

FOOD INSECURITY IN OLDER ADULTS WITH CV DISEASE

Food Insecurity Screening Among Hospitalized Older Adults with Cardiovascular Disease

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Abstract

Objective: To implement a food insecurity (FI) screening process using the HVS™ for adults age 60 and older on an inpatient cardiac unit. The intent was to better understand the prevalence of FI, to evaluate current nutrition resource use, and to assess for any significant relationship between resource use and FI screening result among this specific patient population.

Methods: Screenings were administered by registered nurses on the cardiac unit to any adult age 60 or older admitted to the unit. Screening forms consisted of the two-item HVS™ and a third question screening for use of nutrition resources (SNAP, MOW, and/or Food Pantry). Positive screens were provided a list of local resources for nutrition assistance.

Results: a total of 41 screenings were completed. 4 of the 41 screenings were positive for food insecurity. Only one of the 4 utilized any nutrition resources. A total of 4 individuals (3 positive, 1 negative) utilized a nutrition resource.

Conclusion: Food insecurity prevalence may be higher among hospitalized older adults than the general population. Older adults are also less likely to use nutrition assistance resources for unknown reasons. Implementing routine screenings in an acute care setting could improve identification and subsequent intervention in food insecure older adults.

Keywords: food insecurity, nutrition screening

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Food insecurity (FI) is defined by the United States Department of Agriculture Economic Research Service (USDA-ERS) as "...the limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways" (2020). Food insecurity can be chronic, cyclical, or incidental in nature and is closely linked to poverty. In 2018, 35.3% of households below the official poverty line were food insecure vs 5.4% of households at or above 185% of the poverty line (Coleman-Jensen et al., 2019). According to a study using the National Health and Nutrition Examination Survey (NHANES) data from 1999-2010, individuals with food insecurity were more likely to be non-white, have less than a high-school diploma, poor, current smokers, obese, and people with diabetes (Banerjee et al., 2020). Additionally, food insecurity is associated with a plethora of adverse health outcomes, including increased risk of all-cause and cardiovascular-related mortality (Banerjee et al., 2020). Given the significant health consequences of food insecurity, providers and health care organizations are now being encouraged to incorporate food insecurity screenings into practice.

Overview

Problem Description

In 2018, 11.3% of the Omaha metro area were food insecure (Professional Research Consultants, Inc [PRC], 2018). While the prevalence of FI among the Omaha metro population closely reflects national trends, certain populations are disproportionately affected. According to a 2018 community needs assessment, 21.2% of Northeast Omaha and 15.8% of Southeast Omaha residents were FI, compared to 8.4% in Northwest and 9.7% in Southwest Omaha (PRC, 2018). There are also racial disparities in the Omaha metro, with FI prevalence of 26.6% among black respondents, 24.6% among Hispanic respondents, 18.8% other, and only 8.3% of white respondents (PRC, 2018).

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FI is associated with significantly worse health outcomes and excess medical expenditures. Individuals who are food insecure have a 46% higher probability of all-cause mortality, and a 75% higher probability of cardiovascular mortality, even after accounting for comorbid conditions (Banerjee et al., 2020). In 2016, additional health care costs associated with FI in the state of Nebraska was estimated to be approximately \$258 million. Adults experiencing FI in the United States accrue on average an additional \$1,834 in annual health costs compared to their food secure counterparts (Berkowitz et al., 2016).

In 2018, approximately 4.4% of seniors in Nebraska were food insecure (Hubbert, 2020). Although food insecurity prevalence is lower among older adults, this population faces unique challenges. Food insecure older adults are more likely to engage in cost-related medication non-adherence (CRN) (Caouette et al., 2020). This is especially concerning among older adults with cardiovascular disease, which is often managed through specific dietary requirements and pharmacotherapy, without which, decompensation and subsequent hospitalization may occur. Seniors with marginal food insecurity have limitations in their abilities to complete activities of daily living (ADL; indicates functional status) equivalent to being 14 years older (Gunderson & Zilliak, 2015). Additionally, in 2015, only 32% of eligible adults over the age of 60 living in Nebraska were enrolled in SNAP, which means they may benefit from food insecurity screening and referrals (Food Research and Action Center [FRAC], 2019).

