Student Brief

Everyone at the Table: Strengthening Efforts to Support Student Food Security

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McMaster University | HEALTH FORUM

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The McMaster Health Forum and Forum +

The goal of the McMaster Health Forum, and its Forum+ initiative, is to generate action on the pressing health-system and social-system issues of our time, based on the best available research evidence and systematically elicited citizen values and stakeholder insights. We aim to strengthen health and social systems – locally, nationally, and internationally – and get the right programs, services and products to the people who need them. In doing so, we are building on McMaster's expertise in advancing human and societal health and well-being.

About student panels

A student panel is an innovative way to seek input from the student body on high-priority issues. Each panel brings together 14-16 students from many backgrounds. Panel members share their ideas and experiences on an issue and learn from research evidence and from the views of others. A student panel can be used to elicit the values that students feel should inform future decisions about an issue, as well as to reveal new understandings about an issue and spark insights about how it should be addressed.

About this brief

This brief was produced by the McMaster Health Forum's 2019-2020 Fellows to serve as the basis for discussions by the student panel on how to strengthen food security at McMaster University.

This brief includes information on this topic, including what is known about:

- the underlying problem;
- three possible elements of an approach to addressing the problem; and
- potential barriers and facilitators to implement these elements

This brief does not contain recommendations, which would have required the authors to make judgments based on their personal values and preferences.

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Key Messages

What's the problem?
We've identified three key challenges related to strengthening food security at McMaster University:

1. students have competing financial commitments, such as tuition and housing, which may influence their food security;
2. meeting diverse student expectations and needs is challenging for campus food services due to a variety of pressures; and
3. several student-level factors, such as lifestyle, perceptions, knowledge and skills, limit the reach of existing food-security initiatives.

What do we know about elements of a potentially comprehensive approach for addressing the problem?

- **Element 1:** Reshape existing payment models for student expenses
    - This could include establishing more flexible schedules for paying tuition and rent/residence fees that allow for payment to be made through instalments.
    - There is limited evidence on reshaping payment models for university students.
- **Element 2:** Establish a monitoring and evaluation strategy for food security on campus
    - This could include setting strategic targets for student nutrition and food security, increasing opportunities for students to inform food security policies/programs on campus, and publishing annual report cards on the impact of existing food-security initiatives.
    - There is limited evidence on the establishment of a monitoring and evaluation strategy in university settings. However, strategies to evaluate this issue have been mobilized at some Canadian universities, such as the University of British Columbia.
- **Element 3**: Create a campus food-security awareness strategy to inform students of existing initiatives to support food security
    - This could include designing and implementing skills-education programs, a comprehensive access point for food-related services, and peer nutrition advisors.
    - Evidence suggests that school-based, peer-led nutrition education initiatives have been effective at promoting healthy eating knowledge, self-efficacy, and attitudes towards healthy eating over the short-run.

What implementation considerations need to be kept in mind?

- Barriers to implementing these elements include stereotypes which normalize student food insecurity, large administrative shifts required for collecting data on food security, and the challenge of procuring extensive collaboration across stakeholders across campus.
- Some promising opportunities include the initiation of the McMaster Campus Food Council (MCFC) and an increased interest surrounding student well-being, as exemplified by McMaster University's adoption of the Okanagan Charter.

Questions for the student panel

>> We want to hear your views about the problem, three elements of a potentially comprehensive approach to addressing it, and how to address barriers to moving forward.

Box 1: Questions for students

Question related to the problem

- What do you think are the biggest challenges to strengthening student food security at McMaster University?

Questions related to the elements of a potentially comprehensive approach to address the problem

Element 1 - Reshape existing payment models for student expenses

- How could existing payment models for tuition and residence fees be changed to address student financial and food insecurity?
- Who should be involved in determining which students are eligible for reshaped payment plans and what should the eligibility criteria be?

Element 2 - Establish a monitoring and evaluation strategy for food security on campus.

- How could a food security monitoring and evaluation strategy be designed and implemented to strengthen student food security?
- How should data collected from a monitoring and evaluation strategy be used to inform the food climate at McMaster University?

Element 3 - Create a campus food-security awareness strategy to inform students of existing initiatives to support food-security.

- How could we increase students' awareness of existing resources that support food-security?
- What role would you like to play (alongside other stakeholders) in building a campus food-security awareness strategy?

Questions related to implementation considerations

- What do you think are the biggest barriers and opportunities for strengthening student food security at McMaster University?
- What stakeholders need to be at the table in order to address student food insecurity?

Box 2: Glossary

Food insecurity
A situation in which individuals lack access to nutritious and safe food necessary for growth, development and maintaining an active lifestyle.(1) Food insecurity may arise due to a variety of reasons including financial barriers, limited availability of enough food, etc.

Food services
Businesses, institutions, and other establishments that prepare or provide meals, snacks and beverages to customers.(2) Please note that this term encompasses all food establishments run by Hospitality Services, Graduate Students Association, and the McMaster Students Union.

Food environment
The physical, social, economic and political factors which influence the accessibility, availability, and adequacy of foods. Healthy food environments are settings which support healthy eating by providing equitable access to healthy food through a variety of programs, infrastructure, food service outlets/retailers, and prepared, pre-packaged foods.(3)

Food mirage
Locations with sufficient presence of healthy food retailers but where high prices make healthy foods inaccessible to individuals experiencing financial challenges.(4; 5)

Food literacy
An individual's knowledge, perceptions, attitudes and skills as they relate to food and the risks associated with food choices. This also includes an individual's ability to assess and interpret food marketing and advertising.(6)

Healthy diet
A balanced diet comprised of food that is diverse and that meets an individual's needs of macro- and micro-nutrients. It is important to note that foods which make up a healthy diet may vary in accordance to an individual's personal characteristics (such as gender, age, physiological state), their lifestyle, cultural context, availability of local foods, and dietary customs.(7)

The prevalence of food insecurity necessitates considering what the University can do to strengthen food security.

What is food security?

Food security is when all individuals have access to nutritious and safe food that adequately meets their dietary, lifestyle, and cultural needs at all times.(7)

There are five factors which contribute to food security:

- availability, which refers to the presence of safe and healthy food in an individual's life at all times;
- accessibility, which means having social, physical, and financial access to safe and healthy food;
- adequacy, which means having access to safe and healthy food procured sustainably;
- acceptability, which means having access to culturally important foods, and being able to obtain safe and healthy food in ways that protect an individual's rights and dignity; and
- agency, which refers to the existence of policies and practices which support the attainment of food security by all individuals.(8)

The context: Why is strengthening food security at McMaster University a priority?

