Piloting an Adapted Halal Food Assessment Tool in Chittenden County, Vermont

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Objective: The tools used to measure food accessibility and food insecurity need to reflect the growing diversity of the United States. A lack of cultural acceptability is prevalent in food insecure populations. Researchers must rethink the "American diet" that many tools are based upon. The purpose of this study was to pilot an adapted food assessment tool that complies with Islamic dietary laws.
Methodology: Cross-content analysis of the Winooski School District Cookbook was used to develop a nutritional assessment tool that catered to the Burlington and Winooski communities while adhering to Halal guidelines as set by the Muslims in Dietetics and Nutrition (MIDAN) Toolkit. The tool was adapted from the Nutritional Environmental Measures Survey in Stores (NEMS-S) and the Somerville Food Assessment, which is a recent adaption of NEMS-S. After development, the tool was used to assess 30 retailers in the community across four different store types: Convenience, Chain, Niche, and Ethnic.
Analysis: Bread, Milk, and Halal Animal Protein were analyzed across store types. Prices and availability of each food product were assessed and compared to concerning the other store types.
Results: Chain/Niche stores had more items stocked compared to the other store types. Ethnic food stores were more likely to have Halal animal protein. Convenience stores were usually more expensive than the other store types.
Future Research: To become a more comprehensive tool, the Halal Food Assessment could be expanded to include access to public transportation, the acceptability of food assistance programs, the overall freshness of produce, etc.
Key Words: food access, cultural acceptability, food insecurity, food retail, nutritional assessment, Halal, diversity, alternative diets

INTRODUCTION

The Nutrition Environment Measures Survey in Stores (NEMS-S) is an observational assessment tool developed in 2007 to measure the nutritional environment of food retailers.[1] The tool is used to give retailers a score based on the availability, price, and quality of healthy foods. The NEMS-S was developed in response to the growing research surrounding food environments that lacked proper assessment tools.[1] The tool

evaluates retailers' food stock across the US, based on a "healthful American diet" as decided by various federal agencies, health professionals, and researchers.[1,2] It is a fundamental tool used to evaluate food environments around America.

Critics of assessment tools, such as NEMS-S, highlight that such tools reflect the Eurocentrism that permeates our society.[3] Thus, NEMS-S does not reflect the eating patterns that are relevant to population groups with different food cultures, including minority populations in the United States. Nearly 45 million immigrants are residing in America, each with their own food culture and practices.[4] Current census projections predict that by 2045 America will be minority white.[5] Being over a decade old, based on even older literature, NEMS-S needs reform. It is imperative that researchers utilize tools that are culturally inclusive and reflect the diverse dietary practices of our population. Other countries and communities have already adapted NEMS-S to reflect the diets of their civilians better.[6,7] We must continue this pattern to make food security an inclusive goal and practice for the US.

The idea that food insecurity includes people's right to culturally appropriate food has been brought to the global agenda at both the Forum for Food Sovereignty in 2007, and in the definition of the UN Committee on World Food Security.[8] Despite this global phenomenon, the current NEMS-S is not reflective of cultural acceptability. When using this tool to assess food environments, surveyors are overlooking a fundamental facet of food insecurity that is especially striking among minority populations. While studies show that diet-related health issues and food insecurity are highest among new Americans in the US, there is a prominent gap in literature to operationalize cultural acceptability in its relation to food insecurity.[9]

This project adapts the Somerville Community Food System Assessment tool in order to cater to the preferences of the Burlington and Winooski communities. Developed in 2018, the Somerville Community Food System Assessment tool is an essential iteration of the NEMS-S that sought to address cultural inclusivity and is one of the first tools of its kind to cater specifically to the community it is assessing. The present study is part of a larger Hatch Grant-funded project titled 'Influences on Food Security in Resettled Refugee Households.'

