SCREEN AND INTERVENE: IMPLEMENTATION OF A FOOD INSECURITY SCREENING AND REFERRAL PROGRAM IN UNIVERSITY STUDENT HEALTH CENTERS

by

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ABSTRACT OF THE THESIS

Screen and Intervene: Implementation of a Food Insecurity Screening and Referral Program in University Student Health Centers

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Student food insecurity is a growing problem on college campuses and is negatively associated with educational success, physical health, and mental well-being among students. Although colleges are increasingly offering supports for food insecure students, a lack of formal outreach strategies may contribute to the underutilization of these services. Student health clinics can be natural locations to both screen students for food insecurity and to provide a formal referral to on-campus resources. Therefore, the purpose of this study was to develop and assess the implementation of a novel food insecurity screening and referral program within Rutgers University’s Student Health Services using a mix of qualitative and quantitative approaches. Of the students (n=5,819) who were screened by the program, 9.5% (n=551) were found to be food insecure. According to the RE-AIM framework, this program was highly effective in the dimensions of implementation, adoption, and maintenance, with an overall public health impact score of 76%. Results from the staff and clinician semi-structured interviews (n=18), indicate the program was perceived as successful, effective, and a valuable tool that supports the mission of Student Health Services. Findings indicate that hundreds of students seen by the health centers are struggling to feed themselves. They also highlight
the importance of continuous food insecurity screening programs on campus. This study suggests that “screen and intervene” programs address the need for increased awareness, continual screening, and formal referral of resources which can help combat student food insecurity and should be considered in student health clinics and centers within universities and colleges across the nation.
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CHAPTER ONE
INTRODUCTION

The increased enrollment of low- and moderate-income students, together with the growing costs of education and insufficient student employment and government benefit opportunities, have resulted in an increase in food insecurity on college and university campuses.\(^1\) Food security can be defined as the access by all people at all times to enough food for an active, healthy life.\(^2\) On the contrary, food insecurity implies a limited access to adequate food due to lack of money or other resources.\(^2\) Current literature suggests the prevalence of food insecurity among college and university students ranges from as low as 14% to as high as 59%.\(^3\)–\(^11\) Food insecurity is negatively correlated with academic achievement and lower grade point averages (GPA’s) in colleges and universities.\(^7,8,12\)–\(^14\) Food insecure students are also more likely to experience poorer self-reported physical health;\(^7,10,15\)–\(^19\) higher BMI; poorer diet, sleep, and exercise habits;\(^20\)–\(^22\) higher perceived stress;\(^12\) and higher risk for developing mental health conditions such as depression.\(^10,16\)–\(^18,23\)

Recognizing this as a public health and academic success issue, institutions of higher education have been working towards effective strategies to secure the basic needs of students.\(^1\) Two common on-campus services include student food pantries and centralized student services, such as a dean of students office, that function to connect students to an emergency food supply and other local support. However, recent studies have suggested an underutilization of campus food pantries because of multiple barriers, including lack of information and stigma.\(^24,25\) In addition, a lack of published data makes it difficult to determine the utilization and effectiveness of institutional offices used to
connect students to basic need services. A few studies have assessed food security support programs and services available at institutions, however, to ensure that students receive adequate assistance, additional research efforts are needed to evaluate programs.

The health care setting has been at the forefront of using a “screen and intervene” approach to address food insecurity. The American Academy of Pediatrics has partnered with the Food Research & Action Center to provide supporting tools and recommendations for pediatricians, including a validated two-question screening tool. Similar food insecurity screen and intervene programs have been implemented with success in adult health clinics with low-income populations. University student health centers provide a promising setting for the implementation of food insecurity screen and intervene programs. Therefore, the purpose of this study was to implement a food insecurity screening and referral program within Rutgers University-New Brunswick’s (Rutgers University) Student Health Services and to assess the program’s effectiveness in identifying food insecure students and connecting them to on-campus services.

**Campus Context**

Rutgers University was a good context in which to test this approach for a number of reasons. With a food insecurity prevalence of 36.9% among undergraduate students in 2016, Rutgers University was comparable to national estimates of food insecurity in higher education institutions. Rutgers University is a four-year, land grant public university with a 2018 enrollment of 50,254 students, including 36,039 undergraduate and 14,215 graduate students. Similar to other universities, Rutgers University had both the on-campus Rutgers Student Food Pantry (RSFP) and a Dean of Students Office (DOS) to connect students to additional services and resources.
This project also addressed recommendations from the Rutgers University Board of Trustees Task Force on Student Aid 2017-2018 report, which suggested the need to continue raising awareness regarding food insecurity on campus and the services available to students. The report suggested the university should devise strategies to proactively identify and reach food insecure students and to track food insecurity across the institution. Given that there was no system in place for identifying food insecure students and referring them to appropriate on-campus services or resources, this project met an important need of the university.

**Research Questions**

This study was part of an ongoing, multi-method project. This paper aims to describe a program evaluation using quantitative data that was collected and analyzed to date, as well as to present qualitative interview data from the perspective of the health care providers who implemented the program within Rutgers University’s Student Health Services (SHS). This work intended to answer the following research questions.

1. **RQ1:** Can the implementation of a food insecurity screening and referral program identify food insecure students within Student Health Services?
2. **RQ2:** What is the overall effectiveness and public health impact of the food insecurity screening and referral program?
3. **RQ3:** How do the health care providers in Student Health Services perceive the overall efficacy and acceptability of the program?
CHAPTER TWO

REVIEW OF LITERATURE

This review of literature describes the issue of food insecurity specifically within the college and university student population. The following sections discuss food insecurity definitions and measurements, its prevalence, etiology, risk factors, and consequences among college students as well as an overview of higher education program and support services addressing food insecurity, including the evaluation of such programs and services.

Food Insecurity Definitions & Measurements

Food security can be defined as the access by all people at all times to enough food for an active, healthy life; whereas, food insecurity implies a limited access to adequate food. The physical sensation of hunger, caused by lack of food, has been found to be present among individuals with the most extreme form of food insecurity. The United States Department of Agriculture (USDA) considers food insecurity and hunger as two separate concepts, wherein hunger is described as the uneasy or painful sensation caused by lack of food, while food insecurity is considered the limited or uncertain availability of food. Although hunger can be the result of food insecurity, both concepts are considered separate, and are therefore generally measured independently. The USDA provides labels and definitions for measuring the ranges of food insecurity severity, as seen in Figure 1. These labels are split into two categories, food security and food insecurity. Under the category of food security, households or individuals can identify as having high food security or marginal food security. High food security is defined as having “no indications of food access issues or limitations” and marginal food security is
defined as “one or two reported indications of food insecurity (generally pertaining to anxiety over food amount or deficiency of food in the house) with little or no indication of diet changes or intake of food.”\textsuperscript{31} Under the category of food insecurity, individuals or households can identify as having \textit{low food security} or \textit{very low food security}. Low food security is defined as having reports of “reduced quality, variety, or desirability of diet with little or no indication of reduced food intake,” whereas, very low food security is defined as having “multiple indications of disrupted eating patterns and reduced food intake.”\textsuperscript{31}

**Figure 1: Ranges of Food Security** \textsuperscript{31}

In the U.S., household food security is most commonly measured using the 18-item US Department of Agriculture (USDA) Household Food Security Survey (HFSS), a validated survey tool.\textsuperscript{32} Many studies measuring individual food insecurity use either the 10-item or 6-item versions of the USDA Adult Food Security Survey,\textsuperscript{3–8} or a modified
version of these surveys. Examples of questions from these surveys include:\textsuperscript{5}

- “I worried whether my food would run out before I got money to buy more.” Was that often true, sometimes true or never true for you in the last 12 months?
- “I couldn’t afford to eat balanced meals.” Was that often true, sometimes true or never true for you in the last 12 months?
- “In the last 12 months, did you ever eat less than you felt you should because there wasn’t enough money for food?” Yes or No.

The 18-item USDA HFSS has also been modified for use in the clinical setting as a screening tool for patients and families.\textsuperscript{33} Hager et al., developed a 2-item food insecurity screener in order to quickly identify and address food insecurity in the clinical setting, as the commonly used HFSS can be too time consuming to administer.\textsuperscript{33} Upon assessment and comparison with the 18-item USDA HFSS, the 2-item screener was found to be sensitive, specific, and valid among low-income families with young children.\textsuperscript{33} The 2-item screener includes the following statements, (1) “Within the past 12 months, we worried whether our food would run out before we got money to buy more” and (2) “Within the past 12 months, the food we bought just didn’t last and we didn’t have money to get more.”\textsuperscript{33} Each statement is followed by the question, “Was that often true, sometimes true, or never true for your household in the last 12 months?”\textsuperscript{33} A response of “often true” or “sometimes true” to either question is considered a positive indication of food insecurity.\textsuperscript{33} Since its creation, this validated 2-item screening tool has been implemented in multiple primary care practices as a verbal or written screener to help practitioners identify and address food insecurity in patients of varying ages.\textsuperscript{34}
Food Insecurity Prevalence

According to USDA, 11.1% of households in the United States (US) were food insecure in 2018, with 6.8% experiencing low food security and 4.3% experiencing very low food security. In other words, 14.3 million households (11.1%) were uncertain of having enough food, or were unable to acquire enough food, to meet the needs of all household members due to insufficient finances or other food resources. About 5.6 million households (4.3%) identified as very low food security, meaning these households experiences disrupted eating patterns and reduced food intake at times due to insufficient funds and resources.

A growing body of evidence indicates that college and university students are at significant risk of experiencing food insecurity, which has the potential to impact the educational success and well-being of thousands of students. Studies assessing food insecurity among college and university students have increased over the past ten years (from 2009 to 2019), providing much needed information and increasing awareness of the extent of this significant public health issue. Many studies have collected data at the individual college or university level. In 2009, the prevalence of food insecurity surveyed among 441 undergraduate students attending the University of Hawai‘i at Mānoa identified 21% of students as food insecure and 24% as at risk of food insecurity. In 2011, researchers at the City University of New York (CUNY) surveyed 1,086 undergraduates from CUNY institutions and found 39% of students reported experiencing food insecurity in the past 12 months. In a 2011 study, food insecurity assessed in a sample of 354 students attending a rural university in Oregon, California found 59% of students to be food insecure at some point during the previous year.
Another 2011 study assessed 557 undergraduate students at the University of Alabama and found the prevalence of food insecurity was approximately 14%, with 20% of students experiencing anxiety about their food supply. In 2014, The University of California (UC) System, in conjunction with the UC Nutrition Policy Institute, surveyed 8,932 undergraduate and graduate students, in which findings indicated 42% of students faced food insecurity within the previous 12 months. A more recent report released in 2018 by the California State University (CSU) System, similarly found that 41.6% of CSU students (N= 24,324) experienced food insecurity at least once over the previous year. Most relevant to the current research, in 2016, Cuite et al., conducted a campus wide assessment of student food insecurity at Rutgers University-New Brunswick. Survey results estimated 36.9% of undergraduate students and 32.2% of graduate students reported some level of food insecurity.

In addition to research at individual schools, some studies have expanded their focus to multi-institutional, national level data. In a 2016 report, four campus-based organizations, including the College and University Food Bank Alliance, Student Government Resource Center, National Campaign Against Student Hunger and Homelessness and Student Public Interest Research Group, surveyed a total of 3,765 students attending 34 colleges and universities within 12 states. Results from the survey showed that 48% of students has reported food insecurity in the previous 30 days, with 22% reporting very low levels of food security. In 2017, the Wisconsin HOPE Lab conducted the largest national assessment of food insecurity among university and college students, assessing over 43,000 students at 66 institutions, including over 20,000 students at 35, four-year colleges and universities. The national survey results showed
36% of university students, and 42% of community college students were food insecure in the 30 days preceding the survey. In 2019, the Wisconsin HOPE lab released results from its fourth national survey, assessing nearly 86,000 students at 90 two-year colleges and 33 four-year colleges. Results from the national survey indicated about 48% of the students in two-year institutions and 41% of the students in four-year institutions experienced food insecurity in the 30 days preceding the survey. Figure 2 provides a timeline of the aforementioned studies, which measure college and university food insecurity prevalence over a ten year period (2009 through 2019).