In 2011-2012, nearly 12.5% of Canadian households, or roughly 4 million individuals, experienced food insecurity.(3) While there is limited data surrounding this issue in post-secondary student populations, two in five Canadian university students surveyed by Meal Exchange Canada reported experiencing moderate or severe food insecurity in 2016.(10)

The severity of student food insecurity and the urgency to address this issue is often overlooked by stakeholders given a mischaracterization of these experiences as transitory.(11) However, how and what an individual eats as well as how the individual cooks and engages with food are important determinants that influence quality of life and overall health. In acknowledging McMaster University's commitment to promoting optimal student health and wellness, it is important to address the far-reaching consequences of inadequate access to and availability of healthy and safe foods. Food insecurity can have an adverse impact on an individual's physical and mental health by increasing their risk of experiencing social, physical, and psychological stress.(12) Student awareness and attitudes surrounding food insecurity, the increased cost of tuition, and rising cost of living are factors that contribute to this issue.

According to a number of key informants, efforts in strengthening food security on campus also closely work to address other pertinent social issues, such as climate change, chronic-disease disparities, and student mental health. Dietary choice comprises a big proportion of students' ecological footprint, and nutrition has a significant effect on one's long-term health and mental well-being. Thus, food offers an interesting opportunity to synergistically address issues as complex as health, sustainability, and poverty.

The demand for student services and supports that address food inadequacy will likely increase over the next few years for at least four reasons.

The first reason is the rising cost of tuition. Since 1990, government funding for post-secondary education has declined by nearly 50%.(13) As such, post-secondary

institutions are increasingly relying on tuition fees to cover operating costs.(13) It is estimated that between 1993 and 2016, the average cost of tuition for one year of an undergraduate degree in Canada has increased from $3,192 to $6,191, even when accounting for inflation.(10)

The second reason includes changes to the Ontario Student Assistance Program (OSAP) that have affected students' financial situations. In 2018, the Ontario government eliminated free tuition for certain students, and additionally lowered the annual family income threshold to qualify for funding from $175,000 to $140,000.(14) A reduction in grants and greater restrictions around funding eligibility reduces students' abilities to meet the cost of tuition and living.

The third reason is the trend towards increased housing costs in Hamilton. Since 2010, gentrification in the City of Hamilton has decreased the affordability and availability of adequate housing.(15) Hamilton has one of the highest rates of increases in rent across all cities in Canada.(16) Changes to the Residential Tenancies Act additionally compromises students' ability to find appropriate housing by excusing residential spaces first rented after 2018 from rent-control guidelines.(17)

The fourth reason relates to the implementation of the Student Choice Initiative (SCI). In 2019, the Ontario government introduced the SCI, an opt-out policy which gave post-secondary students the option to choose which additional fees they pay.(18) These fees include the cost of McMaster Students Union services aimed at supporting student access to healthy and fresh foods on campus, such as the Mac Farmstand and the Food Collective Centre. While the SCI was ruled unconstitutional by the Divisional Court of Ontario, it is still unclear what this decision means for existing student initiatives aimed at strengthening food security for students.(19)

Given the high prevalence of student food insecurity and it's expected rise over the next few years, strengthening efforts to support student food security is not only a critical step in mitigating long-term negative outcomes, but also in mitigating future strain on campus and community social and health-system resources. Collective interest by stakeholders and student demand in strengthening access to food further supports the need to address this issue.

In this brief, we provide information about what food security is, the challenges in advancing food security for McMaster University students, and potential approaches to overcome these challenges. Box 3a and 3b below provide a brief summary of key players, features and services that influence food security on campus.

Box 3a: Campus and community environment

Key players at McMaster that make decisions with an influence on student food security

- McMaster Hospitality Services sets and regulates food policy for Hospitality Services dining locations on campus. Hospitality Services is responsible for the selection of menu options, the management of day-to-day culinary operations, the meal plan program, and setting of food prices in these locations. Hospitality Services also holds exclusivity for catering events on campus. Hospitality Services operates under a self-financed, for-profit model which generates revenue for the University.

- The McMaster Students Union (MSU) is responsible for two dining locations on campus, 1280 Bar & Grill and Union Market. The MSU governs these locations through a not-for-profit model, and is tasked with setting internal operating policies, managing culinary operations, and managing food pricing. The MSU also operates Mac Farmstand, a student-run farmers market that provides students with fresh fruits and vegetables. The MSU is also responsible for advocating on behalf of student at the campus-wide, local, provincial, and national levels surrounding issues like food insecurity. The MSU is funded by student union fees.

- The Graduate Students Association (GSA) owns and operates the for-profit Phoenix restaurant and bar.

Box 3b: Campus and community environment

Features and services most relevant to strengthening food security

- The MSU Food Collective Centre (FCC) aims to address food-security issues on campus through a number of programs. The physical FCC space allows community members to pick up food and hygiene items free of charge. The Good Food Box program provides affordable, fresh produce to community members once a month. The Lockers of Love initiative allows students to anonymously order non-perishable food items.

- The MSU Emergency Bursary helps students overcome unforeseen financial difficulties throughout the year; many students that utilize this bursary are food insecure or are facing impending food insecurity.

- McMaster Hospitality Services offers numerous initiatives and programs to support students. For example, they provide $5 signature meals, create student jobs, provide emergency meal cards, and support students with dietary restrictions.

- The Student Wellness Centre offers medical services, counselling and education to students at McMaster. It provides students with referrals if they identify experiences of food insecurity. It also provides students with programs like Food for Thought (a gardening and cooking program) that promote food skills, and it has a food-literacy team that performs outreach initiatives on campus. The Wellness Lounge has informational resources and free food.

- The Student Support & Case Management Office is a referral-based service that works with students who are experiencing difficulties, which could include food insecurity, among other things. The service refers people to appropriate resources and works with the Student Financial Aid Office to provide students with emergency meal cards and other financial supports.

- Indigenous Student Services provide culturally appropriate food services and supports to Indigenous students, such as cooking classes and community soup days.

Students' experience and expectations of food are rooted in broader socio-cultural norms.

The problem: Why is strengthening food security at McMaster University so challenging?

