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**The experiences of accessing a sufficient quantity and quality culturally  
appropriate foods among international, Chinese university students in Nova Scotia**

by

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## Chapter 1.0 Introduction

Food insecurity is a serious and long-standing public health issue globally. In Canada, food insecurity is defined as “inadequate or insecure food access due to financial constraints” (Tarasuk et al., 2019, p.2). Based on this definition, the prevalence and severity of food insecurity in Canada is measured using the Household Food Security Survey Module (HFSSM) (Men & Tarasuk, 2021). In 2021, the prevalence of food insecurity in Canada was reported to be 18.4% of the total population, amounting to approximately 6.9 million people in household (Government of Canada, 2022a; Statistics Canada, 2023). Among those who are food insecure, 12.9% were reported to be moderately or severely food insecure, a condition wherein households reduce their food intake because of a lack of funds available for food (Government of Canada, 2022a).

It is important to note that the prevalence of food insecurity is unequally distributed among various subpopulations of those living, working, and studying in Canada. Specifically, data show that two out of five university students experience food insecurity, a rate that is markedly higher than the national average (Silverthorn, 2016). However, the rate of food insecurity differs considerably among Canada’s post-secondary institutions. Student food insecurity was highest at Dalhousie and Lakehead Universities, at 46 %, followed by Ryerson University and the University of Northern British Columbia at 39 %, and then Acadia University at 38% (Silverthorn, 2016). The higher prevalence of food insecurity among university students compared to other groups is related to the particular financial demands faced by this group, such as increasing tuition fees and insufficient financial support from the government (Panza, 2021). University students have additional contributing variables beyond financial inadequacy that make their food poverty experience unique. Living alone for the first time and having poor culinary skills have been shown to make university students more vulnerable to food insecurity (Hanbazaza et al., 2021).

Newcomers (i.e., immigrants and refugees) are another group in Canada that experiences higher rates of food insecurity due to financial insecurity that is exacerbated by additional unique factors. Recent data show that the prevalence of food insecurity among newcomers who had been in Canada for less than five years was 15.2% of food insecure households, compared to 12.0% among newcomers who had been in Canada more than five years, and 11.8% of Canadian born populations (11.8%) (Lane et al., 2019). In addition to

financial barriers, new immigrants face difficulty accessing culturally appropriate foods, which are expensive even when they are readily available (Brady et al., 2019). Furthermore, research has indicated that newcomers undergo food acculturation as they settle into their adopted communities. Dietary acculturation has been defined as “the process by which newcomers adopt the dietary practices of the host country” (Satia-Abouta et al., 2002, p. 1106).

As such, the prevalence and severity of food insecurity among international students—individuals who are both university students and newcomers—is likely to be the result of a unique set of intersecting contributing factors and experiences. In Canada, the number of international students has increased in recent years. International student enrolment in Canadian universities increased from 216,096 in 2018/2019 to 235,422 in 2019/2020 (Government of Canada, 2020; Government of Canada 2021). In 2020/2021, the enrolment of international students decreased slightly to 231,291 due to the Covid-19 pandemic (Government of Canada, 2022b). In 2019/2021, 17.1% of the total university enrollment at the national level consisted of international students. Among the international students, 26.3% were enrolled in universities in Nova Scotia. (Government of Canada, 2021). However, little research has been done to describe the factors that contribute to the experiences of food insecurity among the growing population of international students in Canada. Furthermore, the prevalence, severity, and experience of food insecurity, are likely to differ among the international student population, who arrive from diverse countries with a variety of foodways that may be served to varying degrees by their adopted communities' food landscape (i.e., grocers, restaurants) and the presence of culturally and linguistically familiar populations.

In this study, I used photovoice to explore the experiences of accessing culturally appropriate food of Chinese international students in Canada. In Nova Scotia's universities, colleges, secondary schools, and language schools, there are currently over 12,000 international students enrolled from over 140 countries (Nova Scotia International Students Program, 2022). In 2017-2018, Chinese international students comprised 41% of the total international student enrollment in Nova Scotia universities, followed by Indian students with 10% and students from Saudi Arabia with 6% (Government of Nova Scotia, 2019). This research sheds light on this population's unique experiences, including how dietary acculturation may shape food insecurity for Chinese international students. The findings

provide insights for organizational and institutional policy and programming to enhance responsiveness to the unique needs of Chinese international students.

The following questions guided this research:

1. What are the experiences of international students, or more specifically Chinese international students who are currently living in Nova Scotia and who are enrolled in a Nova Scotian university of accessing a sufficient quantity and quality of, as well as culturally appropriate foods?
2. Of what consequence, if any, is dietary acculturation and accessing culturally appropriate foods to the university experience of Chinese international students living in Nova Scotia?
3. What are the unique barriers and facilitators that shape international, Chinese students' food security?

## **Chapter 2.0 Literature Review**

There is little research on the experiences of food insecurity among international students in Canada. Hence, in this literature review I situate my research in related areas of grey and scholarly literature that shed light on the prevalence, severity, unique contributing factors, and experiences of food insecurity in Canada, and among populations of relevance to this research. My literature review unfolds in five sections: 1) the prevalence and severity of food insecurity in Canada; 2) newcomers to Canada and food insecurity; 3) university students and food insecurity; 4) international students and food insecurity; and 5) international students and acculturation.

### **2.1 Prevalence and Severity of Food Insecurity in Canada**

In Canada, food insecurity is defined for measurement purposes as “inadequate or insecure food access due to financial constraints” (Tarasuk et al., 2019, p.2). According to the most recent data available, in 2021, the prevalence of food insecurity in Canada was reported to be 18.4%, affecting approximately 6.9 million people nationally (Government of Canada, 2022a; Statistics Canada, 2023). Among food insecure households, 12.9% were reported to

experience moderate food insecurity (i.e., compromise in quality and/or quantity of food), and severe food insecurity (i.e., reduced food intake and sometimes day(s) without food) (Government of Canada, 2022a). Food insecurity varies by province and by population group and often reflects patterns related to intersecting social and structural injustices such as gender, race, immigration status, and other factors. Feed Nova Scotia (2023) reported that 22% of households in Nova Scotia are food insecure in 2022. Given that food insecurity is largely caused by financial constraints, it is not surprising that the prevalence of food insecurity is much higher among low-income households (Polsky & Garriguet, 2022). Households with children experience higher rates of food insecurity compared to households without children and couples with children comprise 21.1% of total food-insecure households in Canada (Government of Canada, 2023). While the prevalence of food insecurity is increased among all lone-parent households (Maynard et al., 2019), female lone-parent households are disproportionately affected and have the highest prevalence of food insecurity, comprising 42.6% of food insecure households nationally, compared to male lone-parent households at 23.9% (Government of Canada, 2023).

Food insecurity is linked to several serious chronic health conditions, including heart disease, cancer, and diabetes (Benefield, 2019). People who are food insecure often eat lower-quality, lower-cost foods due to affordability (Benefield, 2019; Muldoon et al., 2013). Severe food insecurity has been linked to malnutrition, stunted growth, and wasting as physical consequences, but it is also associated with various psychological concerns including stress, anxiety, irritability, eating disorders social isolation, and depression (Christensen et al., 2021; Muldoon et al., 2013; Siefert et al., 2004). When households suffer from food insecurity, the resultant anxiety can negatively impact the hypothalamic-pituitary-adreno-cortical axis, which responds to stress (Siefert et al., 2004). A significant association has been observed between food insecurity and high levels of inflammation, a well-established correlation of chronic disease (Benefield, 2019).

## **2.2 Newcomers to Canada and Food Insecurity**

When compared to those born in Canada, newcomers have higher rates of food insecurity (Maynard et al., 2019; Walsemann et al., 2017). Newcomers are a heterogeneous population and include naturalized citizens, legal permanent residents (LPRs), and persons without legal permanent residency (non-LPRs) (Walsemann et al., 2017). The non-LPR category comprises international students, temporary foreign employees, refugees, and other

people without a visa. Non-LPRs have a higher risk of food insecurity than LPRs as their socioeconomic status is often lower (Walsemann et al., 2017). Food insecurity affects 12.6 % of newcomers resident in Canada for less than five years, significantly higher than the non-immigrant rate of 7.5 % (Health Canada, 2012). Most recently, among immigrant households with a principal income earner, one in four (26%) reported experiencing food insecurity between 2013 and 2022 (Uppal, 2023). Factors that contribute to newcomers' increased vulnerability to food insecurity include the financial burden associated with responsibility for dependent family members' living expenditures, a lack of affordable housing, and insufficient access to support programs (Maynard et al., 2018).

### **2.3 University Students and Food Insecurity**

It is well established that food insecurity is more common among younger people, such as students or those who are new to the labor market (Ledrou & Gervais, 2005). University students have been reported to have a higher prevalence of food insecurity than the other risk categories, owing to the impact of increased tuition fees and limited government assistance (Panza, 2021). However, there is a paucity of research on food insecurity among college students. According to Silverthorn (2016), the rates of food insecurity differ throughout Canada's colleges. The prevalence of food insecurity was highest at Dalhousie and Lakehead Universities, at 46 %, followed by Ryerson University and the University of Northern British Columbia at 39 %, and then Acadia University at 38 % (Silverthorn, 2016).

