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# The Diet of Adults in Québec and Canada in the Context of the COVID-19 Pandemic

SYNTHESIS OF KNOWLEDGE



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Direction du développement des individus et des communautés

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## Highlights

This synthesis of data aims to inform decision-makers and stakeholders about changes in the diets of adults in Québec and Canada during the pandemic and to guide subsequent work to promote healthy eating in the current context and for years to come. For around half the themes examined, the data was insufficient to draw conclusions. For the other half of the themes identified, while the data represent self-reported perceptions of change and are based on small non-probability and/or non-representative samples, some conclusions could be drawn.

The available data suggest that some adults in Québec and Canada changed their food intake and eating habits, while others maintained theirs, during the first year of the pandemic. Certain changes promoted health while others adversely affected it:

- ▶ While 10%–25% of respondents indicated that they were eating more fruits and vegetables, around 10%–20% indicated that they were eating less. The majority (65%–70%) reported consuming the same amount. The proportion of adults who increased their consumption of fruits and vegetables is larger than the proportion who lessened theirs in all studies reporting these two proportions.
- ▶ Half of the respondents indicated having maintained their consumption of junk food during the pandemic. The other half reported either increasing (20%–35%) or reducing (15%–25%) theirs.
- ▶ While 20%–75% of respondents reported meal planning and cooking more often, less than 15% reported cooking less often, and 25%–70% cooking as often as before the pandemic.
- ▶ Overall, in all studies on the habit of snacking, the proportion of respondents who indicated snacking more was greater (10%–40%) than those who snacked less during the pandemic (5%–20%).

It appears that proportionally more young adults changed various parameters of their diet compared to older adults. In general, a greater proportion of older adults than young adults reported having a similar diet to before the pandemic:

- ▶ A greater proportion of young adults (43%–48%) than older adults (2%–36%) indicated consuming more junk food than before the pandemic. The proportion of young adults who reported a reduction in their consumption of junk food (12%–17%) appears to be slightly lower than that of older adults (14%–29%). In all surveys, more young adults reported having increased their consumption of junk food than reported having reduced it (43%–48% vs. 12%–17%).
- ▶ Young adults are proportionally the largest age group who cooked more before the pandemic.

Due to insufficient data, it was not possible to determine whether the nutrition inequities present before the pandemic were exacerbated during the pandemic. Considering the increase in food insecurity, a condition that is inversely associated with diet quality, it would be pertinent to validate the hypothesis that pre-existing differences have been aggravated during the pandemic.

The limitations of the data derived from rapid dietary assessment during the pandemic, such as those presented in the studies examined, demonstrate the importance of developing a monitoring system for Quebecers' diets using frequent representative population surveys that use validated methods for collecting data on food intake.

It is crucial to continue actions that aim to maintain and develop healthy diets and improve the quality of food environments. These interventions must specifically benefit individuals affected by the nutrition inequities present before the pandemic as well as young adults. New initiatives could be implemented, especially if the hypothesis that nutrition inequities were exacerbated during the pandemic is confirmed by new data.

## Summary

This knowledge synthesis aims to inform decision-makers and stakeholders about changes in the diets of adults in Québec and Canada during the pandemic and to guide subsequent work to promote healthy eating in the current context and for years to come. An examination of the Québec and Canadian data was carried out to this end.

### Literature review

A review of the scientific and grey literature was carried out in March and April 2021 using keywords related to the concepts of eating habits, healthy life habits, obesity, and COVID-19. Over 40 publications, produced by 18 institutions and research groups (referred to hereafter as research groups) studying the food intake and eating habits of Quebecers and/or Canadians during the pandemic, were identified.

### Results

#### DESCRIPTION OF THE IDENTIFIED PUBLICATIONS

Most studies collected their data in the first six months of the pandemic. Several diet parameters were studied: diet quality, the quantity of food consumed, fruit and vegetable consumption, junk food consumption, meal planning, and cooking, skipping one of the main meals, pausing to eat, ordering takeout, and finally, snacking.

No studies focused on children and adolescents specifically, but data on these age groups were available in the studies by Carroll et al. and El-Gabalawy and Sommer (Carroll et al., 2020; El-Gabalawy and Sommer, 2021).

The collected data are self-reported, and the vast majority qualitatively describe changes in food intake or eating habits during the pandemic in comparison to before. The majority of studies reported dietary changes by proportions of individuals who maintained, decreased, or increased an aspect of their diet. The type of data provided in these studies does not make it possible to determine the intensity of a change for an individual (i.e., whether the person consumes, for example, a little more fast food or a lot more fast food), or to quantitatively compare food intake during the pandemic with food intake before the pandemic (e.g., the quantity of food consumed). Only two studies used a validated method for measuring food intake: a food frequency questionnaire and 24-hour dietary recalls administered three times. These two studies also compared intake measured during the pandemic to pre-pandemic intake.

The use of perception data on diet and the limited number of studies on certain themes limit the use of this data. Data on the themes of “diet quality”, “skipping one of the main meals”, “pausing to eat”, and “ordering takeout”, are too under-researched to establish findings. Only the findings on theme studied by three or more research groups are reported in this summary and the table summarizing results from the knowledge synthesis, as similar results from multiple research groups yield greater confidence.

## CHANGES IN FOOD INTAKE

Overall, three trends were observed: a majority of adult respondents from Québec and Canada indicated having maintained their food intake, and smaller proportions of individuals reported having decreased or increased some of their intake.

More specifically, 30%–40% of respondents indicated having increased the quantity of the food they consumed, irrespective of the quality of this food. The proportions of respondents who maintained or decreased the quantity of food consumed were not systematically reported by the authors who studied this theme. These proportions therefore cannot be reported.

Regarding consumption of fruits and vegetables, a majority of respondents (65%–70%) reported consuming an equal amount during the pandemic. The other respondents reported having increased (10%–25%) or decreased (10%–20%) their consumption. In all studies that examined this theme, the proportion of respondents who reported having increased their consumption was always higher than that reporting a reduction.

For junk food consumption, three trends are also present. A little more than half the respondents (48%–60%) indicated having maintained their junk food consumption. The other half of respondents reported a change: 20%–35% of adults in Québec or the rest of Canada indicated having increased their consumption of junk food, while 15%–25% indicated having decreased theirs. We cannot determine which, between the increase and the decrease of junk food consumption, is the most prevalent change as the examined studies present opposite findings.

## CHANGES IN EATING HABITS

Between 20% and 75% of respondents reported meal planning and cooking more often, while a small proportion cooked less often (15% or less) and planned meals less often (16%) during the pandemic. Around 25%–70% of respondents indicated cooking as often as before the pandemic. We are unable to determine if more individuals overall cooked more than or as often as before the pandemic as half the studies report one finding while the other half report the opposite.

Finally, some people, according to their perception, appear to have snacked less during the pandemic (approx. 5%–20%), while 10%–40% indicate having snacked more. The data is insufficient to establish the proportion of individuals who indicated having snacked equally. In all studies addressing this habit except for one, there were more individuals who snacked more often during the pandemic than those who snacked less often.

**Table 1** Summary of the proportion of adults reporting maintained or changed food intake or eating habits

Themes	Increased	Maintained	Decreased
Quantities consumed	30%–40%	Insufficient data	Insufficient data
Fruit and vegetable consumption	10%–25%	65%–70%	10%–20%
Junk food consumption	20%–35%	50%–60%	15%–25%
Meal planning and cooking	20%–75%	25%–70%	10%–15%
Snacking	10%–40%	Insufficient data	5%–20%

## CHANGES ACCORDING TO DIFFERENT SOCIO-DEMOGRAPHIC CHARACTERISTICS

A limited number of research groups examined the differences according to socio-demographic characteristics. Food intake and eating habits appear to have changed differently according to age during the pandemic. Young adults generally differ from their older counterparts as it appears that fewer of them, proportionally, maintained stability in their intake and habits. Nevertheless, due to the limited number of research groups to have addressed the theme, these are preliminary findings that need to be corroborated by further studies. Only the themes “junk food consumption” and “meal planning and cooking” were studied by an adequate number of research groups for findings to be presented.

A greater proportion of young adults (43%–48%) than older adults (2%–36%) indicated consuming more junk food than before the pandemic. The proportion of young adults who reported a reduction in their junk food consumption appears to be lower than that of older adults (12%–17% vs. 14%–29%). In all surveys, more young adults reported an increase in their junk food consumption than those who reported a decrease. Young adults are also proportionally the largest age group who cooked more.

Other characteristics (sex, education level, material deprivation index of the neighbourhood, region of residence, household size, immigration status, and employment status) were examined by a limited number of research groups to assess whether they were related to differences in changes in intake and habits. For each characteristic, the data are contradictory or insufficient, preventing any conclusions from being drawn. Other studies should examine the differences according to socio-demographic characteristics.

## Main strengths and limitations of the collected data and the synthesis

At the time of writing this document, to our knowledge, no other knowledge synthesis has been published on the changes that have occurred to the diets of adults in Québec and the rest of Canada during the COVID-19 pandemic.

The data presented in this report must be interpreted in light of their limitations. The samples from Québec and the rest of Canada in the studies reviewed vary in size (i.e., from 125 to 10,004 participants), and the majority of them are not representative of the general population (e.g., university students, secondary school students, families, older adults). The majority of data collected were also collected in the first six months of the pandemic, and most of the results are based on perceptions of change self-reported by participants. These results only allow for a qualitative description of the changes to food intake and eating habits, without providing information on the intensity of their increase or decrease. In addition, with this type of data, it is not possible to make a quantitative comparison of food intake during the pandemic with pre-pandemic food intake. Certain themes were studied by several research groups, while others were studied by only one or two groups. Considering the limitations of the data, it is risky to rely on the results of a small number of studies. Accordingly, only themes studied by three or more research groups that present consistent data were used to issue findings.

For the aforementioned reasons, the proportions of individuals reported in this document give an approximation of the situation and should be confirmed by studies using validated data collection methods. The present findings should therefore be used with caution when implementing actions.

## Interpretation of the data

The available data suggest that the food intake and eating habits of certain adults in Québec and the rest of Canada changed, either increasing or decreasing, in the first year of the pandemic. However, on the whole, the majority of individuals maintained their food intake or eating habits. These findings are consistent with those from international studies.

While it remains to be confirmed, it appears that the food intake and eating habits of a larger proportion of young adults than older adults have changed. It will be important to monitor the diets of young adults to better identify the changes that have occurred and determine whether they will be maintained long term.

In 2015, the data from a Québec population survey demonstrated nutrition inequities according to certain socio-demographic characteristics (Plante, Blanchet, et al., 2019; Plante et al., 2020, 2021). The consumption of fruits and vegetables and sugary drinks varied by income, education level, and food insecurity. Yet, few of the studies reviewed here focused on diet during the pandemic according to socio-demographic characteristics, which is why it is not possible to determine whether nutrition inequities were exacerbated during the pandemic. Due to the increase in food insecurity, we can nonetheless imagine that the nutrition inequities that existed before the pandemic are still present.

The limitations of the data derived from rapid dietary assessment of diets during the pandemic, such as those used in the studies examined, demonstrate the importance of developing a monitoring system for Quebecers' diets using frequent representative population surveys that use validated methods for collecting data on food intake.

## Conclusion

Several researchers (Bhutta et al., 2020; Kluge et al., 2020; Zupo et al., 2020) and international organizations (CDC, 2020; NCD Alliance, 2020; WCRF, 2020; World Obesity, 2020) have emphasized the importance of continuing interventions during the pandemic to prevent an increase in the population's average weight and in chronic diseases.

It is essential to continue actions already underway that aim to maintain and develop healthy diets and to improve the quality of food environments. These interventions must specifically benefit individuals affected by the nutrition inequities present before the pandemic, as well as young adults. New initiatives could be implemented, especially if the hypothesis that nutrition inequities were exacerbated during the pandemic is confirmed by new data.

## Context

The context of the pandemic and the measures put in place to curb the spread of COVID-19<sup>1</sup> may have led to changes in lifestyle, such as diet. A possible deterioration in the diet of Quebecers may have a long-term impact on the population's health. Even before the pandemic, many Quebecers' diets did not meet the healthy eating recommendations of Canada's Food Guide 2007 (Santé Canada, 2011 [references in French]). The World Health Organization (WHO) recognizes a poor-quality diet as one of the main causes of chronic disease and mortality (WHO, 2002, 2020).

### Overview: Quebecers' diets before the pandemic

Before the pandemic, many Quebecers' diets did not meet the healthy eating recommendations of Canada's Food Guide 2007 (Santé Canada, 2011) and differed according to specific socio-demographic characteristics.

Québec data, including those issued by the latest Canadian Community Health Survey (CCHS) from 2015, show excessive consumption of free sugars (Bergeron et al., 2019; Moubarac and Batal, 2016; Plante et al., 2020) and sodium (Plante et al., 2019) by Quebecers. In addition, a little over eight out of ten adults do not consume the minimum portion of fruits and vegetables recommended for their age group by Canada's Food Guide in effect, the 2007 edition (Plante, Blanchet, et al., 2019). When analyzed by the degree of processing, the food intake data from the 2015 CCHS revealed that nearly half (48,9%) of the daily energy intake of Quebecers aged two and up comes from ultra-processed foods (Moubarac et al., 2017). According to the Québec Public Health Survey (QPHS), in 2014–2015, 19% of the Québec population consumed sugary drinks once or more a day (Infocentre de santé publique, 2017).

Nutrition inequities were present before the pandemic. The intake of certain nutrients and the consumption of fruits and vegetables and sugary drinks varied by income, education level, and food insecurity (Plante, Blanchet, et al., 2019; Plante et al., 2020, 2021).

The pandemic and the health measures put in place to curb the spread of COVID-19 have affected the living conditions and daily lives of Quebecers (Dionne, Dubé, et al., 2021), which may have changed their eating habits. For example, during the pandemic, some individuals lost all or part of their employment or income (Statistique Canada, 2020, 2021), reducing the income available to feed themselves. For these individuals, this may have led to a deterioration in certain parameters of their diet and its overall quality (e.g., consumption of junk food and sugary drinks, increase in snacking on foods with low nutritional value, excessive energy intake, etc.). During the pandemic, a significant proportion of the Québec population did not have enough food to eat or were worried about not having enough to eat. In April 2020, a quarter of adults in Québec (26%) were living in food-insecure households (Plante and Paquette, 2021). This proportion then gradually decreased, stabilizing at 17%–19% between August 2020 and April 2021 (Plante and Paquette, 2021). This proportion was higher than in 2015–2016 when 11% of Québec households were food insecure according to a population survey conducted using a different methodology (INSPQ, 2020; Plante and Paquette, 2021).

<sup>1</sup> The state of health emergency was declared in Québec on March 13, 2020.

A deterioration in the mental health of some Quebecers, especially of young adults, was observed during the pandemic (Dionne, Roberge, et al., 2021). Some researchers suggest that a deterioration in mental health during the pandemic would partially explain the dietary changes observed (Arora and Grey, 2020; Bennett et al., 2021; Bertrand et al., 2021; Charlebois and Music, 2021; Chee et al., 2020; Clemmensen et al., 2020; Zupo et al., 2020). For some individuals, the pandemic is associated with increased stress, anxiety, feelings of boredom, isolation, and a loss of motivation. This situation may explain an increase in snacking and energy intake, as well as less healthy food choices and a diet less attuned to the signs of hunger and satiety (Arora and Grey, 2020; Bennett et al., 2021; Bertrand et al., 2021; Charlebois and Music, 2021; Chee et al., 2020; Clemmensen et al., 2020; Zupo et al., 2020). Researchers have noted that stress, depression, and anxiety can lead to the consumption of foods higher in sugar and fat (Cuschieri and Grech, 2020; Mattioli et al., 2020; Polivy and Herman, 2005).

The pandemic has also impacted access to food, which may have caused favourable or unfavourable changes in diet. The measures aiming to limit the spread of the pandemic (closing non-essential businesses and implementing a curfew) were cited as a partial explanation for the reduced consumption of food eaten outside the home (Lamarche et al., 2021). The reduced access to restaurant meals and fast food may have also contributed, for certain individuals, to an increase in time spent cooking (Bennett et al., 2021), which may have improved their quality of diet (Bennett et al., 2021; Ghorbal, 2021; Lamarche et al., 2021). More frequent consumption of home-cooked meals is linked to a better-quality diet (Lam and Adams, 2017; Mills et al., 2017; Wolfson et al., 2020). Other authors note that increased time spent at home has facilitated access to food and increased individuals' exposure to food in their food pantry, which they believe may have stimulated impulsive food consumption for some individuals (Clemmensen et al., 2020).



## Objectives and target audiences

To anticipate the potential effects of the pandemic on Quebecers' health, it is important to gather and analyze available dietary data. Several surveys and studies examining diet during the COVID-19 pandemic were conducted in Québec and the rest of Canada.

The objective of the present knowledge synthesis is to identify and document the data on the food intake and eating habits of Quebecers and other Canadians during the pandemic. Given pre-existing nutrition inequities, differences according to certain socio-demographic characteristics were examined.

This exploratory portrait aims to inform public health decision-makers and stakeholders about the changes in diet that have occurred during the pandemic. It also aims to guide dietary monitoring and actions to promote healthy eating in the current context and years to come.

This publication is divided into four sections. It begins with a description of the literature review and review process. Next, the results section details the data on changes in food intake and eating habits, and also the differences according to various socio-demographic characteristics. Finally, this synthesis presents an interpretation of the results and a conclusion.



## Methodology

This literature review identified data on food intake and eating habits from Québec and/or Canadian samples. National data and data from provinces other than Québec were also included in the review to create a more complete portrait. A literature search was conducted in the scientific and grey literature to retrieve this data.

The review of the scientific literature published in English or French was performed on March 1, 2021, with the assistance of a librarian. The literature review flow chart is presented in Appendix 1. Five bibliographic databases were examined (e.g., MEDLINE, Embase, Global Health) using keywords related to the following concepts: eating habits, healthy lifestyle habits, obesity, and COVID-19 (Appendix 2). The research targeted primary studies from Québec and the rest of Canada to gather empirical data. The research strategy was also designed to target literature reviews and international meta-analyses on the theme in order to enhance the interpretation of the data. More specifically, to be selected, the publications needed to document the food intake or eating habits of a sample of people in Québec or in Canada during the COVID-19 pandemic or to address diet during this period in the form of a review or meta-analysis. This search generated 578 results after deduplication—i.e., the removal of duplicate publications—eight of which were considered pertinent (Bertrand et al., 2021; Carroll et al., 2020; Chee et al., 2020; Chew and Lopez, 2021; El-Gabalawy and Sommer, 2021; Lamarche et al., 2021; Zajacova et al., 2020; Zupo et al., 2020).

