

School breakfast programmes for adolescents

Literature review



Canterbury
District Health Board
Te Poari Hauora o Waitaha

Prepared for the Communities Team
by the Information Team
Community & Public Health
April 2014

The information contained in this document may be derived from a number of sources. Although the CDHB has taken reasonable steps to ensure that the information is accurate, it accepts no liability or responsibility for any acts or omissions, done or omitted in reliance in whole or in part, on the information. Further, the contents of the document should be considered in relation to the time of its publication, as new evidence may have become available since publication. The Canterbury District Health Board accepts no responsibility for the manner in which this information is subsequently used.

© Canterbury District Health Board, 2014.

Executive summary

Background

Regular breakfast consumption by adolescents is related to greater nutrient intake and health-promoting behaviours; improved academic performance, cognitive function, and cardiometabolic measures; and healthy weight maintenance.

Many New Zealand adolescents do not consume breakfast regularly; in particular females, Māori, Pacific, and those living in more deprived areas. A variety of sociocultural, demographic, environmental and personal factors have been identified as encouraging regular breakfast consumption, including a supportive family and peer environment. The two most common reasons stated for not consuming breakfast are lack of time in the morning, and not feeling hungry.

In an attempt to decrease inequities and improve health, social, and academic outcomes for vulnerable young people by increasing access to food, the provision of free or subsidised breakfasts within the school environment has been implemented in several countries.

Methods

To investigate the outcomes of free school breakfast provision to adolescents and the features of the most effective programmes, a literature search was conducted to identify reports, theses and recent peer-reviewed journal articles of reviews and interventions on this topic.

Several limitations to the literature review are acknowledged, in particular the reliance on mostly observational (cross-sectional or longitudinal) rather than experimental data. Also, the school breakfast programmes included in the review are highly heterogeneous, which makes it difficult to make conclusions about the outcomes and specific characteristics of successful programmes as a whole. In addition, most data are from the USA and United Kingdom, and the extrapolation of findings from other countries to a New Zealand setting is challenging due to the different educational systems and levels of food support. Finally, most studies focussed on primary school-age students, with only a small number of studies of adolescents.

Findings

Few studies specifically investigating the effect of school breakfast programmes for adolescents were found. Qualitative findings indicate that people involved with the programmes (e.g. school staff and volunteers) believe the programmes are of high importance and value. The perceived benefits included a wide range of educational, wellbeing, nutrition, social and environmental outcomes.

Limited quantitative findings suggest improved school attendance, mathematics scores, punctuality and psychosocial measures for adolescents attending a school breakfast programme. Improvements

tended to be more pronounced in students who attended the school breakfast programme more often.

Breakfast programme attendance was generally poor, and a large proportion of adolescents continued to skip breakfast even when it was provided at school. Interventions to enhance participation by providing breakfast at no cost to all students, and changing the timing and/or location of breakfast, showed some positive effects on uptake.

Studies indicate that a successful school breakfast programme for adolescents needs to be inclusive, tailored, flexible, regular, and embedded within a supportive environment with full backing from school staff and community networks. Secure funding and a stable workforce contribute to the effective operation and long-term viability of a programme.

Conclusions

School breakfast programmes for adolescents may provide positive benefits when attended on a regular basis. Schools need to be able to customise programmes to the needs of their students and have access to sufficient resources to ensure a sustainable programme with high uptake.

Table of contents

| | |
|---|----|
| Introduction | 1 |
| Methodology | 1 |
| Limitations of the evidence base..... | 2 |
| Limitations of this review | 3 |
| Background | 4 |
| Effects of breakfast consumption by adolescents..... | 4 |
| Breakfast consumption by adolescents in New Zealand..... | 5 |
| Determinants of breakfast consumption by adolescents | 6 |
| Adolescents’ barriers to consuming breakfast..... | 7 |
| Provision of breakfast in schools..... | 8 |
| Findings | 10 |
| Outcomes of school breakfast programmes | 10 |
| Interventions to increase adolescents’ participation in school breakfast programmes..... | 14 |
| Components which affect the success of school breakfast programmes for adolescents | 15 |
| Conclusions | 17 |
| Appendix A: Evaluations of school breakfast programmes for adolescents | 19 |
| Appendix B: School food programmes in New Zealand - a brief summary | 20 |
| Non-government organisation and industry-funded school food programmes..... | 20 |
| Government-funded school food programmes | 22 |
| Appendix C: Interventions to increase participation of adolescents in school breakfast programmes | 23 |
| Appendix D: Recommendations for establishing school breakfast programmes..... | 24 |
| References | 25 |

Introduction

This paper has been prepared in response to a request from the Communities Team (Community & Public Health), and presents the findings of a literature review of universal school breakfast programmes for adolescents (aged ≈11-18 years). In particular, it will investigate the:

1. quantitative outcomes of school breakfast programmes (e.g. school attendance, academic achievement, hunger, classroom behaviour),
2. qualitative outcomes of school breakfast programmes (e.g. attitudes towards the programme, barriers to and promoters of participation), and
3. factors that contribute to the success of programmes.

The information gathered will inform the Communities Team in their work with secondary schools that implement breakfast programmes for their students.

Methodology

A literature search to identify reviews and school breakfast programme interventions was conducted via Medline, EMBASE, PSYCINFO, ERIC and EBM Reviews (using OVIDSP through the University of Otago Christchurch Medical Library), from 2000-present, using a combination of the search terms:

- child\$ or school\$ or student\$ or adolescen\$ or teen\$, and
- breakfast\$, and
- program\$ or intervention or study or studies or trial or trials or random\$ or controlled or evaluat\$ or assess\$ or review.

A separate search for studies undertaken in New Zealand was also included. This was conducted using the Kiwi Research Information Service¹, with the search term: breakfast.

A broad search was also conducted using both Google Scholar and Google, and various combinations of the search terms listed above.

Titles and abstracts of publications (articles, reports, and theses) extracted from the search strategies above were assessed for relevance. Further, the reference lists of relevant publications and websites of specific organisations (e.g. universities, New Zealand district health boards, government departments, programme collaborators) were hand-searched to identify further programmes.

Studies which specifically focused on providing breakfast to young people with chronic undernourishment and/or associated health conditions (e.g. stunting, wasting, anaemia), or living in

¹ <http://nzresearch.org.nz/>

areas of extreme poverty were not included in the literature review due to the limited applicability to a New Zealand setting.

Brief summaries of the most relevant publications are included in the Findings section.

Limitations of the evidence base

The majority of studies assessing the impact of school breakfast programmes on academic, health, and social outcomes were observational. The conclusions drawn from observational studies are limited due to the lack of a suitable control group to compare outcomes to over time. Furthermore, it may not be possible to obtain adequate baseline measures, the study timeframe may be of short duration, and comparing breakfast programme participants to non-participants runs the risk of not taking in to the account other potential differences between those who have breakfast at school and those who do not (confounding).

Rigorous intervention studies are required to determine the effect of consuming breakfast (when none was consumed before) or increasing the regularity of breakfast consumption. In saying this, true randomised controlled trials are not necessarily a suitable way of assessing the effect of school breakfast programmes on academic, health, and social outcomes due to both the logistical constraints and the ethical concerns related to not providing breakfast to students who need it.

The school breakfast programmes included in the literature review are highly heterogeneous in terms of programme design, implementation, school environment, education system, staffing, duration, food provided, outcomes measured, cost, frequency of attendance, and participants' socioeconomic and cultural characteristics. This heterogeneity makes it difficult to make conclusions about the outcomes and specific characteristics of successful programmes as a whole.

Much of the information regarding school breakfast programmes is from the USA and United Kingdom, where the provision of lunch, and sometimes breakfast, at school is commonplace. There is less information on school breakfast programmes in countries (such as Australia and New Zealand) where nationwide school food programmes do not exist. The extrapolation of programme findings from other countries to a New Zealand setting can be challenging due to the different educational systems and the provision of differing levels of food support. Therefore, the conclusions made must be interpreted acknowledging that the programmes may not be entirely comparable with the New Zealand situation.

Most studies assessed the effects of school breakfast programmes for primary school-age students (\approx 5-10 years old), or included students from across a range of ages with no separate analyses for younger and older students. Only a very small number of studies included adolescents exclusively. It is possible that the design and implementation of programmes for adolescents may need to be different from those of younger children due to differences such as school structure and increased independence of adolescents (e.g. in terms of getting themselves to school, and food-related attitudes and behaviours).

Limitations of this review

This review has been carried out in a short time frame and has accessed literature using databases readily available to the Canterbury District Health Board. It is not, and does not claim to be, comprehensive or systematic.

Background

Effects of breakfast consumption by adolescents

Many observational and some experimental studies have reported positive effects for adolescents who eat breakfast² regularly³ compared to those who do not. These include:

- greater macro- and micronutrient intakes (in particular, calcium, fibre, iron, zinc, magnesium and vitamins A, C and the B vitamins), particularly when cereal-based foods are eaten (Affenito et al., 2013; Quigley, Taylor, & Scragg, 2007; Rampersaud, Pereira, Girard, Adams, & Metz, 2005; Ruxton & Kirk, 1997; Williams, 2007; Wilson, Parnell, Wohlers, & Shirley, 2006),
- more health-promoting behaviours and positive dietary habits overall, including more physical activity, being less likely to smoke, fewer skipped meals, lower alcohol consumption, greater consumption of fruit, vegetables, and dairy products, lower consumption of sugary beverages and unhealthy snacks, and being less likely to diet (Arora et al., 2012; Cohen, Evers, Manske, Bercovitz, & Edward, 2003; Keski-Rahkonen, Kaprio, Rissanen, Virkkunen, & Rose, 2003; Quigley, et al., 2007; Rampersaud, et al., 2005; Sjöberg, Hallberg, Höglund, & Hulthén, 2003; Utter, Scragg, Ni Mhurchu, & Schaaf, 2007; Yang, Wang, Hsieh, & Chen, 2006; Zullig, Ubbes, Pyle, & Valois, 2006),
- better aspects of academic performance/cognitive function, more consistently for malnourished groups (Cooper, Bandelow, & Nevill, 2011; Gajre, Fernandez, Balakrishna, & Vazir, 2008; Grantham-McGregor, 2005; Hoyland, Dye, & Lawton, 2009; Pollitt & Mathews, 1998; Quigley, et al., 2007; Rampersaud, et al., 2005; Wesnes, Pincock, Richardson, Helm, & Hails, 2003; Wesnes, Pincock, & Scholey, 2012; Widenhorn-Muller, Hille, Klenk, & Weiland, 2008),
- better cardiometabolic measures (e.g. smaller waist circumference, lower fasting insulin, lower total and low-density lipoprotein cholesterol, greater cardiorespiratory fitness, lower percentage body fat) (Cuenca-García et al., 2013; Hallström et al., 2013; Smith et al., 2010), and
- more positive mood (Cooper, et al., 2011; Wesnes, et al., 2003; Widenhorn-Muller, et al., 2008).