Undergraduate students may be more vulnerable to food insecurity than other members of the student community (Christensen et al., 2021). Economic pressures have been identified as contributing to an increased risk of food insecurity among university students, such as the need to work longer hours to pay for tuition and maintain a balance between student loans and basic needs (Lesley, 2018). Food insecurity has been linked to poor academic and personal results, including reduced academic success, a low-grade point average, poor psychosocial development, hurdles to and delays in graduation, and behavioral and attention issues (Christensen et al., 2021). Food insecurity may also result in increased anxiety and stress, weight fluctuations, impairments to mental and physical health, and other detrimental effects on students' everyday lives (Panza, 2021). Christensen et al. (2021) discovered that students who are food insecure are more likely to develop eating disorders

than those who are not, however, the study found no significant difference in the rate at which students purge or engage in compensatory behaviors after binge eating.

#### **2.4 International Students in Canada and Food Insecurity**

The number of international students in Canada has increased markedly in recent years (Calder et al., 2016; Panza, 2021). In 2006, the number of international students in Canada was 172,370, rising to 353,262 by 2015 (The Canada Magazine of Immigration, 2017). China is the most common country of origin for international students in Canada, likely owing to China's vast population (Crossman, 2021; Frenette et al., 2020). Between 2004 and 2015, the number of Chinese international students in Canada increased by 200%, from 39,850 to 119,335 students (The Canada Magazine of Immigration, 2016). The number of Chinese students in Nova Scotia increased by around 209% in the same period (The Canada Magazine of Immigration, 2016). Approximately 39 % of Chinese university students in Canada study commerce, 26.5 % major in scientific disciplines, 22.6 % major in arts and social sciences, and 11.9 % major in engineering (Zha, 2019).

Approximately 60% of overseas students intend to stay in Canada permanently after completing their studies, which positively contributes to the Canadian economy and workforce (Canada Bureau for International Education, 2018). Moreover, international students make significant contributions to the economy, as well as to the revenues, diversity, multiculturalism, and internationalization of Canadian universities, throughout their studies (Panza, 2021). International students contributed about 4.2 billion CAD to Canadian gross domestic product and accounted for 7% of total GDP in the education area in 2010 (Calder et al., 2016). Previous research has found a link between multiculturalism and the cognitive and affective development of students in higher education. Universities that promote multiculturalism have demonstrated a favorable impact on students' intellectual, cognitive, and affective development (Pandian et al., 2014).

However, data shows that two out of every five university students experience food insecurity and international students have a higher prevalence of food insecurity than domestic students (Shi et al., 2021; Silverthorn, 2016). In Fall 2021, a study conducted across 13 university campuses found that 56.8% of them encountered moderate to severe food insecurity (Wang et al., 2023). Higher tuition prices relative to local students, language hurdles, fewer career options and limited social support are some of the factors that enhance

international students' vulnerability to food insecurity (Hanbazaza et al., 2017). Furthermore, variations in cultural norms and lifestyles make it more difficult for international students to receive support from friends or relatives, which may also contribute to their increased risk of food insecurity (Hanbazaza et al., 2017).

Although parents or relatives may send money to international students, doing so creates an additional financial burden for families (Maynard et al., 2019). Students who live off campus have a higher risk of food insecurity than those who reside with family or friends (Panza, 2021). Financial hardship may damage students' academic performance; students may require more time to work in order to relieve financial stress, and they may choose to forego some university supplies, which impacts their academic achievement (Panza, 2021). This may explain why students who are food insecure have lower levels of academic achievement compared to students who do not experience food insecurity (Panza, 2021).

## **2.5 International Students and Acculturation**

Adapting to a new culture in a host country may cause students' views of their own culture to change. The interaction between host communities and newcomers has been found to affect bidirectional cultural adaptation (Eluwole et al., 2019). International education not only improves the personal and professional lives of international students, but it also helps post-secondary institutions by enhancing cultural diversity among university students, generating revenue, and expanding career chances (Xing & Bolden, 2019).

However, international students, as well as the postsecondary institutions that host them, encounter difficulties. Living amidst and adapting to a new culture and the accessibility of culturally familiar foods in host communities may further shape the prevalence and experience of food insecurity among international students. Learning the local language is one of the most difficult aspects of living in a new country. For a student studying abroad, understanding both colloquial and academic language can be a source of stress (Xing & Bolden, 2019). Lacking linguistic skills when adapting to a new culture increases the likelihood of developing psychological issues as a result of stress and anxiety (Xing & Bolden, 2019). Acculturation is a concept that describes the process of absorbing a new culture while reducing the former culture's influence, particularly among immigrants (Cao et al., 2017). According to Cao et al. (2017), they mentioned a bidimensional model of acculturation in which two cultures cohabit rather than clash during the acculturation

process. Four common acculturation strategies have been outlined from this bidimensional model: integration, where individuals are able to connect with both cultures; assimilation, where individuals abandon traditional culture while upholding the host culture; separation, the opposite of assimilation, when individuals maintain their heritage culture while rejecting the host culture; and marginalization, where individuals reject their ancestral culture as well as the host culture. (Cao et al., 2017). Acculturation also involved in two different levels: individual level where are more emphasized internal change such as attitude, beliefs, and behaviors; while in the group level, the acculturation not only bring changes to cultural perspective but also physical, political and other relative perspectives (Satia-Abouta, 2002).

At the beginning of the acculturation process, international students are inevitably experiencing culture shock and stress as a result of acculturation to an unfamiliar environment (Wright et al., 2021). Foodways—the patterns that determine “what we eat, as well as how and why and under what circumstances we eat” (Edge, 2007)—are an important aspect of cultural identity and heritage, and as such, are an important aspect of the acculturation process (Eluwole et al., 2019). Dietary acculturation has been defined as the adoption of the host country's dietary patterns (typical food and beverage intake) (Okafor et al., 2014). International education in host countries has an impact on the experience of altering eating habits (Eluwole et al., 2019). International students may experience positive or negative dietary acculturation as a result of exposure to new foods, cooking methods, and traditional food alternatives during the acculturation process (Shi et al., 2021).

Along with the obstacles associated with adapting to a new culture faced by international students, food insecurity impacts students' eating habits. As previously described, international university students face greater food insecurity than domestic students due to numerous restrictions and issues, which exist in both developed and developing countries (Shi et al., 2021). A study of international students' acculturation in the United States revealed food accessibility, higher costs of healthy food compared to their home country, difficulty maintaining personal food preferences in a foreign country, religious and cultural restrictions, and time constraints significantly impact the eating habits of international students, all of which contribute to an increased demand for convenience food (Alakaam & Willyard, 2020). Researchers must recognize that eating behaviors impact the formation of individual and collective identities, resulting in a strong bidirectional relationship between identity and eating habits (Eluwole et al., 2019). Self-identity is strongly

linked to food alternatives or interventions as one of the main determinants of health (Ryan et al., 2022). This suggests that a person's food preference could be predicted based on their self-described dietary pattern (Ryan et al., 2022). Studies also report that people are willing to accept new foods while retaining their original preferences for food consumption and preparation (Eluwole et al., 2019).

When there is a greater demand for culturally appropriate foods for newcomers, the development of international transportation of culturally acceptable cuisine is accelerated (Eluwole et al., 2019). For many international students, studying abroad is their first experience of preparing their own food and managing their own diets (Shi et al., 2020). Some students may arrive with basic food preparation abilities, while others who lack cooking skills rely on dining out or food deliveries (Shi et al., 2020). As such, a lack of general cooking expertise or familiarity with local ingredients may contribute to the challenges faced by international students (Shi et al., 2020).

The expense of food and availability of traditional foods in host countries, as well as the balance between academic and non-academic life, may put international students under additional stress. As a result, less nutritious convenience foods are commonly viewed as affordable and accessible options for international students (Shi et al., 2021). According to Benefield (2019), changes in mealtimes, portion sizes, and eating intervals may contribute to the development of poor eating patterns among international students. In addition, the role that food plays in affirming social identity and connections cannot be overlooked. Eating alone may exacerbate unpleasant sentiments that impact the mental health of international students, such as homesickness (Shi et al., 2020). Interaction with instructors, forming positive relationships with classmates, and being able to communicate effectively in their second languages are all considered social variables that lower the risk of food poverty for international students during acculturation (Benefield, 2019). A strong social connection and cultural relationship will only serve to strengthen international students' cultural identities (Wright et al., 2021).

### **Chapter 3.0 Theoretical Framework**

The access, use, and availability of culturally familiar foods are important to cultural food security and dietary acculturation, and form the conceptual foundation of this study,

which explores the experiences of food security among Chinese international students in Nova Scotia. More specifically, I draw on two key concepts—cultural food security and dietary acculturation—to inform my understanding of and approach the issues of concern in this research.