Six additional articles were identified using complementary strategies. Three scientific articles that met our inclusion criteria were identified through the scientific watch carried out by the INSPQ since April 2020 on the indirect impacts of COVID-19, including on diet (Bennett et al., 2021; Cuschieri and Grech, 2020; Jantzen et al., 2020). A summary of the research strategy for this watch is presented in Appendix 2. Finally, three other scientific articles that met our criteria (Arora and Grey, 2020; Clemmensen et al., 2020; Jantzen et al., 2020) were identified in the bibliography of one of our previous publications on a related theme (Durette et al., 2021).

A search of the grey literature was conducted from April 9 to 12, 2021, with the support of a librarian. The databases Santécom, CUBIQ, and the Federal Science Libraries Network, as well as Google and the custom search engine OPHLA, were surveyed. The websites of universities in Québec and across Canada ( $n = 12$ ), and those of healthcare and public health associations not covered by OPHLA ( $n = 5$ ) were also examined. A search strategy integrating keywords related to food intake, eating habits, and the COVID-19 pandemic was used (Appendix 2). A total of 24 publications from the grey literature that met the inclusion criteria were identified using this bibliographic search strategy.

In addition, three publications that met our criteria (ASPQ, 2020; Cloutier et al., 2020; Gouvernement du Canada, 2020) were identified by consulting the bibliography of one of our previous publications (Durette et al., 2021). Finally, nine additional publications that meet the inclusion criteria are INSPQ publications on which we collaborated (INSPQ, 2020a, 2020b, 2020c, 2021a, 2021b, 2021c, 2021d, 2021e, 2021f, 2021g).

In total, 50 publications from the scientific and grey literature were identified through a literature search. More specifically, 42 publications, produced by 18 institutions or research groups, contained data on the food intake and eating habits of Quebecers and/or Canadians from other provinces collected during the pandemic. In addition to these 42 publications, eight narrative reviews or literature reviews presenting international findings were selected. These international reviews were used to formulate hypotheses that may explain dietary changes and to provide an international comparison to the findings from the Québec and Canadian data (Arora and Grey, 2020; Bennett et

al., 2021; Chee et al., 2020; Chew and Lopez, 2021; Clemmensen et al., 2020; Cuschieri and Grech, 2020; Mattioli et al., 2020; Zupo et al., 2020).

## Review process

Three reviewers external to the project, one from academia, one from the field of practice, and one from dietary monitoring, reviewed a pre-final version of the document as per the INSPQ's external review framework (Robert and Déry, 2020). The reviewers used an institutional grid covering the conceptual approach, methodology used, ethical issues, scope, conclusions of the synthesis, completeness of the information, and the clarity of the information's presentation to provide their comments. The comments were compiled in a table listing their nature and whether they are to be integrated into the text. As the reviewers were asked to comment on the pre-final version of this synthesis, they have neither reviewed nor endorsed the final content.

## Results

### Description of the identified publications

The literature review yielded 42 publications from Québec or elsewhere in Canada, produced by 18 research groups. Some groups conducted several iterations of their survey, which is why the term “research group” is preferred for reporting the results. A table presenting the characteristics of the selected articles and publications is available in Appendix 3.

The analysis of the selected publications reveals that four themes related to food intake have been studied: diet quality, quantities of the food consumed, fruit and vegetable consumption, and junk food consumption (see Table 2). Studies of eating habits are divided into five themes: meal planning and cooking, skipping one of the main meals, pausing to eat, ordering takeout, and snacking (see Table 2).

The majority of dietary data were collected in the first six months of the pandemic through one-time surveys with non-probability samples (see Appendix 3). Only 12 surveys and studies out of 42 were carried out more than six months after the start of the pandemic (INSPQ, 2021a, 2021b, 2021c, 2021e, 2021f, 2021g; Canseco, 2021; Charlebois et al., 2021; Charlebois and Music, 2021; Durif and Boivin, 2020; Gallais et al., 2021; Jedwab, 2020).

The surveys and studies included also generally contained questions on themes other than diet, e.g., health behaviours, lifestyle habits, the pandemic context, food insecurity, mental health, etc.

The data collected are self-reported and the vast majority of these data qualitatively describe the proportion of individuals who have reported maintaining, increasing, or reducing food intake or eating habits during the ongoing COVID-19 pandemic. The nature of these data makes it impossible to quantify the magnitude of these changes or make an objective comparison with the pre-pandemic situation. Only two studies used a validated method to measure food intake: a 24-hour dietary recalls administered three times (Lamarche et al., 2021) and a food frequency questionnaire (Bertrand et al., 2021). These intakes were compared quantitatively to intakes either measured before the pandemic or reported retrospectively. The time between data collection and publication of results was, in most cases, very short, which likely explains why the near-totality of studies that we identified used rapid collection methods rather than validated measures, which are more complex to use.

Sample sizes vary from 125 to 10,004 participants (see Table 2). The samples are mostly of the general adult population, while some include only university students (Bertrand et al., 2021), cégep students (Gallais et al., 2021), families (Carroll et al., 2020), or older adults (Jantzen et al., 2020). No studies specifically focusing on minors were identified. As such, their diet will not be addressed in this synthesis.

The samples in some studies are made up of Canadians from different provinces ( $n = 7$  research groups), while others only include residents of a single province (Québec [ $n = 8$ ], British Columbia [ $n = 1$ ], Ontario [ $n = 2$ , one of which is a study on Torontonians only], and Saskatchewan [ $n = 1$ ]; see Appendix 3). The participants in the various studies reside in various locations in Canada, which were, at the time of collection, subject to pandemic public health measures of varying types and intensities.

The quality of the studies and data is considered to be poor due to the methods used to collect dietary data (mainly online surveys) and the measurements of diet used (mainly participants' estimates of perceived change). The number of research groups who reported data on a given theme and the convergence of these data were taken into account to improve confidence in the results presented. Replicated results (i.e., convergent results from three or more research groups) yielded higher confidence. In some places in the text, an asterisk (\*) indicates that a result does not meet this criterion, meaning that the result must be reproduced by other studies before being used to implement actions. Only the results that meet this criterion are included in the highlights, summary, and table summarizing the results (Table 3).

**Table 2 Themes studied in the publications analyzed**

Themes (number of studies)	Publications	Summarized description of the studies	Data collection method (number of studies)	Measurements used (number of studies)
<b>Changes in food intake</b>				
<b>Diet quality (n = 5)</b>	(ASPQ, 2020; Boivin et al., 2020a, 2020b; Jantzen et al., 2020; Lamarche et al., 2021)	Québec samples. Varying sample sizes from 853 to 8,137 participants.	One-time questionnaire (n = 2) Recurrent questionnaire (n = 2) Prospective cohort (n = 1)	Perception of change (n = 4) 24-hour dietary recall administered three times and calculation of HEI score (n = 1)
<b>Quantities consumed (n = 6)</b>	(Bertrand et al., 2021; Boivin et al., 2020a, 2020b; Carroll et al., 2020; Jantzen et al., 2020; Jedwab, 2020)	Samples from Québec, Saskatchewan, Ontario, and Canada. Varying sample sizes from 125 to 8,137 participants.	One-time questionnaire (n = 4) Recurrent questionnaire (n = 2)	Perception of change (n = 5) Food frequency questionnaire (n = 1)
<b>Fruit and vegetable consumption (n = 9)</b>	(Bertrand et al., 2021; Canseco, 2020; Carroll et al., 2020; INSPQ, 2020c, 2021a, 2021b, 2021c; Karamanoglu et al., 2020; Lamarche et al., 2021)	Samples from Québec, Saskatchewan, Ontario, and Canada. Varying sample sizes from 125 to 6,600 participants.	One-time questionnaire (n = 4) Recurrent questionnaire (n = 4) Prospective cohort (n = 1)	Perception of change (n = 7) 24-hour dietary recalls administered three times (n = 1) Food frequency questionnaire (n = 1)
<b>Junk food consumption (n = 12)</b>	(ASPQ, 2020; Carroll et al., 2020; El-Gabalawy and Sommer, 2021; Gallais et al., 2021; Gouvernement du Canada, 2020; INSPQ, 2020a, 2020b, 2020c, 2021a, 2021b, 2021c; Zajacova et al., 2020)	Lack of a consistent definition of junk food. Samples from Québec, Ontario, and Canada. Varying sample sizes from 254 families to 8,581 participants.	One-time questionnaire (n = 5) Recurrent questionnaire (n = 7)	Perception of change (n = 12)

**Table 2 Themes studied in the publications analyzed (cont'd)**

Themes (number of studies)	Publications	Summarized description of the studies	Data collection method (number of studies)	Measurements used (number of studies)
<b>Changes in food intake (cont'd)</b>				
<b>Deterioration in junk food and/or fruit and vegetable consumption (n = 1)</b>	(INSPQ, 2021d)	Sample of 6,660 adult Quebecers.	Recurrent questionnaire (n = 1)	Perception of change (n = 1)
<b>Increase in junk food consumption and decrease in fruit and vegetable consumption (n = 1)</b>	(INSPQ, 2021d)	Sample of 6,660 adult Quebecers.	Recurrent questionnaire (n = 1)	Perception of change (n = 1)
<b>Changes in eating habits</b>				
<b>Meal planning and cooking (n = 12)</b>	(Boivin et al., 2020a, 2020b; Canseco, 2020; Carroll et al., 2020; Charlebois et al., 2021; Cloutier et al., 2020; Dianat et al., 2020; Durif and Boivin, 2020; INSPQ, 2021e, 2021f, 2021g; Kaddatz and Badets, 2020)	Samples from Québec, Ontario, and Canada. Varying sample sizes from 254 families to 10,004 participants.	One-time questionnaire (n = 6) Recurrent questionnaire (n = 6)	Perception of change (n = 12)
<b>Skipping one of the main meals (n = 3)</b>	(INSPQ, 2021e, 2021f, 2021g)	Sample of 6,660 adult Quebecers; different participants in each survey.	Recurrent questionnaire (n = 3)	Perception of change (n = 3)
<b>Pausing to eat (n = 3)</b>	(INSPQ, 2021e, 2021f, 2021g)	Sample of 6,660 adult Quebecers; different participants in each survey.	Recurrent questionnaire (n = 3)	Perception of change (n = 3)



**Table 2** Themes studied in the publications analyzed (cont'd)

Themes (number of studies)	Publications	Summarized description of the studies	Data collection method (number of studies)	Measurements used (number of studies)
<b>Changes in eating habits (cont'd)</b>				
<b>Ordering takeout (n = 15)</b>	(Canseco, 2021; Charlebois et al., 2020; Dianat et al., 2020; Durif et al., 2020a, 2020b, 2020c, 2020d, 2020e, 2020f, 2020g, 2020h, 2020i; Kaddatz and Badets, 2020; Karamanoglu et al., 2020; Observatoire de la consommation responsable, 2020a)	Samples from Québec, British Columbia, Ontario, and Canada.  Varying sample sizes from 349 to 1,505 participants.	One-time questionnaire (n = 6)  Recurrent questionnaire (n = 9)	Perception of change (n = 15)
<b>Snacking (n = 10)</b>	(Bertrand et al., 2021; Boivin et al., 2020a, 2020b; Carroll et al., 2020; Charlebois and Music, 2021; INSPQ, 2021e, 2021f, 2021g; Karamanoglu et al., 2020; Observatoire de la consommation responsable, 2020b)	Samples from Québec, Saskatchewan, Ontario, and Canada.  Varying sample sizes from 125 to 9,991 participants.	One-time questionnaire (n = 5)  Recurrent questionnaire (n = 5)	Perception of change (n = 9)  Food frequency questionnaire (n = 1)



## Changes in diet during the pandemic

In most cases, the results collected show that a majority of participants report having maintained their intake and their eating habits and that a certain proportion, varying by theme, reports having changed theirs.

Virtually all studies presented the results as proportions of participants reporting a change in intake or eating habits (e.g., 25% of respondents report having increased their junk food consumption). Although the studies on a common subject were heterogeneous, had different samples, and asked somewhat different questions, the proportions of participants who reported maintaining or changing their diet were grouped and summarized in an approximate range to synthesize the findings, when possible.

With this kind of information (proportion of participants), it is difficult to assess the scale of the change phenomenon in the population. There is no established threshold (e.g., 15% and above) from which the proportion of individuals reporting a change is considered significant. It is also not possible to determine the intensity of the change in either an individual or a population-based on these proportions (e.g., does the person consume slightly more junk food or considerably more junk food?). These data also do not provide information on pre-pandemic food intake or eating habits (e.g., the quantity and frequency of consumption).

To simplify the presentation of data from Carroll et al. and Karamanoglu et al., the authors of the present synthesis decided to calculate the proportions of individuals reporting a change in the food intake and eating habits studied, using the data provided in both scientific articles (Carroll et al., 2020; Karamanoglu et al., 2020). These two studies asked participants if they had changed their diets during the pandemic. Those who responded in the affirmative were then questioned on the aspects of their diets that had changed. The non-respondents were taken into account in Karamanoglu's calculations (Karamanoglu et al., 2020). It is important to emphasize that the proportions from these two studies are approximations, as they were calculated by the authors of this synthesis.

### Changes in food intake

#### DIET QUALITY

In the corpus examined, four research groups addressed changes in the quality of Quebecers' diets occurring between March and May 2020 (ASPQ, 2020; Boivin et al., 2020a, 2020b; Lamarche et al., 2021). Changes in the quality of diet were analyzed in two different ways: by asking individuals about their perception of changes to their diet, and by objectively measuring diet with the Healthy Eating Index (HEI) score, an indicator of overall diet quality.

At the onset of the pandemic, according to a survey commissioned by the Association pour la santé publique du Québec, around one in four adults stated having perceived deterioration in the overall quality of their diet in the last two weeks, while one in five adults reported an improvement (ASPQ, 2020). The remaining half of respondents (54%) reported that the quality of their diet had remained stable in the two weeks prior to the survey (ASPQ, 2020).

In a web survey conducted in April 2020, when asked about their perception of their diet over the past months, 29% of participants reported having a more sugary diet, 22% more salty, and 18% more fatty (Boivin et al., 2020a). The second phase of this survey was conducted in May 2020 and

obtained similar results of 30%, 26%, and 23%, respectively (Boivin et al., 2020b). The proportions of participants who reported having a diet less or as much sugary, salty, or fatty than before are not provided in these two publications.

In April and May 2020, the HEI score of the participants from the NutriQuébec cohort was somewhat similar to that of the pre-pandemic period but still showed a small, significant improvement (+1.1 point) (Lamarche et al., 2021). This score represents the average diet quality of the total sample. This slight improvement was due to small improvements in the consumption of whole grains, dark green vegetables and legumes, refined grains, total vegetables and legumes, total dairy products, seafood and vegetable proteins, added sugars, and total proteins.

#### **Overview: diet quality during the pandemic**

The results on this theme are of different natures and therefore cannot be compared, only considered separately. These data are therefore insufficient for informing action.

One of the studies suggests that diet quality deteriorated at the beginning of the pandemic for nearly one in four participants\*, while it may have improved for one in five,\* and remained stable for half of the participants.\* Data from another study indicates that when reported as a cohort's average, the diet quality score remained relatively stable compared to before the pandemic.\* These results will need to be validated by new studies. No data on diet quality was collected for the period following May 2020.

## **QUANTITIES CONSUMED**

Changes in the quantity of food consumed during the pandemic were studied by three research groups, in samples of adults of all ages, between April and October 2020 (Boivin et al., 2020a, 2020b; Carroll et al., 2020; Jedwab, 2020). The participants were asked about their perception of eating more or consuming more food.

Two monitoring survey conducted in April and May 2020 indicated that a little over one-third of adult Quebecers reported having eaten more in the last month (Boivin et al., 2020a, 2020b). The percentage of individuals who reported having eaten the same amount or less was not presented.

Around 40% of mothers and 28% of fathers from some 250 families questioned in April to May 2020 by Carroll et al. reported having increased their food intake. Approximately 7% of parents reported having reduced their food intake (Carroll et al., 2020). The authors did not report the proportion of parents who maintained stable amounts of food consumed.

In April and May 2020, compared to before the pandemic, the average daily energy intake of participants in the NutriQuébec cohort decreased by 68 kcal (CI 95%: -90, -45 kcal) (Lamarche et al., 2021).

The results of a survey of 1,500 Canadian adults in October 2020 showed that over half (58%) reported eating as much, while 28% and 14% reported eating more and less, respectively, since the start of the pandemic (Jedwab, 2020).

**Overview: quantities of food consumed during the pandemic**

Between 28% and 40% of respondents report having increased their food intake.

The proportions who maintained or reduced quantities were reported by too few research groups to be generalizable to the Québec population\*; these results will therefore need to be replicated. The available data indicate that a majority of adult respondents have consumed as much food\* as they did before the pandemic and a small proportion (approximately 7%–14%)\* report having reduced the quantity of their food intake.

Therefore, it is not possible to determine the type of food being consumed in greater quantity based on these data.

### FRUIT AND VEGETABLE CONSUMPTION

Five sources of data from Québec and Canada examine changes to fruit and vegetable consumption in the first thirteen months of the pandemic (Canseco, 2020; Carroll et al., 2020; INSPQ, 2021a, 2021b, 2021c, 2020c; Karamanoglu et al., 2020; Lamarche et al., 2021).

In a Canadian study conducted in April and May 2020 of 254 families, approximately 17% of mothers and 8% of fathers reported having reduced their consumption of fruits and vegetables, while 14% of mothers and 19% of fathers reported an increase in their consumption of fruits and vegetables (Carroll et al., 2020). The authors did not indicate the proportion of individuals who had consumed an equal amount of fruits and vegetables.

From April to May 2020, NutriQuébec participants consumed, on average, slightly more vegetables but slightly less fruit than before the pandemic (pre-pandemic data collected between June 2019 and February 2020) (Lamarche et al., 2021).

