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# Addressing Food Insecurity and Obesity Within a Rural Primary Care Setting

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**Title**: Addressing Food Insecurities and Obesity Within a Primary Care Setting

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## Abstract

**Background and Objectives**: There is a need to screen, assess, and potentially make referrals for social determinants of health (SDOH) to help coordinate healthcare services across the care continuum and identify factors impacting health.

**Problem**: The majority of primary care offices do not routinely screen patients for social needs, despite the influence they can have on an individual's health.

**Methods**: This quality improvement project was implemented using the Plan-Do-Study-Act (PDSA) framework at a small, midwestern rural primary care clinic in the United States. Participants included office staff and 31 adult patients who presented to the clinic for their wellness exam. A standardized evidence-based tool was implemented to screen for food insecurities among patients, and then information about a variety of community resources were offered to aid the individual with their unmet social need. The quality improvement measures included: total number of patients screened, community resource information provided to patients, resources utilized by patients, and staff understanding of SDOH components through semi-structured interviews.

**Results**: One patient ($N$=1) screened positive for a food insecurity out of 31 patients. This patient utilized one of three community resources provided. An additional two patients denied having food insecurity, but accepted the resources. Office medical assistants showed an increased understanding of screening for food insecurities and SDOH.

**Conclusion**: A screening tool can be effectively implemented through following the PDSA process to identify food insecurities among patients within a primary care clinic.


**Keywords**: Quality improvement, primary care, social determinants of health, food insecurities, referrals, community resources.

**Addressing Food Insecurity and Obesity Within a Rural Primary Care Setting**

Although an individual's health is either promoted or impeded by factors related directly to medical care and diagnoses, current studies show that non-medical social, behavioral, and environmental determinants of health have an even more significant impact on determining health outcomes (Hood et al., 2016; Taylor et al., 2016). Defined as conditions that affect how people are born, live, age, and die, these social determinants can comprise up to 80% of the factors negatively impacting an individual's daily health (Magnan, 2017). These factors can be further broken down into categories, showing how 40% of a person's health can be attributed to socioeconomic factors, 30% by their lifestyle factors, 20% by access to quality healthcare, and 10% by physical environment (Hood et al., 2016). Unemployment, food insecurities, lack of safe and affordable housing, low rates of education, and social isolation have been identified as frequent social factors impacting the health status of numerous individuals throughout the country (Bresnick, 2018). These non-medical, social needs of patients must be addressed in order to cultivate significant and long-lasting, positive impacts on the health of entire communities; however, current literature suggests that the majority of primary care offices and hospitals do not routinely screen patients for social needs, despite the influence they can have on an individual's health (Hood et al., 2016; Leventhal, 2020). This is problematic, as unmet social needs may contribute to the increased prevalence of chronic conditions among numerous individuals, leading to poorer health outcomes (Shim & Compton, 2018).

For a primary care provider to have a significant and lasting impact on the health of their patients and communities, they must address the social needs of the patients outside the clinical walls, as these factors significantly affect the health within individuals, and are major determinants in identifying illness, disease, and premature death within communities (Hood et

al., 2016). However, current literature suggests that the majority of primary care offices and hospitals do not routinely screen patients for social needs, despite the influence they can have on an individual's health (Leventhal, 2020). It is evident that between the nations aging population, increased rates of chronic conditions, and unmet social needs, a solution to addressing an individual's SDOH, such as food insecurities, is crucial before the combination of these problems continue to grow in severity (Raghupathi & Raghupathi, 2018). The purpose of this quality improvement project was to implement a standardized evidence-based SDOH screening assessment tool into daily workflow during annual wellness exams to screen patients for food insecurities and obesity in order to improve their outcomes and work to improve the health disparities and inequity that exist across the country.

**Clinical Practice Question**

How does the implementation of an SDOH screening tool to identify food insecurities into annual wellness exams potentially increase referral rates to community resources for patients within the designated rural health primary care clinic?

**Project Aims**

The quality improvement project was implemented to answer the following questions:

1. How does the implementation of a standardized weight management and nutritional insecurity screening and assessment process as part of SDOH annual wellness visits affect the identification and intervention of food insecure individuals and families within the rural health clinic?
2. Does the implementation of a standardized weight management screening and assessment process for food insecurities improve referral rates to supportive services such as nutritional support or weight management programs?

**Model to Examine Food Insecurities**

The Goal Attainment theory, introduced by Imogene King in 1981, was utilized to examine the integration of a food insecurity screening tool into daily workflow within a rural primary care office (Parker & Smith, 2010, Chapter 10). The theory places the individual as the main focus, and allows for a better understanding of the synergistic relationship between the patient and nurse and outlines the interactions between them to meet mutually agreed upon goals to improve their health (Parker & Smith, 2010, Chapter 10). The human process of effective communication between the nurse and patient is the driving force behind the success of this model (Parker & Smith, 2010, Chapter 10). A patient's health is influenced heavily from an invaluable amount of knowledge and skills, and effective communication can help identify non-medical needs of the patient within their community that may be negatively contributing to their health (Parker & Smith, 2010, Chapter 10).

When nurses begin to assess the patient's SDOH components, they can more accurately gauge the non-medical needs of the patient and can help facilitate mutually agreed upon goals to improve the overall health of the individual (Parker & Smith, 2010, Chapter 10). Application of this phenomenon model places emphasis on the patient to help direct and guide the outcomes of their care. Through effective communication between the nurse and patient, and establishment of mutually agreed upon goals, patients can be set up with community resources to help address their food insecurity. Refer to Figure 1 for the Goal Attainment Theory.

**Organizational Assessment**

A thorough evaluation of the rural primary care clinic was completed utilizing the interconnected domains within the Systems Transformation Framework (2018). Data was collected through information gathered from the organization's website, and through direct

observation and interviews with the office manager, office providers, office medical assistants (MAs), and other key stakeholders. Data regarding screening practice details was provided utilizing the organizations electronic health record (EHR).

It was deemed that the organization was equipped to handle a workflow process change to include the standardized screening tool into wellness exams, as the clinic staff were engaged in learning and enjoyed partnering with nursing students to improve practice and patient outcomes. The clinic is respected among the community and other health resources, providing opportunities for working relationships and referrals to food banks, transportation services, and other community agencies. Covid-19 continuously posed a threat to the application of this implementation, as staff and resources were slightly limited throughout the clinic, potentially causing push-back from office employees who do not currently utilize any screening process to identify SDOH components. Application of this framework provided a comprehensive overview for understanding the organization's current level of operations prior to initiating a practice change.

## Available Knowledge

A literature review was completed with the purpose of analyzing current and up-to-date evidence regarding SDOH screening components. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline served as a framework to follow regarding the literature review (Moher et al., 2015). 237 articles were identified during the literature search between June 10, 2021 and August 03, 2021, utilizing multiple strategies among electronic databases including CINAHL, PubMed, and Google Scholar. The search was limited to full-text research studies in published within the last 10-years in English language. Key search words were developed for each database, utilizing Mesh-terms and text-free keywords that included,

but are not limited to, “social determinants of health,” “screening,” “nutrition,” “obesity,” “nutritional insecurities,” “access to care,” “referrals,” and “primary care.” Unique combinations of the keywords were used in each database to include reviews that may have been accidentally excluded initially due to the algorithms in place on each database. Through this comprehensive literature search, two themes were identified: 1) the effect of implementing a standardized screening and assessment process for proper identification and intervention of individuals with food insecurities, and 2) the effect of implementing a standardized screening and assessment process on patient referral rates to appropriate community resources in regards to food insecurities. Although several studies included utilized screening for nutritional deficits in a variety of healthcare settings and patient population, it was concluded this information could be translated into a primary care clinic.

## Methods

### Setting

The primary care clinic is located in a rural Midwestern community and is not affiliated with any larger healthcare organization. The clinic was comprised of two medical physicians and two nurse practitioners, with additional staff including registered nurses, clinical MAs, receptionists, and clinical support staff. The clinic was a for-profit organization that accepts private insurance, Medicare, and self-pay patients. Specializing in family medicine, the organization assessed, diagnosed, and treated individuals from children to older adults for a variety of medical conditions to promote positive health outcomes. However, no standardized tool to screen patients for SDOH was integrated into the annual wellness exam which may have led to missed opportunities to address specific conditions of an individual’s environment that may be negatively impacting the patient’s health status and health equity.

**Participants**

Participants included clinic patients who were at least 18- years of age, were their own medical decision maker according to the electronic health record (EHR), and who presented for their annual wellness exam. Following the implementation period of the pilot-tested quality improvement project, 31-patients were screened for food insecurity.

**Project Process and Methods**

This quality improvement project was implemented and piloted by the Doctor of Nursing Practice (DNP) student acting as the project manager. After preparing for the wellness exam, the DNP student called the patient who was awaiting the visit in their vehicle due to Covid-19 protocol. The patient then entered the building and was met by the DNP student in the lobby who escorted them to an exam room. Vital signs, height, and weight were measured by the DNP student who also reviewed the patient's medications and asked questions regarding the patient's health status since their last visit. At this time, the DNP student began the official annual wellness visit.

During the visit, the DNP student screened the patient for food insecurities utilizing the modified Huger Vital Sign Questionnaire $^{TM}$ (Hager et al., 2010). This questionnaire consisted of eight questions designed to identify food insecurity. Questions 1-5 on the questionnaire were scored on a Likert scale; the higher the score on questions 1-5, the higher chance the patient may be experiencing a food insecurity. If the score indicated any potential food insecurity, the DNP student discussed the answers with the patient to better understand their situation. Questions such as "tell me more" or "can you expand on that" were utilized to better understand what exactly the root cause of their food insecurity was, how long they have been facing the food insecurity, and how has been impacting their life. These questions allowed the DNP student to then work with

the patient and advise them on options available to aid in their food insecurity and agree on a mutually defined health plan.

After completion of the questionnaire and follow-up questions, the patient was asked if they had any additional concerns regarding their diet or on their answers to the screening tool. The patient was asked if they were interested in obtaining information on community resources that were available to potentially aid with their health and nutrition. In addition, the patient was also questioned if they would participate in a semi-structured interview three to four weeks following their wellness exam to discuss the screening process, if they have utilized any of the community resources provided to them, which resources they found most helpful, and if their health has improved since the implementation of the intervention.

The Hunger Vital Sign questionnaire $^{TM}$ was completed on paper by the DNP student, and was uploaded into the patients EHR following their wellness exam by the MAs at the end of the clinic day. Patient name and phone numbers were collected by the DNP student during the wellness exam only if the patient agreed to participate in a semi-structured interview following their appointment. Refer to Figure 2 for the Hunger Vital Sign Questionnaire.