As a highly complex issue that extends beyond student nutrition, we have identified three key challenges related to strengthening food security at McMaster University:

1. students have competing financial commitments such as tuition and housing which may influence their food security;
2. meeting diverse student expectations and needs is challenging for campus food services due to a variety of pressures; and
3. several student-level factors, such as lifestyle, perceptions, knowledge, and skills, limit the reach of existing food security initiatives.

Box 4 below summarizes methods taken by this brief to define the scope of the problem.

Box 4: Methods in Defining 'The Problem'

A steering committee comprised of key stakeholders across campus, including student leaders and University administration, were actively consulted in the process of developing this brief. Thirteen key informant interviews were conducted with stakeholders from campus programs and services, as well as community and pan-Canadian organizations to develop and present a nuanced understanding of this issue. The aforementioned consultations were utilized to supplement research evidence and to ensure its applicability to the McMaster context.

Students have competing financial commitments such as tuition and housing which may influence their food security

While there is limited literature specifically on food security amongst post-secondary students in Canada, there is a general understanding that student financial commitments are linked to a student's inability to afford food.(10) Being a university student comes with numerous costs, such as tuition, housing (whether through rent or residence fees), and textbook fees, which may influence a student's ability to purchase healthy foods.(10) This financial stress is compounded by the fact that most university students are unable to work full-time during the school year due to busy student schedules.(10) Financial precarity is a wide-spread student issue in post-secondary settings given that many students face high costs while simultaneously having a relatively low income. Financial difficulties may render many students vulnerable to housing instability and food insecurity, and thus unable to afford all the costs of student life.

The high cost of student living is one of the most cited barriers to student food security, especially for students who are financially insecure.(10) This is exemplified by the fact that more than half of students who are low income and rely on government loans or grants as their primary form of income report experiencing food

insecurity.(10) In the face of such financial uncertainty, students may sometimes feel as if they have to sacrifice purchasing adequate food in order to keep up with other costs or to save money for the future.(10; 11) Food is often sacrificed and de-prioritized by students as they keep up with many essential student costs, such as tuition and rent, that call for large upfront payments (typically at the start of the year and/or the start of the month). Thus, if money becomes short at the end of the month or the semester when costs like rent and tuition have already been paid, there is less money left over for food. Existing models for purchasing residence fees, textbooks, and other school-related fees do not offer customizable individualized payment plans to students in precarious financial situations. As such, students are not able to pay fees in instalments - an approach that may relieve financial stress affecting student food choices.

Experiences of food insecurity are deeply influenced by an individual's identity. Food insecurity is an intersectional issue which disproportionately affects marginalized identities, who may be more likely to experience financial insecurity due to systemic barriers. Box 5 below provides additional details regarding identities most at-risk for food insecurity.

Box 5: Intersectionality in Food Insecurity

Student food insecurity cannot be separated from larger social structures. This is especially important when examining the financial dimension of student food security, as there is evidence that shows that people with marginalized identities are more likely to be of low socio-economic status or face other barriers to food security. Importantly, people from marginalized groups may also face barriers in accessing programs and services meant to alleviate food insecurity.

Groups disproportionately affected by food insecurity.

Indigenous students experience food insecurity at a high rate, with 56.4% identifying themselves as food insecure.(10) This high prevalence echoes data outside of the post-secondary context, where Indigenous people are three times more likely to experience food insecurity than their non-Indigenous counterparts.(20) Additionally, Indigenous students may experience difficulty in meeting the cost of living depending on the availability of funding grants provided by band councils and their eligibility for OSAP and band council grants.
Black students are disproportionately likely to experience food insecurity, with 75.3% experiencing some degree of food insecurity.(10)
LGBTQ+ students may face more food insecurity than cis/heterosexual students.(20) Though there is no data available on LGBTQ students' access to food in the Canadian university context, there is evidence suggesting people with these identities may be at increased risk of food insecurity.
Disabled students often face more financial precarity than able-bodied students, and are more likely to accumulate student debt.(21) This likely affects their ability to access and afford food.

While we have only highlighted a few groups, other marginalized groups are also likely to have a higher risk of experiencing food insecurity due to systematic forms of oppression that disadvantage them economically, politically and socially. Due to forms of colonial, racial and gendered oppression, marginalized peoples are more likely to be financially insecure, ultimately affecting their ability to afford the cost of food, along with tuition, textbooks, etc.

Currently, there are numerous programs and services on campus that aim to alleviate food insecurity by focusing on its financial causes, such as by helping students meet the cost of food and living. These include the MSU Emergency Bursary Fund, the McMaster general bursary, emergency Meal Cards offered by Student Financial Aid Services, and the Student Support and Case Management Office Interim Room Program. While these programs are beneficial to students who access them, there is increased strain placed on service providers as the prevalence of food insecurity and the cost of living rises in and around campuses.(22) As more and more students experience food insecurity and housing instability, these programs are not sufficient in

meeting the growing student demand.(22) There is additionally a great need to invest in preventive programs which address the root causes of food insecurity and financial precarity to supplement the reach of existing programs.

Meeting diverse student expectations and needs is challenging for campus food services due to a variety of pressures

Students today have more diverse and individualized dietary preferences and needs than previous generations. Many students have dietary restrictions, including but not limited to, dairy free, gluten free, halal, kosher, vegan, vegetarian, etc. A growing shift in consumer culture towards health-focused and globally inspired cuisine additionally shapes students' food preferences and expectations. As such, campus food has continuously evolved to accommodate many ethnocultural and lifestyle options.(23) Universities are now increasingly catering to a wide variety of diets, such as vegan and locavore, and today's campus cafeterias resemble fast-casual chain restaurants with a focus on healthy, protein- and vegetable-centric, customizable dishes.(24) However, as meal preferences become more individualized and dietary restrictions become more prevalent, it is harder for campus food services to keep up with rapidly changing and diverse individual needs.