**Figure 2: Timeline of College and University Food Insecurity Prevalence**

<table>
<thead>
<tr>
<th>Year</th>
<th>Institution/Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>39% CUNY (Freudenberg, 2011)</td>
</tr>
<tr>
<td>2011</td>
<td>14% University of Alabama (Gaines, 2011)</td>
</tr>
<tr>
<td>2011</td>
<td>21% University Hawai‘i (Chaparro, 2009)</td>
</tr>
<tr>
<td>2011</td>
<td>59% University in Oregon (Patton-Lopez, 2011)</td>
</tr>
<tr>
<td>2014</td>
<td>36.9% Rutgers University (Cuíte, 2016)</td>
</tr>
<tr>
<td>2016</td>
<td>36% National Survey (Goldrick-Rab, 2017)</td>
</tr>
<tr>
<td>2017</td>
<td>48% National Survey (Dubick, 2016)</td>
</tr>
<tr>
<td>2018</td>
<td>41% National Survey (Goldrick-Rab, 2019)</td>
</tr>
<tr>
<td>2019</td>
<td>41.6% CSU (Crutchfield, 2018)</td>
</tr>
</tbody>
</table>

Overall, the current body of literature suggests the prevalence of food insecurity among college and university students can range between as low as 14% to as high as 59%. Such a large range could be related to differences among individual study parameters, such as survey measurement tools, sample sizes, recruitment methods, and data collection time frames. These factors can make cross study comparisons and
generalization difficult.\textsuperscript{8} Despite study differences, the evidence available clearly demonstrates that food insecurity is a significant problem facing college and university students today.

\textbf{Etiology, Risk Factors & Consequences of Food Insecurity}

Increased enrollment of lower and moderate income students, together with the growing costs of education and insufficient student employment opportunities, can make it very difficult for students to meet basic needs, like food security, while attending colleges or universities.\textsuperscript{1} In addition, the majority of able-bodied college or university students are not eligible for Supplemental Nutrition Assistance Program (SNAP) benefits, formerly known as food stamps.\textsuperscript{36} In part, this is due to the restrictive eligibility requirements for college students, including working at least 20 hours per week, taking part in the limited available, federally financed work study programs, or providing care for a dependent child, as well as maintaining at least a half-time college or university enrollment status.\textsuperscript{37} The 2018 food insecurity report from the United States Government Accountability Office (GAO) recognized that for low-income students, federal student aid generally does not support all of the higher education costs and due to eligibility restrictions, college students may have limited access to programs like SNAP.\textsuperscript{38} An analysis of the Department of Education data showed that nearly 2 million (57\%) at-risk students did not report receiving SNAP benefits in 2016, despite potential eligibility.\textsuperscript{38} Similarly, Goldrick-Rab et al., reported only 26\% of food insecure students at community colleges and only 12\% of food insecure students at four-year colleges, received SNAP benefits in 2017.\textsuperscript{3} The Cuite et al. study indicated even lower SNAP participation rates at Rutgers University, with only 2.2\% of students reporting SNAP enrollment.\textsuperscript{8}
In addition, other factors and characteristics have been consistently associated with an increased risk of food insecurity among college and university students. Females have been found to be at greater risk of food insecurity than males, and non-binary students are shown to be at even greater risk. National data from 2017 suggests 28% of male university students experience food insecurity, compared to 37% of female students and 46% of non-binary students. In particular, 52% of homosexual and 54% of bisexual students identified as food insecure as compared to their heterosexual peers (44%). The elevated risk of food insecurity among the LGBTQ student population may be linked to lower levels of family financial support and higher risk of family estrangement. In addition, 55% of transgendered students and 57% of students who did not identify with male, female, or transgender orientations, showed the highest risk for food insecurity as compared to their male and female oriented peers, 42% and 47%, respectively. Many studies have found food insecurity disparities between different racial/ethnic groups with African American and Hispanic students being at greater food insecurity risk compared to their Non-Hispanic student counterparts. Students who were formerly in foster care in their youth have been associated with higher risk for experiencing food insecurity. Goldrick-Rab et al., reported over 60% of former foster youth students experienced food insecurity regardless of which type of institution they attended, community college or university.

Similar to the general population, where food insecurity is often associated with poverty and lack of resources, college students with lower incomes have been associated with a greater likelihood of experiencing food insecurity. Students receiving financial aid have been identified at higher risk for experiencing food insecurity,
especially those receiving the federal Pell Grant.\textsuperscript{5,8,13} Data from 2017 indicates as high as 55\% of Pell Grant recipients at community colleges and 46\% of Pell Grant recipients at universities experienced food insecurity.\textsuperscript{3}

Working while attending college or university is also associated with food insecurity.\textsuperscript{3,4,8} Higher rates of food insecurity have been reported among students who work longer hours.\textsuperscript{3,4} Prevalence of food insecurity for students in two-year and four-years institutions working 6-20 hours per week was found to be 34\% and 38\%, respectively, as compared to rates of 48\% and 51\%, respectively, of students working 40 or more hours per week.\textsuperscript{3} Furthermore, unemployed students who were seeking work were found to have food insecurity rates comparable to those of students working 40 hours or more per week.\textsuperscript{3} The issue of food insecurity stems from a lack of financial resources and, therefore, working during college may function as coping strategy for food insecurity. Likewise, students who are unemployed but seeking work may be struggling financially without an income, also placing them at a higher risk for food insecurity.

In addition, university students who live off campus and those who do not have a meal plan tend to have an increased risk for food insecurity as compared to students living on campus and those with meal plans.\textsuperscript{3} Although having a meal plan and living on campus appear to be protective factors, these students are not immune to food insecurity. For example, studies have shown between 26-43\% of university students with meal plans and 26\% of students living on campus have experienced food insecurity.\textsuperscript{3,4}

Food insecurity can have a detrimental impact on students’ academic success, as well as their physical and mental health. Food insecurity has been negatively correlated with academic achievement and has been associated with lower grade point averages
(GPA’s) in colleges and universities.\textsuperscript{7,8,12–14} In addition to contributing to a students’ inability to perform well academically, food insecurity may also lead students to discontinue their education.\textsuperscript{4} For example, Dubick et al., reported 32\% of food insecure students believed that hunger or housing problems impacted their education. Findings indicated that 55\% of food insecure students reported not being able to purchase a required textbook, 53\% reported missing a class, and 25\% reported dropping a course.\textsuperscript{4}

It has been reported that food insecure students are more likely to experience poorer self-reported physical health than their food secure counterparts.\textsuperscript{7,10,15–19} As an important component of physical health, diet quality can also be hindered by food insecurity. Inadequate resources may result in the purchasing of low nutrient-dense, high-energy foods, as these items, such as grains and refined sugars, are often less expensive than more nutrient-dense options like fruits and vegetables\textsuperscript{20}. Food insecurity has been associated with poor diet quality in youth (9-18 years of age), including insufficient intake of fruits, vegetables, and dairy, as well as inadequate intake of various vitamins and minerals.\textsuperscript{21} Food insecurity among college students has also been associated with higher BMI and poor health behaviors, such as fewer days of sleep, fewer days of moderate-to-vigorous intensity physical activity and fewer daily servings of fruits and vegetables.\textsuperscript{22}

In addition to physical health consequences, food insecure students have an increased risk of developing mental health symptoms and conditions, such as depression.\textsuperscript{10,16–18,23} Food insecure students have also reported higher perceived stress levels than food secure students.\textsuperscript{12} As food insecurity can have deleterious effects on a
student’s overall health and academic success, there is a growing concern and important need to address this complex problem.

**Programs & Services to Address Food Insecurity**

The research reviewed above sheds light on the issue of food insecurity on campus, which has made this issue more visible to institutional leaders and stakeholders. Institutions have been working towards effective strategies to secure the basic needs of students and to address current problems, including food insecurity.\(^1\) Two common on-campus services include student food pantries and institutional offices that function to connect students to local support.

**Food Pantries.** Food pantries provide valuable assistance to students who are in need of food and are considered to be a charitable, short-term response to the poverty epidemic facing college and university students today.\(^24\) A growing awareness of food insecurity on campuses and the associated adverse effects, has led to the implementation of hundreds of campus food pantries throughout the nation.\(^24\) The College and University Food Bank Alliance (CUFBA), an organization which aims to provide support, resources, and training to on-campus food pantries, grew from 88 members in 2012 to more than 650 members as of 2018.\(^24\) Despite their popularity and an increase in the creation of campus food pantries, certain barriers may prevent students from utilizing these services.

According to the results from a 2017 survey of 262 colleges and universities, the most common outreach strategies used to promote food pantries were informal, such as “word of mouth,” which may limit students’ awareness of these resources.\(^24\) The study also noted that student usage of food pantries was highly variable among the surveyed institutions, with the majority (53%) serving between \(\geq 100\) to 299 students per year and
only 15% serving 1,000 students or more per year. A 2018 study surveyed 899 students from the University of Florida and found that only 38% of food insecure students reported using the on-campus food pantry. Students’ major perceived barriers to using the food pantry included insufficient information regarding the food pantry (33.8%), such as how the pantry works, hours, location, and eligibility criteria. Other major perceived barriers included social stigma (36.8%), self-identity or feeling they did not qualify for use (17.6%), and inconvenient hours of operation (11.8%). Further evaluation of campus food pantries is needed to address barriers and determine best outreach strategies.

**Institutional Offices.** Another common service available to students includes large institutional offices, such as a Dean of Students Office, that can connect students to support and even issue grants for emergency needs. Some campuses have partnered with Single Stop, a national nonprofit organization that helps universities create a one-stop-shop program to link students to basic need services, such as access to government benefits like SNAP. However, little publicly accessible information can be found on the effectiveness and usage of these types of multi-service offices, suggesting a need for more research in this area.

**Evaluation of Programs & Services**

Although numerous studies have examined the prevalence of food insecurity within higher education institutions, there have been very few studies that rigorously measured the effectiveness of the interventions and programs created to address student food insecurity. Support programs and services have become more available at institutions, however, to ensure that students are receiving adequate assistance, recommendations suggest concentrating efforts towards meticulously evaluating
programs. A few institutions have begun to evaluate their assistance programs, especially newly piloted programs implemented to address campus food insecurity. For example, Bunker Hill Community College (BHCC) in Boston, MA is piloting a One Solid Meal (OSM) program, which provides self-identifying food insecure students with meal vouchers to be used within the college food service venues on campus. Houston Community College (HCC) has partnered with a local food bank to distribute “food scholarships” to qualifying food insecure students to be used both on and off campus. Both BHCC and HCC have plans to evaluate their pilot programs, however data is not available to date. Overall, however, research in this area continues to be lacking. There is a need for more rigorous program evaluation to ensure that the programs and systems in place are meeting the needs of food insecure students as intended and to address barriers in order to improve access and effectiveness.

**RE-AIM Framework**

A common tool used in community and public health based program evaluation is the reach, effectiveness, adoption, implementation, and maintenance (RE-AIM) framework. The RE-AIM model can be applied in order to evaluate the effectiveness and public health impact of programs and interventions in a real world setting. Glasgow, Vogt, and Boles’ first proposed the RE-AIM model in their 1999 seminal paper titled, “Evaluating the public health impact of health promotion interventions: The RE-AIM framework,” as a framework for evaluating public health interventions. In this model, *reach* is considered the number of individuals who participated in the program and can be determined by dividing the total number of program participants by the total number of people in the studied setting, such as a clinic or worksite. Another
component of reach is sample representativeness, which can be determined by assessing participant and population (non-participant) demographic information. Program effectiveness is measured in this framework by the positive and negative outcomes of the intervention, focusing on behavioral outcomes of participants, as well as, staff involved in providing the intervention. Adoption assesses the characteristics of the studied setting that adopted the program or intervention of interest. Adoption, or the failure of a setting to adopt an intervention, can be measured by direct observation or by conducting interviews with staff members to determine the strengths and weaknesses of incorporating the program. Implementation of a program refers to how accurately the intervention was carried out, as originally intended or designed, by participating staff members and how well participants adhered to the program. Lastly, Maintenance is measured to assess the long term sustainability and adoption of a program and the behavioral outcomes over time. Each of the five dimensions are measured on a scale of 0% to 100% and averaging all five dimensions can provide the programs’ public health impact score.