**Models/Framework for Implementation**

The Plan-Do-Study-Act (PDSA) Cycle guided this DNP project (Institute for Healthcare Improvement [IHI], 2021). The healthcare clinic utilized this framework once the set aim had been identified among the key stakeholders and developed measures were determined to decide whether a change can lead to practice improvement (IHI, 2021). Often labeled as a "shorthand for testing a change" the PDSA cycle implements a project plan, performs the actual implementation, observes the results, and acts on what was learned (IHI, 2021, para 1). In an attempt to improve population health, routine screening for food insecurities was incorporated

into yearly wellness exams within the designated rural primary care clinic. The PDSA cycle was selected for this quality improvement project as it allows for the trialing of screening for SDOH food insecurity and observing the results before offering the opportunity to make changes based on what was learned in order to make improvements for future success and sustainability (IHI, 2021). Refer to Figure 3 for a chart representation of the PDSA cycle.

**Project Measures**

Measures for this quality improvement project included patient specific data (age range, gender), patient name and phone number (if verbal consent), community resources recommended and accessed by patients, and staff knowledge of SDOH components and their readiness for a workflow change. Gauging the clinic's willingness for change and the staff's perception of SDOH components was a critical step in determining the viability of the screening questionnaire within the clinical setting. Data gathering of patient specific information helped to understand which gender and population age group may be facing higher rates of food insecurity within the community. This also helped explain any trends in community resources offered to food insecure patients and which resources were actually accessed by the patients. Z-codes were also included as a measure to identify common themes present among patients with unmet social needs. The data was collected from the patient, their EHR, and through semi-structured interviews.

**Data Collection and Analysis**

Data collection took place between January 01, 2022 and February 28, 2022. Percentage report comparisons were completed to summarize quantitative data to describe the sample. This data was stored on an Excel spreadsheet on an encrypted flash drive kept within a locked drawer within the clinic. Z-codes were also collected, and related to which unmet social needs were present among the food insecure patient; the z-codes were reflective of the type of community

resources provided to the patient in response to their unmet social need. Semi-structured staff interviews were completed pre-and post-implementation, and post-implementation for patients, to analyze any identified themes among the question answers. These interviews consisted of open-ended questions and follow-up statements.

### Ethical Considerations

The Grand Valley State University Institutional Review Board determined that the DNP project was "not research." Patient information was protected within the data collection, and Health Insurance Portability and Accountability Act regulations were followed accordingly. This information was stored on an encrypted flash drive accessible only to the DNP student and site mentor.

## Results

### Number of Patients, Age Range, and Gender

The project was focused on a convenience sample of clinic patients who were assessed for food insecurities during their annual Wellness exam utilizing a modified form of the Hunger Vital Signs ™ questionnaire. The convenience sample was originally planned for a patient size of 35-40 patients. This number of patients was determined based upon the average number of annual wellness exams the site mentor and DNP student saw during one clinical day. This number was then multiplied over the course of the implementation period to identify a conservative number of 35-40 patients to be screened. However, only 31 patients were screened. Of the 31patients, eight were male patients and 23 were female patients. These patients were spread throughout age ranges that spanned 18-29 years (one male and one female), 30-39 years (zero males and two females), 40-49 years (two males and five females), 50-59 years (four males and eight females), 60-69 years (one male and seven females), and 70 and older (zero males or

females). Only one male patient in the 40–49-year age group screened positive on the food insecurity questionnaire; two additional male patients in the 50–59-year age range screened negative, however, the were interested in being provided with the community resources. Refer to Figure 4 for graph representation of the data collected.

**Z-Codes**

Z-codes were added to the one patient's chart who screened positive for a food insecurity. The Z-codes were tied to a specific social determinant of health that matched his unmet social need. For this patient, Z59.4 (food insecurity), Z59.6 (low income), and Z56.0 (unemployment) were added to his electronic chart. The importance of screening for at least one social determinant of health is crucial, as often times additional unmet social needs are also identified. This patient screened positive for a food insecurity, and with further discussion, was found to have a low-income and current unemployment. Being unemployed or having low income is often a driving force for why an individual may be facing a food insecurity. Therefore, although only one social need was screened, two others were also identified, signaling the importance of screening for SDOH.

**Semi-Structured Interviews**

The one patient who screened positive on the food insecurity screening and the patients who accepted the community resources participated in a semi-structured follow-up phone interview with the DNP student three or four weeks after their wellness exam. These phone interviews were conducted by the DNP student who utilized a clinic phone in a private room within the primary care setting. The semi-structured interviews reviewed the community resources offered to the patient, and assessed their overall health since utilizing the resources.

Community resources offered to the patient who screened positive were to address his unmet social needs of food insecurity, low-income, and unemployment; as a result, the patient was given resources such as food banks, local farmers markets, transportation services, and information on the Community Action Agency. This patient stated he had contacted the Community Action Agency, and has plans to utilize the local farmers markets in the future during summer months. The two patients who screened negative but accepted the community resources stated they did not utilize any of the resources at this time, but planned to keep them for future reference.

Clinic MAs also participated in semi-structured interviews pre- and post-implementation of the food insecurity questionnaire. The same questions were asked before and after implementation which identified several themes among the MAs in their responses to the semi-structured interview questions. The first theme identified among the five MAs was a lack of understanding of SDOH, how many components there are, and their impact on health. Responses to this question revealed the MAs had very little SDOH knowledge overall. Two MAs discussed that finances and environment might play a role in SDOH, but the overwhelming majority were unaware of all of the additional components included.

The MAs were also unaware of any patients in the community with a potential food insecurity, stating that they have never really considered food insecure patients in the past as this was not really an area of focus during their job requirements. Most had never screened for, or considered, food insecurities in the past despite asking patients about their overall diet. The MAs stated they never following up with additional questions if a patient reported an inappropriate or inconsistent diet. Discussions on the possible inclusion of food insecurity screening into annual wellness exam workflow patterns indicated the MAs perceived that this could be performed prior

to the provider entering the exam room as is done with other patient screenings such as the PHQ-2 or PHQ-9. The other suggestion was to have the patient fill out a self-report screening tool when checking in for their appointment as the results could then be reviewed by the medical assistant and provider.

Following the implementation of the screening tool, a brief educational session was given to the MAs who were then asked the same semi-structured interview questions prior to the implementation. There was a clear enhanced sense of the overall understanding of SDOH and the components, specifically food insecurities, between the pre- and post-implementation interviews. The MAs were engaged in the learning, and seemed willing to attempt to implement this screening tool into their daily workflow, which is imperative for sustainability of the project. Refer to Figure 5 for representation of semi-structured interviews with both patients and staff.

## Discussion

The county's food insecure percentage is 12.2% among adults, and 16.7% among adolescents and children, both of which are higher than the national average of 11.8% (The Manna Food Project, 2022). However, the food insecurity screening did not result in a high number food insecure patients. The shorter implementation timeframe may have contributed to the lower number of positive screens in the DNP project. In addition, review of project data collection results indicate discrepancies between this quality improvement project and the literature review articles that guided the project implementation.

Several of the studies in the literature were conducted in specialty offices such as Veterans clinics, college campus clinics, and in geographic areas specifically sought out by the researches due to the low education and income levels of people living in those areas; results from these areas typically showed a much higher rate of food insecure individuals. (Kopparapu

et al., 2020; O'Toole et al., 2017; Page-Reeves et al., 2016; Tong et al., 2018). The literature highlighted that food insecurities appear more prevalent among low-income populations, individuals on Medicare and Medicaid, as well as high-risk populations (ethnic minorities, veterans), as these individuals may rely on low-cost and high energy foods, leading to overconsumption of low-nutrient but high-caloric foods (Kopparapu et al., 2020; Pan et al., 2012). Although the clinic where the quality improvement project was implemented is considered "rural" there were very few ethnic differences between patients when compared to the patients screened within the literature review articles, and the clinic did not accept Medicaid patients (Page-Reeves et al., 2016). All studies included were also conducted for longer periods of time, and included larger sample sizes in contrast to this project.

## Implications for Practice

Although there were several implications for practice that potentially led to low numbers of positive screens, the actual implementation process was a success. While it was beneficial for the DNP student to pilot the intervention, this led to medical assistant concerns, as they did not have a chance to incorporate the screening tool into their daily workflow. However, after several engaging conversations with the MAs, it was apparent they were willing to work the screening tool into their daily workflows, as they brainstormed several options for sustainability. It was discovered that the process for screening for food insecurities could be successfully incorporated into daily workflow, whether completed when the medical assistant completes other necessary screenings or by reviewing a self-reported screening tool the patient would fill out independently once checking in with the front office for their wellness appointment.

The Goal Attainment Theory was utilized to help staff understand the importance of SDOH screening in relation to food insecurities, and help patients connect with community

resources. Staff were engaged, and showed true understanding of the effects food insecurity and other SDOH components play on an individual's health. Ongoing options, such as the ones discussed previously, for continued implementation of the screening tool are planned to be incorporated into the daily workflow by the office MAs.

## Limitations

While it is beneficial to consider the literature in terms of food insecurities, it is equally important to consider why the results of this project implementation did not necessarily match that of the literature. The project was piloted by the DNP student only, and while piloting the project was beneficial in many ways, it also limited the number of patients that could be screened for a food insecurity. Due to staffing changes in the office along with the consequences of the Covid-19 pandemic and time constraints, the target goal of 35-40 patients was not met. Since only three patients participated in the follow-up interviews, thematic analysis of answers could also not be conducted.

Due to the pandemic and office changes, a care coordinator was not employed during the implementation phase. The literature states how crucial this individual is in helping set up patients with community resources. Literature discussed the importance of not only screening for SDOH, but also being the one who made the referral and encouraged the patient to attend compared to only giving education or available resources (Aveyard et al., 2016).

## Conclusion

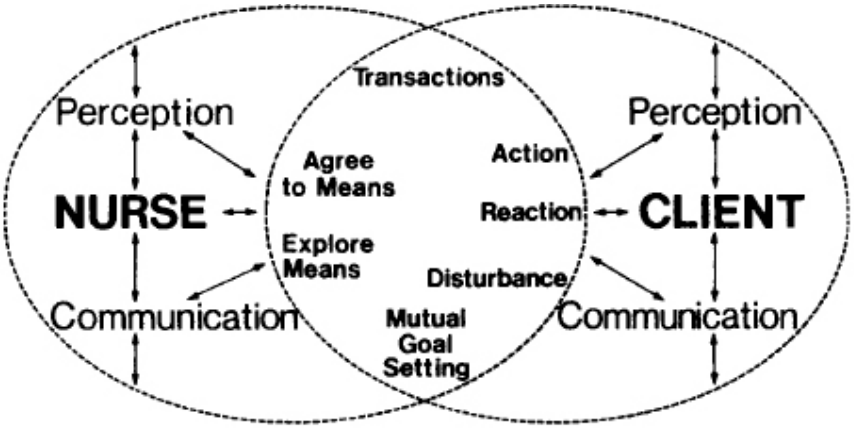
Screening for SDOH food insecurities within primary care clinics is an essential component to preventive health, as social determinants have a direct influence on the health status of an individual (Hood et al., 2016). The purpose of this project was to address the clinical question: in what ways would the addition of routine SDOH assessment for the quality metric

nutritional insecurities improve patient outcomes within the designated rural health primary care clinic located in the Midwest? Substantial evidence signified the importance SDOH screening may have on health outcomes among an individual and community. Results from this DNP project may be transferable to primary care clinics wishing to improve SDOH screenings. By implementing a standardized screening tool for food insecurities, community resources can be provided to patents who screen positive to create a personalized plan of care. Meeting non-medical needs through SDOH screening has the potential to become a fundamental aspect of primary care practice that will aid in facilitating positive health outcomes.