Despite the provision of diverse food options by campus food services, many students report barriers in accessing foods appropriate for their needs.(25) Discounts and food-security initiatives are not uniformly available across all food-service locations on campus. For instance, $5 meals are available at La Piazza and Centro, but not at Bridges for students who may choose to eat vegan or vegetarian meals. In a similar vein, many students report experiencing an inability to connect with their cultural communities due to a lack of availability surrounding culturally appropriate foods.(10) For students with dietary restrictions, access to appropriate foods may also be diminished disproportionately during exam season due to student lifestyle factors. These factors can include, but are not limited to lack of time to eat due to increased academic demands requiring students to be present late on campus, and the normalization of skipping meals during exam season.(11)

Many students report using campus food-service providers as primary sources of meals due to time constraints and ease of access.(11) Within this context, many students perceive that the role of campus food services should be to provide subsidized meals. However, this expectation often conflicts with food services' role as an important contributor to the campus operating budget. As public funding to universities has decreased, food-service operations, such as Hospitality Services, and other ancillary units, have become a crucial source of revenue generation.(26) In the 2018-2019 academic year, Hospitality Services contributed 4.5% of their annual revenue to University operations, which comprises 1.39% of the University's total operating budget.(26) Flexibility surrounding food prices is further compounded by the unionization of many food-service employees and Hospitality Service's commitment to providing competitive benefits for their management employees.(27) Additionally, food services' commitment to sustainability, such as through the elimination of single-use plastics from many food-service locations, can also add to financial pressures. As such, many food services are limited in their ability to adjust the price of foods according to student demands.

Meanwhile, communication about student food security between stakeholders of campus food services, such as students and food-service providers, are lacking. Although modes of communication exist at a smaller level (such as the annual dialogues between Hospitality Services and First Year Council), McMaster University at large does not have systems in place to formally collect data on campus food-security issues. The University at large also lacks systems to collect student feedback on topics including campus food prices, meal plans, meal options, ingredients and food preparation, food waste, and food literacy. Policies regarding transparency of food-services budgets may additionally contribute to students' misunderstanding of the role of food vendors on campus and their motives in providing food. Students' experience of campus food is thus affected by complex interactions between government and University-level decisions, as well as campus bureaucracy.

Several student-level factors, such as lifestyle, perceptions, knowledge and skills, limit the reach of existing food-security initiatives

Several student-level factors hinder the effectiveness of food-security initiatives on campus, as well as student abilities to secure adequate and appropriate access to safe and healthy foods. These factors include:

- time constraints due to multiple student obligations;
- limited food-related skills and knowledge about existing services;
- inadequate access to food-preparation facilities;
- attitudes which normalize food insecurity; and
- stigma surrounding the use of food-security initiatives on campus.

With respect to time-constraints, one survey by the Canadian Federation of Students found that 81% of university students reported purchasing meals on campus despite the perception of food being expensive.(28) While many students are aware of the economic consequences and health risks associated with purchasing prepared and packaged foods, campus food-service providers are widely used as primary sources of meals due to time constraints.(11) Various commitments, such as keeping up with classes, employment, extracurricular activities and studying, may impede student efforts in cooking and preparing meals at home.(10; 11) Furthermore, student dependence on public transport and long commute times to discount grocery stores or farmer's markets may also act as a barrier to preparing meals at home.(11)

Within the context of food-related skills and knowledge, university students, specifically those living away from home for the first time, may also lack awareness on how to prepare, access and budget for healthy meals.(10; 11; 22) According to the Hungry for Knowledge survey by Meal Exchange Canada, roughly 11.3% of surveyed students reported a lack of food-related skills and knowledge as a barrier to food security.(10) International students may be especially vulnerable due to limited knowledge in utilizing local ingredients that may be readily available in nearby food retail stores as opposed to more familiar ingredients that may be physically or economically inaccessible. Many students additionally report being unaware of campus services that are aimed at building skills and competencies in accessing, purchasing and preparing healthy foods both within and around campus.(11; 29) In one report by

Maynard et al., surveyed students reported experiencing isolation due to limited knowledge about navigating challenges in accessing food.(11) Narrow hours of operation and limited availability of culturally congruent food-skills programming may additionally hinder students from utilizing campus initiatives.

In reference to food preparation facilities, the aforementioned survey also reported that 7.5% of students identified limited kitchen spaces and equipment as a barrier to cooking meals.(11) The limited availability of kitchen amenities, such as microwaves and refrigerators, in all buildings on campus and lack of student knowledge about amenity locations may also discourage off-campus students from bringing their own meals.(28)

In connection to attitudes which normalize food inadequacy, many students perceive food insecurity as a temporary experience that will disappear once they graduate.(11) In one survey conducted at McMaster University, nearly a quarter of surveyed students characterized challenges in obtaining food as a part of the 'campus experience'.(22) 'Starving student' stereotypes, which characterize food insecurity as a rite of passage, contribute to the pervasive normalization and widespread acceptance of disordered eating patterns among students.(11; 29) These include:

- skipping meals due to lack of time and/or financial resources;
- eating meals at inconsistent times due to late nights, fluctuating sleep schedules and/or prioritization of other commitments;
- making food choices which are nutrient-deficient and informed by status of being a student; and
- selecting food based on emotional state, such as feeling stressed.

These norms may additionally influence students' food choices because they may feel pressured to fit in with the wider student culture and the peer networks on which they rely for support. These attitudes may also function as coping strategies for students as they face limited access to food due to stress, as well as time and financial constraints.(29)

With regards to stigma, feelings of shame experienced by students when accessing existing community and campus food-security services further compound this issue.(11) In one survey by Meal Exchange Canada, 15.6% of students reported feeling embarrassed utilizing food-security supports.(10) Student perceptions about

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the 'types of people' who are allowed to use these resources and a wide inability to recognize signs of food insecurity may additionally serve as barriers to access.(11) In one survey conducted at the University of Waterloo, students reported not wanting to "take away from people who could really be in need" despite experiencing food inadequacy themselves.(11) Students' lack of knowledge about the pervasiveness of this issue may additionally contribute to feelings of loneliness and isolation when navigating food insecurity.(11; 29)

We have selected three elements of an approach to address the problem for which we are seeking student input.

Elements of an approach to address the problem

>> To promote discussions about the pros and cons of potential solutions, we have selected three elements of an approach to strengthen food security at McMaster University

Many approaches could be selected as a starting point for discussion. We have selected the following three elements of an approach for which we are seeking public input:

1. reshape existing payment models for student expenses;
2. establish a monitoring and evaluation strategy for food security on campus; and
3. create a campus food-security awareness strategy to inform students of existing initiatives to support food security.

These elements should not be considered separately. Instead, each should be considered as contributing to a potentially comprehensive approach aimed at strengthening student food security. New elements may also emerge through further discussion with stakeholders, including student panel participants. Box 6 below discusses research evidence used in identifying, selecting and synthesizing information for each element.