In a Canadian survey conducted in June 2020, a quarter of respondents (24%) reported an increase in their consumption of fruits and vegetables since the start of the pandemic, while 10% and 7% reported having reduced their fruit consumption and vegetable consumption, respectively (Canseco, 2020). Finally, a majority of respondents reported having maintained their consumption of fruits (65%) and vegetables (68%) since the start of the pandemic (Canseco, 2020).

Data collected between June and August 2020, taken from an online survey of 350 Quebecers, showed that around 13% of the respondents indicated having increased their fruit and vegetable consumption, while 10% reported having reduced theirs (Karamanoglu et al., 2020).

According to the data collected in April 2021 as part of an INSPQ survey, a majority of participants (67%) responded that they were consuming an equal amount of fruits and vegetables as before the pandemic. However, one in ten people (11%) indicated that they were consuming less fruits and vegetables than before the pandemic, and nearly a quarter of participants (22%) reported eating more fruits and vegetables (INSPQ, 2021c).

### **Overview: fruit and vegetable consumption during the pandemic**

Three trends in fruit and vegetable consumption appear to have emerged in the first year of the pandemic. Around 10%–25% of respondents increased their consumption of fruits and vegetables, while around 10%–20% indicated a decrease. A majority of respondents (65%–70%) therefore appear to have maintained their consumption of fruits and vegetables.

The proportion of individuals who reported having increased their consumption of fruits and vegetables is still larger than the proportion who reported decreasing theirs in each of the studies presenting these two proportions of individuals.

These proportions of individuals do not, however, indicate the degree of the increases and decreases in terms of portions of fruits and vegetables per day, either on an individual or population scale.

## **JUNK FOOD CONSUMPTION**

Various surveys and polls by five research groups studying junk food consumption were conducted between March 2020 and April 2021 (ASPQ, 2020; Carroll et al., 2020; Gouvernement du Canada, 2020; INSPQ, 2020a, 2020b, 2020c, 2021a, 2021b, 2021c; Zajacova et al., 2020). One study presented data on college students (Gallais et al., 2021) and another exclusively by age subgroups (El-Gabalawy and Sommer, 2021). Their results are discussed in Appendix 4 [French only]. The term “junk food” (or “fast food”) was used in the majority of studies without being defined (Carroll et al., 2020; Gouvernement du Canada, 2020; INSPQ, 2020a, 2020b, 2020c, 2021a, 2021b, 2021c; Zajacova et al., 2020). All data are self-reported and based on perceived changes.

At the end of March 2020, a third of respondents (31%) to a Québec survey indicated having increased their consumption of sugary drinks, candy, chips, and fried foods in the two weeks preceding the survey, while 17% reported a reduction in their consumption (ASPQ, 2020). Half of the respondents (52%) reported having consumed the same amount of these foods as usual (ASPQ, 2020).

In a Canadian government study conducted from March to April 2020, a quarter of respondents 25 years and older indicated having increased their junk food consumption in the first few weeks of the pandemic, while 15% reported having reduced theirs (Zajacova et al., 2020). More than half of the respondents (60%) indicated having maintained their consumption during this period (Zajacova et al., 2020).

A significant increase in the proportion of Canadians reported to have increased their consumption of junk food and sweets was observed during the first months of the pandemic. In an initial survey conducted between March 29 and April 3, 2020, 27% of Canadians reported having consumed more of these foods due to the pandemic, while a second survey conducted from May 4 to 10, 2020 showed that this proportion had increased to 35%. It should be noted that the samples of these two surveys were mainly made up of the same respondents (Gouvernement du Canada, 2020). The proportions of individuals who maintained or reduced their consumption of junk food and sweets were not indicated in this publication.

Around 30% of mothers and 26% of fathers from the 254 Ontarian families surveyed in April and May 2020 reported having eaten less fast food and takeout, while 8% of parents had eaten more (Carroll et al., 2020). The authors did not mention the proportion of individuals who indicated no change to their fast food consumption.

In its survey, the INSPQ asked participants about their junk food consumption between July 2020 and April 2021. The reference period for the question did, however, change over time. In the surveys from July to August and in September 2020, one-fifth of adult Quebecers reported having increased their junk food consumption over the 30 days preceding the survey, while a quarter reported a decrease (INSPQ, 2020a, 2020b). A little over half of the respondents indicated having maintained their consumption in the 30 days preceding the survey (INSPQ, 2020a, 2020b). Between July and September 2020, the proportions of individuals who reported an increase or decrease in their junk food consumption remained stable.

The INSPQ surveys from October and December 2020 and from February and April 2021 contained a different question concerning junk food. Their results show that around half of adult Quebecers stated that they maintained their consumption of junk food in the month preceding as before the pandemic, while a quarter stated having increased theirs and around another quarter stated having reduced theirs (INSPQ, 2020c, 2021a, 2021b, 2021c). The proportions of the population who reported an increase or a decrease in their junk food consumption remained relatively stable during this period.

#### **Overview: junk food consumption during the pandemic**

Three trends are present in junk food consumption. A little more than half of the respondents (50%–60%) indicated having maintained their junk food consumption. The other half of respondents reported a change: 20%–35% of adults in Québec or Canada increased their consumption of junk food, while 15%–25% decreased theirs. It should be noted that one of the surveys shows different results.

One small sample of families showed a larger proportion of individuals reporting a reduction in their consumption of fast food and takeout meals than those who reported an increase. This may be due to the characteristics of the sample or the inclusion of takeout meals in the question, which was not the case in the other studies. As these data differed greatly from the others, they were not included in the summary range for the proportions of participants who reported changes to their junk food consumption.

In some studies, the proportion of individuals reporting an increase in their junk food consumption is higher than that reporting a reduction, while other studies have opposite findings. It is therefore impossible to determine which change is more prevalent.

## CONCURRENT CHANGE IN THE CONSUMPTION OF JUNK FOOD AND OF FRUITS AND VEGETABLES

According to the survey conducted by the INSPQ in early April 2021, one-third of Quebecers report having either: 1) increased their junk food consumption, or 2) reduced their consumption of fruits and vegetables, or 3) experienced deterioration in both areas of their diet, compared to before the pandemic (INSPQ, 2021d).

A greater cause for concern is that 7% of respondents indicated having both increased their junk food consumption and reduced their consumption of fruits and vegetables compared to before the pandemic (INSPQ, 2021d). We can therefore expect a greater deterioration to the quality of this last group's diet.

On a positive note, also in April 2021, a little under one in ten Quebecers (9%) reported having both reduced their junk food consumption and increased their consumption of fruits and vegetables in the last month, compared to before the pandemic (INSPQ, 2021d).

## Changes in eating habits

Ten research groups studied changes in eating habits during the pandemic.

### MEAL PLANNING AND COOKING

Eight of these groups focused on meal planning and the time spent cooking (Boivin et al., 2020a, 2020b; Canseco, 2020; Carroll et al., 2020; Charlebois and Music, 2021; Cloutier et al., 2020; Dianat et al., 2020; Durif and Boivin, 2020; INSPQ, 2021e, 2021f, 2021g; Kaddatz and Badets, 2020).

Meal planning habits appear to have changed during the pandemic: according to their perception, 61% of Québec respondents spent more time on meal planning, while 16% spent less time, and 23% an equal amount of time (Cloutier et al., 2020).

A significant portion of participants from various studies, 20%–75%, reported cooking more during the pandemic (Boivin et al., 2020a, 2020b; Carroll et al., 2020; Cloutier et al., 2020; Durif and Boivin, 2020; INSPQ, 2021e, 2021f, 2021g; Kaddatz and Badets, 2020), while no more than 15% reported cooking less often (Carroll et al., 2020; Cloutier et al., 2020; INSPQ, 2021e, 2021f, 2021g). Finally, 25%–70% of respondents indicated that they were cooking as often during the pandemic (Cloutier et al., 2020; Durif and Boivin, 2020; INSPQ, 2021e, 2021f, 2021g).

In a sample of Torontonians, a little over half of the participants reported eating home-cooked meals more often than before, 30% reported eating them as often, and around 10% reported eating them less often (Dianat et al., 2020).

Some individuals appear to have integrated new ingredients into their meals and eaten new fruits and vegetables. According to a survey, half of the Canadian participants reported having used an ingredient during the pandemic that they had never used before. Of these participants, 37% cooked a new vegetable and 17% consumed a new fruit (Charlebois et al., 2021). However, it is interesting to note that 30%–45% of participants of other surveys reported preparing more desserts during the pandemic (Boivin et al., 2020a, 2020b; Canseco, 2020).



## SNACKING

Six research groups explored participants' snacking. They observed three trends in the changes to the behaviour of snacking between meals during the pandemic. Three research groups obtained similar results, a little more than half (60% of respondents) indicated that they were snacking as much (INSPQ, 2021e, 2021f, 2021g). Around 20%–40% of Quebecers reported snacking more in the last month, compared to the same time the previous year or since the start of the pandemic (Boivin et al., 2020a, 2020b; INSPQ, 2021e, 2021f, 2021g; Observatoire de la consommation responsable, 2020b), while around 20% reported snacking less (INSPQ, 2021e, 2021f, 2021g; Observatoire de la consommation responsable, 2020b). When questioned in January, March, and May 2021, nearly seven out of ten adults reported having a habit of eating salty or sweet snacks between meals and consuming sugary drinks (e.g., normal soft drinks, chocolate milk, etc.) in the last month (INSPQ, 2021e, 2021f, 2021g). For the parents in some 250 Ontarian families (Carroll et al., 2020) and the adults of a small, non-representative sample of the Québec population (Karamanoglu et al., 2020), approximately 40% and 11% reported having increased their consumption of sugary and salty snacks, respectively, while a proportion of less than 5% and 7% reported eating less sugary or salty snacks, respectively (Carroll et al., 2020; Karamanoglu et al., 2020). One survey showed that during the pandemic, only a quarter of Canadians stated that they ate healthy snacks “all the time” or “most of the time,” while three-quarters reported that they ate healthy snacks “occasionally” or “never” (Charlebois and Music, 2021). It should be noted that the type of snack foods was not specified in two of the surveys, meaning it is not possible to know from these results whether these foods were of high or low nutritional value (Boivin et al., 2020a, 2020b; Observatoire de la consommation responsable, 2020b).

## ORDERING TAKEOUT

A significant number of Quebecers and Canadians have had takeout delivered to their homes during the pandemic. Around a month after a health crisis was declared, two different samples demonstrated that one-fifth (Kaddatz and Badets, 2020) and one-half (Observatoire de la consommation responsable, 2020a) of participants had had takeout delivered to their home. Between 25% and 35% of Quebecers (Durif et al., 2020a, 2020b, 2020c, 2020d, 2020e, 2020f, 2020g, 2020h, 2020i) and Canadians (Charlebois et al., 2020) ordered food from a restaurant at least once in the last week (or per week). Between one-third and two-thirds of Canadians surveyed had ordered takeout at least once every two weeks (Canseco, 2021; Charlebois et al., 2020).

Three studies, including one based on a small non-representative sample of the Québec population and two others on non-representative samples of Torontonians and British Columbians, presented data on changes in the prevalence of ordering takeout during the crisis, compared to before it began (Canseco, 2021; Dianat et al., 2020; Karamanoglu et al., 2020). According to the data, a similar proportion of respondents ordered takeout during the first wave of the pandemic (40%) as before the crisis (44%) (Karamanoglu et al., 2020). A somewhat larger proportion of individuals (around 30%–40%) ordered takeout less often than before the pandemic, compared with the share of respondents who ordered more often (around 25%) (Canseco, 2021; Dianat et al., 2020).

## SKIPPING ONE OF THE MAIN MEALS

Nearly half of Quebecers were in the habit of skipping one of the main meals over the past month when they were asked in January, March, and May 2021 by the INSPQ (INSPQ, 2021e, 2021f, 2021g). Compared to before the pandemic, over a quarter of Quebecers reported skipping one of the main meals more often in the past month, while around 15% reported skipping one of the main meals less often (INSPQ, 2021e, 2021f, 2021g). Six out of ten Quebecers maintained their frequency of this habit (INSPQ, 2021e, 2021f, 2021g).

## PAUSING TO EAT

According to the same data, one out of five Quebecers reported not regularly pausing to eat in the last month. A little over 15% of Quebecers reported in January, March, and May 2021 taking less often a pause to eat in the last month, compared to the previous year, while a little over 10% took more often a pause to eat (INSPQ, 2021e, 2021f, 2021g). This habit was perceived as stable in 70% of adult Quebecers (INSPQ, 2021e, 2021f, 2021g).

### **Overview: changes in eating habits during the pandemic**

In summary, during the pandemic, the eating habits of a certain proportion of Quebecers and Canadians have changed in a way that either promotes or adversely affects health.

Between 20% and 75% of respondents reported cooking or meal planning more often, while a smaller proportion cooked less often (less than 15%) and planned meals less often (16%)\* during the pandemic. Around 25%–70% of respondents were cooking as often as before. In half the studies presenting data on both changes to and maintenance of this behaviour, the proportion of individuals who reported having cooked more is larger than the proportion who maintained their habit. In the other half of studies presenting these two proportions, the opposite was observed. It is therefore difficult to issue a finding as to which behaviour is more prevalent.

A majority of respondents (60%)\* indicated that they had not changed their snacking habits. Within each study, the proportion of respondents who indicated having snacked more (between approx. 10% and around 40%) was larger than that of those who reported having snacked less during the pandemic (approx. 5%–20%) for all studies presenting these two proportions of individuals except for one.

The themes “skipping one of the main meals,” “pausing to eat,” and “ordering takeout” were studied by a small number of research groups or presented heterogeneous results. The results will need to be replicated by further studies.

Eating habits’ changes occurring during the pandemic have likely positively or negatively affected the quality of food intake, but we cannot correlate these two categories of variables nor know the direction of associations from the available data.

## Changes in food intake and eating habits according to specific sociodemographic characteristics

Of the data collected, age was the characteristic most frequently studied and cross-tabulated with changes in food intake and eating habits. For ease of reading, a summary of the data on differences by sociodemographic characteristics is presented in this section. The detailed data are available in Appendix 4 [French only].

### AGE

#### **Overview: changes in food intake and eating habits during the pandemic – differences by age**

Although age was the most studied sociodemographic characteristic, few research groups examined the data by age group on the same theme. Due to the insufficient data on the majority of themes, findings by age can only be issued on two themes: "junk food consumption" and "meal planning and cooking."

Within a single survey and for each of these surveys, more young adults reported having increased their junk food consumption than those who indicated a reduction (43%–48% vs. 12%–17%). In various samples studied during the pandemic, a larger proportion of young adults (43%–48%) than older adults (2%–36%) indicated consuming more junk food than before the pandemic. There appear to be slightly fewer young adults than their older counterparts, proportionally, who reported a decrease in their consumption (12%–17% vs. 14%–29%).

Young adults are proportionally the largest age group who cooked more. The authors did not, however, report the specific proportions.

For the other themes, the data are insufficient to draw specific findings, but it appears, in general, that young adults were more likely to modify their food intake and eating habits than older adults. According to what young adults reported, their food intake and eating habits appear to have remained less stable.

### SEX AND OTHER CHARACTERISTICS

#### **Overview: changes in food intake and eating habits during the pandemic – differences by sex and other characteristics**

It is not possible to use the data collected to identify clear trends in the differences in changes to food intake and eating habits according to sex or other sociodemographic characteristics. For each theme studied by sex or by other characteristics, the data are either contradictory or insufficient to draw conclusions. Additional studies should examine these characteristics to test the hypothesis that pre-existing nutrition inequities were exacerbated by the pandemic.

## Summary of the proportions of individuals who maintained or changed their diets

Table 3 presents the results of maintenance of and changes in diet by theme, in proportional ranges of individuals. These results are drawn from surveys with varied, non-probability samples measuring the perception self-reported by the participants. They are therefore to be interpreted with caution. The themes not included in the table and the boxes indicating “insufficient data” represent cases where the data was insufficient to be reported with some degree of confidence.

**Table 3 Summary of the proportion of adult Quebecers or Canadians reporting maintained or changed food intake or eating habits**

Themes	Proportions of adults of all ages		
	Increased	Maintained	Decreased
Quantities consumed	30%–40%	Insufficient data	Insufficient data
Fruit and vegetable consumption	10%–25%	65%–70%	10%–20%
Junk food consumption	20%–35%	50%–60%	15%–25%
Meal planning and cooking	20%–75%	25%–70%	10%–15%
Snacking	10%–40%	Insufficient data	5%–20%

## Strengths and limitations of the data and the synthesis

To our knowledge, at the time of writing this document, no other review of the literature has been published on the changes that have occurred in the diets of adult Quebecers or Canadians during the pandemic.

It appears that the study of changes in the diet of Quebecers and Canadians during the pandemic is of interest to many research groups, as evidenced by the large number of surveys conducted in the span of a few months. However, most of the methodologies used in these studies have several limitations. All the data are self-reported and were collected online, mainly through surveys that assess the participant’s perception of change. Only the data from two studies were collected using a validated method (i.e., a food frequency questionnaire and 24-hour dietary recalls administered multiple times) (Bertrand et al., 2021; Lamarche et al., 2021). As the time between the data collection and publication of the results was, in most cases, very short, it was expected that the majority of data available at the time of writing this knowledge synthesis were drawn from rapid collection methods and less rigorous diet assessment. New data on food intake, requiring more in-depth analyses, will likely be published in the coming months or years.

While some studies have large samples and the results are weighted to better represent the population, several studies have small samples sizes that are not representative of the general population, which limits the generalization of their findings. Even though some results are weighted, the participants’ sociodemographic profile, as well as their interest in participating in the surveys nevertheless, may influence the results. People in disadvantaged situations are not as well represented in the surveys, and even weighting by different characteristics cannot fully correct this underrepresentation, hence the efforts of certain researchers to improve recruitment of this population (Bonevski et al., 2014; Côté et al., 2019). We can also assume that the individuals interested in participating in surveys on diet have a particular interest in the topic, in health, or in science (Svensson, 2014), which may have a positive influence on the quality of their diet.

Furthermore, it is not possible to use the available data to associate the changes observed in eating habits with changes that have occurred in food intake. It is also not possible to determine the intensity of these changes (e.g., small increases vs. large increases in junk food) or to identify the causes of these changes. We also cannot comment on how the current situation has evolved during the pandemic given that the majority of the data are cross-sectional and that most studies took place in the first six months of the pandemic.