² Studies use various definitions of the term “breakfast”. Some of these include: the first food/beverage(s) consumed of the day, or food/beverage(s) consumed within a specific timeframe (e.g. 6-9am, or within the first 2 hours of waking). In this literature review, the term “breakfast” is used to encompass all of these definitions, unless stated explicitly.

³ Studies use various definitions of high frequency breakfast consumption. Some of these include: every day, 5-7 days per week, or a relative term such as “always” or “often”. In this literature review, the term “regularly” is used to encompass all of these definitions related to the category of most frequent consumption, unless stated explicitly.

Two recent reviews (de la Hunty, Gibson, & Ashwell, 2013; Horikawa et al., 2011) and several large cross-sectional studies (Arora, et al., 2012; Hallström, et al., 2013; Kostı et al., 2008; Panagiotakos et al., 2008; Sandercock, Voss, & Dye, 2010; Szajewska & Ruszczynski, 2010; Thompson-McCormick, Thomas, Bainivualiku, Khan, & Becker, 2010; Utter, Scragg, Ni Mhurchu, et al., 2007; Utter, Scragg, Schaaf, Fitzgerald, & Wilson, 2007; Yang, et al., 2006) report that adolescents who regularly eat breakfast are significantly less likely to be classified as overweight or obese than those who do not regularly eat breakfast. Some longitudinal cohort data indicate that over several years, adolescents who do not regularly eat breakfast gain more weight than regular breakfast-eaters (Berkey, Rockett, Gillman, Field, & Colditz, 2003; Merten, Williams, & Shriver, 2009; Niemeier, Raynor, Lloyd-Richardson, Rogers, & Wing, 2006; Smith, et al., 2010).

However, not all studies consistently find this relationship, particularly after taking into account confounding factors known to affect weight such as physical activity, ethnicity, and energy intake. As these data are observational it cannot be definitively stated that skipping breakfast causes weight gain (Quigley, et al., 2007; Rampersaud, et al., 2005). For this to be demonstrated, interventions need to be undertaken which increase breakfast consumption in adolescents who do not regularly eat breakfast to see whether this has positive effects on body weight over time.

Despite the limitations of using mostly observational data, given the body of evidence supporting various positive effects for adolescents of eating breakfast, it is prudent to recommend regular breakfast consumption for this age group.

Breakfast consumption by adolescents in New Zealand

Adolescence is a time of increased autonomy in terms of personal food choices, as well as high nutritional need due to growth and development.

Despite the benefits of consuming breakfast regularly, breakfast consumption decreases with increasing age during adolescence (Clinical Trials Research Unit, University of Auckland, & Synovate, 2010). Two nationwide surveys found that 81% of 10-14 year olds reported eating breakfast daily (Ministry of Health, 2012) compared to approximately half of 15-18 year olds (University of Otago & Ministry of Health, 2011). This decline in breakfast consumption over time may reflect the greater control adolescents exert over their dietary patterns as they get older.

Rates of regular breakfast consumption are significantly higher for:

- males, compared to females,
- non-Māori and non-Pacific groups, compared to Māori and Pacific, and
- those living in the least deprived areas, compared to those living in the most deprived areas (Adolescent Health Research Group, 2003; Clark et al., 2013; Ministry of Health, 2008, 2012; University of Otago & Ministry of Health, 2011).

These differential rates of breakfast consumption in New Zealand according to age, sex, minority ethnic group, and level of deprivation are in accordance with numerous international data (e.g. (Currie et al., 2008)).

A national survey of 3,275 New Zealand children aged 5-14 years of age revealed that the most commonly consumed breakfast items were breakfast cereal (57%), bread/toast (35%), chocolate flavoured drink (e.g. Milo, 14%), juice/fruit drink (11%), milk (as an unflavoured beverage, 8%), tea/coffee (5%) and fruit (5%) (Wilson, et al., 2006). The specific breakfast choices of older New Zealand adolescents have not been analysed in any recent surveys. However, it is reasonable to assume that breakfast cereal and bread/toast are also commonly eaten for breakfast by this age group.

Different ethnic groups in New Zealand may not eat a cereal- or bread-based breakfast. For example, rice, beverages, or leftovers from the previous evening's meal may be more commonly consumed. A review conducted by the Scientific Committee of the Agencies for Nutrition Action included information provided by both a dietitian and nutrition worker on Māori and Pacific breakfast habits (Quigley, et al., 2007). This review suggested that Māori children, and Pacific children who have grown up in New Zealand, also commonly consumed breakfast cereal and/or toast for breakfast.

Most secondary school students who reported eating breakfast source their breakfast from home (84-97%, depending on age) (Clinical Trials Research Unit, et al., 2010). Those who do not have breakfast at home are more likely to purchase food on the way to school (Utter, Scragg, Ni Mhurchu, et al., 2007), and a significantly higher proportion of Pacific children eat breakfast on the way to school compared to Māori and New Zealand European/other ethnicity children (Jamieson & Koopu, 2007; Parnell, Scragg, Wilson, Schaaf, & Fitzgerald, 2003).

Determinants of breakfast consumption by adolescents

The identification of influences on breakfast consumption is important for the development of interventions aimed at promoting regular breakfast consumption among adolescents. The following determinants have been found to be related significantly to breakfast-eating by adolescents, and have been grouped into personal, sociocultural, economic and environmental factors.

Personal factors:

- consuming breakfast regularly from an early age (Bruening, Larson, Story, Neumark-Sztainer, & Hannan, 2011; Merten, et al., 2009),
- positive attitude to eating breakfast (DeJong, van Lenthe, van der Horst, & Oenema, 2009; Martens, van Assema, & Brug, 2005), and
- intention to eat breakfast (DeJong, et al., 2009).

Sociocultural factors:

- frequently eating meals together as a family (DeJong, et al., 2009; Utter, Scragg, Schaaf, & Ni Mhurchu, 2008; Videon & Manning, 2003),
- regular parental and sibling breakfast-eating (DeJong, et al., 2009; Keski-Rahkonen, et al., 2003; Pearson, Biddle, & Gorely, 2009),
- healthy parental eating behaviours (Hallström et al., 2011; Pearson, Williams, Crawford, & Ball, 2012),

- parental/family communication and supervision (Moore & Harré, 2007; Pearson, Biddle, et al., 2009),
- presence of a parent at breakfast time (Moore & Harré, 2007),
- parental encouragement to eat a healthy diet (Hallström, et al., 2011),
- greater family cohesion (Moore & Harré, 2007),
- living in a two-parent family (Hallström, et al., 2011; Jørgensen, Pedersen, Meilstrup, & Rasmussen, 2011; Levin, Kirby, & Currie, 2012; Pearson, Biddle, et al., 2009; Pearson, MacFarlane, Crawford, & Biddle, 2009; Vereecken et al., 2009),
- having some household guidelines/rules around breakfast (e.g. whether breakfast should be eaten, certain foods that are/are not allowed for breakfast) (DeJong, et al., 2009; Videon & Manning, 2003),
- regular peer breakfast-eating (DeJong, et al., 2009),
- peer encouragement to eat a healthy diet (Hallström, et al., 2011), and
- healthy peer eating patterns (Hallström, et al., 2011; Pearson, et al., 2012).

Economic factors:

- higher family socioeconomic position (Hallström, et al., 2011; Keski-Rahkonen, et al., 2003; Merten, et al., 2009; Vereecken, et al., 2009), and
- higher maternal education (Hallström et al., 2012; Hallström, et al., 2011; Pearson, MacFarlane, et al., 2009).

Environmental factors:

- having sufficient breakfast products available at home (DeJong, et al., 2009; Pearson, Biddle, et al., 2009).

This list shows that there are many influences that impact on whether an adolescent consumes breakfast or not, most of them related, and many beyond the control of the adolescent themselves. Studies suggest that forming a habit of eating breakfast in early childhood and having positive attitudes/intentions towards breakfast can encourage eating breakfast at the individual level. Wider sociocultural factors such as a supportive and positive family and peer environment appear to encourage breakfast eating, likely through the role modelling and normalising of regular breakfast consumption. Unsurprisingly, living in a household with greater access to resources seems may create an environment that is amenable to regularly eating breakfast.

Adolescents' barriers to consuming breakfast

The two most common reasons cited by adolescents for not consuming breakfast are:

- lack of time in the morning, and
- not feeling hungry (Bailey-Davis et al., 2013; Community & Public Health, 2013; Shaw, 1998; Sweeney & Horishita, 2005).

Breakfast may be viewed as non-essential, and something that can be sacrificed if young people are short on time in the morning. This may be particularly true if breakfast is not seen as important and

other morning activities are prioritised (such as getting ready, and taking other siblings to school). During adolescence the internal body clock shifts sleep timing later (Crowley, Acebo, & Carskadon, 2007), meaning that adolescents tend to wake later in the morning (resulting in less time available for the morning routine), and may not feel hungry or ready to eat soon after getting up.