### **3.1 Cultural Food Security**

Power (2008) has described cultural food security as a condition that is met when people have adequate access to culturally meaningful foods (Wright et al., 2021; Brady et al., 2019). It is a key issue of social justice and a critical component of cultural health and survival that is distinct from individual, domestic, and community food security (Power, 2008). According to Wright et al.'s (2021) study on the impact of cultural food security on second-generation American minority college students, consuming culturally appropriate meals can help students maintain their identity which is fundamental to their well-being. Traditional cuisines and eating habits have been proven to be strongly linked to ethnocultural identity, as a result of environment, customs, and traditions (Moffat et al., 2017). Through meal-based rituals, cultural and ethnic identity can be passed down from generation to generation (Wright et al., 2021). Moffat et al. (2017) identify three pillars that are key elements to conceptualize food security within the cultural dimension of food among newcomers/refugees: food availability (sufficient quantity); access (food resources); and use (use accessed food appropriately). It is not generally difficult to find a substantial number of culturally appropriate foods in a large metropolis, but accessibility issues such as cost, time, and distance pose a barrier for newcomers (Moffat et al., 2014). Though income and availability are important determinants of food security for immigrants, having enough food to satisfy hunger does not always imply that it will be nutritious and culturally appropriate. Immigrants may not know how to use new foods available to them because, among other things, accessible foods may not be culturally suitable for them (Moffat et al., 2014). As a result, newcomers must become well-acclimatized to the new food system by learning how to use new foods (Moffat et al., 2014).

### **3.2 Dietary Acculturation**

Okafor et al. (2014) define dietary acculturation as “the adoption of dietary patterns (usual food and beverage consumption) of the host country” (p.226). Dietary acculturation may involve changes in food choices and eating habits, as well as identifying alternative options for traditional foods (Shi et al., 2020). Satia (2010) describes dietary acculturation as

a multidimensional, dynamic, complex process, which cannot be explained as a simple linear phenomenon of one's acculturation experience from the traditional culture to the host culture. As part of the process of acculturation, dietary acculturation may illustrate how immigrants maintain traditional dietary patterns, eliminate new foods, or accept new foods (Satia-Abouta et al., 2002). When immigrants explore the host country's culture, dietary acculturation is related to socioeconomic, demographic, and cultural factors (Satia-Abouta et al., 2002). Similar to immigrants, international students' experience of dietary acculturation is also complex. Amos and Lordly's (2014) research on international students' food experience in Canada shows that international students initially experience culture shock and commonly feel stress related to food and access to traditional foods which exacerbate feelings of homesickness.

## **Chapter 4.0 Methodology and Method**

### **4.1 Methodology**

Photovoice, developed by Wang and Burris (1997), is so-called for the combination of the word 'photo' and the initials 'VOICE' standing for 'Voicing Our Individual and Collective Experience' (as cited in Evans-Agnew & Rosemberg, 2016, p. 1020). Photovoice is a photographic approach that allows people to use cameras to document their actual health and job situations (Wang & Redwood-Jones, 2001). Photovoice expands the meaning of photography from fine art to social and political relevance due to the ambiguity between personal and public spaces. According to Wang and Burris (2001), photovoice has evolved into a useful instrument for people to accept and experience reality from both personal and social viewpoints, as well as the disparity and critical evaluation of individual perceptions.

Wang and Burris (1997) describe photovoice is a methodology that helps people identify and reflect upon their experiences on a personal level. Caroline Wang, the creator of Photovoice, describes it as a "participatory action research strategy that may be utilized to make an impact on policy" at the political level (Harley, 2012, p.323). Photovoice can give people a platform to express their concerns and the context of their communities. It offers participants the opportunity to engage in critical dialogue and knowledge sharing, and in some cases, contact with legislators (Wang & Redwood-Jones, 2001). As such, the participant photography, critical reflection, and photo-text collected in a photovoice project may be used to promote social change (Evans-Agnew & Rosemberg, 2016). The steps in the

photovoice project that could influence social, or policy change were taking images, having discussions, refining the meaning of photography, and participating in social action (Johnston, 2016).

“SHOWeD”, is a mnemonic often used to guide photovoice projects and it refer to the following questions: “What do you see here?” “What exactly is going on here?” “What does this have to do with our lives?” “Why is there a difficulty or a strength?” and “What can we do about it?” (Wang & Redwood-Jones, 2001). Through the use of photovoice, participants in this study were prompted to reflect on their experiences by photographing what they saw and expressing the significance of those photographs (Capewell et al., 2020). The goal of the photovoice approach is to bring participants and researchers together to talk about their experiences, driven by the researchers' goals and questions. Participants' quotes and photos about their experience are the data source of the research (Capewell et al., 2020). Photovoice improves the interactive experience for participants by allowing them to be more active and involved in the research process (Capewell et al., 2020). Participants' quotes and photos were the source of data when employing photovoice, and the questions were implemented in the interview without being expressly oriented (Capewell et al., 2020).

## **4.2 Method**

### *4.2.1 Recruitment*

Ten international Chinese students enrolled in universities in Nova Scotia were recruited for this study. Recruitment was guided by the following inclusion criteria: 1) the ability to read and write in English; 2) aged over 19 years; 3) had completed at least one year of study during which time they lived in Nova Scotia. Participants were not required to be experiencing income-related food insecurity because even though income-related food insecurity and cultural food insecurity are interrelated, but they are not synonyms. As the previous section mentioned, Power (2008) described cultural food security as a condition that is met when people have adequate access to culturally meaningful foods, which is a unique consideration of food security for Aboriginal people specifically. This research is focused on the experience of cultural food insecurity for Chinese international students that is not synonymous with insufficient quantity or quality of food due to insufficient financial resources.

Convenience sampling, a common method used in clinical and qualitative research areas, was used to identify the study sample (Stratton, 2021). Key advantages of convenience sampling are that the method is inexpensive, and recruitment takes little time (Stratton, 2021). The motivation of the participants is a crucial consideration in qualitative research; however, motivation bias has been identified in convenience sampling, as interest in the topic represents a key motivation for participants when deciding whether or not to participate in a study. Participants with an interest in a study's topic would have greater intention to support the study and learn more themselves (Stratton, 2021).

Participants were recruited via posters distributed on 1) social media platforms such as Facebook, Instagram and Wechat; 2) emails sent by offices that provide support services to international students at universities in Nova Scotia; and 3) in Chinese grocery stores willing to display the posters.

#### *4.2.2 Data Collection*

Two types of data were collected for this study: 1) photographs taken by participants in response to a prompt obtained from the study's research questions; 2) semi-structured one-on-one interviews in which participants were asked about their experiences with food security as influenced by budgetary restrictions and access to culturally acceptable foods. Participants' photographs were utilized in a section of the interview in which they were asked to describe the images and how and why they represent their experiences.

Wang and Burris' (1997) technique was used to lead the data collection procedure for this project. I used a modified version of the photovoice protocol outlined by Wang and Burris (1997). The following stages were adapted based on the study topic and sample size: 1) introduction to the photovoice technique; 2) obtaining informed consent; 3) conveying research themes and guidelines to participants; 4) photo collection; and 5) interviewing. The actions related to each step are detailed below. Other steps in Wang's (1997) photovoice study protocol were not included in the present study, such as "select and recruit a target audience of policy makers or community leaders"; "distribute cameras to participants and review how to use them"; "plan with participants a format to share photographs and stories with policy makers or community leaders" (as cited in Sutton-Brown, 2014, p. 172). This was because the target group and topic are different, which are not associated with policy makers. Also, participants were asked to take photos by using their cellphone or camera due to the

restriction of Covid-19 pandemic. All the procedure and data collection process were finished through online platforms such as WeChat or Microsoft Teams. In the followed paragraphs, I provide a detailed description of the method that I used for each step from Wang and Burris' (1997) protocol.

#### *4.2.2.1 Step 1: Introduction to the Photovoice Technique.*

Following the selection of appropriate individuals, Sutton-Brown's (2014) description shows three primary aims are established in this step: an icebreaker for all participants, a discussion of photovoice methodology, and an explanation of the risks and associated obligations of participation in the study. It is important at this stage to provide a brief explanation of photovoice's theoretical assumption, alongside samples of previous projects (Sutton-Brown, 2014). The responsibilities associated with photographing people and events in the community are also discussed, especially the ethical and safety cautions as a photographer (Sutton-Brown, 2014).

An initial online group meeting was arranged after the recruitment process was finalized. A brief self-introduction (students' name, where they live, degree subject) of the participants took place at the beginning of the group meeting prior to a brief overview of photovoice. The second part of the meeting focused on the research topic. The background and ideas were described in greater detail, allowing participants to gain a better understanding of the project's goals. All the participants attended this group meeting together through Microsoft teams.

#### *4.2.2.2 Step 2: Obtaining Informed Consent.*

As photovoice involves human subjects, ethics clearance is required (Sutton-Brown, 2014). In a photovoice project, consideration should be given not only to the participants but also to people who may appear in photographs taken by participants during the study. It is important for researchers to make sure potential participants are aware that participation is voluntary, that the study may result in benefits or harm, and that the study's objectives are clear (Sutton-Brown, 2014). According to Wang and Redwood-Jones, three different consent forms should be provided: the first is for those voluntarily participating in the study, which is sent out before the research begins (Sutton-Brown, 2014). The second consent form is for those who may be photographed by participants, and it asks for their permission to be photographed as

well as their willingness to release their rights to the photos (Sutton-Brown, 2014). The third consent form is used to obtain participants' permission for any future publication requests involving their images (Sutton-Brown, 2014).