Resettled refugees are forced to overcome tremendous obstacles during readjustment which commonly result in anxiety, depression, and adverse health effects.[10,11] Food insecurity, which is prevalent among these populations, adds to increased stress and inhibits coping mechanisms.[12] Abrupt changes to food choices compromises a healthy diet.[13] Over time, this can contribute to increased diet-related health disparities in refugee populations.[12] Having access to culturally relevant foods would not only be comforting for refugee families but would also aid in combatting food insecurity.

Though Vermont (VT) has proven to be a pioneer in food systems, food insecurity in Vermont is still on par with the national average of 12.1%.[14] Despite being the second-least-populated state; VT is home to a significant immigrant population. Though Vermont makes up less than 1% of the US population, over 4% of the VT population are immigrants.[15] As a home to many new Americans, primarily from Bhutan, Somalia, Bosnia, and Nepal, combating food insecurity in Vermont must also set a precedent for

cultural inclusivity.[16] In this study we produce and pilot a new food assessment tool adapted to reflect the dietary restrictions of Muslim-Americans, targeting the Burlington/Winooski area where most Vermont New Americans have settled.

OBJECTIVES

In this study, we explore the feasibility of developing and piloting a new food assessment tool that is culturally appropriate for Muslim-Americans. Specifically, our tool will cater to the preferences of the Burlington/Winooski community. The tool will be developed using cross-content analysis among the Winooski School District Cookbook, resources from the Muslims in Dietetics and Nutrition (MIDAN) member interest group of the Academy of Nutrition and Dietetics, and available nutritional assessments. We hope this will provide insight to gaps in resources and barriers that arise with current assessment tools. Documentation of the development of this tool will provide transferable lessons to communities looking for the best approach when adapting assessment tools for specific populations. Upon development, we will pilot the tool in select stores in Chittenden County. Completion of the pilot stage will give us a preliminary understanding of the viability of adapted nutritional assessments for targeted populations.

METHODS

In 2018 the City of Somerville, in partnership with The Tisch College Community Research Center (TCRC) at Tufts University, published Somerville's own unique Community Food System Assessment.[17] Being an adaption of the NEMS-S, the Somerville Community Food System Assessment caters specifically to the needs of the Somerville community. When creating the Somerville Food Assessment, the tool developers conducted focus groups in order first to analyze the preference of the community to cater the tool to their needs. The Somerville Food Assessment was used as a model for this project. Given time and research constraints, community surveys and focus groups were not able to be conducted for this project. Using the Winooski School District Cookbook, we first adopted the existing Somerville Food Assessment to adhere to the preferences of the Burlington/Winooski Community. The Cookbook was developed in 2017 using recipes from community members to raise money for the Winooski PTO. Once developed, the tool was piloted in the Burlington and Winooski. Afterward piloting the assessment, we reflected on the lessons learned in the process.

Content Analysis

Each recipe within the Winooski School District Cookbook was analyzed. For ingredients to be considered in the adapted assessment, the recipe had to fit three criteria.

(1) All ingredients must be Halal. Halal was defined by adhering to the Practitioner Guide developed by MIDAN for the strictest followers of Islam[18] (2) The recipe did not call for processed or ultra-processed foods. The consumption of processed or over processed foods has been found to lead to adverse health effects.[19] The inclusion of recipes that list potentially unhealthy ingredients does not fall within the purpose of our new food assessment. (3) The country of origin of the recipe authors surname had a Muslim population of 30% or higher, according to the 2009 study mapping the global Muslim population.[20] Fourteen recipes met these inclusion criteria. Ingredients of the 14 recipes were then separated into categories that reflected the measures of the Somerville Food Assessment, making a note of ingredients that appeared in more than two recipes.

Developing the Tool

The first modification to the Somerville Food Assessment was adapting the tool to reflect considerations and restrictions found in a Halal diet. The red meat measure was changed to Halal Animal Protein. Animal Protein assessed must now have the certified Halal labeling to fill the requirements of animal protein. Goat and Lamb were included in the measure as both animals are recognized in major Muslim holidays. It has been found that demand for lamb and goat increase around both Eid al-Adha and Ramadan and Eid al Fitr.[21] The assessment of the availability of cuts and lean meats were removed. The tool now solely assesses whether Halal animal protein is available or not. As Halal meats and Halal certified products are not widely available, assessing for cuts and leanness would only create narrower margins of availability and assessment. A note was added to packaged foods to make users aware that packed and canned foods must be free of various additives such as gelatin, alcohol, and other animal derivatives that would not be considered Halal by the strictest Muslims.