In addition, ethnicity and/or cultural practices have not been given much consideration in breakfast-related literature. For some groups, breakfast may not be a common cultural practice, and the influence of family tradition and routine may play a large part in determining whether young people are offered, and eat, breakfast regularly. A small qualitative study undertaken by the New Zealand Health Sponsorship Council (now part of the Health Promotion Agency) with Māori and Pacific parents of school-age children identified several beliefs and behaviours related to breakfast consumption (Murray, 2011). These included:

- having heard that eating breakfast was important, but not knowing why, or not believing that it was true,
- not eating breakfast themselves,
- purchasing breakfast foods based on price, rather than nutritional value,
- believing that children should be responsible for making their own breakfast (from around 8-9 years of age), and
- not encouraging children to eat breakfast if they (the parent) did not think that it was important.

Of importance to note is some of the parents stated that they were at work in the morning while their children were getting ready for school. So even if parents thought that their children should be eating breakfast, they were not always there to supervise this. The parents of children who ate breakfast more often tended to believe that breakfast was important, ate breakfast themselves, valued routine, had a focus on health, and made breakfast for their children. While this study was small (n=23), and may not be representative of Māori and Pacific parents as a whole group, it provides some insight into the attitudes of some individuals towards breakfast-eating.

A lack of food available in the home due to food insecurity⁴ may be another potential barrier to consuming breakfast. It has been reported that in New Zealand, over 15% of households experience food insecurity (Carter, Lanumata, Kruse, & Gorton, 2010), with females, Māori and Pacific households, and those living in more deprived areas reporting greater food insecurity (Carter, et al., 2010; Parnell, Reid, Wilson, McKenzie, & Russell, 2001; Russell, Parnell, & Wilson, 1999). Although breakfast skipping tends to be more common in these groups, few studies have adequately analysed food insecurity in households with adolescents (or other related factors such as socioeconomic position or income) as a barrier to breakfast consumption.

Provision of breakfast in schools

In an attempt to decrease inequities and improve health, social, and academic outcomes for vulnerable children by increasing access to food, the provision of free or subsidised breakfast within

⁴ Food security is a term that encompasses the ready availability of nutritionally adequate and safe foods, and the assured ability to acquire personally acceptable foods in a socially acceptable way (Russell, et al., 1999).

the school environment has been implemented in several countries. A great deal of resources are invested in these programmes; it is therefore important to know whether or not they are attended regularly and are effective.

While a very small number of randomised controlled intervention studies have assessed the effectiveness of providing free school breakfast on various outcomes, these have been undertaken with primary school-age children. More information is required on the outcomes of implementing these programmes in secondary schools, as well as identifying any factors which increase their effectiveness.

Findings

This section will specifically outline research related to universal school breakfast programmes (i.e. where breakfast is offered at school free of charge to all students). In particular, it will investigate the quantitative and qualitative outcomes of breakfast provision at school, and the factors of implementation that contribute to the success of programmes.

Outcomes of school breakfast programmes

In some countries (such as the United Kingdom, France, Sweden, Chile, and the USA), school meals are subsidised by the government (Harper, Wood, & Mitchell, 2008). These schools provide lunch (and sometimes breakfast), with low-cost or free meals often available to children from low-income households. A large body of observational research accompanies these programmes, covering a wide range of outcomes. The collection of outcome data depends on the objectives of the programme, and can include:

- school attendance and punctuality,
- cognitive performance,
- academic achievement,
- conduct (behaviour) at school,
- physiological measures (e.g. Body Mass Index),
- dietary habits and nutrient intakes,
- attitudes, norms, intentions, and behaviours (e.g. related to breakfast, the school breakfast programme, school in general),
- social and emotional skills and competencies,
- satiety, and
- food security or household economics.

There are also outcomes for the programme itself, and these may include:

- the number of students participating in the breakfast programme (in particular, those who regularly do not eat breakfast),
- programme sustainability (e.g. in terms of funding, workforce, support), and
- attitudes of stakeholders towards the programme.

Keeping in mind the methodological limitations of many studies (see Introduction), reviews of school breakfast programmes indicate significant increases in both school attendance and achievement, with younger, more disadvantaged, and less well-nourished participants most likely to benefit (Food Research and Action Centre, 2014a, 2014b; Grantham-McGregor, 2005; Greenhalgh, Kristjansson, & Robinson, 2007; Hoyland, et al., 2009; Kristjansson et al., 2007; Taras, 2005). It is hypothesised that improved achievement may be due to increased attendance (and therefore, time) at school, as well as any independent effect that eating breakfast may have on cognitive performance.

As most studies in these reviews have been conducted with children of primary school age, the following sections specifically look at evaluations of programmes which included providing school breakfast to adolescents (aged ≈11-18 years). Refer to Appendix A for a brief summary of the student-related outcomes from evaluations of school breakfast programmes described below.

USA-based school breakfast programmes for adolescents

Two studies evaluated universal free school breakfast provision in schools which previously had a targeted approach with free, reduced and full-priced breakfast (depending on student eligibility).

Data from students 8-13 years of age from three public schools in Philadelphia and Baltimore were collected from multiple sources: school records (n=133), student and parent interview (n=85), and teachers (n=76) (Murphy et al., 1998). Prior to the introduction of the universal breakfast programme, mean daily participation of all students was 15%. Students who participated in the programme sometimes or often had significantly better school-recorded mathematics test scores, student-reported depression and anxiety scores, parent-reported psychosocial symptoms, and teacher-reported hyperactivity index scores than children who rarely participated in the programme. There was no significant effect of school breakfast programme participation on school absence or lateness, or science, social studies or reading grades.

Four months after the introduction of the universal programme, mean daily participation increased significantly to 27%. Students who participated in the universal programme sometimes or often were absent or late to school significantly less often, and had significantly better mathematics test scores, and hyperactivity index scores than students who rarely participated. There was no significant effect of programme participation on student-reported depression and anxiety scores, or parent-reported psychosocial symptoms.

Those students who increased their participation in the programme over the 4 months were significantly more likely to decrease their rate of school absence, and increase their punctuality, mathematics test scores, student-reported depression and anxiety scores, parent-reported psychosocial symptoms, and hyperactivity index scores than students whose level of participation stayed the same or decreased.

Both cross-sectional and longitudinal data from this study provide evidence that higher rates of school breakfast programme participation were associated with improved attendance, punctuality and student academic and psychosocial functioning in the short-term.

In addition to this, a longitudinal study of 97 students 9-11 years of age was conducted in three schools in Boston (Kleinman et al., 2002). Prior to the implementation of the universal programme, students who ate school breakfast rarely were significantly more likely (41%) to be “nutritionally at risk” than were children who ate school breakfast sometimes (7%) or often (17%). This was defined as consuming two or more nutrients at ≤50% of the recommended daily allowance and/or having an energy intake ≤50% of the recommended daily allowance.

Six months after the introduction of the universal programme, the nutrient intake of 19% of students had improved, while the nutrient intake of 64% of students had not changed, and the nutrient intake of 18% of students had worsened. Students whose nutritional intake had improved

had significantly larger increases in school breakfast participation than children whose nutrient intake had stayed the same or worsened. Improvements in nutrient intake were associated with significant improvements in school attendance, mathematics grades, child-reported psychosocial functioning, and decreases in food insufficiency. However, since these outcomes were not specifically analysed in relation to school breakfast consumption, it is not possible to say whether programme participation was causally related to these improvements.

Europe-based school breakfast programmes for adolescents

A controlled pilot study was conducted to evaluate whether breakfast served in a secondary school in Norway could improve the dietary habits and school performance of students (Ask, Hernes, Aarek, Johannessen, & Haugen, 2006). Fifteen year-old students in one class were offered a free breakfast at the beginning of each school day for 4 months (n=26), while students in a second class were not (and acted as a control group, n=28). Both classes received education on the importance of healthy eating. All students completed two questionnaires - one on school factors (environment, own performance, and satisfaction) and one short non-validated food frequency questionnaire, four weeks before the study started and one week after the study ended. Body weight and height were measured by the school nurse at the beginning and end of the study.

Almost all students in the intervention group had breakfast at school every day during the intervention. There was no significant change in Body Mass Index between the beginning and end of the study for the intervention group; however, it did increase significantly for the control group (both males and females). There was no significant effect of school breakfast on the amount of time spent doing homework, or student-rated school environment. Males in the intervention group (but not females) reported significantly improved dietary habits (as measured by a healthy eating index), and an increase in school contentment. In the control group, the frequency of eating lunch increased significantly. One week after the study ended the students in the intervention group had returned to their usual breakfast pattern.

Reports from a small number of teachers suggest that the school attendance and social behaviour of students receiving school breakfast improved. However, some teachers were not happy with certain practical aspects of the breakfast, as it delayed the first class of the day.

The findings from this small pilot study suggest that a school breakfast programme may contribute to weight maintenance. However, the small sample size limits the robustness of the findings.

Australia-based school breakfast programmes for adolescents

There are several school breakfast programmes running in Australia, including the Good Start Breakfast Club⁵ (operated by the Australian Red Cross), and the School Breakfast Program⁶ (operated by Foodbank WA).

⁵ <http://www.redcross.org.au/good-start-breakfast-club.aspx>

⁶ <http://www.healthyfoodforall.com.au/school-breakfast-program/>

The School Breakfast Program commenced in 2001 and currently works with over 425 schools in Western Australia. The Australian Government and corporate sponsors provide funding to Foodbank WA to purchase and transport the breakfast products (including wheat biscuits, oats, fruit, canned spaghetti and baked beans, bread, Vegemite, milk and yoghurt) to schools. An evaluation of the programme was conducted in 2011, which surveyed the programme coordinator or school principal of 271 participating primary and secondary schools (Davies, 2012). The majority of respondents agreed that the breakfast programme positively influenced a wide range of educational, wellbeing, nutrition, social and environmental outcomes. These outcomes included school attendance, student behaviour and concentration, student physical and mental health, and the health-promoting environment of the school.

Two case studies of secondary schools in Western Australia that participated in the School Breakfast Program were also conducted (TNS Social Research, 2010).

