantic Wholesalers and Atlantic GIFT (Grocery Industry Foundation Together) provided \$84,000 to programs in 2003-04 through BFL NB.</li> <li>BFL provides free nutrition education resources and start-up kits, to organizations and schools.</li> <li>Other donors include home and school associations, businesses, credit and Boys and Girls clubs.</li> </ul>
Newfoundland and Labrador	✓		148 schools	17,000 children / day	<ul style="list-style-type: none"> <li>Provincial funding of \$2.5 million provided through the Department of Human Resources and Employment (DHRE) to Kids Eat Smart Foundation Newfoundland and Labrador (KESFNL) between 1998 and 2003.</li> <li>Other sources of funding to KES include BFL, Petro Canada, Newfoundland Association of Public Employees, and fund-raising</li> <li>KES provides start-up grants based on matching community contributions.</li> <li>In 2004, BFL provided \$50,000 to 136 programs serving 14,000 children per day.</li> </ul>
Northwest Territories		✓			<ul style="list-style-type: none"> <li>Federal funding (Brighter Futures)</li> <li>Donations, sponsorships, school boards and individual schools, BFL, fund-raising, student fees, purchases.<sup>10</sup></li> </ul>
Nova Scotia		✓	159 mostly	Kindergarten	<ul style="list-style-type: none"> <li>BFL contributes \$90,000 per year in program grants and 10% subsidy.</li> </ul>

<sup>9</sup> Manitoba Council on Child Nutrition. (2001). Food and Nutrition in Manitoba Schools Survey Report 2001. Government of Manitoba.

\* **BREAKFAST FOR LEARNING (2004) data obtained from this organization**

<sup>10</sup> Monahan (2004)

**Table 1. Sources of Support for Child Nutrition Programs in across Canada by Province and Territory.**

PROVINCE	PROVINCIAL SCHOOL PROGRAM	# SCHOOL MEAL PROGRAMS <sup>45</sup>	#CHILDREN	FINANCIAL SUPPORT	
			breakfast and snack	to Grade 12	<ul style="list-style-type: none"> <li>In 2004, BFL provided \$79,551 to 144 programs serving 9,822 children per day.</li> <li>Atlantic Grocery Industry Foundation Together (Atlantic Superstore, Sobey's and Co-ops) contributes \$40,000 to nourishment programs in Atlantic provinces, however, \$11,850 goes to programs in Nova Scotia.</li> <li>Community financial and in-kind support such as church groups, service clubs, and businesses.</li> <li>Universally accessible and mostly free.</li> <li>Some schools request donations.</li> </ul>
Ontario		✓	623 (breakfast, snack and lunch)	156,197 (kindergarten to Grade 12)	<ul style="list-style-type: none"> <li>Provincial Government (Ministry of Children and Youth Services) - \$4.5 million to programs.</li> <li>In 2003-04 school year, BFL funded 2,027 programs across the province.</li> <li>Municipal support is provided for local programs (i.e. City of Toronto)</li> <li>Local decision-making structure.</li> </ul>
Prince Edward Island	✓		34 breakfast and snack	Kindergarten to Grade 12	<ul style="list-style-type: none"> <li>\$25,000 in provincial funding through the Department of Education for the funding of breakfasts coordinators within schools in the Easter School District.</li> <li>Easter School District provides office space and administrative support to the part-time provincial coordinator of the School Healthy Eating programs funded by BFL.</li> <li>The Access to Safe and Healthy Foods Committee (PEI Healthy Eating Alliance) allocates BFL (\$19,000) and other funds to nourishment programs in all districts (Atlantic GIFT - \$7,600).</li> <li>\$12,000 and donated equipment and products is donated by a local businessperson from the food industry.</li> <li>In 2004, BFL provided \$40,650 to 26 programs serving 2,552 children per day.</li> <li>Universally accessible and free.</li> </ul>
Quebec			163 schools	13,000 daily	<ul style="list-style-type: none"> <li>Cost to operate the program in each site is \$15,000 yearly</li> <li>Le Club des Petits Déjeuners du Québec receives 80% of its food from 30 food suppliers.</li> <li>Corporate partners include Danone, SC Johnson, CIBC, and Canadian Pacific Railways.<sup>11</sup></li> <li>In 2004, The club was successful in securing \$4,000,000 in funding from the Québec government<sup>12</sup></li> </ul>
Saskatchewan					<ul style="list-style-type: none"> <li>Provincial funding through Saskatchewan Learning and the Department of Community Resources and Employment.</li> </ul>

<sup>11</sup> <http://www.clubdejeuners.org/php/Vision.php3><sup>12</sup> P. Audette, Le Club des Petits Déjeuner du Québec (personal communication, November 16, 2004)

**Table 1. Sources of Support for Child Nutrition Programs in across Canada by Province and Territory.**

PROVINCE	PROVINCIAL SCHOOL PROGRAM		# SCHOOL MEAL PROGRAMS <sup>45</sup>	#CHILDREN	FINANCIAL SUPPORT
					<ul style="list-style-type: none"> <li>▪ Saskatchewan Learning funds designated elementary community schools in high-need low-SES areas.</li> <li>▪ Designated schools with 200 students receive \$10,000 and \$40.00 / student for schools with &gt; 200 students.</li> <li>▪ Local decision making.</li> <li>▪ The Department of Community Resources and Employment (DCRE) funds school divisions who fund designated secondary schools.</li> <li>▪ 98 designated community schools (12% of all Saskatchewan schools).</li> <li>▪ 2003-04 DCRE provided \$1,330,440 for child nutrition and development programs.</li> <li>▪ Programming is sustained through DCRE and Saskatchewan Learning, which provides policy direction and educational support to programs.</li> <li>▪ In 2004, BFL provided \$51,242 to 41 programs serving 3,999 children per day.</li> <li>▪ Cost to students: free / universally accessible.</li> </ul>
Yukon			25 schools	Kindergarten to Grade 12	<ul style="list-style-type: none"> <li>▪ Territorial government provides \$30,000 annually to school-based nourishment programs through the Department of Health and Social Services, BFL contributes \$30,000 to school-based nourishment programs; BFL contributes an additional \$25,000 to Yukon Food for Learning Association covering staff pay, member development, and promotional activities.</li> <li>▪ In 2004, BFL provided \$44,200 to 18 programs serving 476 children per day.</li> </ul>