Since its inception, the RE-AIM model has been utilized by diverse public health fields, including dietary change, medication adherence, cancer screening, weight loss, diabetes prevention, and health policy. A 2017 study utilized the RE-AIM framework to assess the implementation of a food insecurity screening and referral program administered in free health clinics in San Diego, CA. Results indicated a 92.5% screening participation rate (or reach) with 74% of screened participants identifying as food insecure and a 100% participation and adoption of the program by all clinics approached. Applying the RE-AIM model allowed researchers to assess the
effectiveness and impact of the screening and referral program, in which they concluded can serve as a useful tool in identifying and addressing food insecurity in a clinical setting.27

Conclusion

In summary, food insecurity among college and university students is a national problem that appears to have deleterious effects on academic achievement, as well as, physical health and mental well-being. Institutions have responded to this public health problem by implementing programs and services such as on-campus food pantries. However, recent studies have suggested an underutilization of campus food pantries due to poor outreach strategies and perceived barriers, including lack of information and stigma.24,25 In addition, there is a lack of research assessing the effectiveness of such programs at meeting the basic needs of students.

Rutgers University-New Brunswick has shown similar rates of food insecurity (36.9%)8 as compared to national averages (14-59%),3–11 and has implemented multiple programs to help aid students who are experiencing food insecurity. Yet, according to the Rutgers Task Force on Student Aid 2017-2018 Report, there was a need for increased awareness of food insecurity on campus, including resources available to students, and for a system to aid in the identification and outreach of food insecure students across the institution.29 In an attempt to meet the needs detailed above, this paper describes the implementation and assessment of a novel food insecurity screening and referral program within Rutgers University’s Student Health Services. The paper is largely qualitative, as this work was done as part of the program’s formative and process assessment.
CHAPTER THREE

METHODOLOGY

This study was approved by the Rutgers University Institutional Review Board (IRB). All participants in the qualitative research provided informed consent (Appendix A). However, the other research components were given a waiver of documentation of consent and a waiver of HIPPA privacy rule authorization through the Rutgers University IRB.

Purpose

The purposes of this study are listed below:

- To implement and describe a novel food insecurity screener and referral program within Student Health Centers.
- To assess food insecurity prevalence among students visiting Student Health Services.
- To measure and assess overall effectiveness and public health impact of the program using the RE-AIM framework.
- To describe health care providers’ perceptions on the implementation, efficacy and acceptability of the program.

Sample

This food insecurity screening and referral study was conducted from September 1st, 2018 through May 31st, 2019. A total of 5,819 undergraduate and graduate students at Rutgers University, a 4-year, public university, participated in this study. All students who were enrolled at the university and visited one of the four on-campus student health centers for an initial or annual appointment were screened. Screening sites included the
Busch-Livingston, Hurtado, and Cook Douglass Health Centers, as well as the Counseling and Psychiatric Services Center (CAPS). Upon scheduling a medical appointment (online, in-person, or over the phone) with one of the student health centers, each student was invited to participate by automatic email and text message with instructions to visit their online student health portal and complete the Personal Health History Questionnaire (PHH). The PHH included the 2-item food insecurity survey, amongst other standard medical history questions. Upon completion of the 2-item food insecurity screener, students were automatically recruited into the study. There were no further exclusion criteria.

In order to more fully understand the perspectives of the Student Health Services staff and clinicians who were involved in the implementation of the program, all staff and clinicians in the health centers (other than the mental health center) were invited to participate in a semi-structured qualitative interview. A total of 31 staff members and clinicians were approached to participate, and 18 (58%) of them completed the interview process. The study participants represented a variety of medical positions with varying responsibilities. Nine of the 18 employees were considered staff members, which included Registered Nurses, Licensed Practical Nurses, and Certified Medical Assistants, the others were clinicians, which included Physicians and Nurse Practitioners.

**Intervention**

The food insecurity screening and referral program was developed through a partnership between the Student Health Services Department and the research team.
Survey Instrument

The 2-item food insecurity survey, or screener, was embedded in the Personal Health History Questionnaire (PHH). This is an online survey which asks questions about general medical history, depression and anxiety, sexual assault, trauma, exercise, sleep, alcohol and substance use, as well as food insecurity. The food insecurity questions were located in the middle (question number 23 and 24) of the 50-question instrument. A copy of the complete PHH is in Appendix B.

Food insecurity was assessed using a modified version of the 2-item survey originally developed by Hager et al., which uses two questions from the 18-item USDA Household Food Security Survey (HFSS), 30-day version. The 2-item screener began with the question, “Thinking about the last 30 days, how true would you say the following statements are?” It then presented the following statements: (1) “I was worried whether my food would run out before I had money to buy more” and (2) “The food that I bought just didn’t last, and I didn’t have money to get more.” A response of “often true” or “sometimes true” to either question was considered a positive indication of food insecurity. A response of “never true” or “I don’t know” to both questions was considered negative and assumes food security.

Program Implementation Process

Upon scheduling an initial medical appointment (online, in-person, or over the phone) with one of the student health centers, students were automatically sent an email and text message with instructions to visit their online student health portal and complete the Personal Health History Questionnaire (PHH) prior to their appointment. Upon
completion, results from the PHH were automatically populated in the health services electronic medical record system and were accessible by health care practitioners for review.

When students arrived at a health center for their appointment, a staff member performed an initial intake assessment. Either before or during the intake assessment, health care staff would review the PHH, including the food insecurity screener, for positive responses that would indicate the presence of food insecurity. Students who were identified as positive for food insecurity were provided with both a verbal and physical referral of resources by either a staff member during the intake assessment or a clinician during the medical assessment or clinician’s visit. The verbal referral included discussion of the student’s screener results and referral to on-campus resources, including the Rutgers Student Food Pantry (RSFP) and the Dean of Student’s Office (DOS). Along with the verbal referral, staff or clinicians also provided a printed referral card to each student who identified as food insecure. The front of the referral card included information regarding food resources, such as the operating hours, locations, and contacts for the RSFP and the DOS. The referral card also featured a QR code that students could scan with their phones to view a video tour of the RSFP. The back side of the referral card explained how limited access to food may have negative effects on a student’s academic performance, such as lower GPA, difficulties focusing or concentrating, and missed classes. A copy of the resource referral card is located in Appendix C. While speaking with each student, the staff or clinician was able to access and change students’ responses to the food insecurity screener.
Each time a referral card was provided, the staff member or clinician would then document and record the referral within the electronic medical records system. Staff and clinicians were trained to select a box with a preset education code (EDFIRx). By selecting this code, a copy of the referral card would be sent to the student’s online health portal and would allow the student to access an electronic copy of the referral card. If further contact was needed, or a referral was missed, staff or clinicians could send a secure message to the student through an internal email server and a copy of the referral card could be sent to their online health portal. For a detailed visual explaining the program implementation process, please see Figure 3.

**Figure 3: Program Implementation Process in Student Health Services**

**Provider Training**

In September 2018, a meeting was held where in all medical staff and clinicians involved in the program were introduced to the issue of student food insecurity. During
this meeting, staff and clinicians were trained on the study protocol, including food insecurity screening and referral procedures. Staff were trained on how to read and interpret the 2-item food insecurity screener and how to identify answers that constitute either a food secure or food insecure status. Training also included example language of a verbal referral of resources, as well as an overview of the physical referral card to be provided to food insecure students. New staff members who joined Student Health Services after the September meeting were trained on the job during orientation. For a copy of the handout used during training, see Figure 4 and Figure 5.
Figure 4: Provider Training Handout Side One

Two-Item Food Insecurity Screener on Personal Medical History Questionnaire Research Project

What is the research about?
- This research aims to implement a two-question food insecurity screener into the existing PMH questionnaire in order to identify food insecure students and refer them to the appropriate resources (such as the Dean of Students Office and the Rutgers Food Pantry).
- See reverse for the wording of the two-item screener.

Why is this important?
- Food insecurity is defined as a lack of reliable access to sufficient quantities of affordable, nutritious food. Food insecurity can have serious effects on both physical and mental health.
- 36.9% of undergraduate and 32.2% of graduate students at Rutgers University—New Brunswick are food insecure (Cuite et al., 2018).

When will it take place?
- Implementation of the two-question screener will begin September 1st, 2018, with research collection proceeding throughout the Fall 2018 semester.

Where will it take place?
- Participation will involve all three Rutgers New Brunswick campus health centers.

Who is involved?
- All health care providers and support staff who review results of the personal medical history questionnaire.

What do you need to do?
1. Health care staff will review the two-item screener for any positive responses, which would indicate food insecurity. A response of “sometimes” or “always” to either question means they are positive for food insecurity. A response of “never” or “I don’t know” to both questions is negative and does not require further action.
2. You will provide positive students with verbal referral of resources:
   “I’ve reviewed your medical history questionnaire and it looks like you answered yes to one or more of the questions regarding adequate access to food. I’d like to refer you to two helpful on-campus resources, the Rutgers Food Pantry and the Dean of Students Office. Here is your referral card which contains more detailed information about these resources.”
   (If students have questions, refer them to the resource contacts on the postcard for more information).
3. Along with the verbal referral above, you will give a printed postcard to each student.
4. Document that you have provided a postcard in the EHR (details to be determined).
Figure 5: Provider Training Handout Side Two

What is considered a positive response for Food Insecurity?

A student is considered positive for Food Insecurity if ANY of their responses are "Often True" or "Sometimes True" (indicated in red and circled below):

Thinking about the last 30 days, how true would you say the following statements are?

I was worried whether my food would run out before I had money to buy more.

- Often True
- Sometimes True
- Never True
- I don’t know

The food that I bought just didn’t last, and I didn’t have money to get more.

- Often True
- Sometimes True
- Never True
- I don’t know

The postcard you will give out is:

Front:

Rutgers University-New Brunswick

FOOD RESOURCES

Patient Name
Prescription for:
Rutgers Student Food Pantry, 50 Union Street (848) 932 2500 Monday-Friday, 9:00am-4:00pm
Students are welcome to visit the pantry anytime during operating hours.

Dean of Students, 69 College Ave (848) 932 2000 Monday-Friday, 9:00am-5:00pm
Please call to schedule an appointment to meet with a representative from the Dean’s Office.

Scan to take a virtual tour of the Rutgers Student Food Pantry!

Back:

Did you know that your ability to access sufficient food can affect your academic performance?

Students with problems accessing enough food are more likely to:

- Have difficulty focusing and concentrating in class
- Experience a lack of energy
- Fail to purchase required educational materials such as textbooks
- Miss classes
- Have lower GPAs
- Withdraw from a course
- Consider leaving college

As part of Rutgers ongoing efforts to support student wellness, you may be invited to participate in a voluntary online survey.

Program Evaluation

The screening and referral program was assessed using the reach, effectiveness, adoption, implementation, and maintenance (RE-AIM) model. As previously noted, each of the five dimensions are measured on a scale of 0% to 100% and multiplication of all five dimensions provides the programs’ public health impact score 42.

Qualitative Interviews

Upon receiving IRB approval, a total of 18 in-person, semi-structured interviews were conducted from January 4th through January 17th, approximately four months after the implementation of the food insecurity screener and referral program. Participants were recruited through an email invitation, which was developed by the research team and distributed to all staff and clinicians by the Director for Rutgers Student Health. A link was provided in the invitation email to allow each volunteer to sign up for a 30-minute interview with a research team member. A copy of the participant invitation email is found in Appendix D.

Interviews were audio recorded and transcribed into text using an audio transcription software (Temi®). Interviews ranged in length between 15 to 46 minutes with an average interview lasting about 31 minutes. Interview length was restricted due to time constraints of medical staff and clinicians. To maintain confidentiality, one researcher transcribed all interviews, with pseudonyms used throughout the study to protect the identity of the participants.

An interview guide was developed by the research team and pre-tested with three interviewees. Participants were asked to respond to brief background questions regarding their positions. The majority of the interview questions prompted discussion on the topics
of initial training and overall program implementation, which included assessment of the food insecurity screener and the provision and documentation of referrals. Participants were also asked to discuss their thoughts on overall impact of the program, perceived efficacy, and any recommendations for improvements. A copy of the semi-structured interview script is found in Appendix E.

**Data Analysis**

All quantitative analyses were analyzed using IBM® SPSS® Statistics version 25 software (IBM, 2017). The 2-item survey was used to determine participants’ food security statuses, and descriptive statistics were used to determine the rate of food insecurity. The percent screening rate was calculated by Student Health Services staff for the total number of students who had checked in at a participating health center and total number of students who completed a PHH, including the 2-item survey. The analysis of food insecure students who utilized resources and food insecure students who did not utilize resources was ongoing and will not be discussed in this paper.

For the qualitative data, transcribed interviews were analyzed via content analysis by two trained researchers. Interviews were first coded by the individual who conducted the interviews, then each interview was independently re-coded by another person on the research team, in order to enhance reliability. Common themes were identified using the grounded theory framework.
CHAPTER FOUR

RESULTS

The results presented here are divided into two sections. The first is focused on quantitative data and the second is focused on qualitative data.