Box 6: Identification, selection and synthesis of research evidence presented in this brief

- Whenever possible, we describe what is known about each element based on systematic reviews. A systematic review is a summary of all the studies looking at a specific topic.

- A systematic review uses rigorous methods to identify, select and appraise the quality of all the studies, and to summarize the key findings from these studies.

- A systematic review gives a much more complete and reliable picture of the key research findings, as opposed to looking at just a few individual studies.

- We identified systematic reviews in Health Systems Evidence (www.healthsystemsevidence.org) and Social Systems Evidence (www.socialsystemsevidence.org). These two websites are the world's most comprehensive databases of research evidence on health and social systems.

- A systematic review was included if it was relevant to one of the elements covered in the brief.

- We then summarized the key findings from all the relevant systematic reviews.

Element 1 – Reshape existing payment models for student expenses

Overview

This element aims to strengthen student food security at McMaster University by providing students with more financial flexibility. Many students who struggle with food insecurity are students who are in financially precarious situations. As other student costs – such as residence fees, tuition, and textbook costs – must be paid in full at a fixed time (the beginning of the semester, the first of the month, etc.), food becomes the cost that is most flexible, and thus most logical to sacrifice when resources are low. Thus, this element proposes that more flexible payment plans be introduced to allow students with certain financial needs to choose between the option of paying all fees upfront or paying in instalments. To reshape current models of payment, the following changes could be implemented:

1. a tuition schedule that allows students to pay their tuition in instalments (i.e., paying tuition in monthly instalments); and
2. an option for students living in residence to pay their residence fees in instalments, primarily focusing on providing students with an option to pay residence fees in two instalments, once at the beginning of each semester, in accordance with the OSAP payment schedule.

Evidence to consider

Presently, there is little existing literature that speaks to alternate payment plans in the university context. As a result, we were not able to find evidence within systematic reviews or single studies that discussed the effectiveness of a more flexible student payment plan.

Questions to consider

Overarching question to consider

- How could existing payment models for tuition and residence fees be changed to address student financial and food insecurity?

Additional questions to consider

- Who should be involved in determining which students are eligible for reshaped payment plans and what should the eligibility criteria be?

- To what extent should the payment plans be customizable for students with individual needs?
- To what extent would a flexible payment-plan program help alleviate financial and food insecurity for marginalized students?
- How could the success of a flexible payment-plan program be measured?
- To what degree will a program that addresses financial insecurity through a change in payment models alleviate issues of food insecurity?
- What effect would a flexible payment plan have on McMaster University and its operations?
- Which fees should be incorporated into the flexible payment plan? Should it be tuition, residence fees, meal-plan fees, or some sort of combination?

Element 2 – Establish a monitoring and evaluation strategy for food security on campus

Overview

The focus of this element is to iteratively collect information on the prevalence and severity of food security among students at McMaster University. This element addresses the lack of available data pertaining to food security at McMaster University. Data collected through a monitoring and evaluation strategy may be used to assess the uptake and impact of existing food-security initiatives, inform the development and refinement of existing food-related policies and programs, evaluate the state of food security on campus, as well as pinpoint and address student demands.

Monitoring and evaluating food security could include:

- establishing strategic targets for student food security and nutrition;
- increasing opportunities for student engagement in processes which inform the development of campus food-security initiatives, such as through surveys or councils; and
- publishing annual report cards which evaluate and review the success of food-security initiatives on campus as well as highlight next steps.

Evidence to consider

While there is limited synthesized evidence pertaining to the monitoring and evaluation of food security in post-secondary settings, there is an emerging need to establish ongoing strategies which address the pervasiveness of this issue and its underlying causes on campus. Unfortunately, no systematic reviews were directly applicable to university settings. However, our search yielded one systematic review focused on the general Australian population that offered valuable insights. We also identified one single study and one grey-literature report for additional evidence.

Four key insights emerged in scanning the available literature:

- multi-item quantitative surveys are common and reliable tools that have been used to evaluate food security in post-secondary settings;
- evaluation and monitoring of food security must assess all four pillars of food security, including access, availability, utilization and stability;

- assessing local and individual factors which may have an impact on food security, such as employment, the food retail environment, and living situation, is also critical to developing a nuanced understanding of this issue; and
- selecting an appropriate survey recall period is a key step in ensuring the development of a reliable evaluation strategy.

According to the aforementioned systematic review investigating methods used to measure food insecurity in Australia, quantitative surveys (questionnaires with numerically rated response scales), are the most commonly employed tools to assess the severity and prevalence of this issue.(30) Quantitative methods may offer a more robust approach to visualizing and understanding the relationship between food insecurity and its determinants.(31) This review suggests that single-item surveys (questionnaires which only ask participants one question) about their ability to access or afford food, may under-report estimates by overlooking the multi-dimensional nature of food insecurity.(30) The review proposes that multi-item surveys, which include several questions on food insecurity, offer a more reliable, sensitive and comprehensive route to monitoring this issue.(31) Qualitative methods can also be employed to assess food inadequacy, and methods may include interviews, focus groups and photovoice.(30)

The United States Department of Agriculture (USDA) and Canadian Household Food Security Survey Module (HFSSM) are multi-item tools that are frequently adapted to measure food security in university settings, as found by one grey-literature review conducted by the University of British Columbia (UBC).(32) The full questionnaire consists of 18 questions, which may also be shortened to versions with 10 or six items, and is completed individually by participants.(30)

While the USDA or Canadian HFSSM tools are reliable for the general public, they have not yet been validated in post-secondary settings, and furthermore, only consider financial- and resource-based barriers to food security.(30; 32) Our findings, on the other hand, emphasize the importance of assessing all four pillars of food security identified by the Food and Agriculture Organization (FAO) of the United Nations: access, availability, food utilization and the stability of these three pillars over long periods of time.(30) Context-specific survey questions that provide detailed information about factors which influence food security in local settings are also critical. These questions may assess the presence of food deserts, availability of culturally relevant foods, characteristics of the food retail environment, employment,

and overarching welfare issues.(30) The UBC adopted HFSSM survey also collects information pertaining to the use of food banks, self-reported mental health, academic standing, funding and financial resources, access to meal plans, and housing.(32)

Identifying an appropriate recall period is also a critical step in utilizing surveys as part of a food-security monitoring and evaluation strategy. According to the UBC grey-literature report, the majority of food-security surveys conducted in university settings asked participants to evaluate their experiences of food security in the past 12 months.(32) First-year students were thus restricted from participating if surveys took place at the beginning of the school year given that they were not university students in the past year.(32) The Australian systematic review suggests that 12-month recall periods may be better suited to measure chronic instances of food security, and thus may be limited in their ability to identify transitory experiences.(30) Other recall periods used by university surveys included 30 days, one semester, or three to nine months.(32)

Questions to consider

Overarching question to consider
- How could a food-security monitoring and evaluation strategy be designed and implemented to strengthen student food security?