The study ethics application to the MSVU research ethics board included consent forms for each of these concerns. After the participants agreed to take part in the study, the first consent form was distributed to them via email. Due to the distance limits imposed by some participants, each participant's cellphone or camera was used instead of a unitive camera. The second consent form was distributed to participants after the first group meeting via email as well. The third consent form was distributed during the one-on-one interview with each participant through Microsoft Teams, which also allowed the participants to ask questions regarding future publication.

#### *4.2.2.3 Step 3: Providing the Initial Themes to Guide Participants' Photography.*

According to Creswell (2003), researchers should choose a theme focused on the research issue to allow participants to produce more precise responses to questions (Sutton-Brown, 2014). Having specific themes could help participants to be creative on photographing and how to depict it (Wang, 1999). I directed participants to take photographs that represent their experiences of 1) accessing cultural or traditional foods in their adopted communities; 2) the barriers and facilitators that impact their access to traditional foods to maintaining cultural food security; 3) how the (in)accessibility of traditional foods impacts their university experience.

#### *4.2.2.4 Step 4: Timeline and Photo-Gathering.*

In a photovoice project, the duration for capturing images varies depending on the situation and context. Because of budgetary and time constraints, researchers should inform their participants of the expected time length (Sutton-Brown, 2014). Participants in shorter photovoice projects (up to two weeks) may be required to finish all photography in only a few days (Sutton-Brown, 2014).

There were 10 participants were recruited, this project was completed over a period of two week. This was discussed with participants at the first group meeting. Participants were informed of three initial themes: 1) accessing cultural or traditional foods in their adopted communities; 2) the barriers and facilitators that impact their access to traditional foods to

maintaining cultural food security; and 3) how the (in)accessibility of traditional foods impacts their university experience. Each participant was requested to take as many photographs as they would like by using their own techniques such as cellphone or camera. From those photos, 8 to 10 photos that participants feel best represent their experience were selected and shared to me. To capture a range of experiences, 8 to 10 photos that represent participants' experience over 3 to 5 days, including 2 to 3 weekdays and at least one weekend day should be chosen. During the individual interviews, participants discussed those 8 to 10 of the best images most indicative of each subject. This allowed for a deeper understanding of the participants' values and perspectives on each theme.

#### *4.2.2.5 Step 5: Interviewing.*

Photovoice emphasizes sharing and discussion of images, as well as critical thinking and communication (Sutton-Brown, 2014). The methodology places a greater emphasis on the interpretation of images than on the photographs themselves, and the accompanying stories are used to inform others about the concerns and strengths of participants (Sutton-Brown, 2014). Wang and Burris use the SHOWeD technique—which refers to five questions: “What do you See here?” “What is really Happening here?” “How does this relate to Our lives?” “Why does this situation, concern, or strength exist?” “What can we Do about it?”—as a guide for participants to discuss their photographs. (Wang, 1999). They formalize the findings as challenges to address as photovoice is action-oriented research (Wang, 1999). This participant-directed analysis technique allows everyone in the group to participate, with the idea that each image might have multiple meanings (Wang et al., 1998).

Following the completion of the photography phase, each participant attended an online one-on-one interview. Interviews were held on the online platform Microsoft Teams and lasted approximately 40–50 minutes. Additional specific questions derived from the original themes were used to encourage participants to share their thoughts. After 10 interviews were completed, I have transcribed the interviews from audio to text for data analysis.

### **4.3 Data Analysis**

The audio recording of the interviews was transcribed into text for analysis. All the photos were organized into a PowerPoint with the description of each participants' demographic for analyze purpose. Data was analyzed using thematic analysis. Thematic analysis requires delving into a text's meaning on various levels, while thematic networks give these themes structure and description (Attride-Stirling, 2001). The thematic network has a web-like structure that makes it easier for researchers to understand meaning and for the general audience to read (Attride-Stirling, 2001). Themes within thematic networks are typically divided into three categories: basic themes, organizing themes, and global themes (Attride-Stirling, 2001). Explicit rationale and implicit meaning can be highlighted throughout the transcript breakup process (Attride-Stirling, 2001). The text of ten transcripts were coded into the basic theme first, and then were coded into organizing and global themes using MAXQDA software [VERBI, 1995]. Photos were analyzed within the process, it was analyzed by combining participants' quotes to express their experiences and perceptions toward accessing culturally appropriate foods.

## **Chapter 5 Result and Discussion**

### **5.1 Participants**

Ten international Chinese students who met the inclusion criteria participated in the study, each of whom was enrolled in a Nova Scotia university during the study period. Participants varied in terms of their area of study, socio-economic status, and familial backgrounds, as well as length of stay in Canada (See Table 1).

The majority of participants lived in Halifax, Nova Scotia. The duration of residency in Canada ranged from one to seven years. Some interviewees were at the beginning of their university studies in Canada, whereas others had been in Canada for some time before beginning their university program for various reasons. Some of the students come to a university in Canada through a collaborative 2+2 program between institutions in Canada and China. Some students had lived in Canada but delayed starting university because of COVID-19, some completed an English language program in Canada before starting their degree program, and some had transferred to a Nova Scotia university from another university in Canada.

**Table 1. Demographic data of participants.**

<b>Name Pseudonym</b>	<b>Region of Origin in China</b>	<b>Years residing in Nova Scotia</b>	<b>Year of university study</b>	<b>Major in University</b>
Emma	Henan Province, Northern China	1	1st	Business administration
Nancy	Yunnan Province, Southern China	2	4th	Nutrition
Brad	Jilin Province, Northeastern China	4	4th	Nutrition
Lance	Hunan Province, Southern China	1	3 <sup>rd</sup>	Communication
Lily	Fujian Province, Southern China	2	4th	Tourism and hospitality management
Emily	Hubei Province, Northern China	4	2nd	Nutrition

Zed	Hebei Province, Northern China	4	3rd	Nutrition
Wendy	Beijing City, Northern China	7	4th	Nutrition
Simon	Beijing City, Northern China	4	2nd	Environmental Science
Peter	Hebei Province, Northern China	4	2nd	Computer Science

## 5.2 Global themes

All the data were analyzed and organized into two global themes: 1) “Yeah, I have to try” and 2) barriers and facilitators of cultural food security. The first global theme was compromised into two subthemes: experiencing dietary acculturation and the social role of food. The next sections will discuss those themes in detail with participants’ quotes and photos.

### 5.2.1 Global Theme 1: “Yeah, I Have to Try”

This global theme addresses the first and second of my research questions regarding the experiences of international Chinese students in relation to accessing a sufficient quality and quantity of food, including culturally appropriate foods, and how dietary acculturation and accessing culturally appropriate foods impacted to the university experience of Chinese international students living in Nova Scotia. Moving to Canada exposed participants to novel culinary experiences and different cultural milieu. Participants’ experiences of accessing culturally appropriate food while in Canada were intermingled with their willing, intentional, and agentive exploration of unfamiliar food options that they defined as “Canadian food”. For participants, Canadian food included various food items, namely bread, steak, pasta, and fast food such as burgers, French fries, and fried chicken.

Recall that the definition of dietary acculturation that is often cited in related literature reads, “the adoption of dietary patterns (usual food and beverage consumption) of the host country” (Okafor et al. 2014, p. 226). However, far from being passive objects of dietary acculturation, or simple adopters of new dietary practices, participants navigated their new food environment as a way of exploring and situating themselves in their host community. Thus, for my participants, dietary acculturation included a complex mix of positive and negative experiences that were both sought out and incidental as they established themselves within their host community through food. Being immersed in a different culture and food landscape also prompted participants to reconsider their connection with the Chinese cuisine that they were accustomed to eating. Thus, for my participants, dietary acculturation

comprised their agentic participation in an evolving relationship with their host communities and with their communities of origin that was expressed through food.

Participants expressed that a significant and anticipated aspect of their Canadian experience was the opportunity to try unfamiliar cuisines as a means of discovering their new living environment. Peter succinctly captured the essence of this theme when he stated, “Yeah, I have to try” in response to a question about whether moving to Canada had affected his feelings about food. For Peter, this statement meant that exploring unfamiliar experiences, including new foods and food culture, is to be expected when living in a foreign country. This includes adapting to the local food culture and cuisine while exploring and enjoying foods that are culturally familiar and aligned with the cultural background and values of the host country. Peter's statement captures the essence of participants' meaning of exploring new experiences to embrace a new way of life, cultural heritage, and eating habits in order to acclimate to their new surroundings. Immigrants may undergo significant shifts in their dietary habits when relocating to a country with a profound cultural heritage (Li et al., 2023). This suggests that changes in dietary habits are an inevitable process for expatriates. However, the participants in this paper maintained a proactive attitude toward the consequences of this necessary process. “Yeah, I have to try” does not necessarily mean that the outcome of dietary acculturation is good or bad but can be dominated by the participants' circumstances. Badanta et al. (2021) recently explored the dietary patterns of Chinese immigrants living in the south of Spain. They reported that the Chinese immigrants in their study did not classify foods as ‘good’ or ‘bad’ when comparing Chinese food and the cuisine of the host country. Similar to the participants in Badanta et al.'s study, the Chinese international students in my research did not categorize Western and Chinese cuisine as solely 'good' or 'bad'. Instead, they focused on how the food options in Canada could impact their overall wellness. Through exploring the novel environment, especially by experiencing the typical Canadian dietary pattern, participants could discover their preferences regarding food options.