Finally, no data on changes to the diet of children and adolescents have been documented, except for the studies by Carroll et al. and El-Gabalawy and Sommer (Carroll et al., 2020; El-Gabalawy and Sommer, 2021). We therefore cannot issue any findings specific to children and adolescents.

For all the above reasons, the change ranges reported in this document are an approximation of the situation and should be confirmed by studies that, ideally, use validated methods to collect data on food intake and objectively measure eating habits (e.g., frequency, duration). Accordingly, the present findings should be interpreted and used with caution when implementing actions.



## Interpretation of the data

### Main findings from the data synthesis

The available data suggest that the food intake and eating habits of some adult Quebecers changed in the first year of the pandemic. In general, three trends have emerged for each of the themes studied: the majority of individuals maintained their food intake or eating habits, while a certain population increased or decreased theirs.

For reported changes in food intake, some findings can be shared. Some 30%–40% of adult Quebecers indicated having increased the quantity of food consumed (Boivin et al., 2020a, 2020b; Carroll et al., 2020; Jedwab, 2020). The data are nonetheless insufficient to formulate a range for the proportion of individuals who reported maintaining or reducing their intake.

This is also the case for the proportions of individuals who reported having improved, worsened, or maintained the quality of their diet.

A majority of individuals reported having maintained their fruit and vegetable consumption (65%–70%) during the pandemic (Canseco, 2020; INSPQ, 2021c), while 10%–25% of respondents reported to have increased their consumption and 10%–20% stated having decreased theirs (Canseco, 2020; Carroll et al., 2020; INSPQ, 2020c, 2021a, 2021b, 2021c; Karamanoglu et al., 2020). In the studies that presented both the proportion of individuals who had increased their fruit and vegetable consumption and the proportion who had reduced theirs, an examination of the proportions indicates that there are still more people, proportionally, who reported an increase in their consumption than those who reported a decrease.

Regarding junk food consumption, 20%–35% of individuals appear to have increased their consumption and 15%–25% to have decreased theirs (ASPQ, 2020; Gouvernement du Canada, 2020; INSPQ, 2020a, 2020b, 2020c, 2021a, 2021b, 2021c; Zajacova et al., 2020). We cannot determine which of these changes are the most prevalent, as some studies indicate that more individuals reported an increase, while the other studies present the opposite. A little more than half of respondents indicated that they had maintained their junk food consumption (50%–60%) (ASPQ, 2020; INSPQ, 2020a, 2020b, 2020c, 2021a, 2021b, 2021c; Zajacova et al., 2020).

Only two of the five eating habits are documented by sufficient data for the ranges of proportions of individuals to be reported. Some 25%–70% of individuals indicated that they were meal planning or cooking as often as before (Cloutier et al., 2020; Durif and Boivin, 2020; INSPQ, 2021e, 2021f, 2021g), while 20%–75% of respondents indicated that they were cooking and meal planning more often (Boivin et al., 2020a, 2020b; Carroll et al., 2020; Cloutier et al., 2020; Dianat et al., 2020; Durif and Boivin, 2020; INSPQ, 2021e, 2021f, 2021g; Kaddatz and Badets, 2020). A small proportion of adults (10%–15%), however, reported cooking less often during the pandemic (Carroll et al., 2020; Cloutier et al., 2020; Dianat et al., 2020; INSPQ, 2021e, 2021f, 2021g). From this data, we cannot determine whether more people cooked more often than before the pandemic or as often. Half of the studies showed that the majority of individuals cooked more, while the other half demonstrated that the majority of individuals cooked as often.

There seems to be an increase in snacking during the pandemic: 10%–40% of respondents in the included studies indicated that they were snacking more (Boivin et al., 2020a, 2020b; Carroll et al., 2020; INSPQ, 2021e, 2021f, 2021g; Karamanoglu et al., 2020; Observatoire de la consommation responsable, 2020b). The authors did not systematically indicate the nutritional value of the snack

foods. In contrast, 5%–20% of respondents snacked less, according to their own perception (Carroll et al., 2020; INSPQ, 2021e, 2021f, 2021g; Karamanoglu et al., 2020; Observatoire de la consommation responsable, 2020b). Within the same study, for all studies except for one, the proportion of respondents who snacked more was larger than the proportion of respondents who snacked less. The data are insufficient to establish a range for the proportion of individuals who snacked as often as before the pandemic.

Almost no studies examined the diet of children and adolescents. Thus, no specific findings specific to this age group can be issued. However, it is possible that some of them also experienced changes to their diet and their eating habits during the pandemic, following their parents' example, especially since their diet depends on their parents' choices. It would be useful to monitor the data on the diet and eating habits of these segments of the population as they are published.

### Changes in diet reported in international studies

Some reviews of the international literature have confirmed the data from Québec and Canada. Bennett et al. (2021) conducted a systematic review on the changes to food intake and eating habits occurring around the world during the first lockdown at the beginning of the pandemic. They also observed that some individuals made health-promoting changes in their intake or habits (e.g., home-cooked meals, increased fruit and vegetable consumption), and that others changed theirs in ways that adversely affect health (e.g., reduced consumption of fresh foods, increase in the consumption of junk food and comfort foods) (Bennett et al., 2021). Chew and Lopez (2021) also studied the changes in specific lifestyle habits during the first months of the pandemic in their exploratory review. Similar to our results, Chew and Lopez observed positive and negative changes in food quality and quantity internationally (Chew and Lopez, 2021). They also noted an increase in the consumption of home-cooked meals and of emotional eating (Chew and Lopez, 2021), two observations consistent with the Canadian results. Finally, in their international review on food intake and habits at the start of the pandemic, the observations of Zupo et al. (2020) observed, among other things, an increase in the consumption of high-carbohydrate foods, fruits and vegetables, snacks, and time spent cooking, but they were unable to conclude regarding junk food consumption due to inconsistent results (Zupo et al., 2020).

### CHANGES DURING THE PANDEMIC: DIFFERENCES BY DIFFERENT SOCIODEMOGRAPHIC CHARACTERISTICS

Before the pandemic, nutrition inequities were observed: the consumption of fruits and vegetables and sugary drinks varied by income, education level, and food insecurity (Plante, Blanchet, et al., 2019; Plante et al., 2020, 2021).

A significant proportion of Quebecers experienced food insecurity at the beginning of the pandemic and in subsequent months (26% in April 2020; stabilization around 17%–19% between August 2020 and April 2021) (Plante and Paquette, 2021). These proportions were markedly higher than in 2015–16 when 11% of Québec households were food insecure according to a survey conducted using a different methodology (INSPQ, 2020). Yet, food insecurity appears to be inversely associated with food quality in adults (Blanchet et al., 2011; Hanson and Connor, 2014; Plante et al., 2021). This suggests that the diet quality of individuals who have experienced food insecurity during the pandemic may have deteriorated.



Despite the importance of studying inequalities, nutrition themes received little examination in relation to income, education level, employment status, or food insecurity, each theme being examined by one research group or not at all. In these studies, some changes observed in more disadvantaged groups have appeared to adversely affect the quality of their diet, while others appear to have promoted quality. To complete the portrait, new studies will therefore be necessary to determine the pandemic's impacts on nutrition inequalities.

At the end of the crisis, a certain proportion of the population may return to healthy eating habits, but it is likely that due to limited resources, disadvantaged individuals will need additional support to achieve this. Disadvantaged people have limited financial resources and time to protect themselves against the effects of environmental pressures (Comité scientifique sur la prévention de l'obésité, 2016), such as those related to the pandemic. Measures aiming to promote a healthy diet should therefore be designed and implemented in a way that takes into account the particular circumstances of disadvantaged people in order to reduce nutrition inequities. Such actions would help to reduce or even eliminate the gaps in diet associated with changeable social disadvantages.

In addition, as observed in this synthesis and despite requiring confirmation by other studies, a larger proportion of young adults than older adults appear to have modified their food intake and eating habits. First, the transition to adulthood, with all the upheavals it includes (e.g., leaving the family home, finishing school, entering the job market), is already likely to be a period of change in diet (Winpenny et al., 2018; Winpenny, Smith, et al., 2020; Winpenny, Winkler, et al., 2020). Moreover, in a pandemic context, some young adults may face many additional daily disturbances: job loss or reduced salary (Statistique Canada, 2020, 2021), isolation from peers, online college or university education, etc. (Dionne, Dubé, Ève, et al., 2021). These disturbances may partly explain the more marked deterioration in the mental health of young adults than in that of older adults (problematic psychological distress, fair or poor mental health, moderate to severe symptoms of anxiety, reduced emotional well-being) (Dionne, Roberge, et al., 2021). Indirectly, pandemic-related disturbances may have brought about changes in diet for some people. For example, as mentioned by several experts, stress and deteriorated mental health negatively impact on diet quality (Cuschieri and Grech, 2020; Mattioli et al., 2020; Polivy and Herman, 2005).

Conversely, some young adults have experienced positive aspects of the pandemic situation (e.g., increase in free time, introspection, implementation of strategies to improve daily life) (Dionne, Dubé, Ève, et al., 2021). Therefore, not all young adults have necessarily felt the negative effects of the pandemic, which may partly explain why a certain proportion of young adults report having improved the overall quality of their diet, specifically meaning they perceive having reduced their junk food consumption, increased their fruit and vegetable consumption, and improved the quality of their diet. It is also possible that some individual characteristics that were not studied within the scope of this document partially explain the differences observed within this age group, such as, for example, positive personality traits, resilience, or cooking skills.

It will therefore be important to monitor the diet of young adults to better understand the changes that have occurred during the pandemic and how they evolve post-pandemic. We should note that before the pandemic, young adults consumed too much sugar and sodium, and more than older adults (Plante, Rochette, et al., 2019).

## Monitoring the diet of the population

The review of the data for this synthesis revealed certain limitations to the available data on diet in the context of the COVID-19 pandemic.

As highlighted in this data synthesis, few research groups have studied the difference in food intake and eating habits by sociodemographic characteristics other than adults' age. This may be due to the small size of some studies' samples, which limits the number of cross-tabulations that can be done. Studying the possible differences by education and income levels, immigration and employment status, place of residence, etc. is essential for targeting the groups affected by nutrition inequalities and for guiding action.

Additionally, due to the financial impact of the pandemic on some individuals and pre-existing nutrition inequities it is imperative to ensure that disadvantaged people are reached by surveys and polls so that they are properly represented.

As food intake is difficult to measure due to various biases that could skew the data collected, it is important to use validated methods like a food frequency questionnaire or repeated measurements by 24-hour recalls. Data on food purchases could also complement the study of food intake on a population scale. In the event where the only option for studying diet is to ask the participants about their perception of changes in their diet, it would be worthwhile to ask them about the intensity of these changes.

Finally, the main data on pre-pandemic diets are several years old. The most recent population surveys with a nutrition component were conducted several years ago, such as the Québec Population Health Survey (QPHS) from 2014–2015 and the Canadian Community Health Survey (CCHS – Nutrition) from 2015.

In short, the limitations of the data currently available on the diet of Quebecers and Canadians during the pandemic demonstrate the importance of representative and frequent population surveys that use validated collection methods to measure food intake. The data collection tools already in place could therefore be improved, for example by aiming for better representativity of the samples in existing and future large-scale studies or by adding a diet assessment using 24-hour recalls or food frequency questionnaires to pre-existing surveys, etc.

## Conclusion

To monitor how the situation develops from now until the end of the pandemic and afterwards, it is important to monitor the diets of Quebecers, especially those of children and adolescents—as they are currently hardly documented—as well as those of young adults and groups affected by nutrition inequities that existed before the pandemic.

It is difficult to predict whether new eating habits acquired during the pandemic, either promoting or adversely affecting health, will persist over time, which is why it is important to follow their evolution. The individuals who have improved their food intake and eating habits during the pandemic may need help maintaining these newly acquired good habits. It is also likely that with the lifting of public health measures, some spontaneous resumption of adverse food intake and eating habits will be observed. Nevertheless, some people or groups, especially those affected by nutrition inequalities present before the pandemic, may need additional support to return to their pre-pandemic habits or to acquire better habits. Moreover, the deterioration in some Quebecers' diet quality during the pandemic adds to the pre-pandemic situation in Québec where diets were suboptimal and presented differences by sociodemographic characteristics, and where excess weight and obesity were highly prevalent.

Several researchers (Bhutta et al., 2020; Kluge et al., 2020; Zupo et al., 2020) and international organizations (CDC, 2020; NCD Alliance, 2020; WCRF, 2020; World Obesity, 2020) have emphasized the importance of continuing interventions through the pandemic to prevent an increase in the population's average weight and in chronic disease. It is essential to continue actions already underway that aim to maintain and acquire healthy diets and to improve the quality of food environments. These interventions must specifically reach individuals affected by the nutrition inequities present before the pandemic, as well as young adults. New initiatives could be implemented, especially if the hypothesis that nutrition inequities were exacerbated during the pandemic is confirmed by new data.



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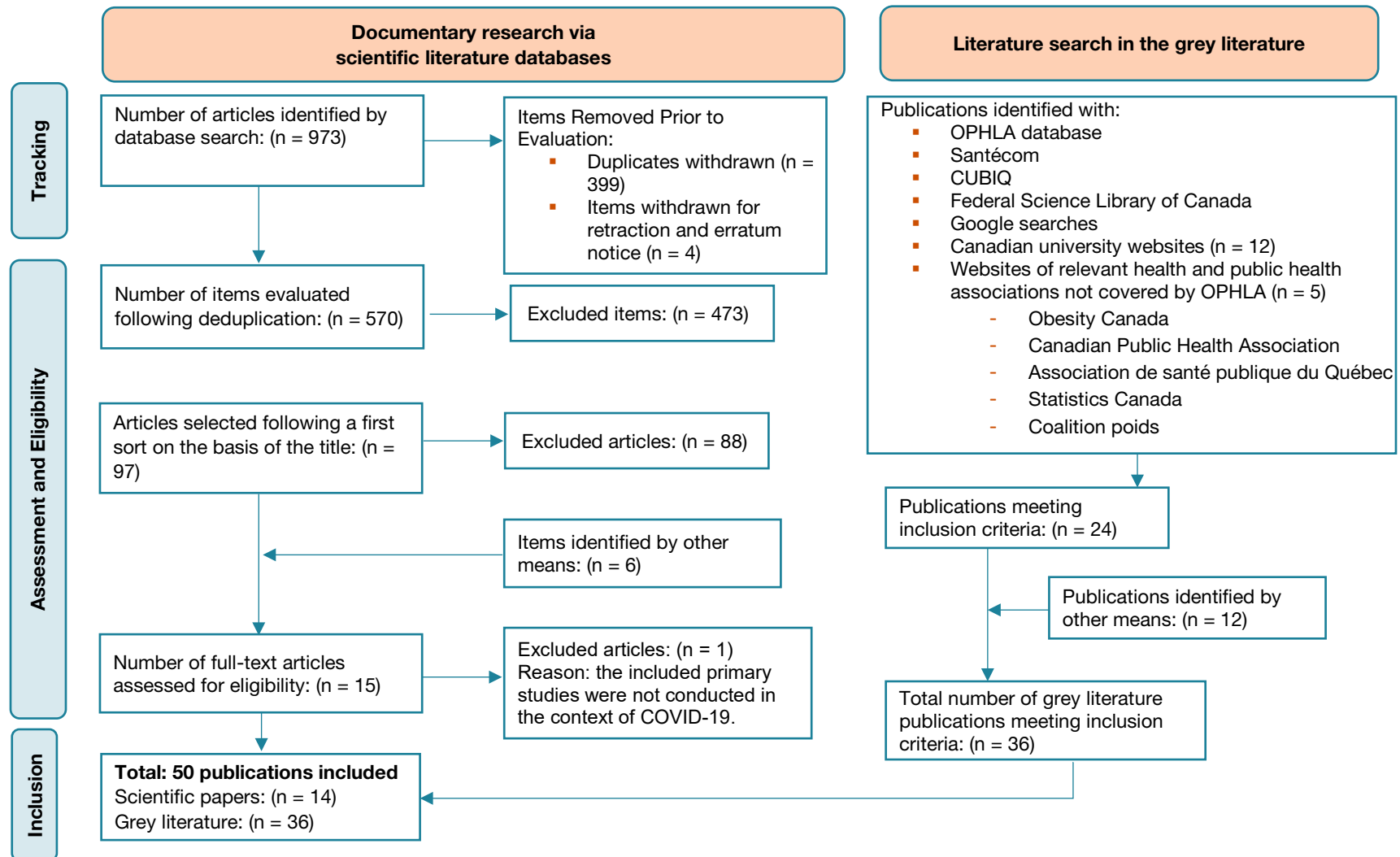
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## Appendix 1

### Flow chart of literature search and article selection





## Appendix 2

### Literature search in the scientific literature

#### Concepts

- ▶ Eating Habits and Changes
- ▶ Healthy lifestyle habits and obesity
- ▶ COVID-19
- ▶ Québec or Canada
- ▶ Literature reviews and meta-analyses
- ▶ Databases and query date(s) Medline (Ovid), 2021-03-01
- ▶ Embase (Ovid), 2021-03-01
- ▶ Global Health (Ovid), 2021-03-01

#### Limits

- ▶ Chronology: November 17, 2019 to December 31, 2020. Linguistics: English or French.  
Geographic: Québec or Canada (for all types of studies). Types of studies: if outside Québec or Canada, reviews or meta-analyses only.

Selection criteria Inclusion criteria: The study focuses on the general population, on children, adolescents or adults; The study examines a change in diet (food intake, eating habits, food purchases) during the COVID-19 pandemic; The scientific articles are primary studies presenting Canadian or Québec empirical data or are international literature reviews or meta-analyses; Exclusion Criteria: The study does not address the context of COVID-19.

## Search Strategies Medline

Search done March 1, 2021.