Using the identified recipes as our guide, we adapted the Somerville Community Food System Assessment tool to reflect the preferences of the Burlington/Winooski community. Ingredients that were identified with a frequency higher than two were included in the new tool under their appropriate measure. Spices were also a very prominent ingredient within the recipes. Though the lack of access to spices would not denote food insecurity, the access to appropriate spices is part of cultural autonomy which can influence one's relationship with food. Thus we created a new measure assessing the availability of certain spices identified in the recipes.

Appendix 1 shows the tool as it was initially developed. The adapted tool was converted to an electronic version in attempts to increase discretion for the assessors. The electronic assessment also allows for increased mobility and allows for more convenient sharing of results.

Piloting the Tool

Thirty food retailers were assessed during the piloting of the tool. All Winooski food retailers were included. As Burlington is a larger and more populated city than

Winooski, only food retailers within one mile of Burlington's downtown transit center were assessed. These retailers would be within walking distance for individual coming by public transport. As no national chain stores fell within these parameters, five of the closest unique chain stores were assessed. One niche store outside of the parameters was also included, as it carries many specialty items that may pertain to the Muslim community. The 30 stores assessed were compromised of thirteen convenience stores, nine ethnic food stores, five chain, and three niche stores. A chain store is a large branch that is found nationally. Convenience stores included both cornerstones and gas station stores. An ethnic food store is a store that caters to a specific cultural population. Niche stores were comprised of health food stores or high-end grocery stores.

We assessed the majority of stores between 5:00 pm and 8:00 pm on either Monday or Tuesday to maintain as much consistency in variables such as shipments and stocking patterns as possible. Using as much discretion as permissible, we went in person to each store and assessed the retailer by hand using our electronic adapted tool. We would often have to ask prices for various items. While most food retailers reacted positively to our pilot, one retailer refused to participate and asked us to leave.

Analysis

The purpose of this study was to develop and pilot an alternative nutritional assessment tool. However, given data available from the project, we were able to conduct a pilot evaluation of the food environment in the Burlington/Winooski area for the Muslim community. The information collected from the 30 stores was transferred to Excel. In Excel, data was cleaned to fill gaps in responses and create consistency in units. As only three niche stores were assessed, chain and niche stores were combined during analysis. They are the most similar in what is stocked. Using SPSS Statistics, three measures were chosen to highlight the differences between store types. Frequencies and averages (mean and standard deviation) were used to assess the availability and prices of the measures chosen within the store types.

RESULTS

The results show that the cost and availability of foods measured vary considerably both between store types and between stores. We focus on Measure 1: Milk, Measure 6: Bread & Flour, and Measure 5: Halal Animal Protein. Milk and Bread were available at almost all stores and allowed for the opportunity to compare pricing across stores. Bread and milk are also routinely thought of as "staple foods." When assessing for food insecurity, noting the availability and cost of these two items are essential foundations. Measure 5 was analyzed because as Halal meat is not an available norm in most grocery stores, but necessary for a follower of Islam if they are to have animal protein.