This global theme comprises two subthemes. The first sub-theme focuses mainly on participants' experiences of dietary acculturation, which is the main component of "Yeah, I have to try." Dietary acculturation is also one of the theoretical concepts that underlies my conceptualization of the topical focus of this study. This subtheme elucidates participants' mixture of positive and negative experiences when they are exploring new foodways and how this relates to their overall life experience in Canada. The second subtheme focuses on the social role of food during the dietary acculturation process when participants are trying to maintain their cultural food security. This subtheme will assist researchers in exploring how food serves as a vital intermediary in preserving social connections among Chinese students adapting to a new culture. Also evident in the 'Yeah, I have to try' theme, is how the social role of food helps participants enrich their experience of studying in Canada.

#### *5.2.2.1 Subtheme 1: Experiencing Dietary Acculturation*

Dietary acculturation is central to the experience of Chinese international students studying in Canada. As time had passed, participants' attitudes toward Canadian culture and food changed to varying degrees through the experience of dietary acculturation. Participants discovered that they may or may not develop a greater level of acceptance towards Canadian cuisine; this was influenced by the unique characteristics, outlook, social circumstances, and situations of each participant. In this study, both through photographs and sharing in their interviews, participants revealed a mixture of positive and negative encounters.

Participants reported different extents of modification of their food selections. After exposure to Canadian cuisine, some participants in this study developed new food preferences that enhanced their overall experience of living in a Western environment. For example, Nancy described the process of trying and accepting new food options after moving to Canada. She shared:

Yeah, it changed me a lot. I mean changed because when I just came here last year...And I stopped eating rice at the first time because...I don't know, I just tried to try more local foods here, like bread, different kind of bread. And I enjoyed very different kinds of bread, toast, and I started to eat dairy foods.

For participants in this study, moving to Canada for the first time meant leaving the shelter of their families, giving them greater autonomy in their lives and a corresponding increased sense of responsibility. It has been suggested that international post-secondary students could develop negative changes in dietary habits due to lack of experience and the increased responsibility to manage their food choices for the first time (Hanbazaza et al., 2021; Shi et al., 2020). However, in contrast to the literature, Nancy's experience demonstrated a positive change in food selection after trying local foods in Canada. International students have the opportunity to discover foods that are not usually found in their home country (Amos & Lordly, 2014). Even though negative changes in dietary habits might be easily identified at the beginning of the change period, the change process is flexible involves various factors, and should not be considered a simple linear situation (Satia, 2010; Shi et al., 2020). Nancy's experiences suggest that for Chinese international students, trying the local cuisine can be a positive experience and may lead to the development of new food preferences that improve their experience in Canada.

Several other participants also shared that they had a positive feeling associated with changing their food selection after coming to Canada. For instance, Emily, who is a fitness enthusiast, found a new favorite milk brand in Canada (see Figure 1):

That's the one that I really want to mention here. That one represents the idea that I find we can have the easier and quicker access to high protein food...The one difference from this one with the other typical milk is that it has the really high content protein and low calories. Yeah. It's like my every day to go food.



**Figure 1. Fairlife milk, new favorite milk in Canada, Emily.**

Emily's sharing reveals that discovering a new milk brand in Canada was a very positive experience. Similar to her experience, Zed also suggested that exploring foods available in Canada improved the healthfulness of his diet via increasing consumption of protein, vegetables, fruits, and other foods he perceived as healthy. Zed commented, "I think moving to Canada makes my food more healthy, so I have more time to cook by myself. So, I can eat more veggies and some fruits, eat more fruit here. It makes my eating more health."

Figure 2 depicts his typical weekday lunch, featuring boiled chicken, vegetable salad, and honeydew melon. Both Emily and Zed's sharing showed that participants who explored Canadian food actively realized the positive outcomes



**Figure 2. Lunch for weekdays, chicken, salad, and fruit, Zed.**

of changes to their dietary habits. Lv and Cason's (2004) research found that Chinese

Americans in Pennsylvania showed increased consumption of seven food groups—grains, vegetables, fruits, meat/meat alternatives, fat/sweets, and beverages—after moving to North America. Similarly, participants in the present study also reported increased consumption of several foods beneficial to their health after moving to Canada. Those findings are in accordance with those of Amos and Lordly (2014) and Shi et al. (2020) who each reported that international students have positive feelings regarding the availability of what they perceive to be healthier foods, such as cheese, milk, yogurts, and fresh raw meat, in their host countries. The consumption of dairy products in particular is recommended to maintain a healthy diet in both Western and Asian countries (Zhao et al., 2014). The findings support Global Theme 1, which posits that participants who undergo dietary acculturation through exploring local cuisine are more likely to recognize the advantages of modifying their food choices to some extent.

Conversely, participants also brought up negative experiences of dietary change during the process of dietary acculturation. For example, Simon described involuntary dietary change due to a lack of culturally appropriate foods in Canada. He stated:

Okay. I said before, I am crazy about hot pot. But in Canada, I can't eat hot pot every weekend. So right now, in Canada, I just can only eat four or five times a year... that's really changed my habits. It is a big impact....And also, I'm in China, I'm not really like to eat steak and some pasta. But in Canada, I have to eat because they don't have much Chinese food, Chinese restaurants. So, when I'm really hungry, I will choose some steak or pasta. I think that's really an impact to my life.  
Yeah.



with frozen strawberries and blueberries, which she tasted in the dining hall on campus (see Figure 4). She commented:

The strawberry [from the yogurt] is like a whole strawberry and the same as the blueberry. It is very amazing to me. Cause in China, like in China jams, like fruit jams, they won't get you like a whole strawberry, whole blueberry, just jams...I think 'Wow... Oh my God, it tastes so good and fresh.'



**Figure 4. Yogurt with frozen strawberry in the dining hall on campus, 'Very amazing to me', Emma.**

In contrast, Peter still did not feel comfortable toward the food in Canada, even after four years of residency. When I asked him if he feels comfortable and has got used to the Canadian food available to him, he said, "I don't think so. I have no idea. Maybe only pasta ... Yeah" Emma and Peter's experiences in Canada revealed very different levels of acceptance of Western cuisine at different points in their stay. Notably, Peter did not share any images of Western food, perhaps because he does not really like Canadian food, thus he does not eat it often. He commented, "Because I don't like tacos and brunch, because I don't like vegetables. I only like meat. So that's why I kept cooking all of the things by myself."

Figure 5 was one of Peter's cooking of 'Xie Huang Dou Fu' [Fried Tofu with Crab Roe] that



**Figure 5. Home cooking -'Xie Huang Dou Fu' [Fried Tofu with Crab Roe], Peter.**

he shared and supported his preference of Chinese home cooking rather than Canadian foods. These findings support Shi et al.'s (2020) research which indicates that over time, as immigrants and international students become more familiar with their new environment, some people become more receptive to the cuisine of their

host country, while others remain reliant on previous eating habits. Therefore, Chinese international students' acceptance of Canadian food is not a homogeneous process, and adoption of Canadian foodways does not necessarily increase with participants' length of stay, despite perceptions to the contrary.

Participants also noted having greater opportunities to explore multicultural foods when they came to Canada. This illustrates the wide range of culinary options available in Western countries, encompassing not only traditional Western cuisine but also diverse international dishes. Lily stated:

It's good to know that there are Chinese groceries in Canada. And I can find many Chinese foods in Canada and Korean foods and Vietnam food and many countries' food. So, I can try many foods from different countries. And there's not like in China. I don't know so many countries have a lot of food. In Canada, I can try more. But sometimes it's not very suitable for me. But I'm glad to go to the Chinese grocery.

In Figure 6, Lily displayed the Korean dish ‘Bibimbap’ that she ate in Halifax. Lily also indicated that, after trying various foods from different cultural backgrounds, Chinese cuisine remains her ‘comfort food’. Trying the food of different cultures is an opportunity for participants to identify the type of food that best suits their eating habits. Shi et al. (2021) described this phenomenon as “an intermittent embrace of new food and a



**Figure 6. Korean food ‘Bibimbap’ [rice mix with assorted vegetables and meat in hot stone pot] in Halifax, Lily.**

simultaneous retention of origin culture habits” (p.8). International students have the intention to try novel food options, but culturally appropriate foods remain their favorite dishes (Shi et al., 2021). Badanta et al. (2021) report that retaining traditional eating habits is common in immigrant life. Therefore, the participants' experiences reported in this study support the notion that being open to exploring new food cultures is a positive attribute among Chinese international students but does not ultimately have a significant impact on their perceptions of culturally appropriate food.

A typical Western-style diet is characterized by frequent fast-food consumption. Participants in this study cited fast food as a classic example of the unhealthy aspects of the Western dietary pattern. Participants reported negative feelings when eating fast food during the dietary acculturation process. Emily commented on the availability of fast food in Canada, saying:

The second point is, well, you can easily get easier access to the fast food. That's the unhealthy side. You can find many fast-food restaurants like Tim Hortons and McDonald's here. But in China, there are a lot of the other variety of different restaurants that you can find on the street.