#	Search	Results
1	((alimentary or calori* or cooking or cuisine or diet* or eat* or energy or food* or fruit? or lunch* or meal? or menu? or nutriti* or restaurant? or snack? or vegetable?) adj2 (behavio?r? or change? or choice? or consum* or decreas* or deteriorat* or frequen* or habit? or health* or improv* or increas* or intake? or pattern? or practi#e? or preference? or purchas* or quality or routine? or selection? or shopping or unhealth*) or "health* behavio?r?").ti,ab,kf. or "feeding behavior"/ or "food preferences"/	434 024
2	((health* or lifestyle? or unhealth*) and (behavio?r? or change? or habit? or pattern?)) or malnutrition or obes* or overweight* or (weight adj1 (body or decreas* or excess* or extra or gain* or increas* or lose or losing or loss or lost)).ti.	214659
3	((SARS-CoV-2 or SARS-CoV2 or SARSCoV-2 or SARSCoV2 or SARS-CoV* or SARSCoV* or "severe acute respiratory syndrome 2" or "severe acute respiratory syndrome cov*" or COVID-19 or COVID19* or COVID or nCoV* or 2019nCoV* or 19nCoV* or HCoV-19).mp. or (coronavirus* or "corona virus*" or curfew? or lockdown? or "lock-down?" or pandemic? or quarantine? or "social distanc*" or "stay-at-home").ti,ab.) and ("20191117" or "20191118" or "20191119" or 2019112* or 2019113* or 201912* or 202*).dp,yr.	113778
4	(Canada* OR Canadi* OR Alberta* OR Calgary* OR Edmonton* OR "British Columbia*" OR Vancouver* OR Victoria* OR Manitoba* OR Winnipeg* OR "New Brunswick*" OR Fredericton* OR Moncton* OR Newfoundland* OR "New Foundland*" OR Labrador* OR "St John*" OR "Saint John*" OR "Northwest Territor*" OR Yellowknife* OR "Nova Scotia*" OR Halifax* OR Dalhousie* OR Nunavut* OR Igaluit* OR Ontario* OR Ontarian* OR Toronto* OR Ottawa* OR Hamilton OR Queen's OR McMaster* OR Kingston* OR Sudbury* OR "Prince Edward Island*" OR Charlottetown* OR Québec* OR Montreal* OR McGill* OR Laval* OR Sherbrooke* OR Nunavik* OR Kuujjuaq* OR Inukjuak* OR Puvirnitug* OR Saskatchewan* OR Saskatoon* OR Yukon* OR Whitehorse*).ti,ab. OR exp Canada/	306663
5	((systematic or state-of-the-art or scoping or literature or umbrella) adj (overview* or assessment*)) or meta-analy* or metaanaly* or ((systematic or evidence) adj1 assess*) or "research evidence" or metasynthe* or meta-synthe* or review*).tw. or exp Review Literature as Theme/ or exp Review/ or Meta-Analysis as Theme/ or Meta-Analysis/ or "systematic review"/	3 892 238
6	(1 or 2) and 3 and (4 or 5)	446
7	6 and (english or french).lg.	442



## Embase

Search done March 1, 2021.

#	Search	Results
1	((alimentary or calori* or cooking or cuisine or diet* or eat* or energy or food* or fruit? or lunch* or meal? or menu? or nutriti* or restaurant? or snack? or vegetable?) adj2 (behavio?r? or change? or choice? or consum* or decreas* or deteriorat* or frequen* or habit? or health* or improv* or increas* or intake? or pattern? or practi#e? or preference? or purchas* or quality or routine? or selection? or shopping or unhealth*) or "health* behavio?r?").ti,ab,kw. or "eating habit"/ or "feeding behavior"/ or "food preference"/	537 773
2	((health* or lifestyle? or unhealth*) and (behavio?r? or change? or habit? or pattern?)) or malnutrition or obes* or overweight* or (weight adj1 (body or decreas* or excess* or extra or gain* or increas* or lose or losing or loss or lost))).ti. or "obesogenic diet"/	283032
3	((SARS-CoV-2 or SARS-CoV2 or SARSCoV-2 or SARSCoV2 or SARS-CoV* or SARSCoV* or "severe acute respiratory syndrome 2" or "severe acute respiratory syndrome cov*" or COVID-19 or COVID19* or COVID or nCoV* or 2019nCoV* or 19nCoV* or HCoV-19).mp. or (coronavirus* or "corona virus*" or curfew? or lockdown? or "lock-down?" or pandemic? or quarantine? or "social distanc*" or "stay-at-home").ti,ab.) and ("20191117" or "20191118" or "20191119" or 2019112* or 2019113* or 201912* or 202*).dp,yr.	107793
4	(Canada* OR Canadi* OR Alberta* OR Calgary* OR Edmonton* OR "British Columbia*" OR Vancouver* OR Victoria* OR Manitoba* OR Winnipeg* OR "New Brunswick*" OR Fredericton* OR Moncton* OR Newfoundland* OR "New Foundland*" OR Labrador* OR "St John*" OR "Saint John*" OR "Northwest Territor*" OR Yellowknife* OR "Nova Scotia*" OR Halifax* OR Dalhousie* OR Nunavut* OR Igaluit* OR Ontario* OR Ontarian* OR Toronto* OR Ottawa* OR Hamilton OR Queen's OR McMaster* OR Kingston* OR Sudbury* OR "Prince Edward Island*" OR Charlottetown* OR Québec* OR Montreal* OR McGill* OR Laval* OR Sherbrooke* OR Nunavik* OR Kuujuaq* OR Inukjuak* OR Puvirnituaq* OR Saskatchewan* OR Saskatoon* OR Yukon* OR Whitehorse*).ti,ab. OR exp Canada/	384000
5	((systematic or state-of-the-art or scoping or literature or umbrella) adj (overview* or assessment*)) or meta-analy* or metaanaly* or ((systematic or evidence) adj1 assess*) or "research evidence" or metasynthe* or meta-synthe* or review*).tw. or exp Review Literature as Theme/ or exp Review/ or Meta-Analysis as Theme/ or Meta-Analysis/ or "systematic review"/	4 714 199
6	1 or 2	762 033
7	4 or 5	5 031 825
8	6 and 3 and 7	422
9	8 and (english or french).lg.	415

## Global Health

Search done March 1, 2021.

#	Search	Results
1	((alimentary or calori* or cooking or cuisine or diet* or eat* or energy or food* or fruit? or lunch* or meal? or menu? or nutriti* or restaurant? or snack? or vegetable?) adj2 (behavio?r? or change? or choice? or consum* or decreas* or deteriorat* or frequen* or habit? or health* or improv* or increas* or intake? or pattern? or practi#e? or preference? or purchas* or quality or routine? or selection? or shopping or unhealth*) or "health* behavio?r?").ti,ab,id. or exp "eating patterns"/ or exp "feeding behaviour"/ or "feeding habits"/ or "food preferences"/	282 355
2	((health* or lifestyle? or unhealth*) and (behavio?r? or change? or habit? or pattern?)) or malnutrition or obes* or overweight* or (weight adj1 (body or decreas* or excess* or extra or gain* or increas* or lose or losing or loss or lost)).ti.	101442
3	((SARS-CoV-2 or SARS-CoV2 or SARSCoV-2 or SARSCoV2 or SARS-CoV* or SARSCoV* or "severe acute respiratory syndrome 2" or "severe acute respiratory syndrome cov*" or COVID-19 or COVID19* or COVID or nCoV* or 2019nCoV* or 19nCoV* or HCoV-19).mp. or (coronavirus* or "corona virus*" or curfew? or lockdown? or "lock-down?" or pandemic? or quarantine? or "social distanc*" or "stay-at-home").ti,ab.) and ("20191117" or "20191118" or "20191119" or 2019112* or 2019113* or 201912* or 202*).dp,yr.	21577
4	(Canada* OR Canadi* OR Alberta* OR Calgary* OR Edmonton* OR "British Columbia*" OR Vancouver* OR Victoria* OR Manitoba* OR Winnipeg* OR "New Brunswick*" OR Fredericton* OR Moncton* OR Newfoundland* OR "New Foundland*" OR Labrador* OR "St John*" OR "Saint John*" OR "Northwest Territor*" OR Yellowknife* OR "Nova Scotia*" OR Halifax* OR Dalhousie* OR Nunavut* OR Igaluit* OR Ontario* OR Ontarian* OR Toronto* OR Ottawa* OR Hamilton OR Queen's OR McMaster* OR Kingston* OR Sudbury* OR "Prince Edward Island*" OR Charlottetown* OR Québec* OR Montreal* OR McGill* OR Laval* OR Sherbrooke* OR Nunavik* OR Kuujjuaq* OR Inukjuak* OR Puvirnituc* OR Saskatchewan* OR Saskatoon* OR Yukon* OR Whitehorse*).ti,ab. OR exp Canada/	60188
5	((systematic or state-of-the-art or scoping or literature or umbrella) adj (overview* or assessment*)) or meta-analy* or metaanaly* or ((systematic or evidence) adj1 assess*) or "research evidence" or metasynthe* or meta-synthe* or review*).tw. or exp Review/ or Meta-Analysis as Theme/ or Meta-Analysis/ or "systematic review"/	394 065
6	1 or 2	352 050
7	4 or 5	446 465
8	6 and 3 and 7	124
9	8 and (english or french).lg.	<b>116</b>

## Complementary research monitoring strategy

**COVID research monitoring: Mental health, psychosocial aspects, lifestyle habits, environmental health, occupational health, etc.**

### Methodology

A non-exhaustive monitoring process of scientific and grey literature has been conducted continuously since April 2020. Results from a set of relevant sources are captured by an RSS feed aggregator and then sorted daily by a team of scientific advisors, documentation technicians and librarians. The selected publications (scientific articles and grey literature) and preprints are then classified in different themes. Articles are selected on the basis of their relevance and public health priorities. In particular, the following are focused on: articles, scientific letters or correspondence providing new knowledge that may guide public health intervention or answer current questions; meta-analyses, systematic reviews and literature reviews.

### Sources

Databases:

- ▶ PubMed
- ▶ AgeLine (EBSCO)
- ▶ CINAHL (EBSCO)
- ▶ Environment Complete (EBSCO)
- ▶ ERIC (EBSCO)
- ▶ Health Policy Reference Center (EBSCO)
- ▶ Political Science Complete (EBSCO)
- ▶ Psychology and Behavioral Sciences Collection (EBSCO)
- ▶ Public Affairs Index (EBSCO)
- ▶ SocINDEX with Full Text (EBSCO)
- ▶ GreenFILE (EBSCO)
- ▶ PsycINFO (Ovid)
- ▶ bioRxiv
- ▶ medRxiv
- ▶ Other sources. All NCTSN Resources | The National Child Traumatic Stress Network
- ▶ Bienvenue | Santé publique Ontario
- ▶ CDC – Morbidity and Mortality Weekly Report
- ▶ CDC Emerging Infectious Diseases Journal
- ▶ China CDC Weekly
- ▶ CIDRAP – All News
- ▶ Eurosurveillance – Articles les plus récents
- ▶ Global Health
- ▶ Nature

- ▶ NICE-thématique-covid-19
- ▶ Pediatrics
- ▶ RMTC
- ▶ Science china life sciences
- ▶ AgriUrbain
- ▶ Alimentation — 100°
- ▶ FAO Newsroom RSS
- ▶ Food Secure Canada
- ▶ IPES food | Reports
- ▶ PROOF Food insecurity and policy research
- ▶ ACGIH — News
- ▶ ACMTS
- ▶ ACSP — Nouvelles
- ▶ Affaires autochtones et du Nord Canada — Centre des nouvelles du Canada
- ▶ Agriculture Canada
- ▶ AIHW — Latest reports
- ▶ ANSES — Nouvelles
- ▶ APHA
- ▶ ASPC
- ▶ ASPQ — communiqués/publications
- ▶ Assemblée nationale du Québec — Mandats de la Commission de la santé et des services sociaux
- ▶ CCNDS-NCCDH
- ▶ CCNMI-NCCID
- ▶ CCNMO-NCCMT
- ▶ CCNPPS-NCCHPP
- ▶ CCNSA-NCCAH
- ▶ CCNSE-NCCEH
- ▶ CDC
- ▶ Center for Professional Success
- ▶ Center on the developing child — resources
- ▶ Centre des nouvelles du Canada — Transports Canada
- ▶ Child Trends
- ▶ CMSC — Nouvelles
- ▶ CNESST
- ▶ Données Québec — Jeux de données les plus récents

- ▶ Eau | CCNSE
- ▶ ECDC
- ▶ Environnement Canada
- ▶ EU – OSHA
- ▶ Fra – Anses – Toutes les actualités
- ▶ FRA – Inra – Communiqués de presse
- ▶ Gouvernement du Nouveau-Brunswick – Santé – Communiqués récents
- ▶ Gouvernement du Québec – Portail Québec – Communiqués de presse
- ▶ Gouvernement des Territoires du Nord-Ouest – Secteurs Santé et Services Sociaux – Nouvelles
- ▶ Government of Alberta – Newsroom: Health
- ▶ Government of British Columbia – News
- ▶ Government of Manitoba – News Releases: Health, Seniors and Active Living
- ▶ Government of Newfoundland and Labrador – News Releases
- ▶ Government of Ontario News – Health and Long-Term Care: News
- ▶ Government of Prince Edward Island – Public Alerts
- ▶ Government of Saskatchewan – News Releases: Health
- ▶ Government of Yukon – Health & Social Services News Releases
- ▶ Haut Conseil de la santé publique
- ▶ Health PEI
- ▶ Health tech assessment
- ▶ Health Tech Update
- ▶ HSE
- ▶ In development | NICE
- ▶ INERIS
- ▶ INESSS
- ▶ INRS France – Actualités
- ▶ INSERM
- ▶ IRSST – Actualités
- ▶ Issues in emerging health
- ▶ MAPAQ
- ▶ McMaster – Health Forum
- ▶ MÉSI – Actualités
- ▶ Ministère environnement
- ▶ Ministère environnement – Communiqués
- ▶ Ministère Sécurité publique

- ▶ Ministère du Travail
- ▶ Morbidity and Mortality Weekly Report (MMWR)
- ▶ MSSS — Publications
- ▶ MSSS — Salle de presse
- ▶ National Academy of Medicine — Nouvelles
- ▶ NCTSN — Ressources
- ▶ New York State Department of Health — 2018 Press Releases
- ▶ NIH — News Release
- ▶ NLM — MedlinePlus: Foodborne Illness
- ▶ NSW Health (Australia) — Media Releases from the Minister for Health
- ▶ NSW Health (Australia) — Media Releases from the Minister for Mental Health
- ▶ NSW Health (Australia) — Publications
- ▶ NYAM — News
- ▶ New Zealand — Ministry of Health — Media Releases and News Articles
- ▶ New Zealand — Ministry of Health — What's new
- ▶ OECD
- ▶ OIT
- ▶ OMS
- ▶ Ontario Public Health Association — News
- ▶ PAHO
- ▶ Parlement fédéral — Activités liées aux projets de loi
- ▶ PCODR
- ▶ PHAC
- ▶ PHO
- ▶ PNUD
- ▶ Policy Options
- ▶ Pro-Med Mail — HealthMap Global Disease Alerts
- ▶ Public Health England — Activity on GOV.UK
- ▶ Ressources naturelles Canada
- ▶ RRSPQ
- ▶ Safe Work Australia — News feed
- ▶ SafetyLit: All (Unduplicated)
- ▶ Santé Canada
- ▶ Santé publique France — Presse
- ▶ SCOPH Santé publique — Nouvelles

- ▶ Suicide Prevention Resource Center — Nouvelles
- ▶ Therapeutic Review
- ▶ UNEP
- ▶ UNSCN — News, Resources and Events
- ▶ US — EPA
- ▶ US Army
- ▶ Vermont Department of Health — Social Media
- ▶ Waterra
- ▶ WHO
- ▶ 100°
- ▶ CityLab | All Articles
- ▶ Geography Realm (Geolounge)
- ▶ Newgeography.com — Economic, demographic, and political commentary about places
- ▶ Next City — Forefront
- ▶ Planetizen: The independent resource for people passionate about planning and related fields
- ▶ Streetsblog New York City
- ▶ Strong Towns Media — Strong Towns
- ▶ TheCityFix
- ▶ Urban Planning: The built environment
- ▶ SSRN — Preprints with The Lancet
- ▶ FAO

## Literature search in the grey literature

### Concepts

- ▶ Eating Habits and Changes
- ▶ Healthy lifestyle habits and obesity
- ▶ COVID-19
- ▶ Québec or Canada
- ▶ Literature reviews and meta-analyses

### Limits

- ▶ Chronology: November 17, 2019 to December 31, 2020.
- ▶ Linguistics: English or French.
- ▶ Geographic: Québec or Canada (for all types of studies).
- ▶ Types of studies: if outside Québec or Canada, reviews or meta-analyses only.

## Selection criteria

- ▶ Inclusion criteria:
  - ▶ The study focuses on the general population, on children, adolescents or adults;
  - ▶ The study examines a change in diet (food intake, eating habits, food purchases) during the COVID- 19 pandemic;
  - ▶ The scientific articles are primary studies presenting Canadian or Québec empirical data or are international literature reviews or meta-analyses;
- ▶ Exclusion Criteria:
  - ▶ The study does not address the context of COVID-19.

## Research strategy

Search done April 9 and 12<sup>th</sup> 2021.