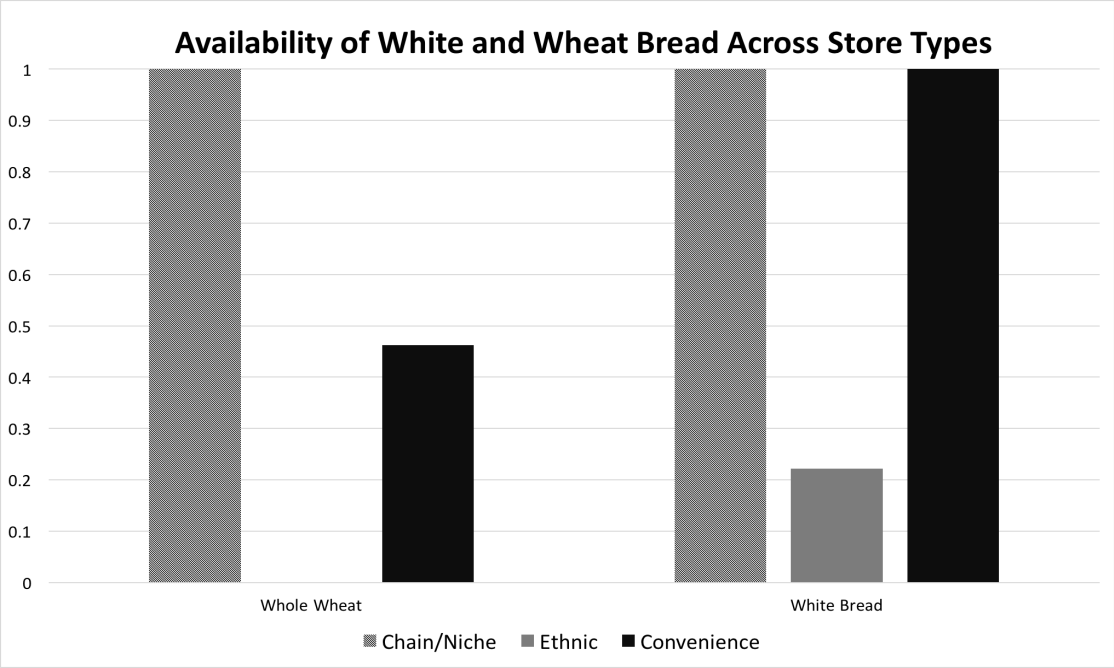
Measure 1: Milk

Figure 1 shows that while the chain/niche stores and convenience stores assessed all carry milk, only 55% of ethnic stores assessed stock milk. Convenience stores were the most expensive, with a mean of $0.04 per ounce of whole milk and a standard deviation of $0.02. Convenience stores also showed the most extensive variation of prices between stores, ranging from $0.02 per ounce to $0.1 per ounce. Of the five ethnic stores that did carry whole milk, the mean cost was $0.02, which was less expensive than the mean cost of milk at chain/niche stores, $0.03. Ethnic food stores had a standard deviation of $0.01. Chain/niche stores were the only store type to carry infant formula. The mean cost of infant formula in chain/niche stores was $0.7 per ounce, with a minimum cost of $0.14, a maximum of $1.78 and a standard deviation of $0.70.

(Figure 1)

Measure 6: Bread & Flour

Figure 2 shows that at least one store from all store types carries bread. 100% of chain/niche stores carry whole wheat, less than 50% of convenience stores carry whole wheat, and no ethnic stores carry whole wheat. Less than 20% of ethnic stores carry white bread, while 100% of both chain/niche and convenience stores carry white bread.