## Figures

**Figure 1**

*Goal Attainment Theory Concepts*




*Note:* The transaction model of Goal Attainment shown on the screen shows the interactions between the patient and nurse to meet mutually agreed upon goals to improve their health (Parker & Smith, 2010, Chapter 10).

**Figure 2**

*Hunger Vital Signs ™ Questionnaire*

**Eight-Item Questionnaire:**

1. Within the past 12-months, (I/we) worried whether (my/our) food would run out before we had the means to buy more. Was that:
   a) Often true b) Sometimes true c) Never true
2. Within the past 12-months, food (I/we) bought food just didn't last and (I/we) didn't have the means to get more. Was that:
   a) Often true b) Sometimes true c) Never true
3. Within the past 12-months, (I/we) couldn't afford to consume balanced meals:
   a) Often true b) Sometimes true c) Never true
4. Within the past 12-months, the food (I/we) consumed (ate) was:
   a) More boxed/canned or processed foods than fresh foods like fruit/vegetables
   b) An even amount of boxed/canned or processed foods and fresh foods like fruit/vegetables
   c) Primarily fresh foods like fruit/vegetables
5. Within the past 12-months, the amount of fresh fruit and vegetables (I/we) consumed (ate) was:
   a) Less than one day per week
   b) Between 2-4 days per week
   c) Greater than 4 days per week
6. Is there anything in addition you would like to discuss or add to what we have talked about?
   a) Yes b. No
7. Would you like information regarding community resources to aid with nutrition?
   a) Yes b. No
8. May I call you in a few weeks to answer any questions you may have and briefly discuss if you are utilizing the community resources discussed at this visit?
   a) Yes b. No

Likert Scale Scoring:

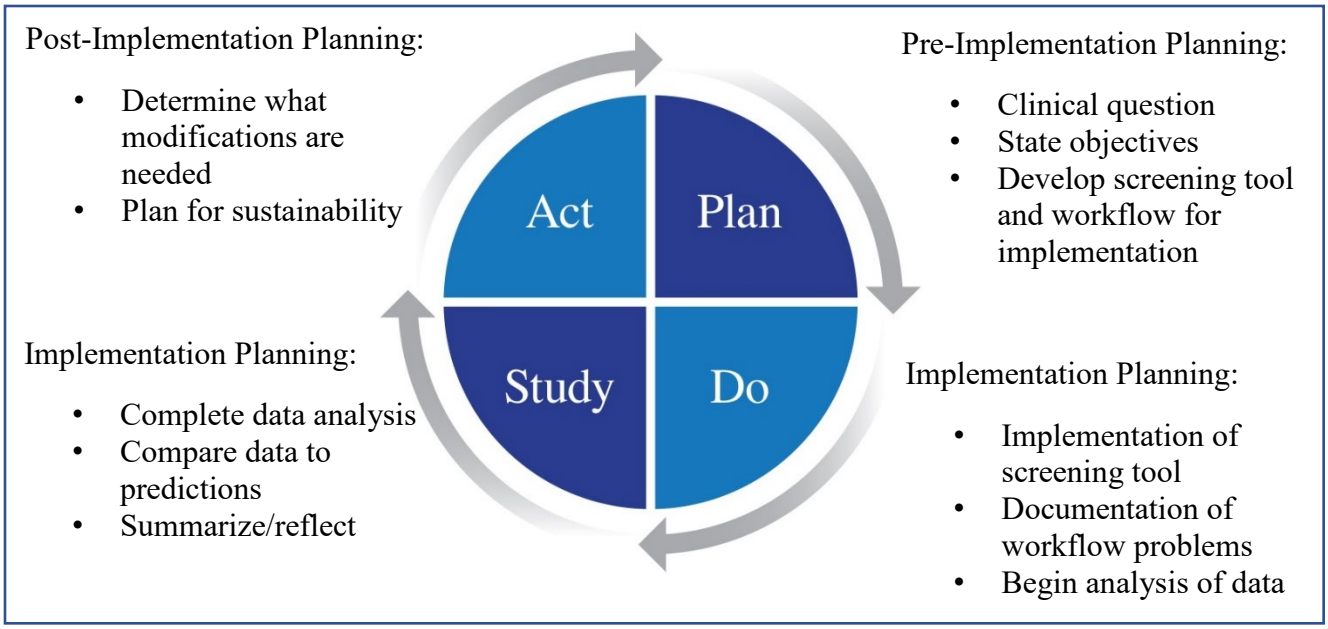
- If patient answers (A) to any of the questions 1-5, patient receives a score of 2.
- If patient answers (B) to any of the questions 1-5, patient receives a score of 1.
- If patient answers (C) to any of the questions 1-5, patient receives a score of 0.

The higher the score on questions 1-5, the higher chance the patient may be experiencing, or is at a higher risk, for a food insecurity.

*Note:* The modified Hunger Vital Signs ™ Questionnaire is depicted outlining the questions asked to each adult patient presenting for their annual wellness exam (Hager et al., 2010).

**Figure 3**

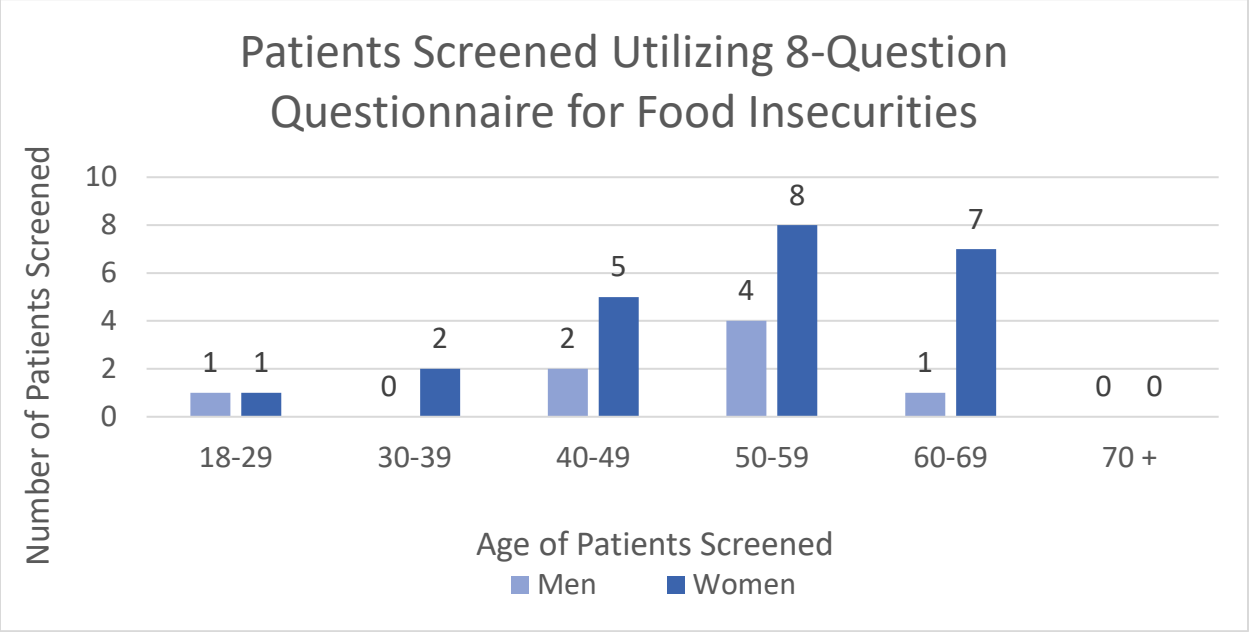
*PDSA Cycle*

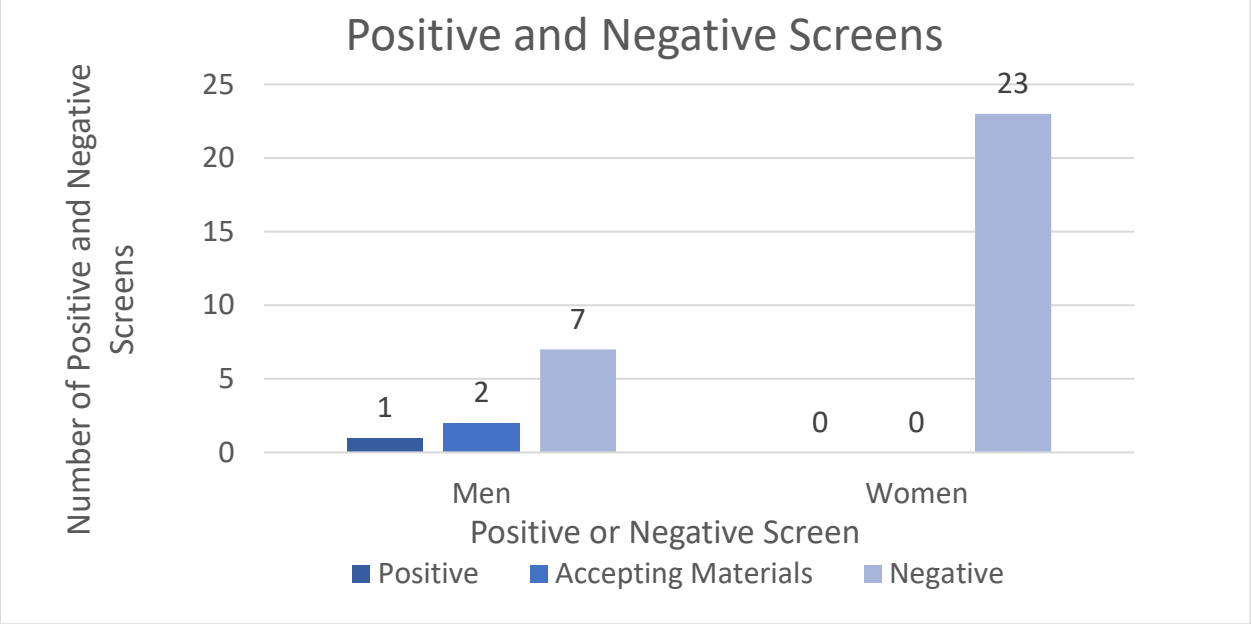



*Note:* The PDSA Cycle utliized within the quality improvement project is depected to help guide and inform the impelemntation process (Institute for Healthcare Improvement, 2021).