### Google

- ▶ site:ca ext:pdf dietary|calories|eating|food|meal|"junk food"|restaurant-minute|beverages|sugary|quantity|nutrients|macronutrients AROUND (3) change|choice|consumption|intake|preference|quality data|survey|research|questionnaire|study|participants|participation covid|pandemic|coronavirus
- ▶ site:ca dietary|calories|eating|food|meal|"junk food"|restaurant-minute|beverages|sugary|quantity|nutrients|macronutrients AROUND (3) change|choice|consumption|intake|preference|quality data|survey|research|questionnaire|study|participants|participation covid|pandemic|coronavirus
- ▶ site:ca ext:pdf alimentaire|calories|manger|repas|malbouffe|"restauration rapide"|boissons|sucre|quantité|nutriments|macronutriments AROUND (3) changement|choix|consommation|apports|préférence|qualité données|sondage|recherche|questionnaire|étude|participants|participation covid|pandémie|coronavirus
- ▶ site:ca alimentaire|calories|manger|repas|malbouffe|"restauration rapide"|boissons|sucre|quantité|nutriments|macronutriments AROUND (3) changement|choix|consommation|apports|préférence|qualité données|sondage|recherche|questionnaire|étude|participants|participation covid|pandémie|coronavirus
- ▶ site:ca "lifestyle|behavior|behaviour|habit|habits|pattern|food|eat|eating|nutritive|nutrition AROUND(3) cooking|cook|prepare|plan|planning|snacks|snacking|meals|meal|intitle:weight" "participation|data|study|research|participants|survey " Covid|"corona virus"|coronavirus"|intitle:pandemic
- ▶ site:ca ext:pdf "lifestyle|behavior|behaviour|habit|habits|pattern|food|eat|eating|nutritive|nutrition AROUND(3) cooking|cook|prepare|plan|planning|snacks|snacking|meals|meal|intitle:weight" "participation|data|study|research|participants|survey " Covid|coronavirus"|intitle:pandemic
- ▶ site:ca "change|dietary|food|eat|eating|nutritive|nutrition|plan|planning AROUND(3) lifestyle|behavior|behaviour|habit|habits|pattern|cooking|prepare|snack|snacks|snacking|meal|intitle:weight" "participation|data|study|research|participants|survey " Covid|coronavirus"|intitle:pandemic



- ▶ site:ca ext:pdf "change|dietary|food|eat|eating|nutritive|nutrition|plan|planning AROUND(3) lifestyle |behavior|behaviour|habits|pattern|cooking|prepare|snack|snacks|snacking|meal|intitle:weight" "participation|data|study|research|participants|survey " Covid|coronavirus"|intitle:pandemic
- ▶ site:ca  
"habitudes|comportements|pattern|aliments|alimentation|manger|consommation|nutritif|nutrition AROUND(3) cuisiner|préparer|planifier|grignotines|collation|grignoter|repas|intitle:poids"  
"participation|données|étude|recherche|participants|sondage " Covid|"corona virus"|coronavirus"|intitle:pandémie
- ▶ site:ca ext:pdf  
"habitudes|comportements|pattern|aliments|alimentation|manger|consommation|nutritif|nutrition AROUND(3) cuisiner|préparer|planifier|grignotines|collation|grignoter|repas|intitle:poids"  
"participation|données|étude|recherche|participants|sondage " Covid|"corona virus"|coronavirus"|intitle:pandémie
- ▶ site:ca  
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habitudes|comportements|pattern|cuisiner|préparer|collations|collation|grignoter|grignotage|repas| intitle:poids" "participation|données|étude|recherche|participants|sondage " Covid|"corona virus"|coronavirus"|intitle:pandémie
- ▶ site:ca ext:pdf  
"changements|alimentaires|aliments|alimentation|manger|consommation|nutritif|nutrition|planifier|A ROUND(3)  
habitudes|comportements|pattern|cuisiner|préparer|collations|collation|grignoter|grignotage|repas| intitle:poids" "participation|données|étude|recherche|participants|sondage " Covid|coronavirus

## Grey Literature Databases

### Ophi@

- ▶ Search strategies identical to Google's engine..

### Santé Com

- ▶ (kw,wrld: aliment or kw,wrld : alimentaire or kw,wrld : manger or kw,wrld : consommation or kw,wrld : nutrition or kw,wrld : nutritif or kw,wrld : nourriture or kw,wrld:fruit or kw,wrld:malbouffe or kw,wrld:habitude or kw,wrld:collation or kw,wrld:repas or kw,wrld:grignotage or kw,wrld:cuisiner or kw,wrld:grignoter or kw,wrld:poids or kw,wrld:nutriments) and (kw,wrld: covid or kw,wrld: coronavirus or kw,wrld : "corona virus" or kw,wrld: confinement or kw,wrld : pandémie)

### CUBIQ

- ▶ (aliment\* OU calor\* OU manger OU nutriti\* OU collation\* OU grignot\* OU malbouffe OU cuisiner OU repas OU consomm\* OU fruit OU nutriments OU habitudes) ET (covid OU coronavirus OU "coronavirus" OU pandémie\*)

### **Bibliothèque scientifique fédérale du Canada**

- ▶ (dietary OR cook\* OR eat\* OR food\* OR meal\* OR nutriti\* OR beverages OR weight OR snack\* OR “junk food” OR fast-food OR fruit OR lifestyle OR meal OR pattern OR nutrients OR intake) AND (Covid OR "corona virus" OR coronavirus OR pandemic) NOT testing

### **Specific grey literature sources (exhaustive list)**

Here is the list of sources consulted using Google search strategies:

- ▶ Université Laval: [ulaval.ca/](http://ulaval.ca/)
- ▶ Université de Mc Gill: [mcgill.ca/](http://mcgill.ca/)
- ▶ Université de Montréal: [umontreal.ca/](http://umontreal.ca/)
- ▶ Université de Toronto: [utoronto.ca/](http://utoronto.ca/)
- ▶ Université de Waterloo: [uwaterloo.ca/](http://uwaterloo.ca/)
- ▶ Université McMaster: [mcmaster.ca/](http://mcmaster.ca/)
- ▶ Université de Moncton: [umoncton.ca/](http://umoncton.ca/)
- ▶ Université d’Ottawa: [uottawa.ca/fr](http://uottawa.ca/fr)
- ▶ Université Dalhousie (Agri-Food Analytics Lab): [dal.ca/](http://dal.ca/)
- ▶ Université Queens: [queensu.ca/](http://queensu.ca/)
- ▶ Université de Guelph: [uoguelph.ca/](http://uoguelph.ca/)
- ▶ Université Concordia: [concordia.ca](http://concordia.ca)
- ▶ Obesity Canada: [obesitycanada.ca/fr/](http://obesitycanada.ca/fr/)
- ▶ Association canadienne de santé publique: [cpha.ca/fr](http://cpha.ca/fr)
- ▶ Association de santé publique du Québec: [aspq.org/](http://aspq.org/)
- ▶ Statistique Canada: [statcan.gc.ca/fra/debut](http://statcan.gc.ca/fra/debut)
- ▶ Coalition Poids: [cqpp.qc.ca/fr](http://cqpp.qc.ca/fr)

## Appendix 3

**Table 4 Summary of data from the scientific and grey literature**

Author	Characteristics of the sample	Time of data collection	Themes studied	Details
(ASPQ, 2020)	1001 Québec adults	End of march 2020	<ul style="list-style-type: none"> <li>▶ Diet quality</li> <li>▶ Junk food</li> </ul>	<ul style="list-style-type: none"> <li>▶ One-time survey.</li> <li>▶ Sample is 51% female, approximately one-third of participants are retired.</li> <li>▶ Results weighted by sex, age, language, region, education and presence of children in the household, according to Statistics Canada data.</li> </ul>
(Bertrand et collab., 2021)	125 Saskatchewan university students	April to July 2020	<ul style="list-style-type: none"> <li>▶ Quantity</li> <li>▶ Fruits and vegetables</li> <li>▶ Snacking</li> </ul>	<ul style="list-style-type: none"> <li>▶ One-time survey.</li> <li>▶ Small sample of university students, 76% female.</li> <li>▶ Respondents who participated during June and July were asked to refer to their April and May diets when answering questions about their diets during the pandemic, which may have added additional recall bias for these participants.</li> </ul>
(INSPQ, 2020a, 2020b, 2020c, 2021d, 2021a, 2021b, 2021c, 2021e, 2021f, 2021g)	6600 Québec adults per two-week period (i.e. for each survey)	July 2020 to May 2021	<ul style="list-style-type: none"> <li>▶ Fruits and vegetables</li> <li>▶ Junk food</li> <li>▶ Deterioration in junk food and/or fruit and vegetable consumption</li> <li>▶ Increase in junk food consumption and decrease in fruit and vegetable consumption</li> <li>▶ Cooking</li> <li>▶ Skipping one of the main meal</li> <li>▶ Pausing to eat</li> <li>▶ Snacking</li> </ul>	<ul style="list-style-type: none"> <li>▶ Recurring survey with a sample from a web panel</li> <li>▶ Results weighted for sex, age, region, language, household composition and education.</li> </ul>

**Table 4 Summary of data from the scientific and grey literature (cont'd)**

Author	Characteristics of the sample	Time of data collection	Themes studied	Details
(Boivin et collab., 2020 a, 2020b)	1000 Québec adults, for each monthly vigil	Mid-April 2020 and mid-May 2020	<ul style="list-style-type: none"> <li>▶ Quality</li> <li>▶ Quantity</li> <li>▶ Cooking</li> <li>▶ Snacking</li> </ul>	<ul style="list-style-type: none"> <li>▶ Occasional surveys.</li> <li>▶ Observatoire de la consommation responsable.</li> <li>▶ Sample of convenience, members of a web panel (mbaweb.ca). Data weighted by region, language, age and gender.</li> </ul>
(Canseco, 2020)	1000 Canadians adults	Early June 2020	<ul style="list-style-type: none"> <li>▶ Fruits and vegetables</li> <li>▶ Cooking</li> </ul>	<ul style="list-style-type: none"> <li>▶ One-time survey.</li> <li>▶ Results weighted according to Canadian census (age, gender and region).</li> </ul>
(Canseco, 2021)	800 British Columbia adults	Early February 2021	<ul style="list-style-type: none"> <li>▶ Take out</li> </ul>	<ul style="list-style-type: none"> <li>▶ One-time survey.</li> <li>▶ Results weighted according to Canadian census (age, gender and region).</li> </ul>
(Carroll et collab., 2020)	254 Ontario families with young children; Guelph Family Health Study	Mid-April to mid-May 2020	<ul style="list-style-type: none"> <li>▶ Quantity</li> <li>▶ Fruits and vegetables</li> <li>▶ Junk food</li> <li>▶ Cooking</li> <li>▶ Snacking</li> </ul>	<ul style="list-style-type: none"> <li>▶ Survey of an existing cohort.</li> <li>▶ Sample comprised primarily of high-income Caucasians.</li> </ul>
(Charlebois et collab., 2020)	1505 Canadians	Early June 2020	<ul style="list-style-type: none"> <li>▶ Take out</li> </ul>	<ul style="list-style-type: none"> <li>▶ The sample is not described in the article.</li> </ul>
(Charlebois et collab., 2021)	10 004 Canadians	January 2021	<ul style="list-style-type: none"> <li>▶ Cooking</li> </ul>	<ul style="list-style-type: none"> <li>▶ One-time survey.</li> <li>▶ Sample said to be representative, but not described in the article.</li> </ul>
(Charlebois et Music, 2021)	9991 Canadians	April 2021	<ul style="list-style-type: none"> <li>▶ Snacking</li> </ul>	<ul style="list-style-type: none"> <li>▶ One-time survey.</li> <li>▶ Sample said to be representative, but not described in the article.</li> </ul>

**Table 4** Summary of data from the scientific and grey literature (cont'd)

Author	Characteristics of the sample	Time of data collection	Themes studied	Details
(Cloutier et collab., 2020)	1143 Québec adults	End of May 2020	<ul style="list-style-type: none"> <li>▶ Cooking</li> <li>▶ Meal planning</li> </ul>	<ul style="list-style-type: none"> <li>▶ One-time survey.</li> <li>▶ Recruitment carried out via a web panel of a polling firm. Sample representative of the Québec population in terms of gender, age and region.</li> </ul>
(Dianat et collab., 2020)	918 Toronto adults	July 2020	<ul style="list-style-type: none"> <li>▶ Cooking</li> <li>▶ Take-out</li> </ul>	<ul style="list-style-type: none"> <li>▶ One-time survey.</li> <li>▶ Higher proportion of young adults in the sample than in the population.</li> </ul>
(Durif et collab., 2020a, 2020b, 2020c, 2020d, 2020e, 2020f, 2020g, 2020h, 2020i)	500 Québec adults, for each weekly vigil	Early April 2020 to early June 2020	<ul style="list-style-type: none"> <li>▶ Fruits and vegetables<sup>2</sup></li> <li>▶ Take-out</li> </ul>	<ul style="list-style-type: none"> <li>▶ Weekly surveys conducted with different respondents each week.</li> <li>▶ Observatoire de la consommation responsable.</li> <li>▶ Sample of convenience recruited via a web panel (mbaweb.ca). Data weighted by region, language, gender and age.</li> </ul>
(Durif et Boivin, 2020)	1050 Québec adults	Late September to early October 2020	<ul style="list-style-type: none"> <li>▶ Cooking</li> </ul>	<ul style="list-style-type: none"> <li>▶ Monthly survey.</li> <li>▶ Observatoire de la consommation responsable.</li> <li>▶ Participants were randomly selected from a panel of 34,000 internet users representative of the population (MBA Recherche). Data weighted according to age and sex based on the Canadian census.</li> </ul>
(El-Gabalawy et Sommer, 2021)	4627 Canadians aged 15 and over; Canadian Perspectives Survey Series 1: The Impacts of COVID 19	Late March to early April 2020	<ul style="list-style-type: none"> <li>▶ Junk food</li> </ul>	<ul style="list-style-type: none"> <li>▶ First Iteration of the Canadian Perspectives Survey Series: Impact of COVID-19.</li> <li>▶ Random sample. Weighted data.</li> </ul>

<sup>2</sup> La question utilisée par Durif et collab. pour étudier la consommation de fruits et légumes n'était pas assez claire pour intégrer ces données à la présente synthèse.

**Table 4 Summary of data from the scientific and grey literature (cont'd)**

Author	Characteristics of the sample	Time of data collection	Themes studied	Details
(Gallais et collab., 2021)	8581 CEGEP students in the province of Québec	Late November to mid-December 2020	▶ Junk food	▶ One-time survey. ▶ Sample of college students, 73% female.
(Gouvernement du Canada, 2020)	4600 Canadians aged 15 and over; Canadian Perspectives Survey Series 2: Follow-up on the effects of COVID-19	Early May 2020	▶ Junk food	▶ Second iteration of the Canadian Perspectives Survey Series: tracking the effects of COVID-19. ▶ This iteration was conducted with most of the same respondents as the first iteration. Data from the first and second iterations are compared.
(Jantzen et collab., 2020)	8137 Québec adults; CARTaGENE Cohort	June 2020	▶ Quality ▶ Quantity	▶ CARTaGENE longitudinal cohort. ▶ Sample made up of individuals aged 40 to 69 years at the time of recruitment, thus an older sample with a higher level of education.
(Jedwab, 2020)	1516 Canadians adults	End of October 2020	▶ Quantity	▶ One-time survey. Recruitment via a web panel (Leger Marketing). ▶ Results are weighted by gender, age, language, region, level of education and presence of children in the household, according to Canadian census data.
(Kaddatz et Badets, 2020)	1500 Canadians adults	Mid-March to mid-April 2020	▶ Cooking ▶ Take-out	▶ One-time survey. ▶ Results weighted by gender, age, language, region, education and presence of children in the household, based on the Canadian census.

**Table 4** Summary of data from the scientific and grey literature (cont'd)

Author	Characteristics of the sample	Time of data collection	Themes studied	Details
(Karamanoglu et collab., 2020)	349 Québec adults	Early June to late August 2020	<ul style="list-style-type: none"> <li>▶ Fruits and vegetables</li> <li>▶ Take-out</li> <li>▶ Snacking</li> </ul>	<ul style="list-style-type: none"> <li>▶ One-time survey.</li> <li>▶ Convenience sample; 80% female; education level.</li> </ul>
(Lamarche et collab., 2021)	853 Québec adults; NutriQuébec Cohort	Mid-April to mid-May 2020	<ul style="list-style-type: none"> <li>▶ Quality</li> <li>▶ Quantity</li> <li>▶ Fruits and vegetables</li> </ul>	<ul style="list-style-type: none"> <li>▶ NutriQuébec longitudinal cohort.</li> <li>▶ Sample more advantaged than the general population.</li> <li>▶ Results weighted for age, sex, place of residence and education.</li> </ul>
(Observatoire de la consommation responsable, 2020a)	400 Québec adults	Late April 2020	<ul style="list-style-type: none"> <li>▶ Take out</li> </ul>	<ul style="list-style-type: none"> <li>▶ One-time survey. Observatoire de la consommation responsable.</li> <li>▶ Convenience sample, via a web panel (mbaweb.ca). Data weighted by region, language, gender and age.</li> </ul>
(Observatoire de la consommation responsable, 2020b)	400 Québec adults	Late March 2020	<ul style="list-style-type: none"> <li>▶ Snacking</li> </ul>	<ul style="list-style-type: none"> <li>▶ One-time survey. Observatoire de la consommation responsable.</li> <li>▶ Convenience sample, via a web panel (mbaweb.ca). Data weighted by region, language, gender and age.</li> </ul>
(Zajacova et collab., 2020)	4383 Canadians adults 25 years and older; Canadian Perspectives Survey Series 1: Impact of the COVID-19	Late March to early April 2020	<ul style="list-style-type: none"> <li>▶ Junk food</li> </ul>	<ul style="list-style-type: none"> <li>▶ First Iteration of the Canadian Perspectives Survey Series: Impact of COVID-19. Random sample. Weighted data.</li> </ul>





## Appendix 4

### Changements selon diverses caractéristiques sociodémographiques

Parmi les données recensées, l'âge est la caractéristique qui a été la plus fréquemment étudiée et croisée avec les changements des apports et de comportements alimentaires. Selon les indications de l'INSPQ pour interpréter leur sondage, une différence de cinq points de pourcentage entre les groupes est considérée comme importante. Afin d'alléger la présentation des résultats dans l'annexe, les proportions d'individus ayant rapporté un maintien de leurs apports et comportements alimentaires durant la pandémie ne sont pas rapportées.

#### Âge

Neuf groupes de recherche ont rapporté des données d'apports et de comportements alimentaires en fonction de groupes d'âge (ASPQ, 2020; Boivin et collab., 2020 a, 2020 b; Canseco, 2020; El-Gabalawy et Sommer, 2021; INSPQ, 2021a, 2021 b, 2021c, 2021e, 2021f, 2021g; Lamarche et collab., 2021), ou de populations d'âge spécifique : des collégiens (Gallais et collab., 2021), des universitaires (Bertrand et collab., 2021) et des adultes plus âgés (Jantzen et collab., 2020).

#### **En bref : les changements d'apports et de comportements alimentaires durant la pandémie; différences selon l'âge**

Malgré qu'elle soit la caractéristique la plus étudiée dans les études recensées, chacune des thématiques a été étudiée en fonction de l'âge par peu de groupes de recherche. En raison de données insuffisantes pour une majorité de thématiques, des constats peuvent être émis seulement pour les thématiques « Consommation de malbouffe » et « Planifier les repas et cuisiner ».