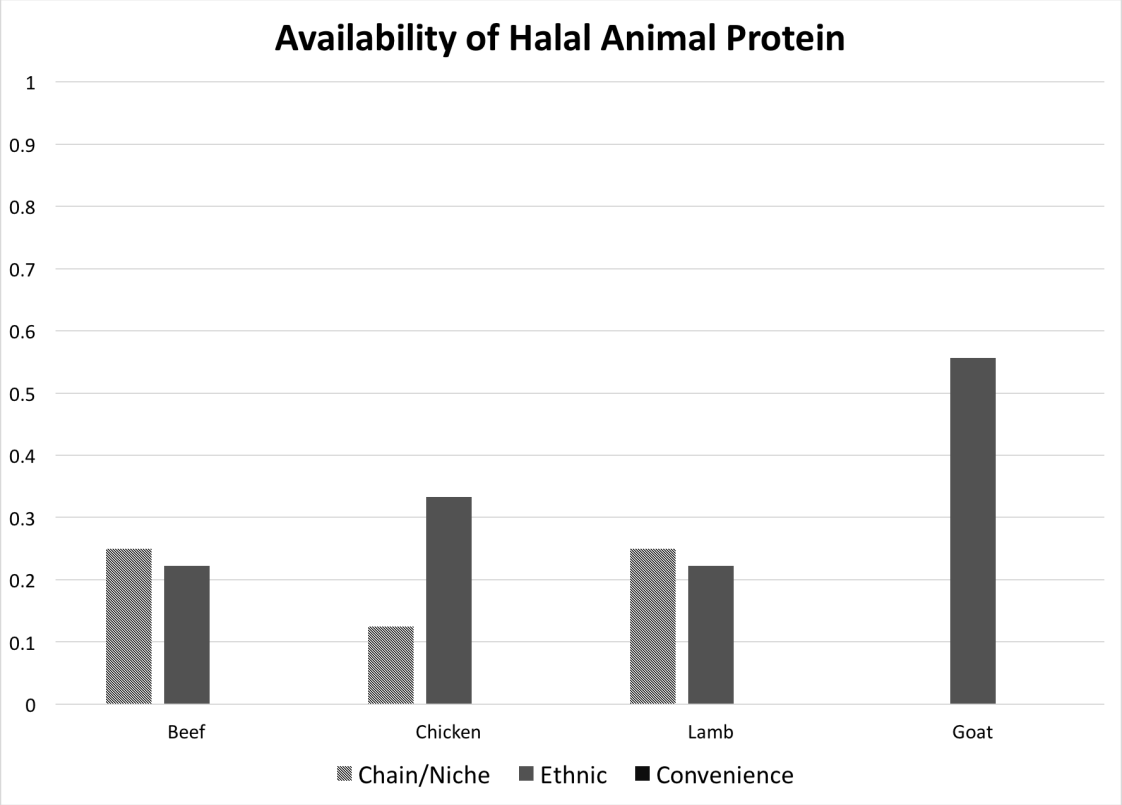


(Figure 2)

Whole Wheat bread is found to be more expensive at both chain/niche stores and convenience stores, with means of $2.57 and $3.92 respectively. The standard deviation for the stores was $0.97 and $0.67 respectively. White bread, which is found at all store types, is most expensive at ethnic food stores costing on average $3.79 per loaf with a standard deviation of $0.28, compared to chain/niche (mean of $2.27 per loaf) and convenience stores (mean of $2.48) per loaf.

Measure 5: Halal Certified Animal Protein

No convenience stores assessed carried any form of Halal animal protein, as shown in Figure 3. All four kinds of halal animal protein were found in ethnic food stores, compared to chain/niche stores which did not carry goat. Ethnic food stores were the only store type to carry a Halal animal protein (goat) at a rate higher than 50%. Across all store types, goat was the most expensive, averaging $5.98 per pound. Lamb was the second most expensive with a mean of $5.24 per pound and a standard deviation of $0.95. Beef ranged from $1.99 per pound to $6.99 per pound, with a mean cost of $4.8 per pound and the greatest standard deviation of $2.09. Chicken was the least expensive across all store types, with a mean cost of $2.47 per pound.



(Figure 3)

Overall, chain/niche stores had a high availability of items assessed. As there are limited chain/niche stores within walking distance of Burlington and Winooski's downtown centers, this can pose an issue for many new Muslim-Americans. Infant formula can only be purchased at a chain/niche, requiring public transportation or access to a vehicle. While white bread can be found at the numerous convenience stores in the city limits, the healthier option of whole wheat bread is less available and comes at a higher cost. Ethnic food stores are the most reliable resource for accessing Halal animal protein, but there is still an evident lack of cultural representation across all store types in regards to Halal meat products.