**Figure 4**

*Patient Specific Data Included in Screening Process*




*Note:* The above figures display the number of patients, their age category, and gender screened for a food insecurity within the quality improvement project.

**Figure 5**

*Semi-Structured Interviews Among Patients and Staff*

**Patients**:

1. Have you been able to use the _____ to help with your food insecurity?
2. Was the _____ helpful?
3. What are your thoughts about your health since using _____?
4. Do you have any questions or concerns about your food needs?

Follow-up Questions:

Tell me more about that?
Can you give an example to help me understand?
Reflecting back on the patient "so what I hear you say is…"

**Staff**:

1. How familiar are you with the social determinants of health (SDOH) and their impact on the health of patients?
2. What are your views on food insecurities within our community? Tell me about the food insecurities you have seen among our patient population?
3. What are your thoughts on how we can better integrate screening for food insecurities into the workflow?

Follow-up Questions:

Tell me more about that?
Can you expand on what you are describing?
Reflect back on what is said, "so what I hear you saying is…"

*Note:* Semi-structured interviews conducted with patients and staff to identify present themes associated with each answer.

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# “Oral”

# Defense

# Presentation”

# Addressing Food Insecurity and Obesity Within a Rural Primary Care Setting

Alec Tuchowski

DNP Project Final Defense

2022, April 13


Grand Valley State University
Kirkhof College of Nursing

# Acknowledgements

Faculty Advisors:

Dr. Marie VanderKooi, DNP, MSN, RN-BC

Dr. Joy Turner Washburn, EdD, RN, WHNP-BC

Site Mentor:

Lisa Hoffman, FNP-BC

Potential Funding:

Health Resources and Services Administration (HRSA) Grant

# Objectives for Presentation

1. Explore the clinical phenomenon of social determinants of health (SDOH) in relation to food insecurity within a family practice office and review the clinical problem.
2. Identify the organizational needs and provide a synthesis of literature to support the interventions related to SDOH screening among the patient population at the designated rural primary care clinic.
3. Describe the project design, models and frameworks, implementation strategies, and data collection.
4. Review the project results and implications to practice.
5. Discuss the Doctor of Nursing Practice (DNP) Essentials in relation to the project implementation process.
6. Obtain approval for the quality improvement project defense.

# Clinical Phenomenon

- SDOH is defined as conditions that affect how people are born, live, age, and die (Artiga & Hinton, 2018; Hood et al., 2016).
- Screening for SDOH is essential for addressing non-medical needs (Bernazzani, 2016; Leventhal, 2020).
  - Rural communities at an increased risk (Centers for Disease Control and Prevention, 2017; Warshaw, 2017).
- SDOH components relation to food insecurities are not currently screened as part of routine practice within the primary care clinic.

Social determinants can compromise up to **80%** of all factors negatively affecting an individual's daily life (Magnan, 2017).

# Clinical Phenomenon

"What good does it do to treat people and send them back to the conditions that made them sick in the first place? We need to address the conditions that make people sick." – Sir Michael Marmot

(The Kings Fund, 2017).

# Organizational Setting

- Rural primary care clinic in the Midwest
  - Two medical doctors
  - Two nurse practitioners
- Independent practice
  - Not affiliated with a larger healthcare system
- No protocol for routinely assessing SDOH components

# SWOT Analysis

| Strengths | Opportunities |
|---|---|
| • **Part of a small, independently owned private practice.**<br>• **Engaged staff and experienced leadership team.**<br>• Common team goals of improving patient outcomes, specifically among the rural community members.<br>• Flexible work atmosphere and culture that adopt new change.<br>• **Enjoy partnering with nursing schools to mentor and precept students, and support their goals and projects.**<br>• Health resources and Services Administration (HRSA) available funding. | • **Partner with community-based resources including local food pantries, housing assistance, and free transportation options.**<br>• Reimbursement opportunities regarding food insecurity and obesity screenings associated with SDOH. |
| **Weaknesses** | **Threats** |
| • **No current process in place to screen for SDOH within the organization.**<br>• **Does not accept Medicaid patients, of whom make up a large percentage of the community population.**<br>• No current social worker or case manager within the organization.<br>• Lack of staff knowledge regarding SDOH screening and the need within the community.<br>• No truly defined mission/vision statement within the organization.<br>• Buy-in from all office staff, providers, and key stakeholders.<br>• **Lack of support staff (medical assistants, referral coordinator, care plan manager)** | • **Covid-19 Pandemic.**<br>• **Larger medical corporations within the community with additional resources and funding for project implementations such as SDOH screenings.**<br>• Not part of an extensive healthcare team, leading to a decreased number of resources or workers to support patients.<br>• No current partnership with community-based resources to improve an individuals SDOH after the initial visit. |

# Literature Synthesis

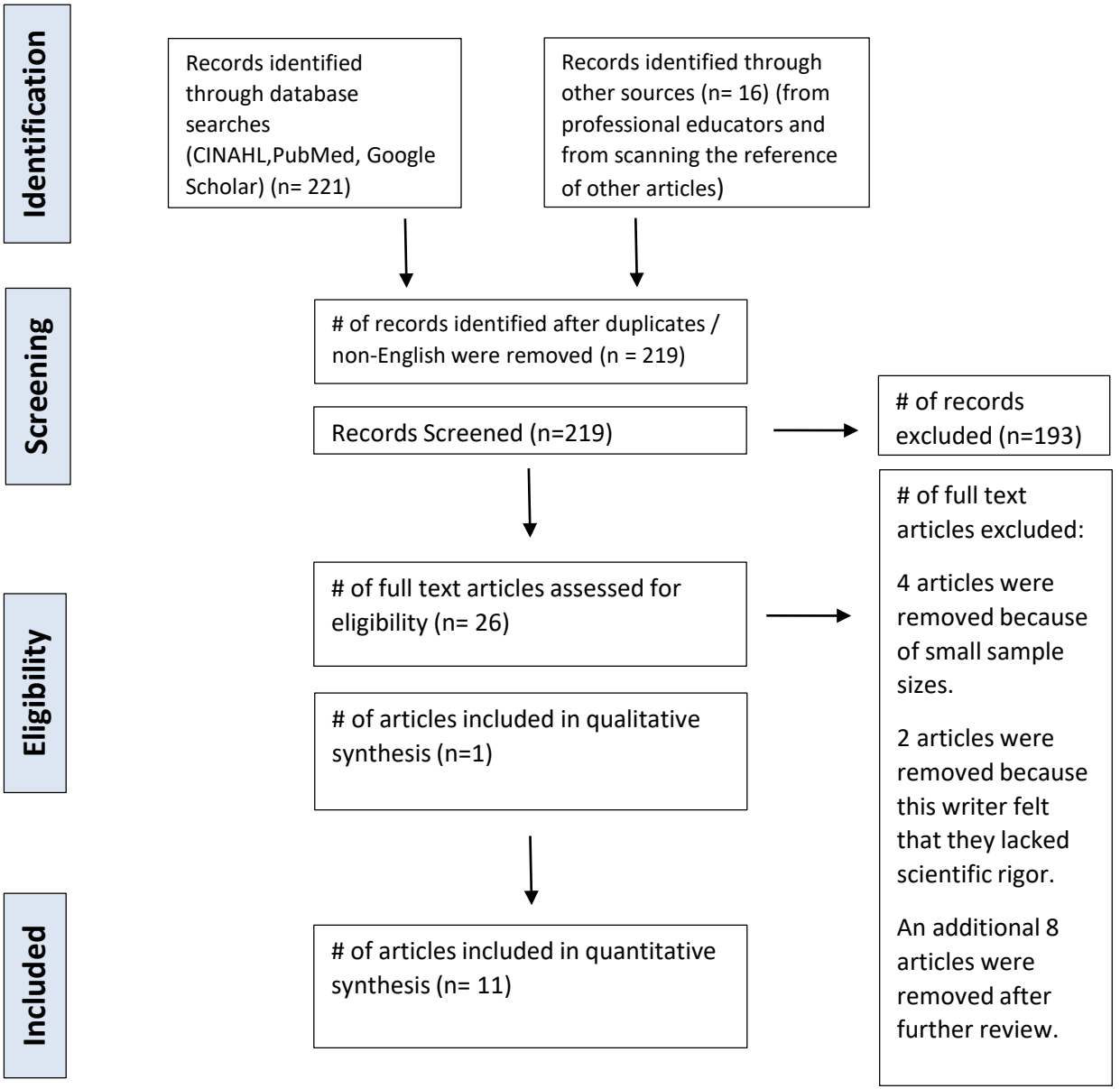
Purpose:

Analyze the most current evidence regarding SDOH screening to identify patients with food insecurities within primary care settings.

Aims:

- How does the implementation of a standardized food insecurity screening and assessment process for SDOH affect the identification and intervention of food insecure individuals within a rural health clinic?
- Does the implementation of a standardized screening and assessment process for food insecurities improve referral rates to community services aimed at nutritional support or weight management programs?

# PRISMA Figure




PRISMA diagram outlining the search strategy (Moher et al., 2015).

# Results of Literature Synthesis

## Identified Themes

1. There are a variety of implementation strategies for identifying food insecurities (Okafor et al., 2020; O'Toole et al., 2017; Page-Reeves et al., 2016; Pan et al., 2012; Sherson et al., 2014; Tong et al., 2018).
2. Proper identification of food insecurities is crucial in order to improve referral rates to community services (Aveyard et al., 2016; De Marchinis et al., 2019; Fraze et al., 2016; Friedman et al., 2018; Kopparapu et al., 2020).

Food insecurities are shown to be one of the most common unmet SDOH needs throughout the country (De Marchis et al., 2019; Pan et al., 2012; Tong et al., 2018).