Dans toutes les études ayant examiné les changements dans la consommation de malbouffe chez les jeunes adultes, la proportion de ceux ayant rapporté avoir augmenté leur consommation de malbouffe est plus importante que la proportion indiquant l'avoir diminuée (43-48 % c. 12-17 %). Dans divers échantillons étudiés, les jeunes adultes ont indiqué en plus grande proportion (43 à 48 %) que les adultes plus âgés (2 à 36 %) consommer plus de malbouffe qu'avant la pandémie. Ils semblent moins nombreux, en proportion, à avoir rapporté une diminution de leur consommation que leurs aînés (12 à 17 % c. 14 à 29 %).

Les jeunes adultes sont le groupe d'âge qui rapportait en plus grande proportion avoir cuisiné davantage. En raison de l'insuffisance des données, on ne peut tirer de constat quant aux pourcentages d'individus par groupe d'âge ayant rapporté une augmentation ni quant aux différences selon l'âge pour la diminution et le maintien de ce comportement.

De manière générale pour les autres thématiques étudiées dans les sondages, bien que ces impressions restent à confirmer par d'autres études, on semble remarquer que les jeunes adultes ont eu plus tendance à modifier (augmenter ou diminuer) leurs apports et leurs comportements alimentaires que leurs aînés. En effet, selon ce qu'ils ont rapporté, leurs apports et leurs comportements alimentaires semblent être demeurés moins stables.

## **Qualité de l'alimentation**

En matière de qualité globale de l'alimentation, quelques données présentent des différences selon l'âge, mais sont impossibles à comparer en raison de leur nature différente (ASPQ, 2020; Boivin et collab., 2020a, 2020b; Jantzen et collab., 2020; Lamarche et collab., 2021).

Dans trois différents sondages, lorsqu'interrogés sur la qualité de leur alimentation, les jeunes adultes étaient, en proportion, plus nombreux à rapporter une diminution de la qualité de leur alimentation que les adultes plus vieux (ASPQ, 2020; Boivin et collab., 2020a, 2020b).

Ce sont 36 % des jeunes de 18-34 ans participant à un sondage québécois qui ont rapporté une diminution de la qualité de leur alimentation (c. 17 % des adultes de 55 ans et plus) (ASPQ, 2020). Les jeunes sont aussi, en proportion, légèrement plus nombreux à rapporter avoir amélioré la qualité de leur alimentation que les adultes plus âgés (55 ans et plus) (25 % c. 17 %) (ASPQ, 2020). Il semblerait donc que les jeunes adultes ont en plus grande proportion changé la qualité de leur alimentation durant la pandémie que les adultes plus vieux. Un seul sondage a évalué à la fois la proportion d'individus ayant rapporté une amélioration de la qualité de son alimentation et la proportion ayant rapporté une diminution (ASPQ, 2020). Au sein de ce sondage, la proportion de jeunes adultes ayant rapporté une détérioration de la qualité globale de leur alimentation est supérieure à la proportion qui a rapporté une amélioration (36 % c. 25 %) (ASPQ, 2020).

Chez des adultes plus âgés (40 ans et plus), l'examen de la perception de changement de la qualité de l'alimentation, fait par Jantzen et collab., a suggéré que celle-ci est demeurée relativement stable (Jantzen et collab., 2020).

Dans la cohorte NutriQuébec, l'amélioration de la qualité de l'alimentation entre la mesure pré-pandémique et celle en avril-mai 2020, calculée à l'aide du score de qualité globale de l'alimentation (HEI), était légèrement plus prononcée chez les jeunes adultes de 18-29 ans (+ 3,6 points de score HEI) que pour l'ensemble de la cohorte (+ 1,1 point de score HEI) (Lamarche et collab., 2021).

## **Quantité d'aliments consommés**

En ce qui a trait aux différences de changement des quantités d'aliments consommés selon l'âge, il est impossible d'établir un constat clair en raison de l'hétérogénéité de la présentation des données dans les études et de l'insuffisance d'études ayant présenté des données pour différents groupes d'âge.

Un groupe de recherche a constaté que les jeunes adultes ont davantage eu tendance à manger plus, comparativement aux adultes plus âgés, sans toutefois indiquer les proportions d'individus concernés dans chacun des groupes d'âge (Boivin et collab., 2020 a, 2020b).

D'autres données semblent indiquer que les jeunes adultes rapportaient en plus grande proportion (36 %) que leurs aînés (65 ans et plus; 19 %) avoir mangé plus, mais également en plus grande proportion (26 % c. 13 %) avoir mangé moins (Jedwab, 2020). Encore une fois, les jeunes adultes semblent, en proportion, être ceux ayant changé le plus la quantité d'aliments consommés. Seul ce groupe de recherche a rapporté à la fois la proportion d'individus ayant augmenté la quantité d'aliments consommés et la proportion ayant rapporté une diminution de celle-ci (Jedwab, 2020). Au sein de ce sondage, une plus grande proportion de jeunes adultes a rapporté manger davantage que la proportion de jeunes ayant rapporté manger moins (36 % c. 26 %) (Jedwab, 2020).

Une étude chez une centaine d'étudiants universitaires effectuée entre avril et juillet 2020 présente des données d'apports moyens non comparables avec les autres données recensées. Ces données, colligées à l'aide d'un questionnaire de fréquence, indiquaient une réduction significative de l'apport calorique quotidien moyen par rapport aux apports avant la pandémie (Bertrand et collab., 2021).

Dans un échantillon d'adultes plus âgés questionnés en juin 2020, seuls 2 % des participants ont rapporté manger plus qu'avant la pandémie (Jantzen et collab., 2020).

### **Consommation de fruits et légumes**

Au sein d'un même sondage, la proportion de jeunes adultes ayant rapporté avoir augmenté sa consommation de fruits et de légumes est plus importante que la proportion qui a rapporté une diminution (29-32 % c. 8-16 %) (Canseco, 2020; INSPQ, 2021c).

En ce qui concerne les différences de consommation de fruits et légumes selon les groupes d'âge, les résultats ne concordent pas tous : dans certaines études, les jeunes adultes semblent, en proportion, les plus nombreux à avoir changé leur consommation de fruits et légumes, mais cela n'est pas le constat fait par tous les groupes de recherche. Il semble y avoir concordance dans les données portant sur l'augmentation de la consommation de fruits et légumes : ce sont les jeunes adultes qui semblent en plus grande proportion l'avoir augmentée (29-32 % c. moins de 23 % pour les autres groupes d'âge) (Canseco, 2020; INSPQ, 2021c). Par contre, les données sur la diminution de la consommation de fruits et légumes, en fonction de l'âge, ne concordent pas. Dans les données de l'INSPQ, on observe un gradient inverse selon l'âge : les jeunes adultes rapportent en plus grande proportion avoir réduit leur consommation en mars 2021 par rapport à avant la pandémie (16 % chez les 18-24 ans c. 5 à 14 % chez les 25 ans et plus) (INSPQ, 2021c). Ce n'est toutefois pas le constat obtenu par Canseco et collab., dont les données indiquent plutôt une similitude entre les groupes d'âge (Canseco, 2020).

Des étudiants universitaires de la Saskatchewan ont rapporté une fréquence de consommation quotidienne de fruits et légumes plus faible en avril-juillet 2020 qu'avant la pandémie. Selon le questionnaire de fréquence utilisé pour la collecte de données d'apports alimentaires, les répondants ont réduit leur fréquence de consommation de fruits et de légumes : passant de 1,01 fois par jour à 0,86 pour les fruits et de 1,37 fois par jour à 0,75 pour les légumes (Bertrand et collab., 2021).

### **Consommation de malbouffe**

Dans divers échantillons, les jeunes adultes ont indiqué en plus grande proportion (43 à 48 %) que les adultes plus âgés (2 à 36 %) consommer plus de malbouffe qu'avant la pandémie (ASPQ, 2020; El-Gabalawy et Sommer, 2021; Gallais et collab., 2021; INSPQ, 2021c). Concernant la diminution de la consommation de malbouffe, ce sont 12 à 17 % des jeunes adultes et 14 à 29 % des adultes plus âgés qui ont rapporté ce changement d'apport (ASPQ, 2020; Gallais et collab., 2021; INSPQ, 2021c). Au sein des sondages, la proportion de jeunes adultes ayant rapporté avoir augmenté leur consommation de malbouffe est plus importante que la proportion ayant rapporté une diminution (43-48 % c. 12-17 %) (ASPQ, 2020; Gallais et collab., 2021; INSPQ, 2021c).

### **Changement simultané dans la consommation de malbouffe et de fruits et légumes**

Selon le sondage de l'INSPQ d'avril 2021, la proportion d'adultes québécois rapportant avoir augmenté sa consommation de malbouffe ou diminué celle de fruits et légumes ou détériorés ces deux habitudes suivait un gradient inverse selon l'âge et s'avérait nettement plus élevée chez les jeunes adultes (52 %) que chez les autres groupes d'âge (17 à 40 %) (INSPQ, 2021d). La proportion de jeunes adultes ayant à la fois augmenté leur consommation de malbouffe et diminué celle de fruits

et légumes (11 %) se distingue également de celle des adultes de 60 ans et plus (4 % et moins) (INSPQ, 2021d). La proportion d'individus ayant rapporté avoir réduit leur consommation de malbouffe et augmenté celle de fruits et légumes est similaire à travers les groupes d'âge (8 à 11 %) (INSPQ, 2021d).

### **Cuisiner**

Les résultats montrent que les jeunes adultes constituaient le groupe d'âge qui rapportait en plus grande proportion avoir cuisiné davantage (Boivin et collab., 2020a; Cloutier et collab., 2020; INSPQ, 2021e, 2021f, 2021g; Kaddatz et Badets, 2020). Seuls deux de ces sondages ont présenté des pourcentages d'individus ayant rapporté des changements. Selon le sondage de l'INSPQ, un gradient selon l'âge est présent dans l'habitude de cuisiner plus souvent : 32-36 % des adultes de 18-24 ans c. 16-33 % des adultes plus âgés ont rapporté cuisiner plus souvent (INSPQ, 2021e, 2021f, 2021g). Dans un autre sondage, les résultats indiquent que les jeunes de 18-34 ans (48 % des femmes et 41 % des hommes) ont cuisiné plus souvent que les adultes de 55 ans et plus (39 % des femmes et 30 % des hommes) (Kaddatz et Badets, 2020). D'autres données canadiennes et québécoises indiquaient que, parmi les groupes d'âge, les jeunes adultes sont, en proportion, les plus nombreux à avoir cuisiné davantage de desserts (Boivin et collab., 2020a, 2020 b; Canseco, 2020). Notons également que, selon les données de l'INSPQ, la proportion rapportant cuisiner moins dans le dernier mois qu'au même moment l'année précédente était plus importante chez les jeunes adultes (13-14 %) que chez les autres groupes d'âge de 45 ans et plus (5 à 7 %) (INSPQ, 2021e, 2021f, 2021g). Les sondages qui ont à la fois rapporté les proportions d'individus ayant cuisiné plus et moins ont montré que la proportion de jeunes adultes ayant cuisiné davantage est plus importante que la proportion ayant cuisiné moins (32-36 % c. 13-14 %) (INSPQ, 2021e, 2021f, 2021g).

### **Sauter l'un des repas principaux**

Dans les sondages de l'INSPQ, comparativement aux autres groupes d'âge, les jeunes adultes ont mentionné en plus grande proportion qu'ils avaient l'habitude de sauter l'un des repas principaux au cours du dernier mois comparativement à pareille date l'année précédant le sondage (environ 75 % c. 63 % et moins pour les autres groupes d'âge) (INSPQ, 2021e, 2021f, 2021g). Environ 40 % des jeunes adultes ont rapporté qu'ils ont sauté plus souvent l'un des repas principaux dans le dernier mois, comparativement au même moment l'année précédente (c. environ 20-30 % pour les autres groupes d'âge) (INSPQ, 2021e, 2021f, 2021g). Il n'y a pas de tendance claire quant aux différences selon l'âge dans le fait de sauter moins souvent l'un des repas principaux (INSPQ, 2021e, 2021f, 2021g). Plus spécifiquement pour les jeunes, la proportion ayant sauté plus souvent un des repas principaux est plus importante que la proportion qui en a sauté moins souvent (38-43 % c. 12-15 %) (INSPQ, 2021e, 2021f, 2021g).

### **Prendre un temps d'arrêt pour manger**

Dans les sondages de l'INSPQ, environ 80 % des adultes ont rapporté prendre un temps d'arrêt pour manger, sans distinction pour l'âge (INSPQ, 2021e, 2021f, 2021g). Toutefois, les jeunes adultes ont rapporté en plus grande proportion le faire moins souvent dans le dernier mois comparativement au même moment l'année précédant le sondage (environ 30 % c. environ < 20 %) (INSPQ, 2021e, 2021f, 2021g). Les proportions d'individus rapportant prendre plus souvent le temps étaient plus importantes chez les 18-44 ans (13 à 17 %), comparativement aux 60 ans et plus (8 à 10 %) (INSPQ, 2021e, 2021f, 2021g). La proportion de jeunes adultes ayant pris moins souvent un temps d'arrêt pour manger est plus importante que la proportion qui a pris un temps d'arrêt plus souvent (31-35 % c. 13-17 %) (INSPQ, 2021e, 2021f, 2021g).

### **Commander des mets de restauration**

Une proportion plus importante de jeunes adultes a commandé des repas au restaurant depuis le début de la pandémie ou a eu l'habitude de le faire (environ entre 55 % et 80 %) (Canseco, 2021; Charlebois et collab., 2020; Observatoire de la consommation responsable, 2020a), comparativement aux adultes plus vieux (environ entre 10 % et 35 %) (Canseco, 2021; Observatoire de la consommation responsable, 2020a). Un seul groupe de recherche a étudié le changement de ce comportement durant la pandémie, comparativement à avant, auprès d'un échantillon de Britanno-Colombiens. Leurs résultats indiquent que 42 % des jeunes adultes de 18-34 ans ont commandé plus souvent des mets de restauration qu'avant la pandémie, alors que c'est le cas pour 31 % des 35-54 ans et pour 13 % des 55 ans et plus (Canseco, 2021).

### **Grignoter et collationner**

Dans les sondages de l'INSPQ, on observe un gradient selon l'âge dans l'habitude de grignoter. Les jeunes adultes rapportaient en plus grande proportion avoir mangé des collations salées ou sucrées entre les repas, ou consommé des boissons sucrées, au cours du dernier mois par rapport au même moment l'année précédente (9 sur 10, comparativement à environ 5 à 8 sur 10, pour les autres groupes d'âge) (INSPQ, 2021e, 2021f, 2021g). Les données montrent également un gradient selon l'âge dans la proportion d'individus ayant rapporté grignoter plus souvent au cours du dernier mois comparativement au même moment l'année précédente (environ le tiers chez les 18-24 ans et entre 12 % et 28 % chez les adultes plus vieux) (INSPQ, 2021e, 2021f, 2021g). Au sein de ce sondage, une proportion plus importante de jeunes adultes a rapporté avoir grignoté davantage comparativement à la proportion ayant rapporté avoir grignoté moins (30-32 % c. 15-20 %) (INSPQ, 2021e, 2021f, 2021g).

La fréquence rapportée de consommation quotidienne moyenne de collations d'un petit échantillon d'étudiants universitaires saskatchewanais a diminué significativement de 1,2 (avant la pandémie) à 0,8 (durant la pandémie) (Bertrand et collab., 2021).

### **Sexe**

Plusieurs sondages et enquêtes réalisés au Québec et au Canada ont rapporté des changements dans l'alimentation en fonction du sexe (ASPQ, 2020; Bertrand et collab., 2021; Boivin et collab., 2020b, 2020a; Canseco, 2020; Charlebois et Music, 2021; Cloutier et collab., 2020; Durif et Boivin, 2020; INSPQ, 2021e, 2021f, 2021g; Jantzen et collab., 2020; Jedwab, 2020; Kaddatz et Badets, 2020; Zajacova et collab., 2020).

#### **En bref : les changements d'apports et de comportements alimentaires durant la pandémie; différences selon le sexe**

On ne peut pas dresser un constat général quant à une différence dans la détérioration ou l'amélioration globale de l'alimentation selon le sexe. Pour la majorité des apports et des comportements alimentaires examinés selon le sexe, les données disponibles pour une même thématique sont insuffisantes pour tirer des constats. Pour les autres thématiques, sur lesquelles au moins trois groupes de recherche se sont penchés, les résultats ne sont pas concordants.

## Apports alimentaires

Trois sondages ont comparé l'augmentation de la quantité de nourriture consommée durant la pandémie entre les femmes et les hommes et présentent des constats différents (Bertrand et collab., 2021; Jantzen et collab., 2020; Jedwab, 2020). Un des sondages indique qu'aucune différence significative n'a été observée dans la diminution de l'apport calorique en fonction du sexe (Bertrand et collab., 2021), un autre présente une différence significative sans pourtant représenter une distinction cliniquement importante (Jantzen et collab., 2020) et finalement, le dernier rapporte que la proportion de femmes ayant augmenté leurs apports alimentaires est plus importante que celle chez les hommes (Jedwab, 2020).

Les données sur la malbouffe et les fruits et légumes de deux études présentent des différences selon le sexe (ASPQ, 2020; Zajacova et collab., 2020), alors que deux autres n'en présentent pas (Canseco, 2020; INSPQ, 2021c). Dans les deux études qui ont présenté une différence, les femmes ont rapporté en plus grande proportion que les hommes avoir augmenté leur consommation de malbouffe (ASPQ, 2020; Zajacova et collab., 2020) et en moins grande proportion l'avoir diminuée (ASPQ, 2020).

## Comportements alimentaires

Similairement, les données sur l'habitude de cuisiner présentent des résultats contradictoires. Certaines montrent que les hommes ont été plus nombreux, en proportion, à rapporter passer plus de temps à cuisiner qu'avant la pandémie (Cloutier et collab., 2020), alors que d'autres indiquent que ce sont plutôt les femmes qui ont davantage cuisiné (Durif et Boivin, 2020; Kaddatz et Badets, 2020), tandis que d'autres données ne montrent pas de différence (INSPQ, 2021e, 2021f, 2021g). Selon une autre étude, les femmes auraient davantage cuisiné de desserts durant la pandémie (Boivin et collab., 2020a).