Additional questions to consider
- What kinds of information would be important to collect in order for a monitoring and evaluation strategy to strengthen food security for McMaster students?
- Who should be involved in carrying out a food-security monitoring and evaluation strategy to ensure it is successfully implemented?
- How often should data be collected in order to appropriately capture students' experiences of food insecurity?
- How can student participation in monitoring and evaluating food security on campus be strengthened?
- How should the state of food security at McMaster University be measured (i.e., surveys, focus groups, interviews, etc.)?

Element 3 – Create a campus food-security awareness strategy to inform students of existing initiatives to support food security

Overview

The focus of this element is to increase students' awareness of existing resources touching the various domains that concern food security (e.g., financial support, skills training). Evidence and questions to consider during your deliberations are provided below. Examples of a food-security awareness strategy on campus may include designing and implementing skills-education programs, building a comprehensive access point for food-related services, and offering peer nutrition-advisory services.

Evidence to consider

The literature is scant on the topic of campus-wide awareness strategies that aim to inform students of existing initiatives to support food security. However, the following key insights were identified:

- personally tailored nutritional programs can be promising, but are resource and time intensive;
- technology-based or school-based peer-led nutrition education can improve healthy-eating knowledge, but long-term maintenance may be challenging;
- supportive campus relationships can facilitate access to food programs;
- many students indicate a desire for financial and food literacy training beyond what is currently offered;
- student awareness of campus programs that enhance their ability to access food is not uniform; and
- food knowledge and skills are not sufficient in themselves to ensure proper nutritional intake.

There are a few systematic reviews that have examined educational programs surrounding food security, although none within the context of post-secondary awareness strategies. According to one systematic review, personally tailored nutrition education was found to be a promising strategy for improving diets of adults, including those in priority population groups, such as minority ethnic groups and low-income groups, over the long term.(33) Most interventions were tailored by current

diet, components of behaviour theories, and food purchases.(33) However, personally tailored educational programs were reported to be resource- and time-intensive.

Another systematic review showed that school-based, peer-led nutrition-education initiatives lead to improvements in: healthy eating knowledge; attitudes towards healthy eating; dietary measures; and body mass index.(34) Interventions included education initiatives in primary schools, high schools, and universities. Examples of identified programs include: high school students performing education sessions in primary schools; education provided to undergraduate students by same-age university peers or a registered dietitian; and teacher-led workshops for primary school students. However, the long-term maintenance of these outcomes was a challenge.(34)

Another systematic review found that school-based nutrition-education programs that incorporate technology have led to increased nutritional knowledge, decreased fat intake, and higher frequency of fruit and vegetable intake.(35) Examples of programs that involve technology-based school interventions included: web-based games; video sessions with individual tailored feedback via email; and SMS-based diary and feedback system facilitated by a dietitian. However, these results did not persist over the long term.(35)

Single studies and grey literature articles were also consulted due to the limited number of systematic reviews on student food-security awareness and education programs. When reading insights obtained from these sources, please be cautious about drawing conclusions about benefits, harms and effectiveness since these are not systematic reviews.

One qualitative study examined the perceptions of college students experiencing basic-needs insecurity who accessed a short-term emergency support program at a university campus in southern California.(36) In this study, students reported that supportive campus relationships facilitated access to food programs, and that emergency services provided important support that enhanced their retention.(36) Participants reported a need for expansion of recruitment strategies for food programs and reconsideration of eligibility requirements.(36)

Also in California, as part of University of California (UC)'s effort to understand and address student food insecurity, another group of researchers conducted 11 focus

group interviews across four student sub-populations at UC Los Angeles, involving 82 students.(37) Unifying themes that emerged from the focus group interviews included campus food environment not meeting student needs, a desire for practical financial and food literacy "life skills" training, and skepticism about the university's commitment to adequately address student basic needs.(37) The authors suggest there is an opportunity for the university to strengthen food security through food-literacy training, among other strategies.(37)

Another study conducted by University of California Davis found that student awareness of campus programs and benefits which enhance the ability to access nutritious foods is not uniform.(38) The task force survey revealed that nearly 30% of respondents were not aware of resources available to them.(38) Accessibility and acceptability of the programs available to students can be enhanced further by examining ways to reduce the stigma associated with their use, which may involve physical location, staffing hours, marketing focus, and practical food-literacy information being provided.(38) Undergraduate students at the University of California further indicated, as shown through another report, the need for stronger communication and awareness building, especially among freshmen and transfer students.(39) The study also pointed to loan-aversion and increased financial literacy as areas to focus on in the future.(39)

According to the World Health Organization (WHO), food knowledge and skills are not sufficient in themselves to ensure proper nutritional intake.(40) The WHO asserts that access to good, affordable food makes more difference to what people eat than education does.(40) It is thus essential that food-awareness strategies on campus work in conjunction with other parts of the solution to secure long-term and meaningful strengthening of student food security at McMaster University.

Questions to consider

Overarching question to consider
- How could we increase students' awareness of existing resources that support food security?

Additional questions to consider
- What features of an awareness strategy would enable it to be impactful?
- How could we dismantle the "starving student stereotype" and elevate food security as an urgent topic amongst students?

- How could we promote more holistic discussions on food security that touches upon broader socio-cultural contexts (e.g., financial, governmental, economic concerns)?
- Who should be involved in increasing students' awareness of existing resources?
- How could an awareness strategy cater to McMaster University's diverse student body comprising students who show different levels of engagement on campus?

Implementation Considerations

It is important to consider what barriers we may face if we implement the proposed elements of a potentially comprehensive approach to address the problem. These barriers may affect different groups such as students, food-service providers, and the University. While some barriers could be overcome, others could be so substantial that they force a re-evaluation of whether we should pursue that element. Some potential barriers to implementing the elements are summarized in Table 1.