The first was at a remote district school in an area of high socioeconomic disadvantage (school roll \approx 360 students, aged from \approx 5-18 years). Breakfast was provided in the classroom prior to school start, and adolescent students prepared their own breakfast and cleaned up afterwards. At first, breakfast was only offered to students who had not had breakfast; however participation was low due to the stigma of being singled out. Participation in the programme increased considerably when a universal programme was implemented. The second case study was at a regional district school (school roll size not stated, students aged from \approx 5-16 years). Eight to 25 students attended breakfast at school each day, and it was estimated that around half of the students attended at some point, with different students attending on different days.

Although the School Breakfast Programs were not the only initiative undertaken to improve outcomes for students over a period of a few years, school staff and parents all agreed that the programmes were successful and contributed to a wide range of benefits. It was proposed that the programme played a role in improved school attendance, student and parent engagement with school, student behaviour, and broader life skills and behaviours (including food preparation, understanding of healthy eating, sense of responsibility and respect, basic hygiene, interacting with adults, and sociability). It was also felt that the programme ensured a stable source of food, increased access to healthy food, and created the opportunity to try new or different foods. Some interviewees mentioned that the programme provided a secure place for students to go in the morning, a caring atmosphere, and a place to transition between the home and school environment. They also felt that breakfast time provided an opportunity to build relationships between students and teachers outside of the classroom.

[New Zealand-based school breakfast programmes for adolescents](#)

Despite particular consideration given to sourcing New Zealand-specific research, no studies of school breakfast programmes for New Zealand adolescents that reported student outcomes were found. There is a small number of school food programmes in New Zealand, which are supported variously by school, community, non-government organisation, industry or government funding. Many programmes target low decile and/or primary schools; however some secondary schools do

operate programmes for students, including breakfast programmes. Refer to Appendix B for a brief summary of school food programmes in New Zealand.

Summary of outcomes from school breakfast programmes for adolescents

Few studies specifically investigating the effect of school breakfast programmes for adolescents were found. The programmes included in this review differ in their format, setting, menu, staff and implementation, highlighting the ability to tailor programmes to an individual school's needs. Differences exist not only between countries, but also between schools and/or programmes within the same country. Despite international research existing on school breakfast programmes, it is difficult to extrapolate these findings to a New Zealand setting where school systems and school food provision differ greatly.

Qualitative findings indicate that people involved with the programmes (e.g. coordinators, school staff, parents and volunteers) believe the programmes are of high importance and value. The benefits mentioned included a wide range of educational, wellbeing, nutrition, social and environmental outcomes.

Quantitative findings suggest improved school attendance, mathematics scores, punctuality and psychosocial measures for those students attending a school breakfast programme. More limited evidence suggests improved nutrient intake, dietary habits, and weight maintenance. Improvements tended to be more pronounced in students who attended the school breakfast programme more often.

Interventions to increase adolescents' participation in school breakfast programmes

As described in the previous section, school breakfast programme attendance is generally poor, and a large proportion of adolescents continue to skip breakfast even when it is provided at school at low or no cost. Some of the barriers cited by adolescents and their parents/caregivers for not participating in a school breakfast programme include:

- lack of time in the morning (e.g. having to arrive at school early enough to eat breakfast before school starts, or problems with bus/transport timetables),
- social stigma associated with participation in a programme aimed at youth from low-income families,
- unmet food needs (e.g. dislike of the foods offered, little variety, lack of culturally appropriate foods, perceived poor food quality),
- other breakfast consumption practices (e.g. students purchase food and/or beverages from food outlets on the way to school - with or without parent/caregiver knowledge),
- cost (in schools where school breakfast provision is not universal),
- not feeling hungry, and
- fear of becoming overweight (Bailey-Davis, et al., 2013; Basch, 2011; Mollie Greves et al., 2007; Olsta, 2013; Reddan, Wahlstrom, & Reicks, 2002; Sabol, Struempfer, & Zizza, 2011).

To try to increase the uptake of school breakfast programmes by adolescents, several interventions which aim to address some of the barriers to participation have been studied. Interventions to enhance school breakfast programme participation usually focussed on two types of strategies:

- providing breakfast at no cost (i.e. universal provision), and/or
- changing the environment in which breakfast was provided.

Universal school breakfast programmes can significantly increase participation rates (Food Research and Action Centre, 2014a, 2014b; Leos-Urbel, Schwartz, Weinstein, & Corcoran, 2013; Murphy, et al., 1998), and may influence uptake in multiple ways. Most obviously, it means that those who cannot otherwise participate due to the monetary cost are able to do so. Also, universal programmes may counteract some of the stigma, as breakfast is free and available for all students, not just those from low-income families.

Breakfast (unlike morning tea and lunch) is not incorporated into the school day, and students must arrive early in order to participate. By changing school policies and practices regarding the timing and location of breakfast provision, a more flexible and less formal eating environment is created meaning more students may attend. Novel environmental approaches such as offering “grab-and-go” breakfast options, allowing students to consume breakfast in the classroom in the morning (as opposed to before school), and/or providing breakfast in the mid-morning break, have been found to be acceptable and feasible ways to increase participation (Food Research and Action Centre, 2014a, 2014b; Morris, Courtney, Bryant, & McDermott, 2010; Nanney, Olaleye, Wang, Motyka, & Klund-Schubert, 2011; Olsta, 2013).

Refer to Appendix C for a brief summary of the interventions described above that aimed to increase participation of adolescents in school breakfast programmes.

Components which affect the success of school breakfast programmes for adolescents

To implement an effective school breakfast programme, it is necessary to identify any factors which may enhance their design and/or implementation. Few studies of the school breakfast programmes for adolescents mentioned previously reported on any contextual elements that may have influenced outcomes, or the use of process evaluation methods for this purpose. Factors that could impact on programme effectiveness were identified from qualitative descriptions, and some general features of programmes which showed positive outcomes.

Factors that were thought to lead to greater student participation and improved student outcomes included:

- using a universal approach, where breakfast is available to all students at no cost,
- developing the programme with the needs of the students in mind, incorporating their input in the design and delivery, to create a strong sense of ownership,
- having the programme embedded in the school system,
- being flexible with the time and location of breakfast provision,
- holding the programme in an appropriate location on school premises, and

- running the programme on a frequent and long-term basis.

As well as identifying components of a programme which may improve its success, it is also important to consider any factors that may limit its operation and future viability. Some of the barriers to implementing school breakfast programmes for adolescents included:

- set-up and ongoing costs (e.g. limiting the ability to extend the programme to all days of the week),
- social stigma associated with a programme that may be perceived to be aimed solely at students from low-income families, and
- negative or unsupportive views of school personnel and the wider community, such as those related to additional workload, cost, mess, and the creation of “dependency”.

Some potential risks to the long-term sustainability of programmes were also identified. These were:

- funding shortfalls (which is particularly pertinent to the many programmes which rely exclusively on donations of money and/or foodstuffs),
- high staff and/or volunteer turnover, and relatedly
- reliance on a single person or a group of volunteers to co-ordinate and run the programme.

These factors suggest that a successful school breakfast programme for adolescents needs to be inclusive, tailored, flexible, regular, and embedded within a supportive environment with full backing from school staff and community networks. Secure funding and a stable workforce, for example having a paid programme coordinator (rather than relying entirely on teachers and volunteers), and splitting the organisational duties between a number of people with clear roles and responsibilities can contribute to the effective operation and continuation of a programme.

Several organisations have published recommendations for establishing school breakfast programmes which incorporate many of these features. Refer to Appendix D for a list of some of these guidelines from various countries.

Conclusions

Despite the benefits of eating breakfast, many New Zealand adolescents do not consume breakfast regularly. This is most common for females, Māori, Pacific, and those living in more deprived areas. Several countries (including New Zealand) have attempted to address these inequities and improve health, social, and academic outcomes for vulnerable young people by increasing access to food through free school breakfast programmes.

Despite the intention of many school breakfast programmes to reduce inequities and provide food to students in need, few studies have actually assessed programme outcomes in relation to socioeconomic position, food security or ethnicity adequately. School breakfast programmes could potentially reduce the risk of household food insecurity in multiple ways (Bartfeld & Ahn, 2011; Bowers et al., 2009; Walton, Signal, & Thomson, 2009). For example, providing food directly to students may relieve some pressure on the household food budget and mean that finances can be redistributed, or the uncertainty and anxiety around the availability of sufficient food could be reduced.

In the current literature review, few studies specifically investigating the effect of school breakfast programmes for adolescents were sourced. Those that were found were highly heterogeneous, also included younger children, and were based overseas, limiting extrapolation to school breakfast programmes in New Zealand secondary schools. These studies suggest that those people involved with the programmes believe them to be of high importance and value, and that the programmes contribute to a wide range of educational, wellbeing, nutrition, social and environmental benefits. When considered in addition to reviews and randomised controlled trials of school breakfast programmes including mostly primary school-age children, studies which include adolescents support evidence that frequent participation may increase school attendance, achievement, punctuality, satiety and psychosocial outcomes.

It is important to remember that school breakfast programmes are not just vehicles to provide food to children of low income families. They also provide a unique opportunity for learning and interaction as all adolescents can benefit from the increased opportunities to practice healthful behaviours, make positive food choices, engage socially, and take leadership roles. These practical skills and behaviours can extend beyond school to the broader family and community context. Although many studies discussed the potential for school breakfast programmes to impact on wider benefits such as social skills, health-promoting behaviours, and attitudes, few assessed these less tangible but important outcomes.

Participation of adolescents in school breakfast programmes was generally poor, and the majority of students continued to skip breakfast even when it was provided at school. Higher participation rates were observed when breakfast was offered at no cost to all students, and policies and practices regarding the timing and/or location of breakfast were adapted. This highlights the benefit of individual schools being able to customise a flexible programme to meet the specific needs of its

student population. Special consideration needs to be given to encourage adolescents who skip breakfast regularly to participate in school breakfast programmes.

Findings indicate that a successful school breakfast programme for adolescents needs to be inclusive, tailored, regular, and embedded within a supportive environment with full backing from school staff and community networks. For example, when a programme is incorporated into the whole school environment it becomes part of the usual school day, and practices can be aligned with the health curriculum and other nutrition messages. Also involving students, school food service personnel, and community stakeholders in the design and implementation of the programme can ensure its relevance and appeal. Secure funding and a stable workforce was reported to contribute to the effective operation and long-term viability of a programme. This point is of particular relevance given that most school food programmes in New Zealand rely heavily on donations and volunteer personnel.