DISCUSSION

This research aimed to address the issues regarding inclusivity in our current assessment tools, by developing a more cross-cultural tool for one ethnically diverse community in Vermont. While the scope of this project is limited to the state of Vermont, cultural dietary diversity and food insecurity are of national importance, and thus our research is well-aligned with the multi-state focus of the Hatch Grant. Through cross-content analysis, and piloting of the tool, it is clear that nutritional assessments adapted for cultural relevancy are not only feasible but also shed light on essential dimensions of the food environment that can impact food insecurity. The findings show that tool adaptation

is valuable to any community that decides to take on such a process. Community-tailored tools provide locally relevant information that cannot be gathered if relying on standards tools. Further research in the food environment, using community centered tools could lead to work to increase cultural inclusivity in smaller stores in the Burlington/Winooski area.

Using cross-content analysis the tool created was developed in mind of the community is assessed. Given more time, researchers would have been able to include qualitative data by surveying individuals in the community, similarly to the Somerville Food Assessment process. Such information would have created a better understanding of community food preferences and thoughts on food environment and thus would have aided in developing a more robust tool. Communities looking to adapt their own specific food assessment tool should consider the value of community member input via qualitative data collection.

In general, there was a large gap between stores that stocked staples, such as bread, and stores that stocked cultural relevant products, such as halal-certified meat. As such, consumers would have to go to many stores to purchase all items needed to prepare recipes from the local cookbook. This may not be a viable option for specific populations. Chain stores were the only store category that generally had both culturally relevant products and staples. The closest national chain stores were assessed in this study, and most required a vehicle to access from Winooski conveniently. If public transportation were to be used, consumers would still have to walk a long distance to bus stops, which may inhibit the number of groceries one could purchase

The definition of food security is changing to make room for culturally acceptable foods. The demographics of America are changing. The NEMS-S is the most commonly-used tool and is over a decade old. Such tools must be updated to reflect the current needs of the community being assessed. While the Pilot Halal Food Assessment shows promise, there can be more done to create a comprehensive tool that addresses the full complexity of food insecurity.

Research Limitations

Though this research is meant to gain insight in achieving cultural inclusivity in community food retailers, there was a lack of Muslim representation within the research team. As the findings were from Vermont-based stores, the results cannot be generalized. Though assessors attempted to maintain as much discretion as possible, there were times when the explanation of the assessment would occur. Often at smaller ethnic stores, prices were not individually marked. Assessors would have to ask store owners prices for individual items. Stores owners then have room to either raise or lower their prices if they wanted. It is unknown if prices stated were in response to knowledge of the assessment. In regards to fruits and vegetables, many ethnic food store owners will often change their prices depending on the seasonality of items. Times that the store was visited may also affect the results of the assessment, as availability is affected by stocking times and delivery days.

IMPLICATIONS FOR RESEARCH AND PRACTICE

To date, there is little research on community-centered food assessment tools. As the demographics of the US changes, it is essential that future research tools reflect these changes. As food insecurity is a product of social, cultural, and economic factors, assessments should move to be multifaceted. Future developments of the Halal Food Assessment could include such parameters as retailer proximity to public transportation, acceptance of federal food assistance programs, the overall freshness of produce, etc. By including such parameters, researchers would gain a more holistic understanding of food environments in individual communities. By adding a scoring mechanism to assessments, retailers would also be given opportunities to work to improve their scores and thus improve cultural inclusively. Using the results from the Pilot, there is an opportunity to gather more qualitative information. Future researchers may conduct focus groups, much in the way that the Somerville Food Assessment was conducted, in order to better cater the tool to fit the needs of the community. Based on the findings, work with retailers can be conducted to supply more culturally appropriate foods that are accessible to Muslim community members. If this pilot is to be used in the future, assessing the growth or decline in availability of Halal meat will show how society adapts to becoming more culturally inclusive.

In the broad spectrum, researchers must start to question how the methods of data collection may perpetuate systemic marginalization that permeates through all facets of US institutions. It is necessary to study and reflect on the implications of how tools categorize, label, and assess may conserve longstanding barriers within our food system. By creating more comprehensive tools is one step in dismantling such barriers and addressing the complexity of food insecurity.

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