Table 1: Potential barriers to implementing the elements

Element	Description of potential barriers
Element 1 – Reshape existing payment models for student expenses (e.g., students can pay tuition or residence fees in instalments throughout the semester rather than upfront)	• Currently, there is a lack of research or 'best practice' model for an analogous program in the Canadian post-secondary context. Thus, establishing the program could be a strenuous process, and the effects of the program are unknown. • Reshaping payment models may require close collaboration between many different University departments, which can pose difficulties especially because University departments have a large variety of other responsibilities. • A lack of universal eligibility to the flexible payment program could stigmatize students who are eligible for the new system. • There may also be difficulties in determining which students are eligible for flexible payment plans and which students are not eligible. • A flexible payment program that allows students to pay their fees at different times throughout the year may have financial implications for McMaster University because the institution currently operates within a model structured to expect upfront payments. • The program could help alleviate student financial precarity, but may not directly translate to increased food security in all cases, due to other factors including lifestyle factors, lack of food literacy, or other expenses.
Element 2 – Establish a monitoring and evaluation strategy for indicators of food security on campus	• Food-security monitoring surveys may have limited participation from students who may perceive them as an added responsibility in addition to other academic commitments. • Individuals who utilize food-security services on campus may hold concerns about their confidentiality. • Food-security monitoring strategies which ask participants to rank or classify their experiences on numerical scales may additionally contribute to the minimization of students' experiences of food insecurity, and may additionally hinder students from reaching out for help. • Extensive time and financial resources may be required to strengthen existing infrastructure for monitoring and evaluation of food-security initiatives. • Establishing an evaluation and monitoring strategy, developing a rapid-feedback look and integrating this feedback into existing policies, programs and services may be a big disruption to day-to-day operations for campus stakeholders. Huge administrative shifts required by this element may hinder stakeholder abilities to implement a monitoring and evaluation strategy. • This element may require collaboration and coordination across multiple stakeholders across campus. • Limited awareness about the severity and prevalence of food insecurity on campus may hinder student and stakeholder engagement in the implementation of a food-security monitoring and evaluation strategy.

Element 3 – Create a campus food-security awareness strategy to inform students of existing initiatives to support food security	• Academics are often prioritized over food-related concerns amongst University students, so that the latter is often given low-priority.
	• There is a prevalent "starving student" stereotype that normalizes student food insecurity, which could make students less engaged in a campus-wide food-security awareness strategy.

The implementation of each of the three options could also be influenced by the ability to take advantage of potential windows of opportunity. A window of opportunity could be, for example, a recent event that was highly publicized in the media, a crisis, a change in public opinion, or an upcoming election. A window of opportunity can facilitate the implementation of an element.

Examples of potential windows of opportunity
- In 2019, McMaster University initiated the McMaster Campus Food Council (MCFC), which convenes stakeholders representing different viewpoints and expertise to strengthen food security at McMaster University. The MCFC may serve a critical role in overseeing the implementation of the aforementioned elements.
- In 2019, The Okanagan Charter put out a call for ideas to advance student well-being and health at McMaster University. Up to $5,000 may be available for funding special projects. This opportunity may be leveraged to support the development of infrastructure necessary to advance student food security.
- The Student Wellness Centre is working with The Okanagan Charter to implement a section on evaluating campus food security in the National College Health Assessment, a survey last administered in 2019. This survey may be utilized as a stepping stone to establishing a comprehensive food-security monitoring and evaluation strategy.
- Initiatives which support health, sustainability, affordability, and poverty can lead to broader impacts that strengthen food security. Similarly, food offers an opportunity to simultaneously address other social issues, such as by advancing student mental health, lowering the risk of chronic illness, and addressing climate change through sustainable food practices.
- As new physical spaces are designed and constructed on campus, opportunities to create choice environments which enable healthy eating practices and prompt students to make healthier food decisions emerge.

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Merit review

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Appendices

Appendix 1: Systematic reviews relevant to Element 1 – Reshape existing payment models for student expenses

Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that focused on measuring food security among University students
[Assessing the cost-effectiveness of primary care and specialized ambulatory care provided by nurse practitioners](#)	This review included fifty-seven studies exploring methods used to measure the severity and prevalence of food insecurity in Australia as well as the impact of existing food security interventions. There are several approaches which have been mobilized by researchers in evaluating food insecurity. These include the United States Department of Agriculture (USDA) Household Food Security Survey Module (HFSSM), the Food Insecurity Experience Scale (FIES), the Australian National Health Survey (NHS), and the Radimer/Cornell Food Security Scale. While nearly two thirds of the studies utilized the qualitative methods, such as the aforementioned surveys, other studies measured food security through interviews, focus groups and photo voice. The findings of this review suggest that single-item measures for food security may underreport the severity and prevalence of this issue. Multi-item tools generally demonstrate strong reliability due to greater sensitivity. This review additionally suggests that tools with a 12-month reference period may be also be limited in their ability to effectively evaluate transitory food insecurity. The authors additionally emphasize the importance of assessing the following four dimensions of food security: availability, the presence of food at all times; access, the presence of resources required to access food; food utilization, the preparation and consumption of safe and healthy meals; and stability of food security over time. The authors further underline the importance of developing tools which are applicable to local context. This may include evaluating several population-level factors in determining estimates for food security. These considerations include: ●the presence of food deserts and their impact on food security; ●barriers in transporting food; ●availability of food in certain regions, specifically remote areas;	N/A	8/10 (AMSTAR rating provided by McMaster Health Forum)	0/18	0/18

	● the characteristics of the food retail environment; ● availability of culturally-relevant foods; and ● the influence of welfare/employment systems on food security.			