As Emily mentioned, there were many other restaurants except fast-food restaurants available in China. This finding was supported by the work of Pilli and Slater (2021), who reported that the unhealthy side of the Canadian food landscape was led by fast/convenience food, particularly when international students were unfamiliar with the food environment, including supermarkets, grocery stores, and restaurants. Emily observed that fast food in Canada is readily available on the streets. This is a challenge for Chinese international students especially when they are at the beginning of the dietary acculturation process. Leaving a familiar living environment and lack of family support encourages dietary acculturation, and fast/convenience food may represent an option for international students (Pilli & Slater, 2021). Interestingly, no photographs of fast food, either consumed or observed by participants, were provided. This could be due to a tendency for participants to share positive experiences when discussing their eating experiences in Canada, whereas fast food had negative connotations. Among the participants, Emily identified fast food as the unhealthy side of exploring local cuisine in the host country. The increased risk of chronic diseases associated with the adoption of a high-sugar and high-fat diet during dietary acculturation is well-documented among immigrants to the United States (Alakaam & Willyard, 2020; Sanou et al., 2013; Shi et al., 2020).

After realizing the negative impacts of fast-food consumption, participants reported seeking healthier options such as cooking for themselves at home. Each participant in this research possesses a unique proficiency in culinary skills that influenced their dietary acculturation process. Some individuals learned cooking skills in China prior to their arrival, whereas others indicated that their culinary expertise developed after their relocation.

Cooking at home allows individuals to include locally grown ingredients in their cooking while also adhering to their personal dietary preferences, and as such, promotes healthier eating habits. Brad spoke up in his interview about how he developed cooking skills after moving to Canada. He said:

When I back home, actually, I don't know how to cook when I back home. When I was in high school, usually my grandmother cook for us... I cook since when I moved to Halifax and I learned how to cook by myself. When I was in China, I know nothing for cook.

During the interview, when Brad was asked whether he preferred dining out or cooking at home, he shared that since he had learned how to cook, he now preferred to cook Chinese food at home, stating, “Yeah. And eating Chinese food outside it's really expensive. So we just decide to cook at home.” Figure 7 depicts an example of a Chinese-style dish he had cooked at home. Several other participants shared a similar idea, that they were willing to cook at home in order to have food that met their preferences. Gaining cooking skills could



**Figure 7. Spicy shrimps with lotus root fried with Chinese spicy soybean sauce and garlic, Brad.**

have a positive impact on Chinese international students' experience when they are living in a foreign country. For Chinese international students, cooking at home is one method of maintaining traditional foodways, which are defined as the connection between food and culture (Wright et al., 2021). Cooking cultural foods also represents a good coping strategy for Chinese international students when

experiencing culture shock (Wright et al., 2021). Thus, developing cooking skills prior to arrival might aid Chinese international students to pass through the dietary acculturation process smoothly.

Engaging in home cooking not only contributes to a healthier lifestyle but enhances participants' overall sense of well-being. The experience of dietary acculturation also involves trying cuisine prepared using food ingredients to cook traditional recipe. After exploring ingredients available in grocery stores in their host country, Chinese international students can select an assortment of ingredients for cooking at home. Figures 8



**Figure 9. Home-made 'Rou Jia Mo', Bun with braised seasoned pork belly, Nancy.**

was an example of Nancy's cooking, which called 'Rou Ga Mo'. It is made with Bun and filling with pork. "Yeah. So I cook a lot. ...Number seven is 'Rou Jia Mo' [Bun with pork].

This is my partner's favorite because she's from Shandong, so yeah.". And Figure 9 was another example of home-made Chinese dish by Peter, the traditional Chinese flour-made dish, he also shared how long he took to complete this delicious food, "Yeah. And picture two, is the Chinese-made 'Hua Juan' [Steamed Roll]. I use the whole night making them because I need to do everything by myself. Like to make flour? Yeah.".



**Figure 8. 'Hua Juan', one of the Chinese traditional staple foods, made with flour, Peter.**

Many of the dishes were difficult to find in local restaurants in Canada because the recipes were complex or used special cooking methods such as steaming, braising, etc. The participants learned the recipes either from the internet or from family members. Other literature has reported that, after becoming familiar with the local food environment of their host country, international students are generally able to find the ingredients to prepare culturally significant foods and adhere to traditional foodways (Shi et al., 2021). Chinese students can better adjust to their host country's dietary culture and enjoy their favorite traditional cuisine if they possess cooking skills.

#### *5.2.2.2 Subtheme 2: The Social Role of Food*

Beyond particular food items, the social role of food was also an important aspect of participants' experiences. Cooking meals together is a way for students to socialize with others, expand their social network and make new social connections (Ma, 2015). In Chinese food culture, food is marked to determine the degree of interpersonal relationships, when Chinese people prepare a meal, they offer expensive and unusual food to someone they perceive to be important (Ma, 2015; Sibal, 2018). Therefore, when discussing dietary acculturation among Chinese international students, the social role of food cannot be ignored.

For participants in this study, socializing with other Chinese friends is a way not only to enjoy food they find appetizing and comforting but also to enrich their interpersonal lives. Food is easy to share with friends and this creates a welcoming environment for Chinese international students and their friends in Canada. Brad discussed his experience of sharing food and socializing with friends. He said:

Yeah, if I don't have a lot of stuff need to do so I can cook like some Chinese food...Or if I'm free I will hang out with my friend. Sometimes we go to the restaurant to eat and sometimes we will meet together like have kind of small party and we will cook by ourselves.

Brad stated he enjoys cooking and spending time with his friends during his leisure time (see Figures 10 and 11). This is an interesting discovery in the comprehension of the association between food and social life for Chinese international students residing in foreign countries. A similar statement, found in the literature, describes how food could be seen as a symbol of Chinese social culture, especially when a meal is shared with a group of people (Ma, 2015). The participants' reports of socializing with friends and cooking food



**Figure 10. Fried pork ear, Brad.**

together support the notion that food is the medium of Chinese social culture. Related to this topic, Chinese barbecue culture is an interesting social phenomenon which promotes communal eating of food prepared on a barbecue and exemplifies how cultural practices



**Figure 11. Fried lamb, Brad.**

impact eating behaviors among the Chinese people (Wang et al., 2023). Brad's example is similar to Chinese barbecue culture, which involves a group of friends meeting to cook and share food. This indicates that food is an important social agent and that its socialization has enhanced the experience of Chinese international students during their time in Canada.

Additionally, eating meals with friends and peers can serve as an encouragement for participants to prepare food dishes that are both elaborate and nutritious. The social aspect of food has reciprocal benefits for Chinese students. Sharing food with peers can enhance social relationships among participants while motivating them to cook more nutritious and delicious food, especially Chinese food, during social events. For

example, Emma shared Figures 12 and 13 which show a comparison between eating alone on campus and cooking food with friends at weekends. When Emma was staying on campus and eating meals in the dining hall, the food was pre-made and more suited to



**Figure 12. Examples of food eaten alone on campus, Emma.**



**Figure 13. Food preparation whilst cooking with friends at weekends, Emma.**

the palate of Western cuisine, with options such as fried chicken nuggets, French fries, and other similar foods. During weekends, when Emma stayed at friends' homes, they prepared and cooked traditional Chinese food together. She described this time spent preparing Chinese food with her friends as enjoyable and precious, she stated, “through Christmas or weekends, I moved out and I lived with my friend. We bought a lot of Chinese noodles and we can cook together. We cooked a lot of Chinese food.” Emma’s interview shows how cooking food with Chinese friends is relaxing and full of happiness for many international students in Canada. Food is therefore, a medium for international students to engage socially with their compatriots, and this helps

them to relieve some of the stress and uncertainty following their move to a new country (Amos & Lordly, 2014). This provides further evidence that food has complex and varied meanings in culture, human identity, and social life (Sibal, 2018).

As an extension of the previous point, it seems that the participants simultaneously reflected and identified that they had become more motivated to cook traditional and familiar foods when in the company of their peers. For Chinese international students, cooking culturally appropriate food with others is a source of comfort following their relocation to Canada, particularly during the period of cultural transition. For instance, Nancy shared how living with her partner motivates her to cook Chinese food. She said:

Yeah. Back that time, the change period, I live myself, just myself. But when I live with my partner now, there's another change. Like, we went back to Chinese foods or like... Because she has a Chinese stomach, so she likes Chinese food a lot. So we cook Chinese food a lot now.



**Figure 14. 'Biang Biang Mian' [A Traditional noodle in Shaanxi province], Nancy.**

Figure 14 shows the traditional noodles from Shaanxi province called 'Biang Biang Mian' that Nancy cooked at home with her partner in Canada. Nancy's experience mirrors that of most participants, where traditional food plays a crucial role in their social lives and provides them with a sense of comfort. When immigrants engage in traditional food practices, whether within or across

cultures, it brings back positive memories of their hometown, their family, and their sense of belonging (Wright et al., 2021b). The participants' experiences also align with other literature that has found cooking traditional food is a way to relieve homesickness and loneliness for international students (Amos & Lordly, 2014).

These results emphasize the importance of food, especially cuisine that is culturally suitable, in participants' experiences of residing in Canada. As traditional food and foodways are highly associated with ethnocultural identity, it is important to maintain the accessibility of culturally appropriate food for international students (Moffat et al., 2017). Ensuring sufficient consumption of culturally appropriate food was crucial for maintaining the physical and mental well-being of the participants in this research.