Appendix A: Evaluations of school breakfast programmes for adolescents

Table 1. Summary of findings from evaluations of school breakfast programmes for adolescents

| Reference | Participant age (years) | n | Location | Programme description | Outcomes |
|--------------------------|-------------------------|---------------------|----------|---|--|
| (Ask, et al., 2006) | 15 | 26, 28 ^a | Norway | Students in one class offered free breakfast (and an optional dietary supplement) at the beginning of each school day for 4 months. Another class was not offered breakfast and acted as a control group. | High compliance. Significant improvement in eating patterns and school contentment (males only) compared to control group. Significantly lower food intake at lunch compared to control group. Breakfast habits returned to pre-intervention levels 1 week post-intervention. No significant effect on self-reported school performance and environment, and teacher-rated attention and social behaviour compared to control group. No significant change in Body Mass Index between the beginning and end of the study for the intervention group; however, it did increase significantly for the control group. |
| (Kleinman, et al., 2002) | 9-11 | 97 ^b | USA | Universal free school breakfast programme introduced in three schools (where free school breakfast provision was not previously universal). Outcomes assessed after 6 months. | Students whose nutritional risk decreased (i.e. who had improved nutrient intake) had significantly larger increases in school breakfast participation than children whose nutritional risk stayed the same or worsened. |
| (Murphy, et al., 1998) | ≈8-13 | 163 ^b | USA | Universal free school breakfast programme introduced in three schools (which previously had free, reduced or full price breakfast provision, depending on eligibility). Outcomes assessed after 4 months. | Participation increased significantly from 15% to 27%. Rate of children who rarely ate breakfast declined from 62% to 43%. Higher rates of participation in the school breakfast programme was associated with significantly improved attendance, punctuality, psychosocial measures and mathematics grades in the short-term. |

^a Number of participants recruited in the intervention (breakfast) group, and control group.

^b Number of participants assessed.

USA, United States of America.

Appendix B: School food programmes in New Zealand - a brief summary

Two recent surveys have investigated the prevalence and characteristics of school food programmes in New Zealand.

The most recent survey, of 458 school principals, board members and other school staff conducted by the New Zealand School Trustees Association⁷ found that 60% of schools had access to a formal school or community food programme (New Zealand School Trustees Association, 2013). In addition, most schools (90%) stated that they provided food for students on an informal basis, when needed. Lower decile schools were more likely to have a food programme, and school breakfast programmes were the most common (60%) type.

The Child Poverty Action Group conducted a telephone survey of 17 primary, intermediate and secondary schools in the Auckland region in 2010, which produced some similar findings (Child Poverty Action Group, 2011). All schools (except one) provided some form of food support to students. Breakfast was the most common form of food provision, and a significant amount of the food was donated through formal programmes and/or donated by local businesses. Some schools stated that they did not operate formal school food programmes, but provided food on an informal or “ad-hoc” basis to particular students who arrived at school not having had breakfast and/or without bringing lunch.

Non-government organisation and industry-funded school food programmes

One example of a current school food programme operated by a non-government organisation (KidsCan) is Food for Kids⁸. Food is provided directly to schools, and distributed by school staff to children in need of assistance (KidsCan, 2011). Food for Kids is intended to be an emergency food programme for children, supplying one meal per child per day.

In May 2007, the New Zealand Red Cross launched its nationwide Breakfast in Schools programme. It was a community service delivery programme that offered breakfast every day to participating decile 1 primary schools. Foodstuffs were supplied by local supermarkets (including cereal, milk, bread, and spreads), and Red Cross covered the implementation of the programme (planning, resources and volunteers) in conjunction with the school. In total, 59 schools were involved. An evaluation was conducted with 12 schools after the first year of implementation (New Zealand Red Cross, 2008). Most school staff thought that the programme had positive effects on students’ social behaviour and learning capacity, and supported the programme. Some children (16% of the 141

⁷ <http://www.nzsta.org.nz/home/>

⁸ <http://www.kidscan.org.nz/our-work/food-for-kids>

surveyed) reported that they had eaten some food/beverage in the morning prior to attending the breakfast programme, indicating some “topping up” of breakfast eaten at home. Maintaining a volunteer workforce was identified as a challenge for schools. In May 2011, the Countdown supermarket brand announced that it would withdraw sponsorship from Breakfast in Schools, and the programme has since ended.

An industry-funded programme - Milk for Schools⁹ - started nationwide roll-out in 2013, which provides a serving of milk every day to students of participating primary schools (irrespective of decile).

Randomised controlled trial to assess the effectiveness of school breakfast programmes in North Island primary schools

The effectiveness of a school breakfast programme in decile 1-4 New Zealand schools on children’s school attendance was assessed using a stepped-wedge, cluster randomised controlled trial (Ni Mhurchu et al., 2013; Ni Mhurchu et al., 2010). Fourteen primary schools were involved, and the trial took place over one school year. The mean age of participants (n= 424) was 9.4 years (range, 5-13), and 42% of were Pacific, 34% were Māori, and the remaining 23% were New Zealand European or other ethnicities. Participation in the programme was voluntary, and breakfast was available to students 5 days per week. Schools received either the Red Cross Breakfast in Schools programme (consisting of Weet-Bix, low-fat milk, bread, spreads, Milo, milk powder and sugar), or one provided by private sector industry partners (consisting of Weet-Bix and low-fat milk).

There was no statistically significant effect of the breakfast programme on children's school attendance. There was a significant decrease in children's self-reported short-term hunger during the intervention phase compared with the control phase. There were no effects of the intervention on any other outcome (academic achievement, self-reported grades and sense of belonging at school, teacher-rated behaviour, parent-reported child breakfast habits and food security). Results indicated infrequent breakfast programme attendance. When analyses were conducted with participants who attended breakfast ≥50% of the time, school attendance was significantly greater during the intervention phase compared with the control phase. There was no change in the proportion of children who ate breakfast everyday, and results suggest that those who previously ate breakfast at home replaced this with breakfast at school. Overall, the free school breakfast programme did not have a significant effect on children's school attendance or academic achievement but had significant positive effects on children's short-term satiety ratings.

This study supports the findings of one other randomised controlled trial of a school breakfast programme for primary school children in Wales (Moore et al., 2007; Murphy et al., 2011; Tapper, Murphy, Moore, Lynch, & Clark, 2007). Both studies suggest that more frequent programme attendance may be required to influence school attendance and academic achievement. They also highlight that there still remains a group of children who do not consume breakfast, even when it is provided at school free of charge.

⁹ <https://www.fonterramilkforschools.com/about>

Qualitative study of the features of breakfast programmes in Waikato secondary schools

A small qualitative study of breakfast programmes in four Waikato secondary schools was undertaken in early 2009, which gathered information from school principals, breakfast programme organisers, and students (Waikato District Health Board, 2010). Each school implemented their breakfast programme individually, and catered to 15-30 students per session. The need for a breakfast programme within each school was identified using informal discussion with staff and students and/or formal survey approaches.

Schools derived funding for the programme from a variety of sources, including financial contributions from community organisations or within the school, fundraising, donations from students using the programme, and nationwide school breakfast programme providers. Breakfast foods were mostly donated by businesses or purchased using programme funds. Many of the funding and food sources were not long-term, which was identified as being an ongoing challenge for the programmes.

Breakfast programmes were promoted using school newsletters, morning notices, posters, assemblies and word of mouth. Views regarding promotion were mixed – promotion was not a priority for some schools as they did not want to draw attention to the students attending, whereas some felt that promotion helped to support participation and to overcome the possible stigma of attendance.

The programmes were staffed by a variety of volunteers – parents, school staff, senior students, and community members. Schools noted that it was challenging to find sufficient volunteers, however volunteers were motivated by seeing the benefits of the programme, and being able to interact with students in a positive setting. The value students can bring to the process, and the development of wider skills and experience, were recognised in breakfast programmes which included leadership by senior students.

Government-funded school food programmes

Aside from the free milk provided daily to schools between 1937 and 1967 (Ministry for Culture and Heritage, updated 15 Nov 2013), and more recently, Fruit in Schools (Ministry of Health, 2006), New Zealand does not have an extensive history of providing government-funded food to school students.

In 2009, the KickStart Breakfast programme was introduced by industry partners who supplied breakfast products (milk and Weet-Bix) on two mornings per week to participating decile 1-4 schools. Breakfast was provided to any student at no cost, and each school provided a suitable location, serveware and personnel to implement the breakfast programme. In May 2013 it was announced that the programme would receive government funding (up to \$9.5 million over 5 years) to gradually extend the programme to 5 days a week, and to any school that wished to participate (irrespective of decile rating) from the beginning of 2014 (New Zealand Government, 2013). As of January 2014, there were 630 primary and secondary schools registered to take part in the KickStart Breakfast programme (KickStart Breakfast, 2014).