Appendix 2: Systematic reviews relevant to Element 2 – Establish a monitoring and evaluation strategy for food security on campus

Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that focused on measuring food security among University students
Measuring and understanding food insecurity in Australia: A systematic review	This review included fifty-seven studies exploring methods used to measure the severity and prevalence of food insecurity in Australia as well as the impact of existing food security interventions. There are several approaches which have been mobilized by researchers in evaluating food insecurity. These include the United States Department of Agriculture (USDA) Household Food Security Survey Module (HFSSM), the Food Insecurity Experience Scale (FIES), the Australian National Health Survey (NHS), and the Radimer/Cornell Food Security Scale. While nearly two thirds of the studies utilized the qualitative methods, such as the aforementioned surveys, other studies measured food security through interviews, focus groups and photo voice. The findings of this review suggest that single-item measures for food security may underreport the severity and prevalence of this issue. Multi-item tools generally demonstrate strong reliability due to greater sensitivity. This review additionally suggests that tools with a 12-month reference period may be also be limited in their ability to effectively evaluate transitory food insecurity. The authors additionally emphasize the importance of assessing the following four dimensions of food security: availability, the presence of food at all times; access, the presence of resources required to access food; food utilization, the preparation and consumption of safe and healthy meals; and stability of food security over time.	N/A	5/10 (AMSTAR rating provided by McMaster Health Forum)	0/57	4/57

	The authors further underline the importance of developing tools which are applicable to local context. This may include evaluating several population-level factors in determining estimates for food security. These considerations include: • the presence of food deserts and their impact on food security; • barriers in transporting food; • availability of food in certain regions, specifically remote areas; • the characteristics of the food retail environment; • availability of culturally-relevant foods; and • the influence of welfare/employment systems on food security.				
Literature and Best Practices Review: Measuring Food Insecurity at the University of British Columbia	This review included 40 studies exploring tools used to measure food insecurity in post-secondary settings and aimed to inform University of British Columbia's (UBC) efforts in meeting food and nutrition targets under the UBC Wellbeing Strategic Framework. Of these studies, 35 utilized the USDA or Canadian Household Food Security Survey Module (HFSSM) to some extent in aims to assess food security. The HFSSM is one tool that has been adopted by the University of British Columbia (UBC) since 2019 in an institutional student health and wellbeing survey to evaluate campus food security. In the aforementioned studies, the USD and HFSSM tool were often adapted to meet local university context. Within the scope of recall period, 4 studies changed the tool to a 30-day recall period, 3 studies adapted to a three to nine-months and 33 studies kept the original twelve-month period. For certain studies which maintained a twelve-month recall period, first year students were not eligible to participate in that their experiences in the past year did not take place during their time as a university student. The majority of included studies exclusively included undergraduate and graduate students. Of the 40 studies, the majority of included studies exclusively included undergraduate and graduate students. Only two included experiences of staff and faculty as well. Some studies additionally prompted survey participants to complete the questions through either an individual or household perspective. Almost all of the surveys were self-reported and administered online.	N/A	N/A	8/40	40/40

Information collected through the surveys included but was not limited to:
- standard food insecurity tool questions;
- demographic information;
- utilization of food banks;
- self-reported mental health;
- academic standing;
- funding and finances;
- registration in meal plan programs; and
- housing.

While the USDA or Canadian HFSSM are validated and reliable tools for assessing food security in general populations, they have never been validated in post-secondary settings. Authors additionally emphasize the limitations of the HFSSM in that it only evaluates economic access to food, and fails to assess accessibility, availability, affordability and food production.

This review additionally underlines the importance of utilizing the full 18-item USDA and Canadian HFSSM tools rather than their shorter versions in order to adequately capture all experiences of food insecurity and to support a nuanced understanding of this issue.

Appendix 3: Systematic reviews relevant to Element 3 – Create a campus food-security awareness strategy to inform students of existing initiatives to support food security

Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that focused on measuring food security among university students
Assessing the effectiveness of tailored nutrition education for adults	This review included 16 studies searched through 11 databases and relevant bibliographies. Meta-analysis was conducted from 15 trials and narrative review was conducted from five trials. The quality of the included studies was moderate to good.	2007	9/11 (AMSTAR rating provided by McMaster	1/16	Not specified

	The included studies had male and/or female participants 18 or older, and used a variety of measurement tools including: a food frequency questionnaire (FFQ), dietary history method, 3-day diet record, and supermarket sales receipts. Included studies had varying follow-up times including 6 months, 12 months, and over 12 months. Tailored nutrition education used frameworks including but not limited to: current diet, food purchases, nutrition knowledge, perceived adequacy of nutrient intake, dietary preferences, occupation, anthropometry, demographics, health concerns and behaviors, diabetic profile, environment and social support. The outcome measures were fruit and vegetable intake per day and percentage of energy consumed from total fat. Tailored nutrition education was found to be more effective than generic nutrition education in improving the diets of adults over the long term. Long-term was defined as a period of time equal to or greater than 6 months. The inadequacy of reporting research design and methods was a potential limitation.		Health Forum)		
Understanding the impacts of school-based, peer-led nutrition education initiatives	This review included 17 Canadian and American studies from 11 unique school-based nutrition education initiatives, searched through PubMed, Scopus, ERIC, and Google Scholar. These studies included education initiatives at the primary school, high school, and university levels. Examples of identified programs included: high school students performing education sessions in primary schools, education provided to undergraduate students by same-age university peers or a registered dietitian, and teacher-led workshops for primary school students. Most studies used a control group: either non-participants from the same school or nearby non-participating schools. Common outcome measures included healthy eating knowledge (n= 5), self-efficacy or attitudes towards healthy eating (n =13), dietary measures (n=9), and body mass index (n =4). The duration of intervention lasted from a few weeks to an entire academic year.	2014	5/10 (AMSTAR rating provided by McMaster Health Forum)	5/17	1/17

	All of these outcomes tended to improve as a result of the interventions. Programs were generally well received but the positive effects mostly did not persist over the long-term (ie. 3- 24 months). Three studies reported a dose-response relationship for varying levels of involvement with the programs.				
Assessing the impact of school-based nutrition education programs that incorporate technology on the acquisition of nutrition-related knowledge and behavior change of adolescents	This review included 13 studies identified through Cochrane Library, Pubmed, Scopus, Science Direct, and Web of Science databases. The studies included adolescent boys and girls 12 to 18 years old. Examples of programs that involve technology-based school interventions included: web-based games, video sessions with individual tailored feedback, and SMS based diary and feedback facilitated by a dietician. Control groups included regular nutrition education, other generic information leaflets, or no intervention. The length and frequency of the intervention varied from just one exposure to several exposures daily over many months. Outcome measures included nutrition knowledge, fat intake, dietary behaviour, fruit and vegetable intake, and brown bread consumption. All studies except for one demonstrated that the intervention showed at least one positive effect. Interestingly, two studies highlighted the importance of providing tailored education, based on previous analysis of the participant, to achieve better results. However, these results did not persist over the long-term when measured some time after the intervention concluded.	2018	7/10 (AMSTAR rating provided by McMaster Health Forum)	1/13	0/13

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