# Clinical Practice Question

**How does implementation of an SDOH screening tool to identify food insecurities into annual wellness exams to potentially increase referral rates to community resources for patients within the designated rural health primary care clinic?**

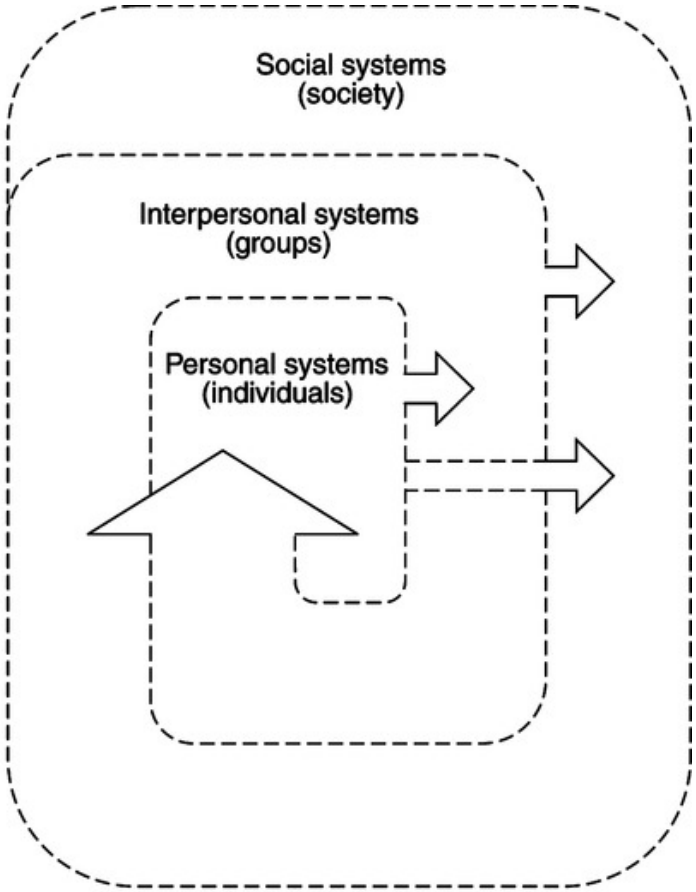
# Results of Literature Synthesis

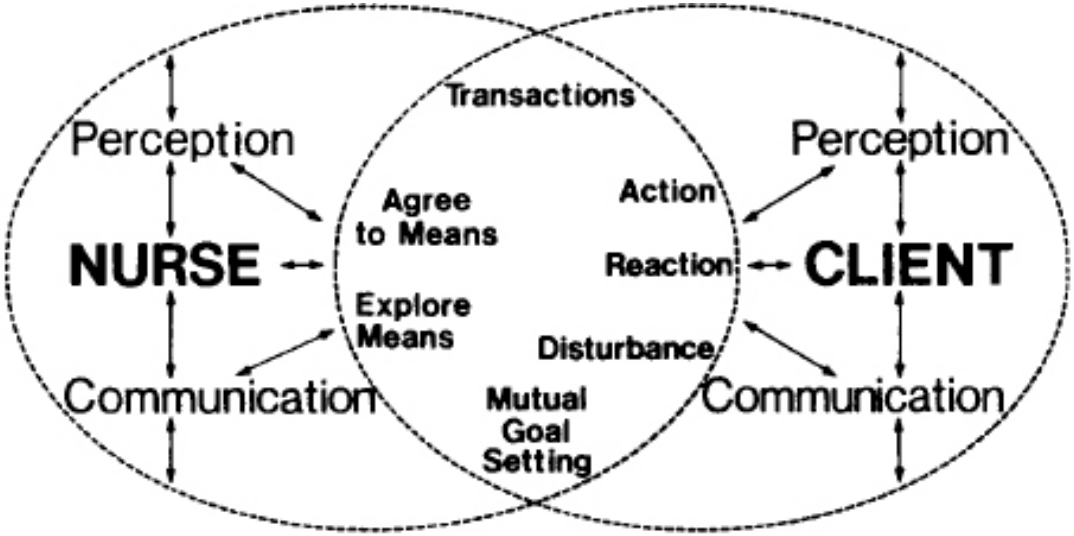
| Theme | Literature Synthesis |
| --- | --- |
| Implementation Strategies for SDOH Screening | • Individuals screened for food insecurity utilizing a **one question survey** via phone interview **identified a 19% prevalence** across 12 states with 41.9% screening positive as overweight or obese (Pan et al., 2012).<br>• Of 260 patients screened, **48.5% reported experiencing a food insecurity** over the past three months utilizing a one-question survey (O'Toole, 2017).<br>• **42% of patients screened positive** for a food insecurity after completing a **4-question screening tool** (Okafor et al., 2020).<br>• Utilization of **z-codes** within the patient's electronic health record **can help identify SDOH needs** among patients and inform providers to begin conversations regarding food insecurity (Friedman et al., 2018). |

# Results of Literature Synthesis

| Theme | Literature Synthesis |
| --- | --- |
| Screening and Patient Referrals to Community Resources | • **Ready-made referrals improve** patient compliance and improve weight loss among patients (Aveyard et al., 2016).<br>• Providing patients who screen positive for a food insecurity with a list of **food banks, local community organizations, and referral to financial assistance programs** are shown to be popular interventions among patients (De Marchis et al., 2019; Fraze et al., 2016; Friedman et al., 2018; Kopparapu et al., 2020).<br>• Providing patients with **additional support and referrals** will allow for ongoing assistance for patients as they work in developing lifestyle and behavior changes (Sherseon et al., 2014). |

# Framework/Conceptual Model for Phenomenon: Goal Attainment Theory




Transitions Model for Goal Attainment Theory (Parker & Smith, 2010, Chapter 10)

# Purpose and Project Type

**The implementation and evaluation of this quality improvement project:**

1. **Increase the identification of food insecure patients within the community.**
2. **Improve patient awareness of community resources available to help with food insecurities.**
3. **Potential increase of referral rates to community resources.**

# IRB Determination

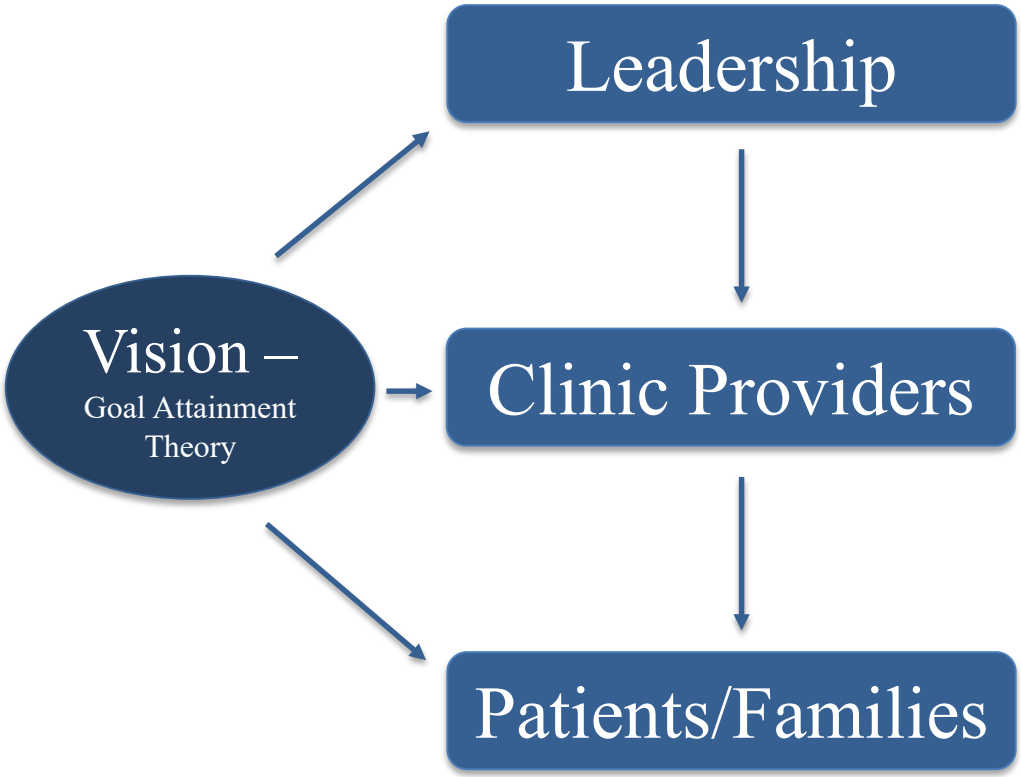
- GVSU Institutional Review Board – Quality Improvement Project (letter available upon request)
- Patient information protected, and student compliant with HIPAA regulations
- De-identified data stored on encrypted flash drive

# PROJECT PLAN

# Project Design

- Quality improvement practice project at a rural primary care clinic in Midwest.
- The clinic has a strong desire to incorporate SDOH screening for the community it serves.
- Participants:
  - Clinic patients who complete the modified Hunger Vital Sign questionnaire during annual Wellness Visit.
  - Clinic Staff:
    - Patients and DNP student clinic provider.
    - DNP Student.
  - Potential sample size 35-40 patients. (N=31)
- Evaluation Method:
  - Post-implementation evaluation of SDOH screenings.

# Key Stakeholders within Clinic




- Clinic Owners
- Clinical Site Manager
  - Vision and Purpose

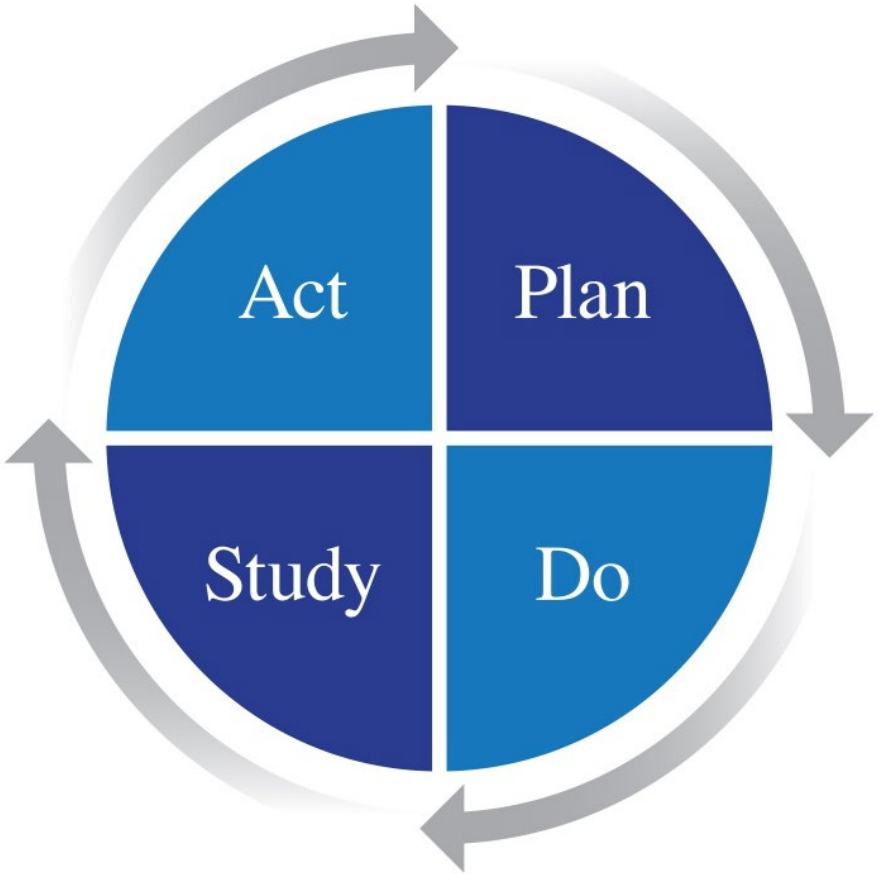
- Four Clinic Providers
- Clinical Support Staff

- Clinic Patients 18-years and Older
  - Screened During wellness Exam

# Implementation Framework:
## Model for Improvement: Plan-Do-Study-Act Cycle

Post-Implementation Planning:
- Determine what modifications are needed
- Plan for sustainability

Implementation Planning:
- Complete data analysis
- Compare data to predictions
- Summarize/reflect




Model for Improvement: Plan-Do-Study-Act (PDSA) Cycles (Institute for Healthcare Improvement, 2021).