Appendix C: Interventions to increase participation of adolescents in school breakfast programmes

Table 2. Summary of findings from interventions to increase participation of adolescents in school breakfast programmes

| Reference | Participant age (years) | n | Location | Programme description | Outcomes |
|----------------------------|-------------------------|--------------|----------|---|--|
| (Leos-Urbel, et al., 2013) | ≈8-13 | ≈723,843 | USA | In one city, universal free school breakfast programme introduced (where previously there was a cost of 5-25c per breakfast for some, depending on eligibility). The price of lunch was increased for those ineligible for meal subsidies (from \$1.00 to \$1.50) to cover the cost of universal free school breakfast. | Breakfast programme participation increased (by ≈6 additional days per student per year). However, programme participation was still low overall. No significant effect on school attendance, mathematics scores or reading scores. |
| (Morris, et al., 2010) | 9-13 | Not reported | USA | In one school, students offered “grab-and-go” bags of breakfast items at no or low cost (depending on eligibility) for 2 weeks. | 49% of students who rarely ate breakfast participated in the programme. High acceptability from students and teachers. Concern from school principal regarding mess. |
| (Nanney, et al., 2011) | ≈11-12 | 239 | USA | In one school, a “grab-and-go” cafeteria breakfast menu, hallway delivery service, and in-classroom eating strategies were implemented for 6 weeks in addition to the usual cafeteria breakfast. Breakfast was offered at no or low cost (depending on eligibility). | 64% of students were very satisfied with eating in the classrooms. All teachers (n=10) rated eating in the classroom as not messy or disruptive, and student behaviour as excellent or good. Breakfast participation increased significantly from 0.74 to 1.21 days per student per week. Improvements were more pronounced among students eligible for free and reduced-price school meals. |
| (Olsta, 2013) | ≈14-17 | 2,560 | USA | In one school, breakfast was made available to students (both cafeteria and mobile food cart) during morning study period after school had started, until 10:30am. Breakfast was offered at no or low cost (depending on eligibility). | Average number of daily school breakfasts increased from 80 (prior to the intervention) to 368 (18 months later). |

n, number of students to whom the school breakfast programme was made available.

USA, United States of America.

Appendix D: Recommendations for establishing school breakfast programmes

Several organisations have published recommendations for establishing and evaluating school breakfast programmes. These include guidelines from:

- New Zealand (Counties Manukau District Health Board, 2008; Office of the Children's Commissioner, 2014),
- Australia (Department of Education and Early Childhood Development, 2008; Foodbank WA, 2011),
- The United Kingdom (New Policy Institute),
- Scotland (Scottish Community Diet Project, 2004),
- Ireland (Health Promotion Agency for Northern Ireland), and
- Wales (Department for Children Education Lifelong Learning and Skills, 2008).

References

- Adolescent Health Research Group. (2003). A health profile of New Zealand youth who attend secondary school. *The New Zealand Medical Journal*, 116(1171).
- Affenito, S. G., Thompson, D., Dorazio, A., Albertson, A. M., Loew, A., & Holschuh, N. M. (2013). Ready-to-eat cereal consumption and the School Breakfast Program: relationship to nutrient intake and weight. *The Journal of School Health*, 83(1), 28-35.
- Arora, M., Nazar, G. P., Gupta, V. K., Perry, C. L., Reddy, K. S., & Stigler, M. H. (2012). Association of breakfast intake with obesity, dietary and physical activity behavior among urban school-aged adolescents in Delhi, India: results of a cross-sectional study. *BMC Public Health*, 12(881).
- Ask, A. S., Hernes, S., Aarek, I., Johannessen, G., & Haugen, M. (2006). Changes in dietary pattern in 15 year old adolescents following a 4 month dietary intervention with school breakfast - a pilot study. *Nutrition Journal*, 5(33).
- Bailey-Davis, L., Virus, A., McCoy, T. A., Wojtanowski, A., Vander Veur, S. S., & Foster, G. D. (2013). Middle school student and parent perceptions of government-sponsored free school breakfast and consumption: a qualitative inquiry in an urban setting. *Journal of the Academy of Nutrition and Dietetics*, 113(2), 251-257.
- Bartfeld, J. S., & Ahn, H. M. (2011). The School Breakfast Program strengthens household food security among low-income households with elementary school children. *The Journal of Nutrition*, 141(3), 470-475.
- Basch, C. E. (2011). Breakfast and the achievement gap among urban minority youth. *The Journal of School Health*, 81(10), 635-640.
- Berkey, C. S., Rockett, H. R. H., Gillman, M. W., Field, A. E., & Colditz, G. A. (2003). Longitudinal study of skipping breakfast and weight change in adolescents. *International Journal of Obesity*, 27(10), 1258-1266.
- Bowers, S., Carter, K., Gorton, D., Heta, C., Lanumata, T., Maddison, R., et al. (2009). *Enhancing food security and physical activity for Māori, Pacific and low-income peoples* (No. 0473152908). Wellington, NZ: Clinical Trials Research Unit, University of Auckland; GeoHealth Laboratory, University of Canterbury; Health Promotion and Policy Research Unit, University of Otago; Te Hotu Manawa Māori (http://intranet.wnmeds.ac.nz/academic/dph/research/heppru/publications/Enhance%20Final%20Report_The%20Book_July%202009.pdf).
- Bruening, M., Larson, N., Story, M., Neumark-Sztainer, D., & Hannan, P. (2011). Predictors of adolescent breakfast consumption: longitudinal findings from Project EAT. *Journal of Nutrition Education and Behavior*, 43(5), 390-395.
- Carter, K. N., Lanumata, T., Kruse, K., & Gorton, D. (2010). What are the determinants of food insecurity in New Zealand and does this differ for males and females? *Australian and New Zealand Journal of Public Health*, 34(6), 602-608.
- Child Poverty Action Group. (2011). *Hunger for learning. Nutritional barriers to children's education. A Child Poverty Action Group Monograph*. Auckland, NZ: Child Poverty Action Group Inc (<http://www.cpag.org.nz/assets/Publications/2-0%2025804%20Hunger%20for%20Learning%20Brochure.pdf>).
- Clark, T. C., Fleming, T., Bullen, P., Denny, S., Crengle, S., Dyson, B., et al. (2013). *Youth'12 Overview: the health and wellbeing of New Zealand secondary students in 2012*. Auckland, NZ: The University of Auckland (<http://ebooks.fmhs.auckland.ac.nz/youth12-overview-report/#/1/>).

Clinical Trials Research Unit, University of Auckland, & Synovate. (2010). *A national survey of children and young people's physical activity and dietary behaviours in New Zealand: 2008/09. Key findings*. Auckland, NZ (<http://www.health.govt.nz/system/files/documents/publications/cyp-physical-activity-dietary-behaviours-08-09-keyfindgs.pdf>).

Cohen, B., Evers, S., Manske, S., Bercovitz, K., & Edward, H. G. (2003). Smoking, physical activity and breakfast consumption among secondary school students in a southwestern Ontario community. *Canadian Journal of Public Health, 94*(1), 41-44.

Community & Public Health. (2013). *Grey High School Nutrition Survey: analysis of data*. Christchurch, NZ: Canterbury District Health Board.

Cooper, S. B., Bandelow, S., & Nevill, M. E. (2011). Breakfast consumption and cognitive function in adolescent schoolchildren. *Physiology & Behavior, 103*(5), 431-439.

Counties Manukau District Health Board. (2008). *Best practice guidelines for establishing breakfast clubs in schools. CMDHB Schools' Accord*. Auckland, NZ: CMDHB (<http://www.ana.org.nz/sites/default/files/BreakfastClubGuidelines.pdf>).

Crowley, S. J., Acebo, C., & Carskadon, M. A. (2007). Sleep, circadian rhythms, and delayed phase in adolescence. *Sleep Medicine, 8*(6), 602-612.

Cuenca-García, M., Ruiz, J. R., Ortega, F. B., Labayen, I., González-Gross, M., Moreno, L. A., et al. (2013). Association of breakfast consumption with objectively measured and self-reported physical activity, sedentary time and physical fitness in European adolescents: the HELENA (Healthy Lifestyle in Europe by Nutrition in Adolescence) Study. *Public Health Nutrition, FirstView Articles*, 1-11.

Currie, C., Nic Gabhainn, S., Godeau, E., Roberts, C., Smith, R., Currie, D., et al. (2008). *Inequalities in young people's health. Health behaviour in school-aged children. International report from the 2005/2006 survey*. WHO, Copenhagen, Denmark: HBSC International Coordinating Centre Child and Adolescent Health Research Unit (CAHRU), Edinburgh (http://www.euro.who.int/_data/assets/pdf_file/0005/53852/E91416.pdf).

Davies, C. (2012). *School Breakfast Program: 2011 evaluation report*. Australia: Foodbank WA (http://www.healthyfoodforall.com.au/images/uploads/120213_SBP2011_Report_Final1.pdf).

de la Hunty, A., Gibson, S., & Ashwell, M. (2013). Does regular breakfast cereal consumption help children and adolescents stay slimmer? A systematic review and meta-analysis. *Obesity Facts, 6*(1), 70-85.

DeJong, C. S., van Lenthe, F. J., van der Horst, K., & Oenema, A. (2009). Environmental and cognitive correlates of adolescent breakfast consumption. *Preventive Medicine, 48*(4), 372-377.

Department for Children Education Lifelong Learning and Skills. (2008). *Primary schools free breakfast initiative*. Cardiff, UK: Welsh Assembly Government (http://wales.gov.uk/dcells/publications/info_for_learning_providers/schools/foodanddrink/freebreakfastinitiative/fbiguidance/free-breakfast-guidance-e.pdf?lang=en).

Department of Education and Early Childhood Development. (2008). *Breakfast programs information booklet*. Melbourne, Australia: A Victorian Government initiative (https://www.eduweb.vic.gov.au/edulibrary/public/stuman/wellbeing/Breakfast_Program_in_Schools.pdf).

Food Research and Action Centre. (2014a). *School Breakfast Scorecard: 2012-2013 school year*. USA: FRAC (http://frac.org/pdf/School_Breakfast_Scorecard_SY_2012_2013.pdf).

Food Research and Action Centre. (2014b). *School breakfast: making it work in large school districts*. USA: FRAC (http://frac.org/pdf/School_Breakfast_Large_School_Districts_SY2012_2013.pdf).