Concernant les autres comportements alimentaires, seulement deux groupes de chercheurs ont examiné et rapporté les différences entre les hommes et les femmes (INSPQ, 2021e, 2021f, 2021g; Kaddatz et Badets, 2020). Les femmes ont rapporté en plus grande proportion que les hommes avoir sauté plus souvent un des repas principaux (27-29 % c. 22 %) <sup>3</sup> (INSPQ, 2021f, 2021g). Elles étaient également, en proportion, plus nombreuses à rapporter avoir plus souvent grignoté des collations salées ou sucrées entre les repas, ou consommé des boissons sucrées (24-29 % c. 19-21 %) (INSPQ, 2021e, 2021f, 2021g). Quant aux hommes, ils étaient, en proportion, plus nombreux à avoir eu davantage l'habitude de commander des mets pour emporter (Kaddatz et Badets, 2020). Aucune différence entre les hommes et les femmes n'a été observée pour l'habitude de prendre un temps d'arrêt pour manger (INSPQ, 2021e, 2021f, 2021g).

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<sup>3</sup> Pour l'habitude de sauter l'un des repas principaux plus souvent, une différence est présente entre les femmes et les hommes dans deux des trois itérations du sondage sur les comportements alimentaires de l'INSPQ présentées dans ce rapport; dans l'autre itération, cette différence était de moins de cinq points de pourcentage et n'était donc pas jugée comme importante (31 % c. 27 %) (INSPQ, 2021e).

## **Autres caractéristiques**

D'autres caractéristiques sociodémographiques (niveau d'éducation, niveau de défavorisation, lieu de résidence, taille du ménage, télétravail, statut d'immigration et statut d'emploi) ont été examinées dans un petit nombre d'études (Cloutier et collab., 2020; Durif et Boivin, 2020; INSPQ, 2021d, 2021e, 2021f, 2021g; Lamarche et collab., 2021; Zajacova et collab., 2020).

### **En bref : les changements d'apports et de comportements alimentaires durant la pandémie; différences selon diverses caractéristiques à l'exception de l'âge et du sexe**

Pour chacune des caractéristiques, les thématiques ont été étudiées par trop peu de groupes de recherche, ce qui ne permet pas de tirer de conclusion fiable. Il aurait été intéressant de pouvoir vérifier notre hypothèse voulant que les inégalités en alimentation présentes avant la pandémie se soient exacerbées durant celle-ci. Des études évaluant l'alimentation en fonction de diverses caractéristiques seront nécessaires pour y arriver.

## **Niveau de scolarité**

Deux groupes de chercheurs ont examiné les différences selon le niveau de scolarité (INSPQ, 2021e, 2021f, 2021g; Lamarche et collab., 2021).

Dans les différentes itérations du sondage de l'INSPQ, les individus possédant un diplôme universitaire étaient plus nombreux, en proportion, à avoir indiqué cuisiner plus souvent (28-30 %) et avoir grignoté plus souvent (25-27 %) que les individus possédant un diplôme secondaire ou moins (respectivement 22-14% et 18-22 %) (INSPQ, 2021e, 2021f, 2021g). Seule une des trois itérations du sondage, celle menée en janvier 2021, ne présentait pas de différence importante pour l'habitude de grignoter. Aucune différence selon le niveau d'éducation n'a été soulevée dans le changement des habitudes de sauter un des repas principaux et de prendre un temps d'arrêt pour manger.

Dans l'échantillon de NutriQuébec, les personnes avec un plus faible niveau d'éducation ont amélioré davantage la qualité de leur alimentation comparativement à avant la pandémie, en comparaison aux personnes avec un niveau de scolarité plus élevé (+ 1,9 point de score HEI c. - 0,3 point et + 0,6 point) (Lamarche et collab., 2021).

## **Revenu**

Selon un sondage québécois, les individus ayant un revenu plus élevé ont davantage cuisiné, mais les auteurs n'ont pas rapporté les proportions spécifiques (Durif et Boivin, 2020).

Zajacova et collab. ont observé qu'avoir subi un impact financier négatif avait influencé la consommation de malbouffe : 28 % des personnes ayant vécu un impact financier négatif durant la pandémie rapportaient avoir augmenté leur consommation de malbouffe, comparativement à 18 % des personnes n'ayant vécu aucun impact financier (Zajacova et collab., 2020).

## **Indice de défavorisation matérielle du quartier de résidence**

Selon les résultats du volet du sondage de l'INSPQ portant sur les comportements alimentaires, aucune différence n'a été identifiée entre le premier et dernier quintile de défavorisation matérielle du quartier de résidence pour l'ensemble des habitudes étudiées : cuisiner, sauter un des repas principaux, prendre un temps d'arrêt pour manger et grignoter (INSPQ, 2021e, 2021f, 2021g).

## Région de résidence

Trois groupes de recherche ont examiné les changements d'apports et de comportements alimentaires selon la région de résidence (Cloutier et collab., 2020; INSPQ, 2021c, 2021e, 2021g, 2021f; Lamarche et collab., 2021).

Lamarche et collab. ont remarqué une plus grande amélioration de la qualité de l'alimentation des participants vivant à l'extérieur des régions métropolitaines de Québec et Montréal comparativement à celle des participants vivant dans la région métropolitaine de Montréal (+ 1,6 point de score HEI c. + 0,6 point) (Lamarche et collab., 2021).

Selon le sondage de l'INSPQ, la consommation de malbouffe selon le lieu de résidence suit un gradient : les personnes résidant dans de plus grandes villes ont rapporté en plus grande proportion (31 % région métropolitaine de recensement de Montréal [RMR]) une augmentation de leur consommation de malbouffe que les personnes habitant des plus petites villes (21 à 27 %) (INSPQ, 2021c). Il n'y avait pas de différence pour la consommation de fruits et de légumes selon la région de résidence (INSPQ, 2021c).

Les deux groupes de chercheurs ayant comparé l'habitude de cuisiner entre les résidents de la région métropolitaine de Montréal et les résidents d'autres régions urbaines ou rurales du Québec ont remarqué des tendances contraires (Cloutier et collab., 2020; INSPQ, 2021e, 2021f, 2021g).

Concernant l'habitude de sauter l'un des repas principaux, les habitants de la RMR de Montréal et des autres RMR ont rapporté, en plus grande proportion, avoir plus souvent sauté l'un des repas principaux que les habitants des plus petites villes et du monde rural (26-30 % c. 20-25 %)<sup>4</sup> (INSPQ, 2021e, 2021g). Aussi, les résidents de la RMR de Montréal ont davantage rapporté avoir grignoté plus souvent des collations salées ou sucrées entre les repas, ou consommé des boissons sucrées, que les résidents des plus petites villes (excluant les autres RMR) (23-28 % c. 18-22 %) (INSPQ, 2021e, 2021f, 2021g).

Aucune distinction selon le lieu de résidence n'est observée pour l'habitude de prendre un temps d'arrêt pour manger (INSPQ, 2021e, 2021f, 2021g).

## Taille du ménage

Les individus vivant seuls ont été plus nombreux, en proportion, à avoir mentionné une diminution de leur consommation de malbouffe, en comparaison aux individus habitant dans des ménages de trois personnes (24 % c. 19 %) (INSPQ, 2021c). Aussi, les adultes habitants seuls ont été les plus nombreux, en proportion, à avoir rapporté cuisiner moins souvent que les adultes vivant sans enfants mineurs (11-12 % c. 6 %) (INSPQ, 2021e, 2021f, 2021g).

En matière de consommation de fruits et légumes et de malbouffe, les individus vivant dans un ménage de deux personnes semblent se distinguer des adultes vivant dans des ménages d'autres tailles. En effet, dans le sondage de l'INSPQ, ils ont rapporté en moins grande proportion avoir diminué leur consommation de fruits et légumes que les individus vivant dans des ménages d'autres tailles (8 % c. 13-14 %) et ont rapporté en plus grande proportion avoir diminué leur consommation de malbouffe, comparativement aux individus de ménages de trois personnes et plus (25 % c.

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<sup>4</sup> Pour l'habitude de sauter l'un des repas principaux plus souvent, une différence est présente entre les adultes vivant dans une RMR, comparativement aux habitants des plus petites villes et du monde rural dans deux des trois itérations du sondage sur les comportements alimentaires de l'INSPQ; dans l'autre itération, cette différence était de moins de cinq points de pourcentage et n'était donc pas considérée comme importante (25 % c. 22 %) (INSPQ, 2021f).



19-20 %) (INSPQ, 2021c). Les individus vivant dans des ménages d'une ou de deux personnes ont rapporté en moins grande proportion avoir augmenté leur consommation de malbouffe que les individus vivant dans des ménages de trois personnes et plus (24-27% c. 32-35 %) (INSPQ, 2021c).

D'autres chercheurs ont constaté que les familles avec enfants ont davantage cuisiné (Durif et Boivin, 2020). C'est également ce qui a été observé dans le sondage de l'INSPQ : c.-à-d. que les individus, dont le ménage comprend des enfants mineurs, ont rapporté en plus grande proportion avoir cuisiné plus souvent que les personnes vivant seules (27-29 % c. 22-23 %) (INSPQ, 2021e, 2021f).

Les adultes des ménages avec enfants mineurs ont indiqué en plus grande proportion avoir grignoté plus souvent des collations salées ou sucrées entre les repas, ou consommé des boissons sucrées, comparativement aux ménages sans enfants mineurs selon le sondage de l'INSPQ (25-27 % c. 20-22 %) (INSPQ, 2021f, 2021g).

Aucune différence jugée importante n'a été soulevée dans les changements d'habitude de sauter l'un des repas principaux et de prendre un temps d'arrêt pour manger.

### Statut d'immigration

Selon les données de sondage de l'INSPQ, les personnes immigrantes ont rapporté en plus grande proportion avoir augmenté leur consommation de malbouffe (34 % c. 27 %) et leur consommation de fruits et légumes (28 % c. 22 %), avoir cuisiné plus souvent (32-35 % c. 24-26 %), avoir sauté plus souvent l'un des repas principaux (31-36 % c. 25-28 %) (7), avoir pris plus souvent un temps d'arrêt pour manger (16-23 % c. 11-13 %) et avoir moins souvent grignoté des collations salées ou sucrées entre les repas ou avoir consommé des boissons sucrées (22-26 % c. 17-20 %) (8) (INSPQ, 2021c, 2021e, 2021f, 2021g).

Zajacova et collab., d'après les données de leur sondage, ont évalué si le statut d'immigration était une caractéristique qui différenciait le changement dans la consommation de malbouffe (Zajacova et collab., 2020). Leurs données montrent que les immigrants sont plus nombreux, en proportion, à avoir diminué leur consommation de malbouffe (20 % c. 13 %) et qu'ils sont également proportionnellement moins nombreux à avoir rapporté une augmentation de leur consommation de malbouffe (26 % c. 20 %), ce qui ne concorde pas avec les données issues du sondage de l'INSPQ.

<sup>5</sup> Pour l'habitude de cuisiner plus souvent, une différence est présente entre les adultes vivant avec des enfants mineurs et les personnes vivant seules dans deux des trois itérations du sondage sur les comportements alimentaires de l'INSPQ; dans l'autre itération, cette différence était de moins de cinq points de pourcentage et n'était donc pas considérée comme importante (26 % c. 23 %) (INSPQ, 2021g).

<sup>6</sup> Pour l'habitude de grignoter des collations salées ou sucrées entre les repas, ou consommer des boissons sucrées, une différence est présente entre les ménages avec enfants mineurs et ceux sans enfants mineurs dans deux des trois itérations du sondage sur les comportements alimentaires de l'INSPQ; dans l'autre itération, la différence était de moins de cinq points de pourcentage, ce qui signifie qu'elle n'était pas jugée comme importante (27 % c. 23 %) (INSPQ, 2021e).

<sup>7</sup> Pour l'habitude de sauter plus souvent l'un des repas principaux, une différence est présente selon le statut d'immigration dans deux des trois itérations du sondage sur les comportements alimentaires de l'INSPQ présentées dans ce rapport; dans l'autre itération, la différence n'est pas jugée importante (27 % c. 24 %) (INSPQ, 2021f).

<sup>8</sup> Pour l'habitude de grignoter et consommer des boissons sucrées moins souvent, une différence est présente selon le statut d'immigration dans seulement deux des trois itérations du sondage sur les comportements alimentaires de l'INSPQ présentées dans ce rapport; dans l'autre itération, la différence n'est pas jugée importante (18 % c. 17 %) (INSPQ, 2021e).

## Statut d'emploi

Les adultes sans emploi et ceux travaillant à temps partiel ont, en plus grande proportion, rapporté avoir sauté plus souvent un des repas principaux que ceux travaillant à temps complet (31-40 % c. 23-28 %). Comparativement à ceux qui sont en télétravail, les individus sans emploi ont plus souvent sauté l'un des repas principaux (35-40 % c. 29-30 %) <sup>9</sup> (INSPQ, 2021e, 2021f).

Concernant l'habitude de prendre un temps d'arrêt pour manger, les adultes travaillant à temps partiel ont rapporté en plus grande proportion l'avoir adoptée moins souvent que les adultes travaillant à temps complet (23-26 % c. 16-18 %) (INSPQ, 2021e, 2021f, 2021g) et que les adultes qui n'ont pas d'emploi (24-26 % c. 18-19 %) <sup>10</sup> (INSPQ, 2021e, 2021g).

Les individus travaillant à temps complet sont ceux qui ont rapporté en moins grande proportion avoir plus souvent grignoté des collations salées ou sucrées entre les repas, ou consommé des boissons sucrées, comparativement aux autres adultes avec des statuts d'emploi différents (22-26 % c. 28-31 %) <sup>11</sup> (INSPQ, 2021e, 2021f, 2021g).

Il n'y avait pas de différence claire et constante selon le statut d'emploi dans le changement de l'habitude de cuisiner.

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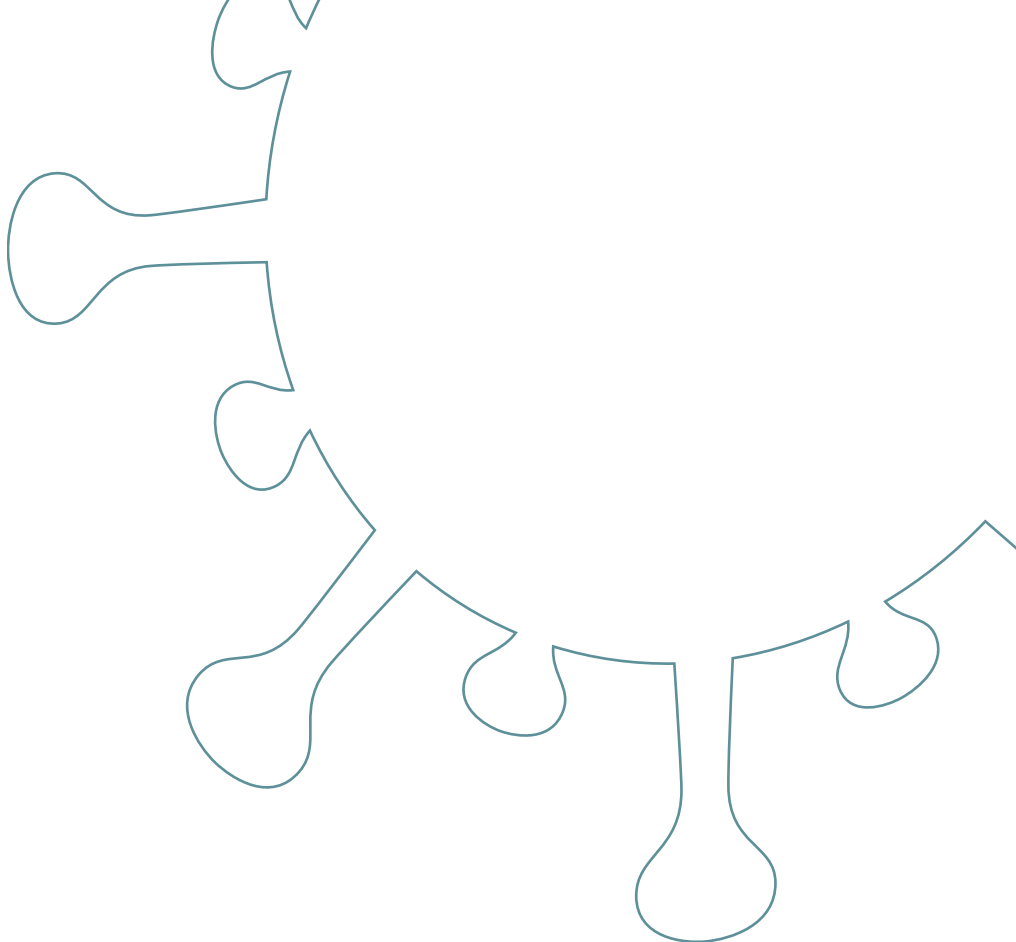
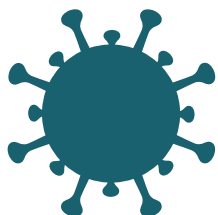
<sup>9</sup> Pour l'habitude de sauter plus souvent l'un des repas principaux, une différence est présente entre les adultes qui n'ont pas d'emploi et ceux qui sont en télétravail dans deux des trois itérations du sondage de l'INSPQ utilisées dans cette synthèse; dans l'autre itération, la différence n'est pas jugée importante (31 % c. 30 %) (INSPQ, 2021g).

<sup>10</sup> Pour l'habitude de prendre moins souvent un temps d'arrêt pour manger, une différence est présente entre les adultes travaillant à temps partiel et ceux qui n'ont pas d'emploi dans deux des trois itérations du sondage de l'INSPQ utilisées dans cette synthèse; dans l'autre itération, la différence n'est pas jugée importante (23 % c. 21 %) (INSPQ, 2021f).

<sup>11</sup> Pour l'habitude de grignoter entre les repas et consommer des boissons sucrées plus souvent, une différence jugée importante est présente entre les adultes travaillant à temps complet et chacun des autres statuts d'emploi dans deux des trois itérations du sondage de l'INSPQ utilisées dans cette synthèse de connaissances, et ce pour chacun des autres statuts d'emploi (INSPQ, 2021e, 2021g, 2021f).



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