Pre-Implementation Planning:
- Clinical question
- State objectives
- Develop screening tool and workflow for implementation

Implementation Planning:
- Implementation of screening tool
- Documentation of workflow problems
- Begin analysis of data

# Project Objectives

1. **By January 10, 2022, complete pre-implementation staff survey on social determinants of health (SDOH) to evaluate baseline knowledge and understanding of their role in patient health and provide evidence-based synopses or abstracts to office medical assistants to improve their understanding of SDOH components.**
2. **By January 10, 2022, implement the modified Hunger Vital Sign questionnaire to patients during annual Wellness exam and provide/refer patient to appropriate community resources.**
3. **By January 17, 2022, complete an initial evaluation of the implementation following a PDSA cycle that assesses the integration of the screening tool into daily workflow.**
4. **By March 04, 2022, evaluate effect of SDOH food insecurity screening on referral rate to community resources and supportive services regarding improved nutrition and weight management.**
5. **By March 14, 2022, complete post-implementation staff survey on social determinants of health to evaluate knowledge and understanding of their role in patient health.**
6. **By March 14, 2022, complete statistical analysis of post-implementation data.**
7. **By April 25, 2022, disseminate evidence-based practice project findings and sustainability plan to the project site and GVSU faculty members.**

# Implementation Strategies

| Implementation Strategy | Description | Framework Alignment |
|---|---|---|
| Conduct local need assessment (Powell et al., 2015). | Complete interviews with site mentor and clinical manager<br><br>Identification of appropriate Z-codes that may be utilized within patient charts to indicate food insecurities | PDSA: Plan<br><br>Goal Attainment Theory |
| Assess for readiness and identify barriers and facilitators (Powell et al., 2015). | Complete interviews with site mentor and clinical manager<br><br>Complete organizational assessment and SWOT analysis | PDSA: Plan<br><br>Goal Attainment Theory |
| Shadow other experts (Powell et al., 2015). | Job shadow clinic medical assistants to improve understanding of office workflow | PDSA: Plan |

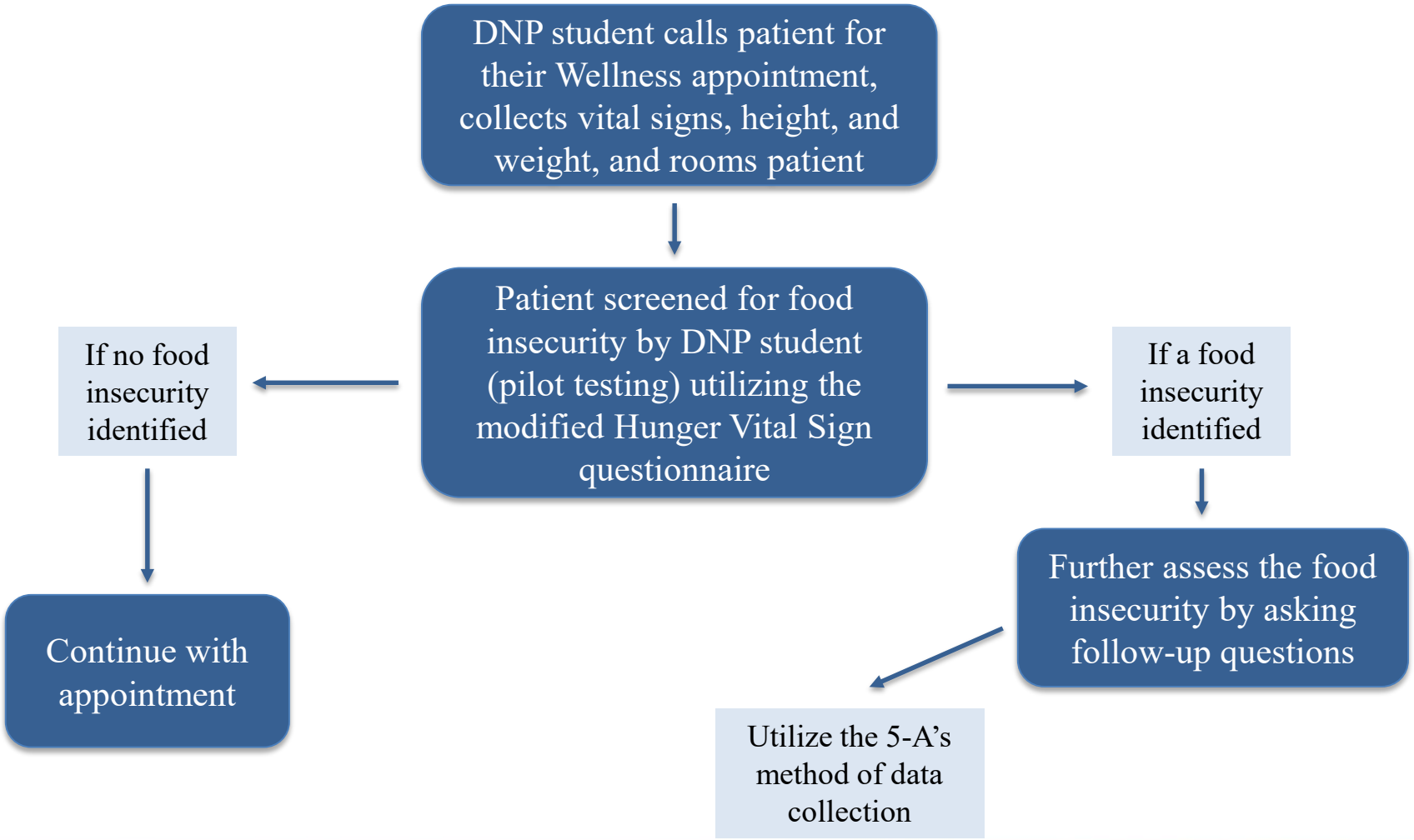
# Implementation Strategies

| Implementation Strategy | Description | Framework Alignment |
|---|---|---|
| Conduct educational meetings (Powell et al., 2015). | Educational discussions with clinical manager and site mentor regarding DNP project status and potential interruption of workflow | PDSA: Plan |
| Distribute educational materials (Powell et al., 2015). | Conduct semi-structured interviews with medical assistants regarding implementation strategy<br>• Evidence-based practice article synopses or abstracts shared and discussed with office medical assistants revolving around SDOH screening | PDSA: Plan |
| Involve patients and family members (Powell et al., 2015). | Screening implementation for food insecurities on patients presenting for annual Wellness exam<br>• If positive, community resources provided<br>• Utilization of both health system and community resources – Goal Attainment Model | PDSA: Plan<br>Do<br>Goal Attainment Theory |

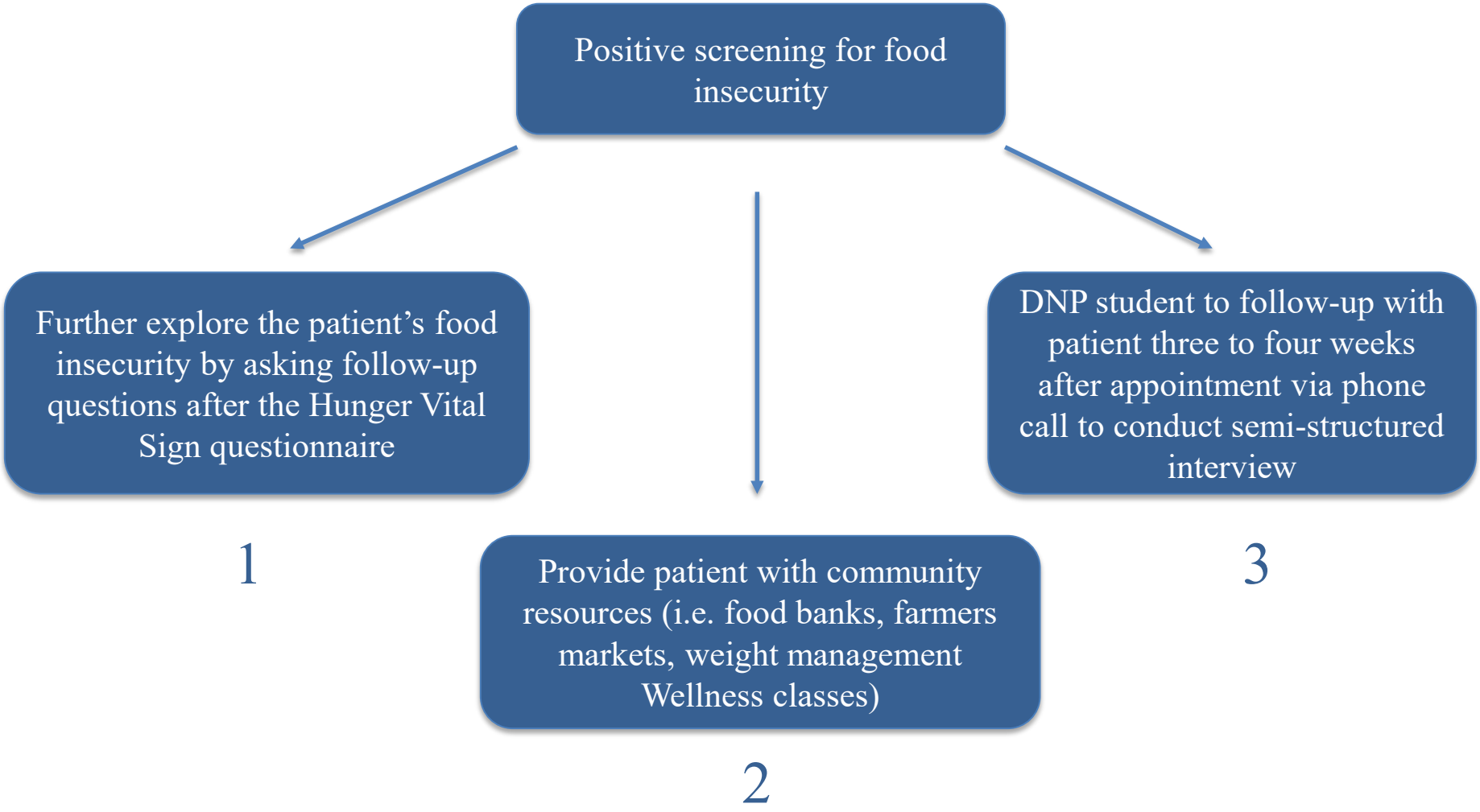
# Implementation Strategies

| Implementation Strategy | Description | Framework Alignment |
|---|---|---|
| Facilitation (Powell et al., 2015). | Collaborative evaluation of implemented interventions<br><br>Follow-up semi-structured interview with patients who give verbal/written consent<br><br>Evaluation of post-implementation data analysis | PDSA: Study<br><br>Goal Attainment Theory |
| Conduct ongoing training (Powell et al., 2015). | Discussions with clinical manger and site mentor regarding plans for sustainability and continuation of interventions<br>• Conduct post-implementation semi-structured interview with office medical assistants | PDSA: Act<br><br>Goal Attainment Theory |