Section I: Program Screening Rates and Food Insecurity Prevalence

The overall screening rate and food insecurity prevalence, as identified from the screening and referral program, are summarized below in Table 1 and Table 2.

Table 1: Program Sample Size and Screening Rate from September 2018 to May 2019

<table>
<thead>
<tr>
<th>Sample size (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total students who were checked into SHS</td>
</tr>
<tr>
<td>Total students who completed the PHH</td>
</tr>
<tr>
<td>Total students who completed the food insecurity screener</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Screening rate (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total program screening rate</td>
</tr>
</tbody>
</table>

Table 2: Student Food Insecurity Prevalence within Student Health Services from September 2018 to May 2019

<table>
<thead>
<tr>
<th>Sample size (n)</th>
<th>Food security (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total students who screened as food secure</td>
<td>5268</td>
</tr>
<tr>
<td>Total students who screened as food insecure</td>
<td>551</td>
</tr>
</tbody>
</table>

Of the students who were checked into their appointments at one of the four health center locations (n=11,499), about 57% (n=6,616) completed the PHH and 51%
(n=5819) completed the food insecurity screener. Of the students who completed the PHH, 88% (n=5,819) completed the 2-item food insecurity screener. Results of the food insecurity screener indicated that 9.5% of the total students screened (n=5,819) identified as food insecure. In other words, a total of 551 students identified as experiencing food insecurity within the past 30 days.

Program Evaluation and Impact

Table 3 depicts the RE-AIM framework as it applies to the food insecurity screening and referral program. Each of the five RE-AIM dimensions or elements are shown with associated descriptions of program outcomes and public health impact scores. The scores were set from 0% to 100%, reflecting an estimated percentage of the criteria met. Scores were then averaged across all five dimensions to provide an estimated total score of the public health impact.

Table 3: Analysis of the Food Insecurity Screening and Referral Program within Four Student Health Services Sites at Rutgers University from September 2018 to May 2019 using the RE-AIM Framework

<table>
<thead>
<tr>
<th>RE-AIM element</th>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reach</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exclusion criteria</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Percent students who participated</td>
<td>51% (5819/ 11499) total students screened</td>
<td></td>
</tr>
<tr>
<td><strong>Effectiveness</strong></td>
<td></td>
<td>50%a</td>
</tr>
<tr>
<td>Measure of primary outcome: Food Insecurity</td>
<td>9.5% (551/ 5819 of students screened) were food insecure</td>
<td></td>
</tr>
</tbody>
</table>
| Measure of secondary outcome: Utilization of resources  
  - Student Food Pantry | Data are still being analyzed and are pending | |
|  - Dean of Students Office | Data are still being analyzed and are pending | |
**Adoption**

<table>
<thead>
<tr>
<th>Site exclusions</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of sites approached that participated</td>
<td>100% (4/4)</td>
</tr>
<tr>
<td>Characteristics of settings participating</td>
<td>Three Student Health Centers and one mental health facility in New Brunswick, New Jersey serving the Rutgers University student population</td>
</tr>
<tr>
<td>Provision of referrals</td>
<td>Unable to obtain</td>
</tr>
</tbody>
</table>

**Implementation**

<table>
<thead>
<tr>
<th>Percent of delivery as intended, and adaptations made to intervention</th>
<th>The intervention was delivered as intended, no known adaptations were made</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of intervention</td>
<td>There were no costs to train staff or screen students; however, printing of the physical referral cards cost a total of $275 (for 1,000 cards) over one academic year (2018-2019)</td>
</tr>
<tr>
<td>Consistency of implementation across staff, settings, subgroups</td>
<td>Documentation of the provision of referral cards varied between staff and clinicians; recommended method was utilized, however, not consistently across all providers</td>
</tr>
</tbody>
</table>

**Maintenance**

<table>
<thead>
<tr>
<th>Long term attrition</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>If program is still ongoing at least 6 months post study</td>
<td>The screening and referral program was maintained for over one academic year (7 months post-study) with plans to continue into the future.</td>
</tr>
<tr>
<td>If and how program was adapted long term</td>
<td>This program was adapted into a routine food insecurity screening and referral system within SHS. The RSFP continued to partner with SHS to supply referral cards.</td>
</tr>
<tr>
<td>Alignment of organization mission or sustainability</td>
<td>Pre-existing mission statements of Rutgers SHS were well-aligned with addressing food insecurity in health care. SHS demonstrated commitment to the sustainability of this program as shown through long term adoption and as supported by qualitative interview findings.</td>
</tr>
</tbody>
</table>
Table 3 indicates an overall public health impact score of 76%. This program particularly excelled in both the adoption and maintenance dimensions, receiving scores of 100% for both dimensions. The reach dimension scored 51% for the program’s ability to screen about half of the students who had checked into their appointment at the health centers. Due to some inconsistencies of documentation, the implementation dimension for this program scored 80%. Lastly, this program scored a 50% in the effectiveness dimension. This score reflects the fact that the secondary outcome measures of resource utilization are pending, whereas the primary outcome of identifying food insecure students was successfully measured.

**Section II: Themes and Findings from Semi-Structured Interviews**

Through the use of content analysis, common themes emerged from the semi-structured interviews. As new interviews were analyzed, concepts and themes were modified. Concepts continued to evolve until final themes were constructed. The themes and sub-themes that emerged from this analysis are discussed within this chapter and are outlined below in Figure 6.
**Figure 6: Outline of Interview Themes and Subthemes**

<table>
<thead>
<tr>
<th>1) Staff and Clinicians’ Perception of Overall Program Impact and Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) <em>Time and Ease</em></td>
</tr>
<tr>
<td>b) <em>Perceived Value</em></td>
</tr>
<tr>
<td>c) <em>Reception of the Program</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2) Staff and Clinicians’ Perception of Training Adequacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) <em>Sufficient with Room for Improvements</em></td>
</tr>
<tr>
<td>b) <em>Newly Hired Employee Training</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3) Staff and Clinicians’ Perception of the Food Insecurity Screener</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) <em>Perceived Accuracy</em></td>
</tr>
<tr>
<td>b) <em>Potential Bias</em></td>
</tr>
<tr>
<td>c) <em>Perceived Language and Cultural Barriers</em></td>
</tr>
<tr>
<td>d) <em>Inability to Review the Personal Health History Questionnaire</em></td>
</tr>
<tr>
<td>e) <em>Recommended Screener Placement</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4) Staff and Clinicians’ Perception of the Food Insecurity Referral Card</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) <em>Availability</em></td>
</tr>
<tr>
<td>b) <em>Visibility</em></td>
</tr>
<tr>
<td>c) <em>Verbal Referral Preference</em></td>
</tr>
<tr>
<td>d) <em>Perceived Student Reactions</em></td>
</tr>
<tr>
<td>e) <em>Documentation</em></td>
</tr>
</tbody>
</table>

**Staff and Clinicians’ Perception of Overall Program Impact and Efficacy**

*Time and Ease*

Staff and clinicians perceived the program as a quick and easy program to implement. Some commented that the program “doesn’t take too much time,” with the time to refer students taking “about a minute” or “less than a minute.” Staff and clinicians also seemed to appreciate the physical referral cards, stating that they were “clear cut”
which made the referral process simple. They also called them “nicely developed” and “effective.”

Perceived Value

Many of the staff and clinicians said the program was a valuable addition to their practice. For example, one employee stated,

These are children that, they need to eat, and they need to eat in order to, you know, get their brains working in order to get out of where they are and so that they can make some money and they don't have to be like that. So it's been a positive [the program]. Every single person that I have handed this [referral card] to has been very receptive and they've been very thankful. And that's one of the biggest words that I continue to hear is being thankful for this. So this is a really positive thing and I'm glad that the university has taken out strides in order to get these students to get the food.

Many expressed that the program is meeting a need that was not being consistently addressed in the past. One employee explained,

I think it's a good idea, I think it's, I think it's, it's part of what we should be doing, you know?... It's definitely a need. I think they, you know, there's a need there.

For some employees, the program appeared to promote awareness of the issue of student food insecurity, wherein the issue was not previously considered or addressed.

It's something I never even thought about asking about to be honest. Um, I just didn't. It wasn't on my radar necessarily as, although it certainly is a health issue, it's just not something I thought about because there are so many things to think about.
The program also seemed to align with the responsibilities and mission of staff and clinicians in terms of promoting physical health and overall student success.

I think it's super important and I was really happy that, you know, we included this because honestly it's something I never thought about and it really is true. If you're not getting enough nutrition, you can't be a good student and you can't, you know. So, um, and that's our job is to make sure that everybody here is not only physically healthy but has, you know, the tools to yeah, to be successful.

Reception of the Program

Overall, the program appeared to be very well received by staff and clinicians. Adding additional tasks to staff and clinicians already busy workload was a concern at the inception of the program; however, the ease of the program helped to facilitate a smooth adoption and garner support. One employee explained,

I thought it was really smooth. I thought it worked really well. It felt like, you know, at first when presented to staff, they were like, ‘oh my god, another thing we have to do’ and, but they got on board really quickly and it, because it wasn't anything that was really difficult and because it was something we didn't really have to discuss it was just like ‘here,’ um that made it a lot easier.

One clinician commented on the simplicity of the program in helping to prevent staff and clinicians from feeling overwhelmed and aiding in the program’s effectiveness.

I mean from a clinician perspective, the number of questions that we ask on the PHH seems overwhelming at times. So I think part of the issue was how to make this part of it without being overwhelming. But I think we did that with, ‘oh,
okay, you're food insecure, here's a card, here's some resources’. So I think that was very effective.

**Staff and Clinicians’ Perception of Training Adequacy**

*Sufficient with Room for Improvements*

Training provided to staff and clinicians regarding implementation of the screening and referral program was perceived as sufficient. Staff and clinicians commented that the training was “very simple and straightforward” and they had enough information to implement the program.

Despite the general idea that the training was sufficient, some staff and clinicians had difficulties recalling details of the training. When asked if they recalled attending any trainings for this program, one employee had a difficult time describing the training, expressing the want for additional training by stating,

> At our Friday morning meetings or you know, it [the training] could've even been there. I have to be honest, I don't know... I think it's a good idea to maybe bring somebody in again, I do, I really do.

Furthermore, some of the newly hired staff and clinicians did not consider the training session provided to be a formal training, by commenting,

> So we got the resource cards and everything else and they said to follow there, but I didn't know if there was anything else. They just gave us a general statement or anything else. So we're, we're not formally trained…. Yeah, we got a sheet with guidelines. But no, like formal training. It was more of like a sheet. ‘This is what we're doing’.
Some employees expressed a lack of knowledge or understanding of the functions of the RSFP and more commonly, the DOS. Concerning the RSFP, some employees questioned where it was located, if the services were free, and how privacy is maintained. When asked if they felt that they knew enough about both of these resources to be able to answer a question or refer students, responses often demonstrated a lack of knowledge of the DOS. For example, one provider explained,

No... dean of students is like, I know what it is, but what, what they're doing with the students out of, out of my scope... yeah. I have no idea. No idea. I know that, um, that it’s their [students] main resource. If things get out of their control, the dean of student’s step in for a lot of students, help to counsel them, maneuver them into the right direction, but what they may discuss with the student or what happens after, I have no idea.

Similarly, another provider expressed concerns about not having adequate knowledge to provide information to the students regarding the referral resources,

I would also have a little conversation with them to try to go background as to what some of their needs were, what their concerns were, and then direct them to this [referral card] and explain a little bit to them. I didn't have, I didn't feel I have enough knowledge to... I hope I was giving them enough information.

Newly Hired Employee Training

Staff and clinicians who were newly hired after the initial program training, were trained during their orientation through shadowing and verbal instruction. One employee described their training on the program as the following,
In my orientation, they told me about the things that, you know, the personal health history that we try to review, see if the students fill them out and ... they showed me about the food insecurity questions, um, and just mentioned that, you know, if they answered sometimes true or, we would give them the card and tell them a little bit about the food pantry.

A few new hires were brought to the on-campus RSFP during their training, which they found helpful in increasing their knowledge of this service. One employee described their experience visiting the RSFP below,

I was also brought ... to the food pantry. So that I could see, this is where the food comes. If you give the card out, this is where the students are referred to... so I could know exactly where it was. So that's all great.