- Foodbank WA. (2011). *School Breakfast Program Toolkit*. Western Australia: ([http://www.healthyfoodforall.com.au/images/uploads/120613_SBP_Toolkit_2012_\(online\).pdf](http://www.healthyfoodforall.com.au/images/uploads/120613_SBP_Toolkit_2012_(online).pdf)).
- Gajre, N. S., Fernandez, S., Balakrishna, N., & Vazir, S. (2008). Breakfast eating habit and its influence on attention-concentration, immediate memory and school achievement. *Indian Pediatrics*, 45(10), 824-828.
- Grantham-McGregor, S. (2005). Can the provision of breakfast benefit school performance? *Food and Nutrition Bulletin*, 26(2, Suppl 2), S144-158.
- Greenhalgh, T., Kristjansson, E., & Robinson, V. (2007). Realist review to understand the efficacy of school feeding programmes. *BMJ*, 335(7625), 858-861.
- Hallström, L., Labayen, I., Ruiz, J. R., Patterson, E., Vereecken, C. A., Breidenassel, C., et al. (2013). Breakfast consumption and CVD risk factors in European adolescents: the HELENA (Healthy Lifestyle in Europe by Nutrition in Adolescence) Study. *Public Health Nutrition*, 16(7), 1296-1305.
- Hallström, L., Vereecken, C. A., Labayen, I., Ruiz, J. R., Le Donne, C., Garcia, M. C., et al. (2012). Breakfast habits among European adolescents and their association with sociodemographic factors: the HELENA (Healthy Lifestyle in Europe by Nutrition in Adolescence) study. *Public Health Nutrition*, 15(10), 1879-1889.
- Hallström, L., Vereecken, C. A., Ruiz, J. R., Patterson, E., Gilbert, C. C., Catasta, G., et al. (2011). Breakfast habits and factors influencing food choices at breakfast in relation to socio-demographic and family factors among European adolescents. The HELENA Study. *Appetite*, 56(3), 649-657.
- Harper, C., Wood, L., & Mitchell, C. (2008). *The provision of school food in 18 countries*. London, UK: School Food Trust (http://www.childrensfoodtrust.org.uk/assets/research-reports/school_food_in18countries.pdf).
- Health Promotion Agency for Northern Ireland. *Healthier breakfast clubs*. Northern Ireland, UK: Department of Education and Department of Health, Social Services and Public Safety (http://www.deni.gov.uk/de1_09_125653_school_food_the_essential_guide_-_healthier_breakfast_clubs-2.pdf).
- Horikawa, C., Kodama, S., Yachi, Y., Heianza, Y., Hirasawa, R., Ibe, Y., et al. (2011). Skipping breakfast and prevalence of overweight and obesity in Asian and Pacific regions: a meta-analysis. *Preventive Medicine*, 53(4-5), 260-267.
- Hoyland, A., Dye, L., & Lawton, C. L. (2009). A systematic review of the effect of breakfast on the cognitive performance of children and adolescents. *Nutrition Research Reviews*, 22(2), 220-243.
- Jamieson, L. M., & Koopu, P. I. (2007). Associations between ethnicity and child health factors in New Zealand. *Ethnicity & Disease*, 17(1), 84-91.
- Jørgensen, A., Pedersen, T., Meilstrup, C., & Rasmussen, M. (2011). The influence of family structure on breakfast habits among adolescents. *Danish Medical Bulletin*, 58(5), A4262.
- Keski-Rahkonen, A., Kaprio, J., Rissanen, A., Virkkunen, M., & Rose, R. J. (2003). Breakfast skipping and health-compromising behaviors in adolescents and adults. *European Journal of Clinical Nutrition*, 57(7), 842-853.
- KickStart Breakfast. (2014). Who's involved? Retrieved 21 January 2014, from <https://kickstartbreakfast.co.nz/whos-involved>.
- KidsCan. (2011). *Food for Kids. Overview and Massey Research 2010. Presented to the Ministry of Social Development* New Zealand: KidsCan (<http://www.kidscan.org.nz/sites/default/files/Food%20for%20Kids%20Massey%20Research.pdf>).

- Kleinman, R. E., Hall, S., Green, H., Korzec-Ramirez, D., Patton, K., Pagano, M. E., et al. (2002). Diet, breakfast, and academic performance in children. *Annals of Nutrition and Metabolism*, 46(Suppl 1), 24-30.
- Kosti, R. I., Panagiotakos, D. B., Zampelas, A., Mihas, C., Alevizos, A., Leonard, C., et al. (2008). The association between consumption of breakfast cereals and BMI in schoolchildren aged 12-17 years: the VYRONAS study. *Public Health Nutrition*, 11(10), 1015-1021.
- Kristjansson, B., Petticrew, M., MacDonald, B., Krasevec, J., Janzen, L., Greenhalgh, T., et al. (2007). School feeding for improving the physical and psychosocial health of disadvantaged students. [Art. No. CD004676. Reprinted 2009]. *Cochrane Database of Systematic Reviews*(1).
- Leos-Urbel, J., Schwartz, A. E., Weinstein, M., & Corcoran, S. (2013). Not just for poor kids: the impact of universal free school breakfast on meal participation and student outcomes. *Economics of Education Review*, 36, 88-107.
- Levin, K., Kirby, J., & Currie, C. (2012). Family structure and breakfast consumption of 11-15 year old boys and girls in Scotland, 1994-2010: a repeated cross-sectional study. *BMC Public Health*, 12(1), 228.
- Martens, M. K., van Assema, P., & Brug, J. (2005). Why do adolescents eat what they eat? Personal and social environmental predictors of fruit, snack and breakfast consumption among 12-14-year-old Dutch students. *Public Health Nutrition*, 8(8), 1258-1265.
- Merten, M. J., Williams, A. L., & Shriver, L. H. (2009). Breakfast consumption in adolescence and young adulthood: parental presence, community context, and obesity. *Journal of the American Dietetic Association*, 109(8), 1384-1391.
- Ministry for Culture and Heritage. (updated 15 Nov 2013). End of free school milk. New Zealand. from <http://www.nzhistory.net.nz/end-of-free-school-milk>
- Ministry of Health. (2006). *Fruit in schools. A how to guide*. Wellington, NZ: Ministry of Health (<http://www.health.govt.nz/system/files/documents/publications/fruit-in-schools-how-to-guide-may06.pdf>).
- Ministry of Health. (2008). *A Portrait of Health. Key results of the 2006/07 New Zealand Health Survey*. Wellington, NZ: Ministry of Health (<http://www.health.govt.nz/system/files/documents/publications/portrait-of-health-june08.pdf>).
- Ministry of Health. (2012). *The health of New Zealand children 2011/12: key findings of the New Zealand Health Survey*. Wellington, NZ: Ministry of Health (<http://www.health.govt.nz/system/files/documents/publications/health-of-new-zealand-child-2011-12-v2.pdf>).
- Mollie Greves, H., Lozano, P., Liu, L., Busby, K., Cole, J., & Johnston, B. (2007). Immigrant families' perceptions on walking to school and school breakfast: a focus group study. *International Journal of Behavioral Nutrition and Physical Activity*, 4(64).
- Moore, J., & Harré, N. (2007). Eating and activity: the importance of family and environment. *Health Promotion Journal of Australia*, 18(2), 143-148.
- Moore, L., Moore, G. F., Tapper, K., Lynch, R., Desousa, C., Hale, J., et al. (2007). Free breakfasts in schools: design and conduct of a cluster randomised controlled trial of the Primary School Free Breakfast Initiative in Wales [ISRCTN18336527]. *BMC Public Health*, 7(258).
- Morris, C. T., Courtney, A., Bryant, C. A., & McDermott, R. J. (2010). Grab N' Go breakfast at school: observations from a pilot program. *Journal of Nutrition Education & Behavior*, 42(3), 208-209.

Murphy, J., Pagano, M. E., Nachmani, J., Sperling, P., Kane, S., & Kleinman, R. E. (1998). The relationship of school breakfast to psychosocial and academic functioning: cross-sectional and longitudinal observations in an inner-city school sample. *Archives of Pediatrics & Adolescent Medicine*, 152(9), 899-907.

Murphy, S., Moore, G. F., Tapper, K., Lynch, R., Clarke, R., Rasanen, L., et al. (2011). Free healthy breakfasts in primary schools: a cluster randomised controlled trial of a policy intervention in Wales, UK. *Public Health Nutrition*, 14(2), 219-226.

Murray, S. J. (2011). *Breakfast: barriers and facilitators [In Fact]*. Wellington, NZ: Health Sponsorship Council (<http://www.hpa.org.nz/sites/default/files/Breakfast%20barriers-fnl%20web-110420.pdf>).

Nanney, M. S., Olaleye, T. M., Wang, Q., Motyka, E., & Klund-Schubert, J. (2011). A pilot study to expand the School Breakfast Program in one middle school. *Translational Behavioral Medicine*, 1(3), 436-442.

New Policy Institute. (2000). *Breakfast Clubs. A how to ... guide*. London, UK: New Policy Institute (http://npi.org.uk/files/3213/7569/6722/breakfast_clubs_how_to_guide.pdf).

New Zealand Government. (2013). Funding boosts to help vulnerable children - PM. Official release by Prime Minister John Key. Retrieved from <http://www.beehive.govt.nz/release/funding-boosts-help-vulnerable-children-pm>

New Zealand Red Cross. (2008). *Red Cross Breakfast in Schools. National Evaluation Report 2008*. Available by request from the New Zealand Red Cross.

New Zealand School Trustees Association. (2013, November/December). NZSTA survey on food programmes in schools. *STAnews*, 6-8.

Ni Mhurchu, C., Gorton, D., Turley, M., Jiang, Y., Michie, J., Maddison, R., et al. (2013). Effects of a free school breakfast programme on children's attendance, academic achievement and short-term hunger: results from a stepped-wedge, cluster randomised controlled trial. *Journal of Epidemiology and Community Health*, 67(3), 257-264.

Ni Mhurchu, C., Turley, M., Gorton, D., Jiang, Y., Michie, J., Maddison, R., et al. (2010). Effects of a free school breakfast programme on school attendance, achievement, psychosocial function, and nutrition: a stepped wedge cluster randomised trial. *BMC Public Health*, 10, 738.

Niemeier, H. M., Raynor, H. A., Lloyd-Richardson, E. E., Rogers, M. L., & Wing, R. R. (2006). Fast food consumption and breakfast skipping: predictors of weight gain from adolescence to adulthood in a nationally representative sample. *The Journal of Adolescent Health*, 39(6), 842-849.

Office of the Children's Commissioner. (2014). *Guidelines for school food programmes: best practice guidance for your school*. New Zealand: Ministry of Education (<http://healthylifestyles.tki.org.nz/School-Food-Programmes>).