# Implementation Plan



# Implementation Plan



# Intervention Methods

| Methods | | | |
|---|---|---|---|
| **Intervention** | **Participant** | **Evaluation Method** | **Data Collection** |
| Patient Interventions | Patient and Families<br>• Schedule and attend Wellness exam with provider<br>• Screen for food insecurities during appointment<br>• Educate/provide patients about community resources available<br>• Follow-through with patient via phone call to evaluate if they utilized community resources<br>• Validating plan of care and referrals by utilizing the teach-back method | • EHR documentation (z-codes)<br>• Hunger Vital Sign questionnaire (scanned into EHR)<br>• Follow-up phone call semi-structured interview | • Hunger Vital Sign Questionnaire Excel Spreadsheet<br>• Patient Phone Follow-Up Excel Spreadsheet |

# Intervention Methods

| Methods | | | |
|---|---|---|---|
| **Intervention** | **Participant** | **Evaluation Method** | **Data Collection** |
| Staff Interventions | Medical Assistant<br>• Education regarding SDOH food insecurities<br>  • Instrumental in plan for sustainability<br><br>DNP Student<br>• Discussion on results of questionnaire<br>• Offer community services to patient<br>• Monitor patient health status over time | • Pre / post comparison with semi-structured interviews<br><br>• Post-implementation evaluation | • Staff Survey Pre/Post Excel Spreadsheet<br><br>• Hunger Vital Sign Questionnaire<br><br>• Patient Phone Follow-Up Excel Spreadsheets |

# Evaluation & Measures

| Topic | Concept | How Measured | When Measured | Who Measures |
|---|---|---|---|---|
| **Implementation Strategies** | Conduct local needs assessment | Discussions with clinic staff | Pre-implementation | DNP Student<br><br>Clinical site mentor / manager |
| | Assess for readiness for change<br>• Staff perception<br>• Staff education<br>• Distribution of educational materials | Discussions with clinic staff<br>• Semi-structured interviews with staff<br><br>Thematic analysis | Pre and post-implementation | DNP Student |
| | Facilitation of change<br>• Workflow adjustments<br>• Plan for sustainability | Discussion with clinic staff and patients<br>• Semi-structured interview with staff (MA's)<br><br>Thematic analysis | Pre and post-implementation | DNP Student |

# Evaluation & Measures

| Topic | Concept | How Measured | When Measured | Who Measures |
|---|---|---|---|---|
| **Patient outcomes** | Increase rates of identified food insecurities among patient population through screening | Hunger Vital Sign questionnaire<br><br>EHR chart audit<br><br>Z-codes | Post-implementation | DNP Student |
| | Increased referral rates to community resources and supportive services<br>• Did patients utilize community resources as recommended?<br>• Number of resources patients accessed | EHR chart audit<br><br>Z-codes<br><br>Patient semi-constructed phone interview<br><br>Percentage report comparison | Post-implementation | DNP Student |
| **System Outcomes** | Use of proper Z-codes, ICD-10, and CPT codes within the EHR | EHR chart audit | Post-implementation | DNP Student |

# Analysis Plan

| Measure | Tool | Measurement Plan |
|---|---|---|
| Readiness for change<br><br>Staff knowledge | Semi-structured interviews | Thematic analysis |
| Food insecurity screening | Patient/family survey | Thematic analysis<br>Generic comments with open ended questions<br>Percentage report comparison |
| Rate of follow-up to community services | Electronic health record<br><br>Patient/family semi-structured interviews | Thematic analysis<br>Generic comments with open ended questions<br>Percentage report comparison |
| Utilization of Z-codes (Z59) to identify and track patients who screen positive | Electronic health record | Percentage report comparison |

# Ethical Considerations

Compliance with HIPAA and patient protected information.

- Utilization of encrypted flash drive that will be stored at clinic site in locked desk.

IRB determination to be completed through Grand Valley State University review board.

Post-implementation data collection, extraction, and storage of de-identified patient and clinic data.

# Budget & Resources

| Revenue | |
|---|---|
| Project Manager Time (in-kind donation) | 12,800.00 |
| Team Member Time: | |
| Site Mentor - Facility NP | 2,600.00 |
| Consultations | |
| Statistician (in-kind donation) | 112.00 |
| IRB expert | 200.00 |
| Equipment | |
| Student laptop (in-kind donation of student) | 990.00 |
| Encrypted flash-drive (in-kind donation of student) | 50.00 |
| **TOTAL INCOME** | 16,752.00 |
| | |
| **Expenses** | |
| Project Manager Time (in-kind donation) | 12,800.00 |
| Team Member Time: | |
| Site Mentor - Facility NP | 2,600.00 |
| Consultations | |
| Statistician (in0kind donation) | 112.00 |
| IRB expert | 200.00 |
| Equipment | 990.00 |
| Student laptop (in-kind donation of student) | 50.00 |
| Encrypted flash-drive (in-kind donation of student) | 16,752.00 |
| **TOTAL EXPENSES** | |
| | 0.00 |

- Key aspects relating to revenue and expenses
- Potential costs related to equipment
- Personal costs related to state average reported salaries (Salary.com, 2021)
- Handout provided for budget details

# Cost Benefit Analysis

| **Cost Mitigation** | |
|---|---|
| Average Cost per Day for Malnutrition in Hospital | **$2,000** |
| 1/3 patients enter ED malnourished | |
| Malnutrition results in prolonged hospital stays, poor healing | |
| | |
| **Budget Expenses** | |
| Net Operating Cost – Total Cost of Food Insecurity Screening in Primary Care | **$0.00** |

(Abbott Health Care, 2021)

# Timeline

| November | December | January |
|---|---|---|
| Educational discussions with clinical manager and site mentor regarding DNP project status.<br><br>Submit project proposal to advisor.<br><br>Presentation of project proposal to advisory team and GVSU faculty. | Submit application for IRB approval.<br><br>Obtain IRB approval. | Staff education.<br>• Semi-structured interviews conducted with medical assistants with provided evidence-based practice education.<br><br>Implementation of food insecurity questionnaire to patients presenting for Wellness visit.<br>• Implementation questionnaire on paper and performed by DNP student.<br>• If positive, community resources provided to patient.<br><br>PDSA cycles: assess what is going well and what may need improvement.<br><br>Attachment of Z-codes in patient's charts who screen positive for a food insecurity. |

# Timeline

| February | March | April |
|---|---|---|
| Ongoing project implementation within clinical site and data gathering.<br><br>Assess what is going well and what may need improvement.<br><br>Attachment of Z-codes in patient's charts who screen positive for a food insecurity. | Post-implementation evaluation.<br><br>Complete statistical analyses of post-implementation data.<br><br>Post-implementation staff and patient semi-structured interviews. | Prepare for project dissemination and defense.<br><br>Presentation of project findings to GVSU faculty and site mentors.<br><br>Create sustainability plan. |

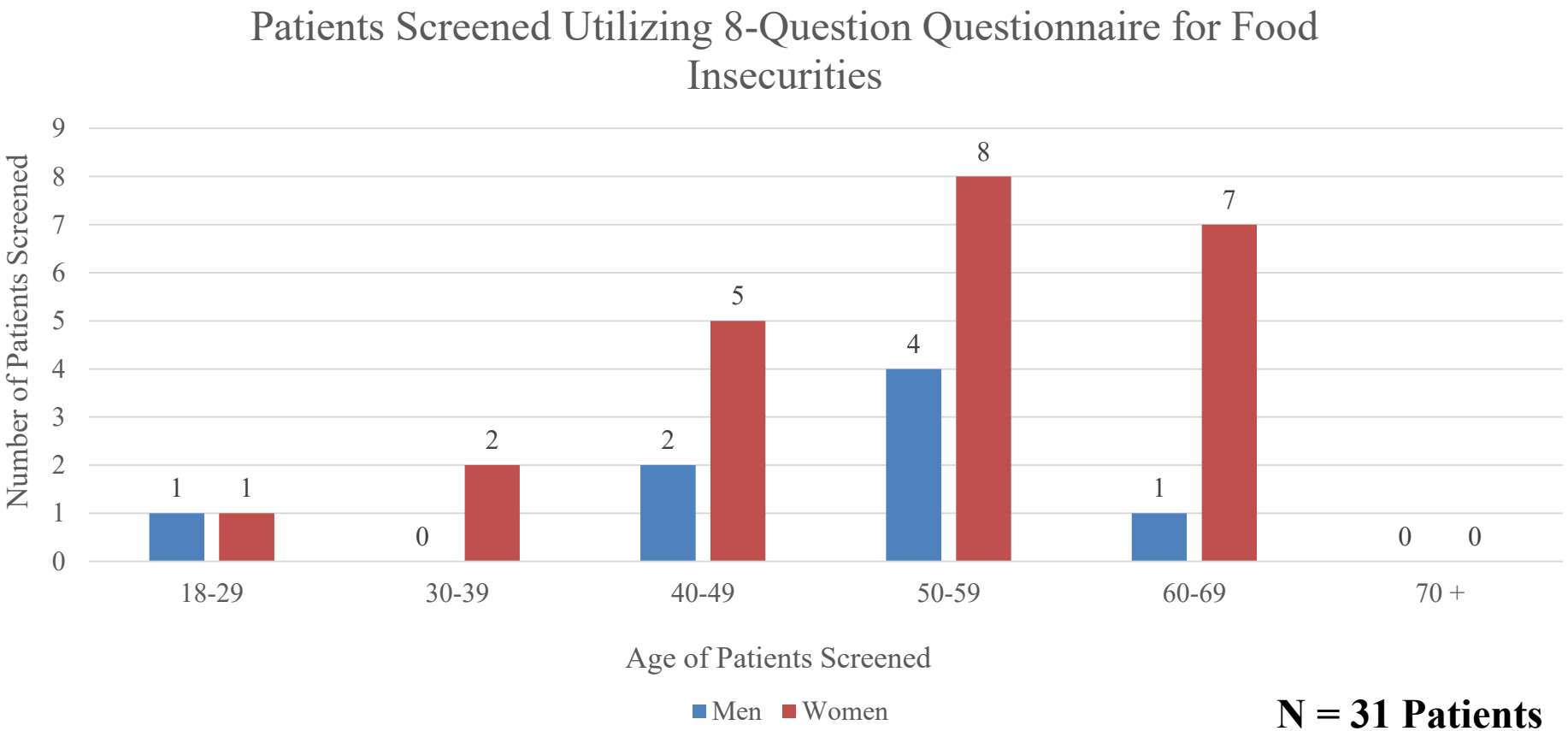
# Results: Quantitative and Qualitative Data