When asked to recall their training, newly hired staff and clinicians mainly mentioned the RSFP and rarely mentioned the DOS, which can be seen in the two prior quotes.

**Staff and Clinicians’ Perception of the Food Insecurity Screener**

*Perceived Accuracy*

The majority of staff and clinicians expressed that the screener was accurate at detecting food insecure students. However, a phenomenon of perceived inaccuracy or “perceived false positives” was occasionally reported by staff and clinicians. In this phenomenon, students would answer or screen positively for food insecurity based on the screener questions, however, they would then change their answer when confronted by the staff or clinician. This resulted in some of the staff and clinicians changing the
original student answers to no longer reflect food insecurity. One employee commented on this phenomenon by stating,

With their [the students] consent, I will often reopen the questionnaire and say, well, if you misunderstood this, are you okay? Can we change this together? Or I pull it up online on the computer and I show them what I'm doing and who did it, you know, as long as that's okay. Or sometimes I'll put it in an append on the bottom of the note.

Staff and clinicians often reported that students would state they did not understand the food insecurity screener questions, and therefore they would change their answers. For example, one employee stated,

The ones [students] that were like, ‘oh, I didn't understand it’. Yes, I just go in and change it [the student's answer]. If some were kind of like iffy [uncertain], I usually would like append something to maybe just give a little bit of a better explanation. Um, I can't say that I was real consistent with whether I just changed the answer or, you know, put in an addendum.

When asked if this employee would still provide the referral card in the situation above, they explained “um, only if it seemed like it was something that they needed.”

Some staff and clinicians expressed confusion over whether or not they should change or keep the student’s original survey answers. For instance, one employee explained,

So there, in the beginning when I started there were, it was confusing because, um, if they [student] did not mean it or did they not understand the question, um, I would type it out like a free text note... And say, um ‘food insecurity card offered, but patient...’ and what they said. Then, um, after a meeting I was told that it
might be, it was okay if they changed it because it was their own, like we're not going into change it for them. They were actually doing the changing, so I wasn't too sure, like do we change it or do we amend it?

**Potential Bias**

One possible explanation for the phenomena of “perceived false positives,” could be attributed to the presence of human bias. Human bias may influence a health care provider to question the legitimacy or need of a food insecure student, and therefore prompt the student to deny or recant an actual need. The way that practitioners lead the conservation surrounding food insecurity and the questions they ask students can potentially influence the student’s answers. In the example below, a practitioner begins their conservation by first asking if they understood the question, which may lead the student to doubt their original answer.

So in the beginning I was reading the question and then I, I changed it to, ‘Okay, so I saw that you filled out your personal health history and there was some food questions here and you answered it like this. Did you, did you understand the question? Do you need help?’ And then they'll, some do not understand the question or have not read it properly and others actually need [resources].

Staff and clinician’s preconceived notions regarding the appearance, attitudes, signs, and symptoms of a food insecure student may influence the screening and referral program and attribute to the “perceived false positive” phenomena. For example, one practitioner explained,

I would say probably maybe like 4 out of 100 [students] had a misunderstanding. And when I say that, I say that very, very firmly because the students were in no
shape or form, you know, they had their attire, there um, the way that they
interact, they, I know that they just did not read it and it's the way that they
presented themselves. And after they were just coming, I said, are you sure?
Because if you are hungry or if there's anything that we can do in order to
alleviate that stress off of you, we'll be more than happy to give this [referral
card] and wanted to take a picture. And they would say, ‘no, no, no, I really do
have. It's just that I didn't read the question’.

In some of the interviews, staff and clinicians gave examples of the type of characteristics
they felt were associated with food insecure students, such as someone who, “doesn't
have an income, parents aren't supporting them, they're trying to work two jobs, go to
school and pay for their meals.” Whereas, other students whom staff and clinicians may
have considered to be “trust fund babies,” who had a meal plan and who had support
from their parents, were perceived as less of a concern for struggling with food
insecurity. Some practitioners reported trying to “tease that out sometimes” in order to
determine the needs of the student rather than relying on their self-reported score on the
food insecurity screener.

Perceived Language and Cultural Barriers

Many of the staff and clinicians reported that certain students are more likely to
misread or misinterpret the food insecurity screener questions, leading to “perceived false
positive” responses. This theme was particularly prevalent among the international
student population, where practitioners perceived that language barriers and cultural
barriers may have hindered a student’s ability to properly interpret and respond to
questions. For example, one employee commented,
There's a lot of Chinese international students and I think there's been, um, I don't know if the question comes across clearly to them because once I get started talking to them, they weren't actually really worried and I don't know how to adjust that. I think that's a cultural, language, I don't know. Because then you get talking to them, they're like, ‘oh no, I have plenty of food.’ And then they were like, ‘I just sometimes think about, you know, what I might eat later’. So it was more like they weren't interpreting it correctly.

Some practitioners commented that it may be difficult for international student to translate questions from English to their preferred language, as the meaning of certain phrases or words may not directly translate. For example,

We [Rutgers] have a large percentage of students from Southeast Asia, from China, or from the Middle East... And so sometimes the questions get lost in translation and so when we're asking a question, um, you get an answer that isn't necessarily the black and white answer doesn't necessarily translate to what the interpretation of it is for us [English speaking or reading persons].

_Inability to Review the PHH_

There were certain situations reported where staff and clinicians may not have been able to review the food insecurity screener and therefore, may not have been able to address and refer a food insecure student. Staff and clinicians mainly reported this incidence as “rare” or could only recollect a “few times” when this happened. The main reasons identified for not reviewing the food insecurity screener and subsequently, potentially missing making a referral included a) the PHH was filled out immediately before the visits (hence the practitioner did not have time to read it or did not see it), b)
there was a medical emergency that preceded typical protocol, or c) the staff or clinician became too busy or preoccupied during the visit and forgot. Although a practitioner may have forgotten to address food insecurity during a visit, if they realized this mistake, some mentioned they would send a secure message to the student containing the food insecurity referral. One employee summarized these different situations in the passage below,

Occasionally if they [student] filled it [PHH] out in the waiting room and I had already reviewed the chart and I thought I knew what was in there, then I would go ahead with the visit and… I didn't always go back and look to see, did anything get filled out in the five minutes between my office and the room. And so occasionally, or there were a couple of times to where the person presented with such a serious issue that we could not possibly do anything else. I mean, a kid came in with an anaphylactic reaction. I'm not dealing with food insecurity. A person is, is expressing suicidal ideation. I'm not going to deal with food insecurity thing. You know, there are certain times when there were just too many things to cover and there were a couple times where I knew it was there, not very often, but a couple of times I, I knew it was there. I had written it for myself and then I got so involved… and it just totally slipped my mind. And when that happened I would, I would always realize that usually about 10 minutes later when I was actually doing the documentation… and so in that case what I did was I would send the student a secure message… and I would include it in the plan so that they could still access it through the student health portal.
**Recommended Screener Placement**

The PHH is an annual questionnaire, therefore, students in this study were only screened at one time point. Due to the infrequency of this screening method, some of the staff and clinicians suggested adding the screener to another form called the Nursing Intake Form, instead of the PHH. The Nursing Intake Form is a list of questions that staff complete verbally with each student at the start of their appointment. Responses are recorded by staff and entered into the electronic medical record system. One staff member suggested that adding the screener to the Nursing Intake Form, would increase the number of students screened,

I think that it might be a better idea to do it [the screener] there [in the Nursing Intake Form], only because there are some students that do not, and I've seen several, that don't fill out a PHH, personal health history... and if they don't fill it out, we'll never know. So if it was, at least patients when they come and we do an intake on them, you have to click off certain things... We ask, every single time they visit, do they exercise greater or less than 150 minutes per week? Food can go right underneath.

Although, incorporating the screener into the Nursing Intake Form may reach a wider population of students, verbal screening may also have the potential to introduce bias amongst the students and health care providers which could skew the screening validity. For example, one provider commented,

Maybe because you know what, you never know today, they might feel embarrassed about who’s screening them and not answering properly, but they
come back a week or two later, a month later, they might feel comfortable with
the person and say, ‘hey, you know, yeah, I do have an issue.’

A student may feel uncomfortable verbally answering the food insecurity in the presence
of a health care provider, and as one employee commented, they may even get offended,

I don't know if people [students] would answer honestly. That's my opinion. I
think they might feel like, I don't know... Because sometimes if I asked them like,
do you exercise weekly? Some of them, they're like ‘uh, no’, they get offended.

One provider expressed concern that by adding the screener questions to the Nursing
Intake Form, it might increase the visit time, which might not be ideal for the providers or
students. For example,

Um. I don't know, it seems like everything gets added to that [nursing intake
form] and it's a, you know, like a 15 minute person that comes in with a cold,
takes like more time to screen them then to ask all the questions...So it may hold
up some people, it may not.

The recommendation of adding the screener to the clinician’s Physical Health Note was
also suggested by some providers, on the premise that clinicians would have more time to
spend talking with a student who was coming in for a physical visit. One provider
suggested that by adding the screener to the clinicians note the screener “could be part of
their review of systems” and “that would give them the option to either build it into their
conversation or defer it” if needed, to be addressed at a later visit.

Another recommendation was to add the screener as an electronic question when
students made an appointment online through the student health portal. The answers
would then prepopulate into the students online medical record and would be visible to the staff and clinicians.

**Staff and Clinician’s Perception of the Food Insecurity Referral Card**

*Availability*

Resource referral cards were distributed to each Student Health Center by the research team. When asked about the availability and accessibility of the referral cards, staff and faculty reported that the availability of the referral cards did not seem to be an issue, as they seemed to always be available. One provider stated, “every single room has the food insecurity cards,” with “extra available on the side.”

*Visibility*

According to staff and clinicians, simply seeing the referral card on the desk of the health care provider encouraged some students to take the card for themselves or for a friend. One provider stated,

So I had them [referral cards] laying here and the person [student] looked at it and said, well ‘Oh, I have a friend who can use this’. Okay. So visualization of this, and advertising and marketing in some way, in the proper manner. I think it’s also very good.

One provider recalled speaking with a student who was sharing food with his/her roommate who did not have enough to eat. The provider said the student was “embarrassed to say that they were sharing food.” The student saw the referral card on the providers desk, which initiated conversation regarding his/her food insecure roommate and available resources. Even students who did not screen positive for food
insecurity were reported to express interest in taking the card after seeing it on the 
provider’s desk. For example, one provider commented,

There have also been times where students, um, filled out the form and they didn't
answer anything positively. Um, but they saw the card... they saw the card and
they said, ‘I don't have this problem, but my friend does. And could I take a card?

**Verbal Referral Preference**

When providing food insecure students with a referral card, some staff and clinicians
reported they referred mainly to the RSFP and not the DOS. This may be due to a lack of
knowledge or confidence in referring to the DOS. For instance, one provider explained,

I will say that I, for some reason feel more comfortable referring them to the food
pantry because I don't honestly know, you know, if they call the dean of students
what the first word they would say are, to get what they need.

Furthermore, some staff and clinicians explained that students may even perceive the
DOS as a negative outcome or consequence. One provider explained,

I can tell you right now. They'll [students] probably say, why do I need to call the
dean of students?... I'll say, call your dean of students. They are your parents at
school. They're not here to hinder you, they're here to help you. Right? So, and
they look at you like "they are?"… so I just feel like the dean of students has to be
explained, like they can help, you know.

Another provider reported that students view the DOS as “not the good parent” but the
parent that is “going to yell at you” and that student may feel they don’t want the Dean to
know about their food insecurity because they, “don’t want anyone else knowing that.”
Perceived Student Reactions

Staff and clinicians reported that the majority of student reactions had been “positive,” “appreciative,” and largely “thankful” when they were provided with the referral cards. Less commonly, students were noted to react with confusion if they felt that the referral card was not a necessary resource or they may have felt slightly uncomfortable discussing the topic of food insecurity with the provider, as explained by one provider below,

 Mostly people received it very positively. Um, occasionally people were confused, like I said, if they didn't mean to answer it that way, they'd be like, ‘where's this coming from?’ And then a couple of people were just a little uncomfortable about the whole topic and they felt like, you know, like they would be the ones who would tuck the card away right away and like they just didn't want to deal with that right at this moment, but they still took the information and uh, and just didn't seem to really want to go into a lot more detail.

A few staff and clinicians commented that some students were surprised that these resources were available, and this was the first time they were hearing of these options. For example, one provider explained,

 They're like, ‘wow’… most of them are really surprised that we do have a food pantry here... I mean like they're like, ‘oh, it's good, I'm running out of meal swipes’. I've heard that from like one or two people.