Olsta, J. (2013). Bringing breakfast to our students: a program to increase school breakfast participation. *The Journal of School Nursing*, 29(4), 263-270.

Panagiotakos, D. B., Antonogeorgos, G., Papadimitriou, A., Anthracopoulos, M. B., Papadopoulos, M., Konstantinidou, M., et al. (2008). Breakfast cereal is associated with a lower prevalence of obesity among 10-12-year-old children: the PANACEA study. *Nutrition, Metabolism and Cardiovascular Diseases*, 18(9), 606-612.

Parnell, W. R., Reid, J., Wilson, N. C., McKenzie, J., & Russell, D. G. (2001). Food security: is New Zealand a land of plenty? *The New Zealand Medical Journal*, 114(1128), 141-145.

Parnell, W. R., Scragg, R., Wilson, N. C., Schaaf, D., & Fitzgerald, E. (2003). NZ Food NZ Children: key results of the 2002 National Children's Nutrition Survey. Wellington, NZ: Ministry of Health

[http://www.moh.govt.nz/notebook/nbbooks.nsf/0/658d849a2bac7421cc256dd9006cc7ec/\\$FILE/nzfoodnzchildren.pdf](http://www.moh.govt.nz/notebook/nbbooks.nsf/0/658d849a2bac7421cc256dd9006cc7ec/$FILE/nzfoodnzchildren.pdf).

Pearson, N., Biddle, S. J. H., & Gorely, T. (2009). Family correlates of breakfast consumption among children and adolescents. A systematic review. *Appetite*, 52(1), 1-7.

Pearson, N., MacFarlane, A., Crawford, D., & Biddle, S. J. H. (2009). Family circumstance and adolescent dietary behaviours. *Appetite*, 52, 668 - 674.

Pearson, N., Williams, L., Crawford, D., & Ball, K. (2012). Maternal and best friends' influences on meal-skipping behaviours. *British Journal of Nutrition*, 108(5), 932-938.

Pollitt, E., & Mathews, R. (1998). Breakfast and cognition: an integrative summary. *The American Journal of Clinical Nutrition*, 67(4), 804S-813S.

Quigley, R., Taylor, R., & Scragg, R. (2007). *Is consuming breakfast important for academic performance, maintaining a healthy body weight, and improving nutrient intake and lifestyle habits in children? A report prepared by the Scientific Committee of the Agencies for Nutrition Action*. Wellington, NZ: Agencies for Nutrition Action

<http://ana.org.nz/sites/default/files/Is%20consuming%20breakfast%20important%20for%20academic%20performance%2C%20maintaining%20a%20healthy%20body%20weight%2C%20and%20improving%20nutrient%20intake%20and%20lifestyle%20habits%20in%20children.pdf>.

Rampersaud, G. C., Pereira, M. A., Girard, B. L., Adams, J., & Metz, J. D. (2005). Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. *Journal of the American Dietetic Association*, 105(5), 743-760.

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.

Russell, D. G., Parnell, W. R., & Wilson, N. C. (1999). *NZ Food: NZ People. Key results of the 1997 National Nutrition Survey*. Wellington, NZ: Ministry of Health

[http://www.moh.govt.nz/notebook/nbbooks.nsf/0/62c5d9d4c418c4e74c2567d9007186c2/\\$FILE/nns.pdf](http://www.moh.govt.nz/notebook/nbbooks.nsf/0/62c5d9d4c418c4e74c2567d9007186c2/$FILE/nns.pdf).

Ruxton, C. H., & Kirk, T. R. (1997). Breakfast: a review of associations with measures of dietary intake, physiology and biochemistry. *The British Journal of Nutrition*, 78(2), 199-213.

Sabol, A., Struempfer, B. J., & Zizza, C. A. (2011). Student and parent perceptions of barriers to and benefits of the School Breakfast Program in elementary schools in southeast Alabama. *Journal of Child Nutrition and Management*, 35(2).

Sandercock, G. R., Voss, C., & Dye, L. (2010). Associations between habitual school-day breakfast consumption, body mass index, physical activity and cardiorespiratory fitness in English schoolchildren. *European Journal of Clinical Nutrition*, 64(10), 1086-1092.

Scottish Community Diet Project. (2004). *Breakfast Clubs... More of a Head Start. A step-by-step guide to the challenges of setting up and running breakfast clubs in Scotland*. Glasgow, UK: Scottish Consumer Council
<http://www.communityfoodandhealth.org.uk/wp-content/uploads/2006/10/breakfastclub-0632.pdf>.

Shaw, M. E. (1998). Adolescent breakfast skipping: an Australian study. *Adolescence*, 33(132), 851-861.

Sjöberg, A., Hallberg, L., Höglund, D., & Hulthén, L. (2003). Meal pattern, food choice, nutrient intake and lifestyle factors in The Göteborg Adolescence Study. *European Journal of Clinical Nutrition*, 57(12), 1569-1578.

- Smith, K. J., Gall, S. L., McNaughton, S. A., Blizzard, L., Dwyer, T., & Venn, A. J. (2010). Skipping breakfast: longitudinal associations with cardiometabolic risk factors in the Childhood Determinants of Adult Health Study. *American Journal of Clinical Nutrition*, *92*(6), 1316-1325.
- Sweeney, N. M., & Horishita, N. (2005). The breakfast-eating habits of inner city high school students. *The Journal of School Nursing*, *21*(2), 100-105.
- Szajewska, H., & Ruszczynski, M. (2010). Systematic review demonstrating that breakfast consumption influences body weight outcomes in children and adolescents in Europe. *Critical Reviews in Food Science and Nutrition*, *50*(2), 113-119.
- Tapper, K., Murphy, S., Moore, L., Lynch, R., & Clark, R. (2007). Evaluating the free school breakfast initiative in Wales: methodological issues. *British Food Journal*, *109*(3), 206-215.
- Taras, H. (2005). Nutrition and student performance at school. *The Journal of School Health*, *75*(6), 199-213.
- Thompson-McCormick, J. J., Thomas, J. J., Bainivualiku, A., Khan, A. N., & Becker, A. E. (2010). Breakfast skipping as a risk correlate of overweight and obesity in school-going ethnic Fijian adolescent girls. *Asia Pacific Journal of Clinical Nutrition*, *19*(3), 372-382.
- TNS Social Research. (2010). *Foodbank WA - School Breakfast Program research. Final Report*. Perth, Western Australia: TNS Social Research (<http://www.healthyfoodforall.com.au/images/uploads/101103-SBP-Evaluation-Final-report-TNS.pdf>).
- University of Otago, & Ministry of Health. (2011). *A Focus on Nutrition: key findings of the 2008/09 New Zealand Adult Nutrition Survey*. Wellington, NZ: Ministry of Health (<http://www.health.govt.nz/system/files/documents/publications/a-focus-on-nutrition-v2.pdf>).
- Utter, J., Scragg, R., Ni Mhurchu, C., & Schaaf, D. (2007). At-home breakfast consumption among New Zealand children: associations with body mass index and related nutrition behaviors. *Journal of the American Dietetic Association*, *107*(4), 570-576.
- Utter, J., Scragg, R., Schaaf, D., Fitzgerald, E., & Wilson, N. (2007). Correlates of body mass index among a nationally representative sample of New Zealand children. *International Journal of Pediatric Obesity*, *2*(2), 104-113.
- Utter, J., Scragg, R., Schaaf, D., & Ni Mhurchu, C. (2008). Relationships between frequency of family meals, BMI and nutritional aspects of the home food environment among New Zealand adolescents. *The International Journal of Behavioral Nutrition and Physical Activity*, *5*, 50.
- Vereecken, C., Dupuy, M., Rasmussen, M., Kelly, C., Nansel, T. R., Al Sabbah, H., et al. (2009). Breakfast consumption and its socio-demographic and lifestyle correlates in schoolchildren in 41 countries participating in the HBSC study. *International Journal of Public Health*, *54*(Suppl 2), S180-S190.
- Videon, T. M., & Manning, C. K. (2003). Influences on adolescent eating patterns: the importance of family meals. *Journal of Adolescent Health*, *32*(5), 365-373.
- Waikato District Health Board. (2010). *Supporting breakfast clubs in Waikato secondary schools*. Waikato, New Zealand: WDHB (http://waikatodhb.govt.nz/file/fileid/HEHA%20Breakfast%20club_resource.pdf).
- Walton, M., Signal, L., & Thomson, G. (2009). Household economic resources as a determinant of childhood nutrition: policy responses for New Zealand. *Social Policy Journal of New Zealand*, *36*, 194-207.
- Wesnes, K. A., Pincock, C., Richardson, D., Helm, G., & Hails, S. (2003). Breakfast reduces declines in attention and memory over the morning in schoolchildren. *Appetite*, *41*(3), 329-331.

Wesnes, K. A., Pincock, C., & Scholey, A. (2012). Breakfast is associated with enhanced cognitive function in schoolchildren. An internet based study. *Appetite*, *59*(3), 646-649.

Widenhorn-Muller, K., Hille, K., Klenk, J., & Weiland, U. (2008). Influence of having breakfast on cognitive performance and mood in 13- to 20-year-old high school students: results of a crossover trial. *Pediatrics*, *122*(2), 279-284.

Williams, P. (2007). Breakfast and the diets of Australian children and adolescents: an analysis of data from the 1995 National Nutrition Survey. *International Journal of Food Sciences and Nutrition*, *58*(3), 201-216.

Wilson, N. C., Parnell, W. R., Wohlers, M., & Shirley, P. M. (2006). Eating breakfast and its impact on children's daily diet. *Nutrition & Dietetics*, *63*(1), 15-20.

Yang, R.-J., Wang, E., Hsieh, Y.-S., & Chen, M.-Y. (2006). Irregular breakfast eating and health status among adolescents in Taiwan. *BMC Public Health*, *6*(295).

Zullig, K., Ubbes, V. A., Pyle, J., & Valois, R. F. (2006). Self-reported weight perceptions, dieting behavior, and breakfast eating among high school adolescents. *The Journal of School Health*, *76*(3), 87-92.