# Patients Screened

31 total patients screened (n = 31)

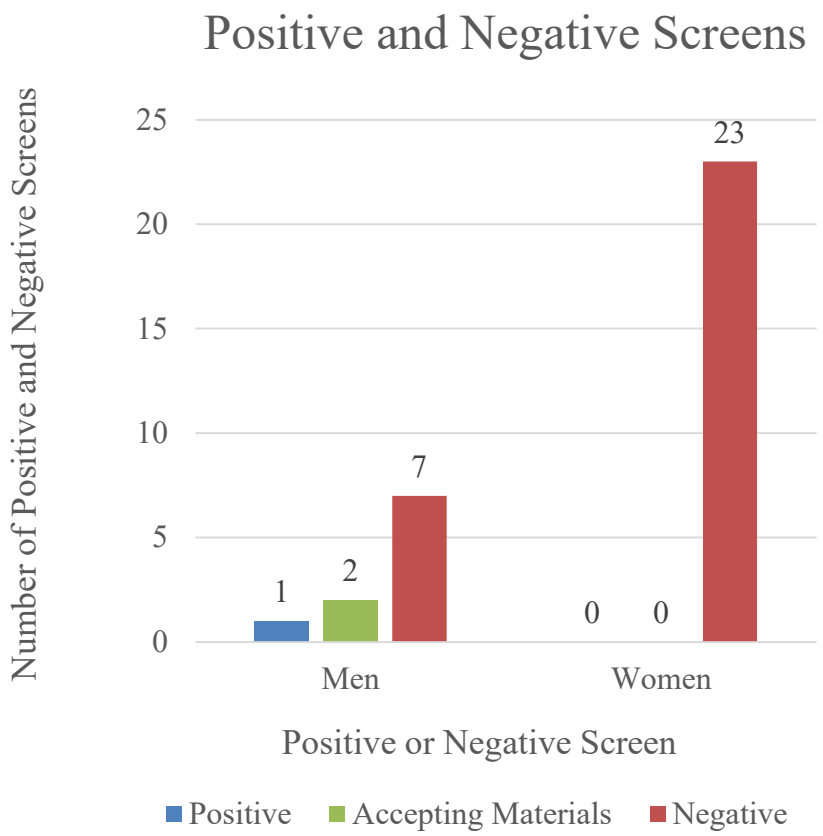
- One male patient screening positive for food insecurity
- Two male patients accepted community resources, despite screening negative
- No female patients screened positive for food insecurity

# Patients Screened




**N = 31 Patients**

# Patients Screened




One male patient screened positive.

- Age 40-49

Two male patients provided with community resources.

- Age 50-59

**N = 31 Patients**

# Patients Screened

One male patient screened positive:

- Z-code:
  - Z59.4 (inadequate food and safe drinking water)
  - Z59.6 (low-income)
  - Z56.0 (unemployment, unspecified)

Community resources provided:

- Food Banks / Farmers Markets
- Transportation
- Community Action Agency

# Qualitative Data: Patient Callback

Utilization of Community Action Agency and transportation services

- Employment opportunities
- Farmers markets

Plan to keep community resources for future use

# Qualitative Data: Staff Semi-Structured Interviews

Pre-Implementation:

1. Limited understanding of SDOH components.
2. Limited understanding of the impact food insecurity plays on community members.
3. Screen while also screening the patient for their PHQ-2.

Post-Implementation:

1. Enhanced understanding of SDOH components.
2. Improved sense of impact food insecurity plays on community members.
3. Screen while medical assistant is performing other patient specific screenings.

# Implications for Practice

- Although low number of positive screens, the process for screening was successful.
  - Engaged staff for incorporation into office workflow
  - Utilization of Goal Attainment Theory to promote positive health outcomes (Parker & Smith, 2010, Chapter 10)
  - Recognition of importance of screening tools for SDOH components
  - First PDSA Cycle completed

# Discussion

- Comparison with Literature Review
  - Specialty clinics
  - High, at risk patient populations (ethnic minorities, veterans)
  - Medicaid accepted at some sites
- Limitations for Study:
  - Piloted by DNP student during COVID-19 pandemic
  - Need for care coordinator (RN)

# Dissemination

- Final defense
- Presentation to key stakeholders at clinic
- Upload work into ScholarWorks

# Sustainability Plan

- Continued support and buy-in from clinic office staff.
  - Project champion (Powell et al., 2015).
  - Addition of staff to serve as key stakeholders (medical assistants, patient care coordinator - RN)
  - Adherence to change in workflow and process.
- Continued support and buy-in from clinic patients
  - Goal Attainment Theory Transitions Model for Goal Attainment Theory (Parker & Smith, 2010, Chapter 10).

# Conclusion

This evidence-based practice project has sought to identify food insecurities among the patient population at a rural primary care clinic.

By implementing a standardized screening tool for food insecurities, community resources can be provided to patients who screen positive to create a personalized plan of care.

# DNP Essentials

| | |
|---|---|
| **Essential I**: Scientific Underpinnings for Practice | Completed literature review |
| **Essential II**: Organizational and Systems Leadership for Quality Improvement | Completed organizational assessment and SWOT analysis |
| **Essential III**: Clinical Scholarship and Analytical Methods for EBP | Quality improvement with PDSA cycles for practice improvement |
| **Essential IV**: Information Systems / Technology and Patient Care Technology | Utilize EHR to track patient specific Z-codes |
| **Essential V**: Health Care Policy for Advocacy | Practice change within rural health clinic |
| **Essential VI**: Interprofessional Collaboration | Meetings with key stakeholders and representatives of community resources |
| **Essential VII**: Clinical Prevention and Population Health | Data collection in relation to social determinants of health among patients |
| **Essential VIII**: Advanced Nursing Practice | Demonstrated professional role of DNP |

# Appendices / Handouts

1. Data collection Excel spreadsheet
2. Modified Hunger Vital Sign questionnaire with Likert Scoring and script for further exploration of food insecurity if patient screens positive.
3. Pre/Post-implementation patient and staff surveys.
4. Community resource examples to be provided to patient.

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# Appendix A
# Data Collection

| Patient Screened | Age Range | Gender | Z-codes | Phone Number | Community Resources Recommended | Patient Verbal Consent for Phone Follow-Up | Patient Accessed the Resource |
|---|---|---|---|---|---|---|---|
| Patient 1: XXX | 18-29 | 1 | Z59.7 | xxx-xxx-xxxx | Food Banks | 1 | 1 |
| | | | | | Farmers Markets | | 2 |
| | | | | | Wellness Classes | | 1 |
| Patient 2: XXX | 30-39 | 2 | Z59.2 | xxx-xxx-xxxx | Community Health Workers | 1 | 2 |
| | | | Z59.4 | | Farmers Markets | | 2 |
| Patient 3: XXX | 40-49 | 2 | Z59.7 | xxx-xxx-xxxx | Farmers Markets | 2 | Unknown |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | Age Categories | | | | | | |
| | 18-29 | 1 = Male | | | | 1= yes | 1 = yes |
| | 30-39 | 2 = Female | | | | 2 = no | 2 = no |
| | 40-49 | 3 = other | | | | | |
| | 50-59 | | | | | | |
| | 60-69 | | | | | | |
| | 70+ | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| EHR data collection of the above information | | | | | | | |
| If patient screens positive, ask if they are interested in receiving community resources (i.e. food banks, wellness classes, nutrition councesling) | | | | | | | |
| Ask patient if they would like a follow-up phone call following their visit - ask for phone number to be given for semi-structured interview (verbal consent) | | | | | | | |
| If patient does not consent to follow-up phone interview, the patient name will be xxx and their phone number will also be xxx-xxx-xxxx to help with patient confidentiality and to de-identify as many patients as possible. | | | | | | | |

Appendix B

# Eight-Item Food Insecurity Questionnaire

## Eight-Item Questionnaire:

1. Within the past 12-months, (I/we) worried whether (my/our) food would run out before we had the means to buy more. Was that:
   a) Often true b) Sometimes true c) Never true

2. Within the past 12-months, food (I/we) bought food just didn't last and (I/we) didn't have the means to get more. Was that:
   a) Often true b) Sometimes true c) Never true

3. Within the past 12-months, (I/we) couldn't afford to consume balanced meals:
   a) Often true b) Sometimes true c) Never true

4. Within the past 12-months, the food (I/we) consumed (ate) was:
   a) More boxed/canned or processed foods than fresh foods like fruit/vegetables
   b) An even amount of boxed/canned or processed foods and fresh foods like fruit/vegetables
   c) Primarily fresh foods like fruit/vegetables

Appendix B (continued)

# Eight-Item Food Insecurity Questionnaire

## Eight-Item Questionnaire:

5. Within the past 12-months, the amount of fresh fruit and vegetables (I/we) consumed (ate) was:
   a. Less than one day per week
   b. Between 2-4 days per week
   c. Greater than 4 days per week

6. Is there anything in addition you would like to discuss or add to what we have talked about?
   a. Yes b. No

7. Would you like information regarding community resources to aid with nutrition?
   a. Yes b. No

8. May I call you in a few weeks to answer any questions you may have and briefly discuss if you are utilizing the community resources discussed at this visit?
   a. Yes b. No

Appendix C

# Post-Implementation Patient Semi-Structured Interviews

"Hi (patient name), this is Alec Tuchowski, a nurse practitioner student with Grand Valley State University working with (preceptor name) at (practice name). We met a few weeks ago for your annual wellness visit, and I am calling to check-in as you consented to participate in a follow-up phone interview regarding the food insecurity we discussed."

1. Have you been able to use the _____ to help with your food insecurity?
   Food banks? Wellness center? Social work? Farmers markets?
2. Was the _____ helpful?
   Can you tell me more about that?
3. What are your thoughts about your health since using _____?
4. Do you have any questions or concerns about your food needs?

Follow-up Questions:

- Tell me more about that?
- Can you give an example to help me understand?
- Reflecting back on the patient "so what I hear you say is…"

Appendix D

# Pre / Post-Implementation Staff Surveys

1. How familiar are you with the social determinants of health (SDOH) and their impact on the health of patients?
2. What are your views on food insecurities within our community? Tell me about the food insecurities you have seen among our patient population?
3. What are your thoughts on how we can better integrate screening for food insecurities into the workflow?

Follow-up Questions:

- Tell me more about that?
- Can you expand on what you are describing?
- Reflect back on what is said, "so what I hear you saying is…"

Appendix E

# Community Resources Provided

Local Food Banks

Local Farmers Markets

Local Transportation Services

Nutrition / Fitness Services

Health Services

- Community Action Agencies
- Councils for Elderly