Most staff and clinicians reported that students did not have many questions after receiving the referral card. Staff and clinicians commented that when questions were asked, they were mainly logistical in nature such as, “if they need an appointment” or “if
they need to meet with them first” in regards to the DOS and if the services are free, in the case of the RSFP.

*Documentation*

Methods of documentation when providing the referral cards appeared to vary depending on the provider and seemed to be a point of confusion for some. Although rare, at least one provider commented that they likely did not document at all, by stating, “I'm trying to remember now if I documented it, no probably not.”

Most staff and clinicians documented the provision of referral cards in either one or a combination of the following ways, a) documented using the education code, EDFIRx (which was the recommended method), b) documented by creating an addendum to the PHH, or c) documented by writing in the appointment note. Some providers mentioned using the recommend method of documentation and could explain the process, for example, “That's how we document it. We'll put it in the little code for this education piece to pop up in their health portal.” While, other providers described a mixed method of documentation using both the code and writing in the appointment note. For example,

So I would document that a food card [referral card] was given and there's also like a code that we will put in. We use the code and then um under the nurse's note, I would just put like, you know, patient verbalized of food pantry card and like whether they had questions about it or not.

One provider explained having documented the provision of a referral card by creating an addendum directly on the PHH, for example,

If it's on the personal health history [form], I will put an addendum on it and I'll addend it and I'll say ‘food resources given’.
In situations where the student denied being food insecure or refused the referral card, some staff and clinicians would document this interaction by creating an addendum, or correction, directly on the PHH document. One provider explained,

I put it at the bottom of the note [PHH] and I'll just put that, you know, that there was a misunderstanding and I'll document it there because that way they'll know that there's, some type of way. I really don't like to change what the patient is saying because I don't want it to affect anything.

Despite the different forms of documentation that were reported, it appeared that majority of staff and clinicians used at least one form of documentation to record the provision of the referral cards.
CHAPTER FIVE

DISCUSSION, RECOMMENDATIONS, AND CONCLUSIONS

This paper describes and assesses the implementation of a food insecurity screening and referral program for university students at four different on-campus Student Health Center sites. This section describes major findings and conclusions, as well as program specific recommendations, limitations, and areas for future research.

Screening Rate

About half (51%) of all students who were checked into their appointment during the study period, completed the food insecurity screener. A few factors likely contributed to this low overall screening rate, including the fact that the PHH is only requested to be completed once per year and it is not a mandatory or required form. These two factors were also noted by staff and clinicians throughout the semi-structured interviews and may suggest a possible limitation of the study. Of the students who did complete PHH (n=6616), the majority (88%) were screened for food insecurity, which may indicate the screener questions did not result in undue burden on the students and that the PHH is an appropriate tool for the food insecurity screening.

Food Insecurity Prevalence

About 9.5% (n=551) of students who were screened in this study reported experiencing food insecurity within the previous 30 days. Prior research at Rutgers University-New Brunswick demonstrated a food insecurity prevalence of 36.9% and 32.2% among undergraduate and graduate students, respectively. One possible explanation for the lower food insecurity rate seen in this study may be the sampling
method used, as only students who visited a health center and volunteered to complete a PHH were screened. The population of students visiting the health centers may not be representative of the student population as a whole. Depending on the student’s health insurance plan and full-time or part-time enrollment status, a medical appointment at one of the health centers could have been associated with a monetary cost. Students who are struggling with food insecurity often do not have sufficient monetary funds, and therefore may avoid seeking medical attention due to the potential associated costs. This possible barrier of use could have also contributed to the lower rates of food insecurity observed in this study population.

Another possible explanation for the lower food insecurity rate observed, could be the variation between food insecurity screening methods utilized. Prior research at Rutgers University-New Brunswick used the 10-item Household Food Security Survey\(^8\), as opposed to this study, which used a 2-item screening survey\(^33\). Another similar study, used a 6-item USDA screener to assess food insecurity prevalence within a low-income patient population.\(^27\) Using the 2-item screener with fewer, less detailed questions than the 6-item or 10-item screener, may have contributed to lower food insecurity rates observed. Although there are no known studies available assessing use of the 2-item screener within the specific college student health population, studies testing the accuracy of the 2-item screener and its use in health care settings have shown that the screener performs well in both the pediatric (≥ 97% sensitive; ≥ 83% specific)\(^33\) and adult (≥ 97% sensitive; ≥ 74% specific)\(^44\) clinical screening programs. In addition, a simplified 2-item screener has been considered easiest for use within the clinical practice setting\(^27\) and has been endorsed for clinical use by multiple organizations including the American
Association of Retired Persons (AARP) Foundation\textsuperscript{45} and the American Academy of Pediatrics (AAP)\textsuperscript{46}. Given the clinical setting of this study, the 2-item screener provided a more practical screening method for health care providers when implementing the study program.

The survey setting is also an important consideration that may influence food insecurity prevalence. Prior research at Rutgers University-New Brunswick used an online survey in order to administer the food insecurity screener questions.\textsuperscript{8} In this setting, students likely assume that the survey is anonymous, and their personal information will not be shared. However, in the health care setting, general medical forms like the PHH used in this study are subject to review by medical professionals and this information can be discussed during appointments. The fact that a medical professional will likely be reading, reviewing, and possibly discussing personal health details with the student (including their food insecurity status), may create a situation where the student is less willing to provide accurate information due to feelings of stigma or embarrassment.

The timing of survey administration may also influence results. In this study, students completed the 2-item screener throughout the academic year as they visited the Student Health Centers. In prior research, students were surveyed towards the end of the fall semester (Novembers 22 through December 19, 2016).\textsuperscript{8} Food insecurity can be transitory, meaning a short term or temporary period where a student may not be able to access adequate food. Student food insecurity prevalence has been found to be significantly higher at the end of each semester, as compared to the start of the school year.\textsuperscript{17} Therefore, the timing of survey administration, such as measuring food insecurity towards the end of the semester, may influence food insecurity rates found.
While the prevalence of food insecurity among students who visited Student Health Services was lower than previous study findings for the general student population, this rate was still in line with statewide levels of food insecurity in New Jersey (9.6%, n=865,900)\textsuperscript{47} and indicates that hundreds of students seen by the health centers were struggling to feed themselves. Therefore, this study highlights the importance of, and need for, continual food insecurity screening programs on campus in order to screen, refer, and track a larger population of students.

**Program Evaluation**

Evaluation of the program using the RE-AIM framework suggested an overall public health impact score of 76%. This total score can be used for comparison with similar programs and to assess internal changes to the program over time. Most importantly, the RE-AIM model provides a summary and description of the five dimensions which are important to the success of any program. The food insecurity and screening program demonstrated strengths within the adoption, implementation, and maintenance dimensions. The program was smoothly adopted by all four health center sites. It was implemented as intended, with a minimal annual cost totaling $275, which represented the printing costs of the referral cards. Further, the program aligns with the overall mission and goals of Student Health Services and has been maintained for a total of 17 months (7 months post-study) with plans to continue the program into the future.

**Semi-Structured Interviews**

Themes from the semi-structured staff and clinician interviews echoed the program’s efficacy and public health impact. The majority of staff and clinicians perceived the program as effective, time efficient, and easy to implement. Providers
considered the program as a valuable addition to their practice that was meeting a need which had not been consistently met in the past. The program also helped to promote awareness of the issue of student food insecurity on campus, as providers were having conversations surrounding food insecurity that they had never thought to mention before. It was apparent throughout the interviews that staff and clinicians considered the program to be well aligned with their responsibilities and mission in terms of promoting the physical health and academic success of students.

This is the first research study assessing health care providers’ perceptions of a screen and intervene program in university health clinics. However, one study has reported on the experiences of providers using a similar food insecurity screen and intervene program in a pediatric primary care setting. In that study, Adams and colleagues reported overall positive implementation experiences and that clinical providers readily accepted the two-item screen and intervene model. When asked about their implementation experiences, providers indicated they appreciated learning about the issue of food insecurity and discussing this issue and resources available with families. They also felt the program fit nicely into their clinical practice. These reports mirror the positive experiences expressed by the staff members and clinicians in this study.

Findings from the interviews revealed the program’s overall perceived success; however, equally as important, the interviews helped shed light on areas for possible improvement, which might be valuable for continued use of the program. In order to formulate recommendations moving forward, and to further validate interview findings, the themes were presented by this author to the research team, which included the Principal Investigator, a Ph.D. candidate, the Medical Director for SHS, an Advance
Nurse Practitioner from SHS, the Director of the RSFP, and the Director of Student Affairs Research and Assessment. The following program recommendations evolved from interview findings, in combination with feedback received from the research team members, and they have been separated into four major areas as discussed in the passages below.

**Recommendations**

1. **Screener placement.** Despite some limitations of the food insecurity screener location, it was recommended to continue screening students by way of the PHH. By screening students using the PHH, the program would continue to capture annual visitors and first-time users at the health centers, with the added benefit of privacy from using a self-administered form. Research team members validated previously expressed concerns associates with its movement to the Nursing Intake Form and determined the PHH was the preferred location for the screener.

2. **Changing responses.** The issue of providers changing original screener responses was brought to light through the interview findings. All participants of the research team were in agreement that moving forward, providers should not change original answers to the screener. Instead, if a provider chose to document a student’s reaction or comments regarding the screener questions, it was recommended that she/he create an addendum within the PHH and keep the screener responses unchanged.

3. **Documentation.** Interview findings had also surfaced regarding the provision of referral cards. As discussed previously, providers had varied in their methods of documenting when a student had been provided with a referral card. As supported by the research team, it was recommended to continue with the intended method of
documentation moving forward. The intended method of documentation included the use of the EDFIRx education code, which providers would select to signify that a referral card had been provided. An added benefit to using the EDFIRx code for documentation, was that, when selected, an electronic copy of the referral card would be sent to the student’s online health portal for easy access at a later time. This feature would be especially useful if the student misplaced the physical referral card provided.

4. Training. Another major theme identified from the interview findings was the need for further training on certain aspects of the program. Notably, staff and clinicians expressed a lack of knowledge on the referral resources, especially the DOS. It was recommended that a representative from the DOS provide further education to the SHS providers regarding DOS services, with a specific focus on their involvement with food insecure students. A detailed explanation of the role that the DOS plays in helping food insecure students and the process of how students can make an appointment would be extremely valuable information for providers to be able to discuss when referring students. Although staff and clinicians felt more knowledgeable regarding the RSFP as a referral resource, some did have questions about this service including if the service was free for students, where it was located, and if an appointment was required. Providing additional training and information on both the DOS and the RSFP is highly recommended. One suggestion was to create an educational training video which could include a virtual tour of the RSFP and specific information regarding the DOS. This video could also provide a general overview of the issue of student food insecurity, in order to foster an increased awareness and understanding of this vulnerable population among health care providers. Additional training on how to properly document referral
card provisions and training providers not to change original student responses to the screener, was also advised. Specific recommendations from the research team included adding the aforementioned training topics to the annual quality improvement training initiatives within Student Health Services, which typically took place during the months of January or June. Quality improvement training would provide continual refresher courses and information for staff and clinicians on a variety of departmental related topics. Adding training specific to this program to the existing quality improvement system, could be a way to facilitate training on an ongoing basis. Another suggestion made included providing regular updates regarding the program during monthly staff and clinician meetings. By doing this, the research team could continue to update health care providers with pertinent information and provide a platform for answering questions.

Limitations

This investigation had two main categories of limitations, those related to the research and those related to the intervention itself. Some limitations had effects on both. In terms of the quantitative research, there are data that have yet to be compiled and analyzed, such as student population demographics and utilization of referral resources (RSFP and DOS). Therefore, assessing the study population for representativeness and assessing the referral aspect of the program was not able to be performed. Future research should focus on the assessment of these data in order to provide further evaluation of the program. An additional limitation that the research team anticipated at the start of the study, was the inability to accurately record each time a referral card was provided to a student. This was largely due to the inconsistencies in documentation by staff and clinicians and the importance placed on not overburdening them.
In terms of the program, an important limitation was that the PHH is only administered to each student once per year, and food insecurity can vary over time. For example, a student may be food secure up until the point in the semester when their meal plan runs out. If they complete the survey during a time of year when they are not food insecure, they will be missed in the referral process.