### **5.3 Global Theme 2: Barriers and Facilitators of Cultural Food Security.**

The second global theme addresses my third research question and explores practical obstacles and sources of assistance in relation to cultural food insecurity among Chinese international students. It has effectively outlined the key challenges that may impact the lives of Chinese international students in Canada, while also highlighting the support systems that enable them to overcome these difficulties and enhance their food-related experiences in Canada.

#### *5.3.1 Barriers*

Research has shown that immigrants often face various challenges after moving to their host country, including financial difficulties, language barriers, and unfamiliar food options (Elshahat & Moffat, 2020). Adapting to the new environment of the host country requires international students to have considerable flexibility and good time management, in order to balance learning, cultural adaptation, and their new lifestyle with fulfilling their academic requirements and family responsibilities (Amoyaw et al., 2022).

The participants reported facing various challenges during their time in Canada. Among these challenges, the financial burden is the one most intuitively observable for participants. For example, Emma commented on the significant disparity in currency by using the values of both Canadian dollars (CAD) and Chinese yuan (RMB). She said:

It was more expensive. It's like huge expensive. If you translate the money, the dollar into Chinese money, it's very expensive. Maybe for one bag of noodles, you need to spend in to spend 40 RMB (Chinese Yuan) in China. But actually, in China, you don't need to pay that much. Just 4 or 5 RMB is okay.

Emma's testimony succinctly captured the essence of this point. New arrivals in Canada observe a big difference in commodity prices between the Chinese market and the Canadian market. The higher price of everyday goods in CAD compared to RMB has a significant impact on Chinese international students in Canada. In line with previous literature, the financial burden is one of the main challenges faced by new arrivals to a host country and is a significant contributing factor in whether an individual has access to food in sufficient quantity and of sufficient quality (Moffat et al., 2017).

Participants frequently mentioned that their food options were limited due to the financial burden of living in Canada. This shows that some obstacles to a positive experience in Canada can be interrelated, which means that one challenge can potentially trigger a chain reaction. Wendy reflected on her perception that high food prices are associated with limitations to food options in Canada, stating:

Yeah. And also, the food price is a little bit high, and the type of food is not too much...Yeah. Because the food that are not very expensive is like pizza or hamburger or fries. I don't think it's really healthy.

Therefore, when Chinese international students face a financial burden, they might choose to buy food at a lower price, although it is of lower nutritional value. According to her statement, if a student is unable to afford the cost of food, they may need to opt for cheaper foods, such as fast food, which frequently lack nutritional value. Amoyaw et al. (2022) found evidence of a relationship between financial struggle and food insecurity, indicating that

students who experience food insecurity are more likely to face financial challenges. This can pose a significant difficulty for Chinese students residing outside their home country.

Participants also reported that there were big differences between grocery shopping in China and Canada. Peter shared his perceptions of buying groceries in both China and Canada. He said:

How would I explain it? So when you're back in China, for example, for me when I'm back in China, the food is everywhere. You can get it whenever you want, wherever you want and it's fast. But come to here you have to cook depending on what you can get in the market. So, it makes me pay less attention to cooking actually after I move here.

From his perspective, food seems readily available in China, allowing him to eat the dishes he desires without restrictions. In contrast, food options in Canada are more limited and do not always cater to his personal cooking preferences. Less food options means Peter does not need to spend much time deciding what to cook; thus, he does not need much attention when making the choice of his dinner; he can only cook what food is available in the market. A similar idea of limited food options in Canadian supermarkets was shared by other participants. For example, Simon said, “Yeah, when I try to cook some food, when I try to find something when going to the market, it not really I want to buy, but I have to buy.”. This excerpt from Simon's statement captures the reality of how Chinese international students in Canada obtain food. “It's not what I want to buy, but I have to buy” shows that participants are compelled to purchase and consume foods that are available in local stores, rather than selecting the food they truly desire that aligns with their typical diets in their home country. However, participants still explored the use of Canadian food ingredients in familiar recipes

and attempted to create dishes that matched their preferences. Figure 15 shows the example dishes that Simon cooked using the ingredients bought from a Canadian supermarket. Referring to what Simon said, even though the choice of menu was not prior to his own preference but decided by what was available in the supermarket intraday, he could still use those ingredients and modify the recipes that he knows. These findings effectively convey how the limited availability of familiar ingredients affects the food-related experiences of Chinese international students in Canada. Published research also demonstrates how an individual's eating habits and food choices are highly related to their self-identity (Eluwole et al., 2019; Ryan et al., 2022). Participants in this study reported actively seeking ways to help release the pressure of cultural food insecurity by developing new dishes that meet their personal preferences.



**Figure 15. Example of home cooking, Simon.**

Notably in the context of home cooking, the participants reported limited access to Chinese ingredients. Wendy reflected on her experience of shopping in Canadian supermarkets, stating, “If I want to do some Chinese food, I need to go to Asian

superstores to buy these things. I can't buy it in the Superstore or Walmart or Sobeys. Sorry, I mean I can't find those food ingredients.” Limited access to traditional foods or food ingredients could have a negative impact on Chinese international students' well-being. Depending on their university location, access to the ingredients required to cook traditional Chinese food may be limited, particularly in cases where students are unable to drive, and Chinese supermarkets cannot easily be reached by walking or public transport. Grocery

shopping for food to prepare at home is also time-consuming, as all necessary ingredients might not be stocked in the same store. According to Hanbazaza et al. (2021), international students with a post-secondary education background experience the same difficulties in finding culturally appropriate food as other immigrant groups. This lack of access to culturally appropriate foods may affect Chinese international students' ability to maintain their cultural identity. Hence, future research could focus on how best to address an essential concern and improve the experience of Chinese international students in Canada by increasing the accessibility of culturally appropriate food.

Furthermore, many participants find the cost of food delivery or “takeout” in Canada to be high compared to the cost in China, where such food is relatively cheap and readily available. A group of participants strongly agreed that the cost of food delivery, including the price of food and the delivery service fee, is excessive in Canada. For example, Simon commented that the price of delivery, service fee, and delivery time are significantly different in Canada compared to China, even when the food offered is comparable. When he shared his experience of having Chinese food delivered in Nova Scotia (see Figure 16), he stated:

Okay. In the place where I live (in Canada right now), only one Chinese restaurant can do the delivery at that time, and it always needs to take an half hour. And also sometimes they are going to lose something. And if you compare it with



**Figure 16. Food delivery from a Chinese restaurant in Canada, Simon.**

China, it's not good, but they still can help you fix your hunger. Yeah, but not good, not that fast.

On this topic, Lily also shared a difference she had observed between China and Canada, stating:

Most of the students will choose takeout because takeout is really convenient in Chinese universities, not like in Canada. It's so different because taking out doesn't need delivery fees, and some delivery is free (no service fee) and it's very quick. Just wait for 30 minutes and it will be delivered to your room. Very cheap and very convenient...And sometimes will be some discounts online. So the delivery is very common and it's very convenient than we eat outside.

Simon and Lily's reported experiences demonstrate the differences between food delivery services in Canada and China. Not only are there significant disparities in price and waiting time, but the tastes of the same food are different in the two countries. This phenomenon could be attributed to non-Western-run restaurants in Canada catering primarily to Western customers' eating preferences (Amos & Lordly, 2014). When international students order food to be delivered from a restaurant in Canada, the dishes have Chinese names but may not be cooked with authentic ingredients, resulting in a difference in flavor (Amos & Lordly, 2014). Thus, participants are dissatisfied with both the quality and service of food delivery in Canada when compared to China, resulting in their expectations not being met and a negative experience overall.

### *5.3.2 Facilitators*

On the other hand, some factors facilitate the maintenance of participants' identity and well-being through food while they are away from home. For example, participants' discovery of the advantages of integrating Western culinary ingredients and techniques into traditional Chinese recipes helped them to reduce the stress of cultural change and explore the

local ingredients of the host country. This approach not only facilitated adaption to cultural changes but also eased the challenges of adjusting to a new diet. In Brad's photograph (Figure 17), he shared the Chinese porridge that he made for breakfast with green onion, shrimp, and ground beef. Those ingredients are commonly found in Canadian supermarkets, and he used them to make Chinese porridge. He also said:

Yeah, for international students, I think when you move to Canada, you will know more of your background food or more of your hometown food because you missed the taste, so you had to learn. So you can know. I mean, you can learn to cook really easily. And also you have a choice to try some new food. And it's really good. Like two different



**Figure 17. Chinese congee made with green onion, shrimp, and ground beef, Brad.**

backgrounds, and cultures, they mix together. So it makes me more like the food better when I was in China. Because in China, it's really easy to eat everything, and it's not convenient here because you have to cook. It makes you more... deeping in the food. It makes you more enjoying the food.”

Brad has described how cooking Chinese cuisine in Canada has helped him comprehend the blend of two distinct cultures. This experience has created a greater appreciation of Chinese cuisine, and now the demarcations between the two cultures have seemingly blurred; food became the catalyst for a better experience in his host culture. According to Mensah et al. (2022), cultural acquisition and heritage retention exist simultaneously in the acculturation process. Brad's experience demonstrates how international students try new foods in their

host country and figure out how to incorporate them into their own cultural beliefs, eventually coming to be perceived as comfort food. This knowledge could help people who move to a new country to develop a novel vision of seeing food as a medium to smoothly accept and coexist between two cultures.