Also, since the completion of the PHH was not mandatory, this likely contributed to a lower overall screening rate and thus some food insecure students not getting referred to appropriate services. Furthermore, the population of students visiting Student Health Services may not have been representative of the student population as a whole, as many students may never use this service. This factor may have contributed to finding a lower food insecurity prevalence among students than the previous study and also means that many potentially food insecure students did not get referred to appropriate services.

Finally, since providers reported changing original student answers on the food insecurity screener, the accuracy of the screener, the rate of food insecurity observed, and food insecure students ultimately being referred to appropriate services, may have been inappropriately influenced.

**Conclusions and Recommendations for Future Research**

The food insecurity screener and referral program successfully screened about half (51%) of the students who checked into their appointments across four major health centers and identified an overall food insecurity rate of 9.5%. These findings indicate that hundreds of students (n=551) seen by the health centers likely struggle to feed themselves, and highlights the importance of, and need for, continual food insecurity screening programs on campus. The program demonstrated strengths within the adoption,
implementation, and maintenance dimensions of the RE-AIM framework and was perceived as a valuable and effective tool for health care providers with plans for continued sustainability. Findings from this study demonstrated that the implementation of a food insecurity screening and referral program within the university health care setting could serve as a beneficial tool in identifying and addressing food insecurity among students. Findings from this program assessment highlighted a need for continual screening, assessment, and formal referral of resources in order to help combat student food insecurity. Therefore, the use of screen and intervene programs such as this one should be considered in student health clinics and centers within universities and colleges across the nation.

In addition to replicating this study in university health care settings, future research should also include assessment of other on-campus formal outreach strategies and referral programs, including the implementation of programs within varying university departments that promote campus support services. Further evaluation of current resources and support services should also be studied in order to assess if students’ basic needs are being met and to identify and address possible barriers of utilization of these services.
REFERENCES


Appendix A: Semi-Structured Staff Interviews Informed Consent

Participant Informed Consent Form

INFORMED CONSENT FORM

Food Security on Rutgers Campus

You are invited to participate in a research study that is being conducted by principal investigator, Dr. Cara Cuite, a professor in the Department of Human Ecology in the School of Environmental and Biological Sciences, and Marina Vineis, a M.S. graduate student in the Department of Nutritional Sciences Graduate program at Rutgers University.

Approximately 20 current Rutgers staff members will participate in this study. Study participants will be asked to participate in an individual interview with one member of the research team. Individual interviews will last approximately 1 hour in length and participants may be contacted for a follow-up interview(s) at a future date.

This research is confidential. Confidential means that the research records will include some information about you and this information will be stored in such a manner that some linkage between your identity and the response in the research exists. We will keep this information confidential by limiting access to the research data and keeping it on a secure, password protected computer network.

The research team and the Institutional Review Board at Rutgers University are the only parties that will be able to see the data, except as may be required by law. If a report of
this study is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept for five years.

There are no foreseeable risks to participation in this study. You have been told that the benefits of taking part in this study may be helping researchers understand the issues of food insecurity and resource programs on campus and helping to identify solutions to the problem. However, you may receive no direct benefit from taking part in this study.

Participation in this study is voluntary. You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

If you have any questions about the study or study procedures, you may contact Cara Cuite at cuite@sebs.rutgers.edu or 848-932-4544. If you have any questions about your rights as a research subject, please contact an IRB administrator at the Rutgers University, Arts and Sciences IRB:

Institutional Review Board
335 George Street
Liberty Plaza / 3rd Floor / Suite 3200
New Brunswick, NJ 08901
Phone: 732-235-2866
Email: irb-admin@ored.rutgers.edu

You will be given a copy of this signed consent form to keep for your records.
Sign below if you agree to participate in this research study:

Subject (Print) _______________________________________

Subject Signature ____________________________ Date ______________________

Principal Investigator Signature _____________________ Date __________________
**Participant Audio Informed Consent Form**

**Audio Addendum to Consent Form**

You have already agreed to participate in a research study entitled: Food Insecurity on Rutgers Campus conducted by Cara Cuite, Stephanie Brescia and other members of the research team. We are asking for your permission to allow us to audiotape your interview as part of that research study. You do not have to agree to be recorded in order to participate in the main part of the study.

The recording(s) will be used for analysis by the research team. Recordings will not be transcribed in full, but researchers will take notes on the recordings. Portions of your interview may be quoted in research findings, but your name will not appear in any publications.

The recording(s) will include your first name only and the information that you share in your interview. If you say anything that you believe at a later point may be hurtful and/or damage your reputation, then you can ask the interviewer to rewind the recording and record over such information OR you can ask that certain text be removed from the dataset/transcripts.

The recording(s) will be moved from the recorder to a password protected computer. The files will be labeled using a pseudonym and will only be shared with members of the research team. Once recordings have been saved to the password protected computer, they will be deleted from the recording device. The recordings will be kept for 2 years. After 2 years time, recordings will be deleted from the password protected computer.
Your signature on this form grants the investigator named above permission to record you as described above during participation in the above-referenced study. The investigator will not use the recording(s) for any other reason than that/those stated in the consent form without your written permission.

Subject (Print) ______________________________________

Subject Signature ____________________________ Date ______________________

Principal Investigator Signature _____________________ Date ___________________
Appendix B: Personal Health History Form with 2-Item Food Insecurity Screener (Questions 23 and 24)

Clinical Note Template List

Date Printed: 10/4/2019 at 11:23:06AM

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<th>Template Group</th>
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</thead>
<tbody>
<tr>
<td>Personal Health History (COMPLETE THIS FORM FIRST)</td>
<td>Group: Other</td>
<td></td>
</tr>
</tbody>
</table>

1. IMPORTANT: You are about to complete an on-line form for your appointment with Rutgers Health Services. If you cancel or do not show up for your appointment, the form will NOT be reviewed and will be inactivated. Upon making your next appointment, this and other forms may still need to be completed. Thank you.
Answer Type: Instructions

2. 

3. Personal Medical History:
(Please check all conditions that you have now or have had in the past. Provide an explanation of the problem in the white column that appears next to the answer when checked.)

Answer Type: Answer Selection Multiple Select

|------|-----------------------------|---------------------------|---------------------------|-----------------------------|---------------------------|-------------------------------|-----------------------------|-------------------------------|--------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------------------------|-----------------------------|-----------------------------|

4. List Previous overnight Hospitalizations and Surgeries:
Answer Type: Free Text Multi-line

Get Previous Answer: By Question
### Clinical Note Template List

**Date Printed:** 10/4/2018 at 11:23:09AM

**Report Type:** Detail

**Template Name:** Personal Health History (COMPLETE THIS FORM FIRST)

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<th>Template Group</th>
<th>SOAP Section</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5.</strong> Allergies:</td>
<td></td>
<td>Get Previous Answer: By Question</td>
</tr>
<tr>
<td>Answer Type: Answer Selection Multiple Select</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latex [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insect Stings/Bites [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-inflammatory medication (such as ibuprofen, motrin, etc.) [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspirin [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Codone [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cortisone [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penicillin [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfis [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peanut [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seafood [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccine Components (chicken, eggs, gelatin, neoynycin, etc.) [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Other Drug or Medication [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seasonal Pollen [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animals [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other [Extra Info Field]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. Do you take any over-the-counter, herbal medications or supplements? Get Previous Answer: By Question

   Answer Type: Yes/No

7. List over-the-counter, herbal or supplements used: Get Previous Answer: By Question

   Answer Type: Free Text

8. Are you using any birth control medications or products? Get Previous Answer: By Question

   Answer Type: Yes/No

9. Name of Birth Control Medication or Product (pills, IUD, Nexplanon, etc.) Get Previous Answer: By Question

   Answer Type: Free Text

10. Do you take any prescription medications? Get Previous Answer: By Question

    Answer Type: Yes/No

11. List Prescription Medications (including name, dosage, frequency) Get Previous Answer: By Question

    Answer Type: Free Text Multi-line
**12.** Family History:
(Please list the relative (e.g. mother, father, grandparent, brother, sister, etc.) who has the illness and a brief description of the problem in the white column that appears next to the next answer when it is checked.)

- Arthritis [Extra Info Field]
- Asthma [Extra Info Field]
- Bipolar Illness [Extra Info Field]
- Cancer [Extra Info Field]
- Clothing Disorder [Extra Info Field]
- Diabetes [Extra Info Field]
- Deep Vein Thrombosis (DVT) [Extra Info Field]
- Depression [Extra Info Field]
- Epilepsy/convulsions [Extra Info Field]
- Heart Disease [Extra Info Field]
- Hepatitis [Extra Info Field]
- High Blood Pressure [Extra Info Field]
- High Cholesterol [Extra Info Field]
- Kidney/Bladder Disease [Extra Info Field]
- Mental Health Problems [Extra Info Field]
- Migraines [Extra Info Field]
- Other emotional or mental health problem [Extra Info Field]
- Stroke [Extra Info Field]
- Substance Abuse/Alcoholism [Extra Info Field]
- Thyroid Disease [Extra Info Field]
- Tuberculosis [Extra Info Field]
- Other [Extra Info Field]
- Deceased [Extra Info Field]

**13.** Sex assigned at Birth:

- Answer Type: Answer Selection
- Female
- Male

**14.** Gender Identity:

- Answer Type: Answer Selection
- Female Identified
- Male Identified
- Questioning [Extra Info Field]
- Identified Outside of Standard Gender Binary [Extra Info Field]

**15.** Are you trans identified?

- Answer Type: Yes/No
- Third Option Text: Not Sure

**16.** Sexual Orientation:

- Answer Type: Answer Selection
- Gay
- Lesbian
- Bisexual [Extra Info Field]
- Queer, Pan or Fluid [Extra Info Field]
- Straight/Not Bisexual [Extra Info Field]
- Other [Extra Info Field]
Clinical Note Template List

Report Type: Detail
Template Name is Personal Health History (COMPLETE THIS FORM FIRST)

<table>
<thead>
<tr>
<th>Template</th>
<th>Template Group</th>
<th>SOAP Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>*17.</td>
<td>Over the last 2 weeks, how often have you been feeling down, depressed or hopeless?</td>
<td>[Answer Type: Answer Selection] Not at all Several days More than half the days Nearly every day</td>
</tr>
<tr>
<td>*18.</td>
<td>Over the last 2 weeks, how often have you been bothered by having little interest or pleasure in doing things?</td>
<td>[Answer Type: Answer Selection] Not at all Several days More than half the days Nearly every day</td>
</tr>
<tr>
<td>*19.</td>
<td>Has someone ever touched you in a sexual manner against your will or without your consent?</td>
<td>[Answer Type: Yes/No ] Third Option Third Option Text: Not Sure ** YES **</td>
</tr>
<tr>
<td>*20.</td>
<td>Have you ever been forced or pressured to have sex?</td>
<td>[Answer Type: Yes/No ] Third Option Third Option Text: Not Sure ** YES **</td>
</tr>
<tr>
<td>*21.</td>
<td>Have you ever recognized that you had sex that you did not agree to while drunk or using drugs?</td>
<td>[Answer Type: Yes/No ] Third Option Third Option Text: Not Sure ** YES **</td>
</tr>
<tr>
<td>*22.</td>
<td>Within the past year, have you ever felt fearful because of verbal or physical threats?</td>
<td>[Answer Type: Yes/No ] Third Option Third Option Text: Not Sure ** YES **</td>
</tr>
<tr>
<td>*23.</td>
<td>Thinking about the last 30 days, how true is the following statement: I was worried whether my food would run out before I had money to buy more.</td>
<td>[Answer Type: Answer Selection] OFTEN TRUE SOMETIMES TRUE Never True I don't know</td>
</tr>
<tr>
<td>*24.</td>
<td>Thinking about the last 30 days, how true would you say the following statement is: The food that I bought just didn't last, and I didn't have money to get more.</td>
<td>[Answer Type: Answer Selection] OFTEN TRUE SOMETIMES TRUE Never True I don't know</td>
</tr>
<tr>
<td>*25.</td>
<td>On an average week, how much time do you spend exercising or being physically active (including walking, dancing, hiking, biking, etc.) over the course of the week?</td>
<td>[Answer Type: Answer Selection] Less Than 150 minutes per week [Extra Info Field] More Than 150 minutes per week [Extra Info Field]</td>
</tr>
<tr>
<td>*26.</td>
<td>Approximately what percentage of your waking hours do you spend with technology/ devices and other sedentary activities?</td>
<td>[Answer Type: Answer Selection] Multiple Select 10% [Extra Info Field] 25% [Extra Info Field] 50% [Extra Info Field] 75% [Extra Info Field] 90% [Extra Info Field]</td>
</tr>
</tbody>
</table>
## Clinical Note Template List