Participants also mentioned support they received from their university had a positive impact on their lives as international students. Campus dining halls often provide menus that have been designed with consideration for students from various cultural backgrounds. Universities also regularly organize events for international students and provide food that suits their tastes. Emma showed a photograph of one of the lunches that she ate in the dining hall on campus (see Figure 18), stating:

For the number four pictures, it's not fried eggs. It's boiled eggs, just put eggs in boiling water...when I arrived in Canada, I had breakfast and maybe lunch here, most of the eggs here are fried eggs. So that's the just one time I tried boiling egg here, just like the Chinese egg, Chinese cook way. And I'm very happy because I think it tastes like



**Figure 18. Lunch in the dining hall on campus, Emma.**

Chinese eggs. Also, the rice actually doesn't taste like Chinese rice because the color is brown and the taste is not very soft... So I just took the pictures, and I think the meat is very delicious.

She stated a preference for boiled eggs over the frequently offered fried eggs in her campus dining hall. The experience of trying a dish cooked in a similar style to the Chinese cuisine she is familiar with was memorable for her. Other participants shared similar experiences. A



**Figure 19. Multicultural food offered by during university orientation, Brad.**

photograph of the food served during Brad's attendance at a school activity is presented in Figure 19. According to Brad's statement, this plate contained a combination of foods from diverse cultural backgrounds, and he complimented the flavor. Emma and Brad's photographs of the food available at their respective universities show how post-secondary education

institutions can support international students. It is important for universities to recognize the importance of providing support to international students who are experiencing an unfamiliar culture for the first time. Serving culturally relevant foods creates opportunities to help Chinese international students expand their social networks through communal eating with students from all backgrounds. O'Sullivan and Amirabdollahian's (2016) study also reported that international students enjoy events, such as multicultural food nights, which are hosted by their universities. Such events represent a good opportunity for Chinese international students to develop new friendships. Previous literature has reported that international students can alleviate feelings of homesickness and improve their happiness through friendship (Luo & Zhang, 2021), enhancing their overall experience of life in Canada.

In addition, when relocating to a different country, it is important for international students to establish friendly relationships with other students. This could be achieved by hosting social events to share traditional cuisine and build social relationships with other students in Canada. As previously discussed, social bonding holds great significance in Chinese culture. In China, food is often used as a means of conveying sentiments. Lily provided an example of how she formed a strong friendship with other students from Vietnam while studying in Canada. In relation to Figure 20, she explained:

The fifth is Chinese foods and the noodle is what my roommate, Vietnamese cooks. It is from different countries' food, but it's all Asian. So these foods sometimes are similar. We can eat. The flavor is similar. And I like the Vietnam culture too.



**Figure 20. Multicultural dinner with Vietnamese friends at home, Lily.**

Lily recalled fond memories of an evening when she enjoyed a multicultural dinner with her partner and roommates. This is a good example of how strong interpersonal relationships and cultural bonds can have positive impacts on international students' experiences and can also help to strengthen their cultural identity (Wright et al., 2021). As previously indicated under the first theme, food has an important social role and offers a chance to build social connections with other students in Canada. This is advantageous when adapting to a new cultural environment in a foreign country. O'Sullivan and Amirabdollahian's (2016) study show it is enjoyable for international students to share culturally significant food with students from their own culture as well as those from other countries.

In addition to friendship, family support also significantly impacts the experience of Chinese international students in Canada. Family support is, therefore, a strong resource to improve Chinese international students' food experiences in Canada. In respect of this concept, Peter has extensive experience, as he stated:

My grandma teaches me how to make it ('Hong Shao Rou', a traditional Chinese dish). And when I was young, I loved that so much. Actually, when I came to Canada, I knew I needed to live alone and to better cook by myself. And I asked my grandma, can you teach me how to make that food? My favorite one is the 'Hong Shao Rou'. And my grandma had written on the paper and given that to me.

Peter shared his experience of learning to cook his favorite dish, 'Hong Shao Rou' [Braised Pork Belly] from his grandmother after moving to Canada (see Figure 21). Hong Shao Rou is a famous traditional Chinese dish with a long history. The first recorded mention of it is in



**Figure 21. Home-made 'Hong Shao Rou' [Braised Pork Belly], prepared from his grandmother's recipe, Peter.**

'Qimin Yaoshu', an ancient Chinese agricultural text written about 1,400 years ago (Li, 2001). Peter said that cooking 'Hong Shao Rou' by himself reminded him of precious memories with his family in China. According to Wright et al. (2021b), "Cultural food consumption is associated with nostalgia, familial memories, and feelings of pleasure, belonging,

comfort, and well-being" (p. 702). Peter's statement highlights the significant role of cultural food in providing support during his time living away from his family. He recognized that his family serves as a constant source of guidance and encouragement in alleviating feelings of

homesickness or stress. Meals that inspire memories of the family could also serve as a form of sustenance for Chinese international students and can support and improve their experiences when residing in a foreign country.

The data collected from the participants may not be generalizable to all Chinese international students, but we still believe they demonstrate how most international students seek out the best food for themselves while studying in a foreign country. Chinese international students experience both barriers and facilitators of cultural food security, however, they can collectively be considered integral to the novel and challenging process of adapting to life in Canada.

## **Chapter 6 Conclusion, implication, and limitation**

This research explored the experiences of international Chinese university students in Nova Scotia in the context of access to culturally appropriate food of sufficient quantity and quality. This exploration revealed a mixture of positive and negative encounters with the experiences of dietary acculturation and how they shape Chinese international students' experiences of accessing culturally appropriate foods in Canada. One key strength of this study is the identification of the proactive attitude exhibited by Chinese international students toward the consequences of the dietary acculturation process; no participant in the study reported succumbing passively to the impact of cultural shock. The participants maintained control over their decision-making during the dietary acculturation experience, and the outcome was determined by the unique circumstances of each participant. This finding was contrasting existing literature, in which the acculturation process is often passively occupied when international students experience cultural change when they are moving into a host country. Besides, the social role of food cannot be ignored among Chinese international students' experiences. Chinese traditional food culture has a long and profound history and is an important part of Chinese traditional culture; therefore, maintaining the accessibility of culturally appropriate food for Chinese international students is necessary to maintain their

ethnocultural identity and improve their experience in Canada. Several unique barriers and facilitators that shape Chinese international students' food security were also identified. Align with the existing literature, students often reported experiencing financial strain and restrictions in accessing culturally appropriate cuisine. On the other hand, the provision of support by peers and relatives, along with the integration of food from both Canadian and Chinese cultures to create comfort dishes, enhanced their overall experience.

### *Implications*

There was limited literature focus on the experience of cultural food insecurity specially among Chinese international students, this study could assist post-secondary institutions expanded a deeper understanding of Chinese international students' experience related to accessing culturally appropriate food and how it impacted their wellbeing and ethnocultural identity. Understanding Chinese international students' experience of dietary acculturation and the factors that shapes their cultural food security would help developing organizational and institutional policy and programming in order to responsiveness to the needs of Chinese international students. This research may also interest a different number of knowledge users. For example, international students center from universities, student groups such as the Inter-Cultural Food Bridging Society at Mount Saint Vincent University, provincial institutions like the Department of Advanced Education in Nova Scotia government, and charity institutions such as Feed Nova Scotia. Different knowledge users might have different interests in this research. For instance, student groups like the Inter-Cultural Food Bridging Society might be interested in this research so they could understand how to design activities on campus to support Chinese international students better. Provincial institutions such as the Department of Advanced Education, might be interested in this research to engage in policy-making that could better support international students. One aspect of their responsibility is to 'provide direction and support to create and improve equitable, diverse and inclusive post-secondary education throughout the province' (Communications Nova Scotia, 2022). In order to follow through with this part of the

mandate, addressing cultural food insecurity for international students should be a part of their work in terms of supporting diversity and inclusivity.

### *Limitations*

The limitation of this study would be it was time-demanding research. Photovoice research required both researcher and participants to contribute lots of time and attention into the project (Wang and Burris 1997). Participants needed a group meeting, ethic training, and time to take photos that could represent their experience of accessing culturally appropriate food during both weekdays and weekends. Moreover, at the end of the two-week periods, some photos that uploaded from participants may be consider re-taking, such as photos with low clarity which are hardly to recognized, or the photos were irrelevant with the themes of the research. Thus, after discussing with participants, participants would need a bit extra one or two days to gather one or two new photos.

Future research could expand the sample size and the region of recruitment to improve the accuracy and validity of the data. Further insights may be yielded by comparing the food experiences of Chinese international students who return to their home country and those who consistently remain in a different cultural environment. It is important to further explore ways to enhance support for Chinese international students in Canada. One recommendation is for universities to support student unions by subdividing them into national student union sections. This makes it easier to customize activities specifically for international students, promote the cultures of their countries, help international students find a sense of belonging, and enrich the diversity of the campus simultaneously. At the same time, institutions could improve the guidance offered to international students preparing for their studies abroad, so that new international students can learn in advance about the process of acculturation, the challenges they may encounter, and how to seek assistance. Such support

can enhance the experience of international students in their new environment and assist them in adapting to university life more efficiently.

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