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**Template Name:** Personal Health History (COMPLETE THIS FORM FIRST)  
**Date Printed:** 10/4/2016 at 11:23:09 AM

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<tr>
<th>Template</th>
<th>Template Group</th>
<th>SOAP Section</th>
</tr>
</thead>
</table>
| **27. On how many of the past seven days did you get enough sleep to feel rested when you woke up in the morning?**  
  **Answer Type:** Answer Selection  
  0  
  1  
  2  
  3  
  4  
  5  
  6  
  7  
  **YES** **"Yes"** | | |
| **28. Do you currently suffer with or have you ever suffered in the past with an eating disorder?**  
  **Answer Type:** Yes/No  
  **Third Option Text:** Not Sure  
  **"YES" "Yes"** | | |
| **29. In the PAST YEAR, how often have you used TOBACCO Products?**  
  **Answer Type:** Answer Selection  
  Never  
  Once or Twice  
  Monthly  
  Weekly  
  Daily or Almost Daily  
  Former user – Quit date: [Extra Info Field]  
  **"YES" "Yes"** | | |
| **30. Please give approximate amount of tobacco products used weekly or daily**  
  **Answer Type:** Free Text | | |
| **31. Please give approximate amount of tobacco products used weekly or daily**  
  **Answer Type:** Free Text | | |
| **32. How often in the past year have you used E-cigarettes, Vaping or Juul?**  
  **Answer Type:** Answer Selection  
  Never  
  Once or Twice  
  Monthly  
  Weekly  
  Daily or Almost Daily | | |
| **33. Please give approximate amount used or number of cartridges used per day or week**  
  **Answer Type:** Free Text | | |
| **34. Please give approximate amount used or number of cartridges used per day or week**  
  **Answer Type:** Free Text | | |
| **35. How often do you have a drink containing alcohol?**  
  **Answer Type:** Answer Selection  
  Never  
  Monthly or less  
  Two to four times a month  
  Two to three times per week  
  Four or more times per week | | |
### Clinical Note Template List

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</table>

**36.** In the PAST THREE (3) MONTHS, how often have you had 5 or more drinks (men) / 4 or more drinks (female) of ALCOHOL in a day?  
**Answer Type:** Answer Selection  
- Never  
- Once or Twice  
- Monthly  
- Weekly  
- Daily or Almost Daily

**37.** In the PAST THREE (3) MONTHS, how often have you used SUBSTANCES such as marijuana, PCP, heroin, cocaine, ecstasy, Molly, and other drugs?  
**Answer Type:** Answer Selection  
- Never  
- Once or Twice  
- Monthly  
- Weekly  
- Daily or Almost Daily

**38.** Which of drugs have you used in the past 3 months? (Check all that apply)  
**Answer Type:** Answer Selection Multiple Select  
- Marijuana  
- Cocaine  
- Heroin  
- Ecstasy  
- Molly  
- LSD  
- Meth  
- K2/Spice  
- Bath Salts  
- PCP  
- Other [Extra Info Field]

**39.** Which of drugs have you used in the past 3 months? (Check all that apply)  
**Answer Type:** Answer Selection Multiple Select  
- Marijuana  
- Cocaine  
- Heroin  
- Ecstasy  
- Molly  
- LSD  
- Meth  
- K2/Spice  
- Bath Salts  
- PCP  
- Other [Extra Info Field]
40. Which of drugs have you used in the past 3 months? (Check all that apply)
   Answer Type: Answer Selection   Multiple Select
   Marijuana
   Cocaine
   Heroin
   Ecstasy
   Molly
   LSD
   Meth
   GHB
   K2/Spice
   Bath Salts
   PCP
   Other [Extra Info Field]

41. Which of drugs have you used in the 3 months? (Check all that apply)
   Answer Type: Answer Selection   Multiple Select
   Marijuana
   Cocaine
   Heroin
   Ecstasy
   Molly
   LSD
   Meth
   GHB
   K2/Spice
   Bath Salts
   PCP
   Other [Extra Info Field]

42. In the PAST THREE (3) MONTHS, how often have you used PRESCRIPTION DRUGS FOR NON-MEDICAL REASONS or THAT WERE NOT PRESCRIPTION FOR YOU?
   Answer Type: Answer Selection
   Never
   Once or Twice
   Monthly
   Weekly
   Daily or Almost Daily

43. Over the past 2 weeks, how often have you been bothered by feeling nervous, anxious or on edge?
   Answer Type: Answer Selection
   Not at all
   Several days
   More than half the days
   Nearly every day

44. Over the past 2 weeks, how often have you been bothered by not being able to stop or control worrying?
   Answer Type: Answer Selection
   Not at all
   Several days
   More than half the days
   Nearly every day

45. Has anything frightening or traumatic ever happened to you?
   Answer Type: Yes/No
   Third Option Text: Not Sure
   ** YES **/No

Clinical Note Template List
Date Printed: 10/4/2018 at 11:23:09AM

Report Type: Detail
Template Name is Personal Health History (COMPLETE THIS FORM FIRST)

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## Clinical Note Template List

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<tr>
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<th>Template Group</th>
<th>SOAP Section</th>
</tr>
</thead>
</table>

### 46. Which of the following frightening or scary experiences have you had?
- **Answer Type**: Answer Selection Multiple Select
  - Childhood abuse (physical, verbal, sexual or neglect) [Extra Info Field]
  - Accident (such as a serious car accident) [Extra Info Field]
  - Natural disaster (such as a hurricane) [Extra Info Field]
  - Assault in adulthood [Extra Info Field]
  - Sexual harassment [Extra Info Field]
  - Bullying [Extra Info Field]
  - Military/Combat experience [Extra Info Field]
  - Other [Extra Info Field]

### 47. Was this form completed online by the patient/client?
- **Answer Type**: Yes/No
  - This Form Was Completed Online By: [ ]

### 48. I acknowledge that I am the person listed below and have completed this form online:
- **Answer Type**: Yes/No
  - I acknowledge that I am the person listed above and have completed this form online. [ ]

### 49. Patient First Name:
- **Answer Type**: Patient Field

### 50. Patient Last Name:
- **Answer Type**: Patient Field
Appendix C: Food Resource Referral Card

Front Page

Rutgers University-New Brunswick

FOOD RESOURCES

Rutgers Student

Patient Name

Prescription for:

- **Rutgers Student Food Pantry**, 39 Union Street
  (848)932-5500 Monday–Friday 9:00am–4:00pm
  Students are welcome to visit the pantry anytime during operating hours.

- **Dean of Students**, 88 College Ave
  (848)932-2300 Monday–Friday 8:30am–5:00pm
  Please call to schedule an appointment to meet with a representative from the Dean’s Office.

Scan to take a virtual tour of the Rutgers Student Food Pantry!
Did you know that your ability to access sufficient food can affect your academic performance?

Students with problems accessing enough food are more likely to:

- Have difficulty focusing and concentrating in class
- Experience a lack of energy
- Fail to purchase required educational materials such as textbooks
- Miss classes
- Earn lower GPAs
- Withdraw from a course, and
- Consider leaving college.

As part of Rutgers’ ongoing efforts to support student wellness, you may be invited to participate in a voluntary online survey.
Appendix D: Invitation to Participate in Staff and Clinician Interviews

Happy New Year!

As part of the Rutgers Student Healthcare team, I appreciate your willingness to screen and provide information on food insecurity to our students. As an essential part of figuring out how to optimize this effort, I am writing to invite you to participate in an interview about the newly implemented food insecurity screener and referral process. The interview is part of a research study that Health Services are conducting with Dr. Cara Cuite of the Department of Human Ecology, Marina Vineis, a M.S. graduate student in the Department of Nutritional Sciences Graduate program, and Student Affairs Research and Assessment. The purpose of this research is to understand how the food insecurity screener and referral process is working and how we can improve it.

Please click on the link below which will bring you to a sign-up page. We are hoping you will as soon as possible, as we are hoping to get the majority of the interviews completed before students return to campus on January 21.

https://docs.google.com/spreadsheets/d/1PRY9UidrrxgPHFtY0UjHMtPnhPZWA6le17bh8IAkc9w/edit?usp=sharing

Each interview will last approximately 30 minutes and will be held at Hurtado Health Center (room to be determined). All participation is voluntary, and responses will be kept confidential.
If you would like more information about this study or have any questions, please email Marina Vineis at mvineis@rutgers.edu. Thank you in advance for your participation.

Sincerely,

Cathryn Heath, MD

Medical Director

Rutgers Student Health Services

11 Bishop Place

Room 321

New Brunswick, NJ 08901
Appendix E: Staff and Clinician Semi-Structured Interview Script

BACKGROUND QUESTIONS:

As you may know already, our research group has implemented a new screening and referral program (beginning in the Fall 2018 semester) to help identify and connect food insecure students to support services. The program involves Student Health Services, the Student Food Pantry, and the Dean of Student’s Office. We will be focusing mainly on this new program for the interview today.

Before we discuss this program, I’d like to learn a little bit about you.

1. Tell me a little bit about your position at Rutgers University.

2. How long have you been working within Rutgers Student Health?

TRAINING:

3. As I mentioned earlier, our research group has implemented a new screening and referral program (beginning in the Fall 2018 semester) to help identify and connect food insecure students to support services. Do you recall attending any trainings for this program?

   a. If yes, were you clear on the expectations and how it would work?

   b. If not, did anyone train you individually at any point on this project?

      i. If not, how did you figure out what to do?

4. Was the instruction sheet clear? Did you have any questions left after reading it?

IMPLEMENTATION: FI Screener

Jumping right into the screener portion of the program…
5. Can you explain to me your process for looking at the food insecurity screener (which was the 2-question item added to the Personal Health History Questionnaire)? *(Do you do it right before you see the student? Or while you are with the student?)*

   a. Did you ever review questions w/ students? Did this ever result in students changing their original answers to the FI screener?

6. Do you ever refer to the training materials or are you able to remember what counts as FI?

7. Was there ever a time where you did not get to look at the FI screener for a student appointment? YES**If so, what are some reasons why?**

8. **If you didn’t see the FI screener for a food insecure student, did you follow up with the student after the appointment?

   a. If so, how did you follow up (i.e. secure email message, phone call, etc.?)

   b. What information did you provide?

9. *IF NURSING/ LPN:* What are your thoughts on adding the 2-questions FI screener to the Nursing Intake Questions? (Possible? Good idea? Time burden?)

**IMPLEMENTATION: SPEAKING WITH STUDENTS**

10. When a student screens positive for food insecurity, what does your conversation sound like?

11. How do students react when they are told they are food insecure and/or provided a card?

   a. How often did students have questions or comments about this?
i. Did students raise any concerns about this process to you, regarding privacy or any other negative issues about it?

**REFERRAL CARDS**

12. Tell me about the process of handing out the referral cards.
   a. At what point in the visit would you normally do this?
   b. Were there always referral cards available?
   c. When explaining the card to students, is there a resource/service you tend to mention or discuss more? (SFP vs DOS)

13. Were there times that you had a student that you knew was food insecure and spoke with them about it but didn’t give them a referral card? If so, can you tell me when that was most likely to happen?

14. Did you ever give a student a referral card but not document it in their health record? If so, can you tell me when that was most likely to happen?

**IMPLEMENTATION: Overall impact**

15. How much of your time did this take (on a daily basis/weekly basis/per semester)?

16. Did you feel like participating in the program has affected your ability to complete other tasks that are a part of your position? (If not clear, probe: Did it hurt or help your ability to do your job?)

**PERCEIVED EFFICACY**

17. Do you feel that the new program is effective at identifying food insecure students and connecting them to services?
   a. If yes: Can you think of any reasons or examples that make it effective? If no: why not?
18. Other than what we’ve already discussed, are there other barriers that you face in implementing the screening and referral program?

RECOMMENDATIONS

19. Do you have any suggestions regarding how Health Services members are trained on this project?
   a. Was there anything you wish you had been told during the training?

20. Do you have any suggestions for improving the implementation of the screening and referral program?

21. Do you feel like this program is addressing a need your patients had prior to implementation?

22. Do you feel that the screener and referral program has increased staff awareness of the issues of student food insecurity? In what ways?

CLOSING

23. Is there anything else you’d like to tell us about the FI screening and referral program?

24. Do you have any questions for me? About this interview, about this program, etc.?