The significant effect on health outcomes among older adults as well as this population's underutilization of available resources make adults over the age of 60 a priority for research and intervention. Many hospitals and clinics are now implementing food insecurity screenings into practice.

This project sought to answer the following question: Does implementation of a food insecurity screening process for adults over the age of 60 admitted to the cardiac unit at a Midwest hospital result

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in improved identification of food insecure individuals and increased provision of information on and/or referrals to community resources over the course of 60 days?

One of the outcomes was evaluating the number of positive screens after implementing use of a FI screening tool in adults over the age of 60 admitted to an inpatient cardiac unit. A second outcome was to evaluate the percentage of individuals with positive screens who were provided additional information or social work assistance regarding access to nutrition resources. Lastly, a third outcome assessed utilization of nutrition resources (SNAP, Meals on Wheels, and/or food pantries) and whether utilization was associated with positive or negative FI screening results.

Available Knowledge

(Population)FI in Older Adults

While prevalence of FI tends to decrease with age, older adults have unique health challenges, which may predispose them to more severe health consequences when confronted with food insecurity. According to data from a national sample, food insecure seniors are 71% more likely to have congestive heart failure and 64% more likely to have experienced a heart attack when compared to their food secure counterparts (Ziliak & Gundersen, 2021). Management of cardiovascular disease, especially heart failure, is highly contingent on adherence to a low-sodium diet and extensive pharmacotherapy, without which, decompensation and subsequent hospitalization may occur. Food insecure older adults are more likely to engage in cost-related medication non-adherence (CRN) (Caouette et al., 2020). Diet is another key component in the management of cardiovascular disease, however, older adults experiencing FI score significantly lower on three different validated measures of diet quality than their food secure counterparts (Healthy Eating Index, Alternate Healthy Eating Index, and Mediterranean Diet Score) according to a study by Leung & Wolfson (2021).

The health consequences extend beyond management of cardiovascular disease. Seniors with marginal food insecurity have limitations in their abilities to complete activities of daily living (ADL;

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indicates functional status) equivalent to being 14 years older (Gunderson & Ziliak, 2015). They are also more likely to report being in fair-to-poor health and to have depression (Ziliak & Gundersen, 2021).

Additionally, in 2015, only 32% of eligible adults over the age of 60 living in Nebraska were enrolled in SNAP, which means they may benefit from food insecurity screening and referrals (Food Research and Action Center [FRAC], 2019).

According to data from 2018, within the state of Nebraska, 5.2% of adults over the age of 60 were food insecure, and 2% had very low food security (a more severe form of food insecurity) (Ziliak & Gunderson, 2020). A cross-sectional analysis utilizing data from NHANES (a national sample) found prevalence to be far higher among those living at or below 300% of the FPL. FI prevalence among this sub-population of older adults more than doubled over the course of a decade, from 5.5% in 2007 to 12.4% in 2016 (Leung & Wolfson, 2021). Among older adults with a poverty-income ratio 130% FPL, approximately 56% were food secure, 15% had marginal food security, and 29% were food insecure (Leung & Wolfson, 2021). In comparison, those whose poverty income ratio was 131-300% FPL, where approximately 80% were food secure, 9% were marginally food secure, and 11% were food insecure (Leung & Wolfson, 2021).

(Intervention) Screening for FI: The Hunger Vital Sign

Although FI is clearly linked to poverty, FI can be brought on by sudden life changes as well, thus systematic screening is recommended, rather than targeted. One study conducted in two neighborhoods in urban Midwest areas, identified as primarily low-income and having low access to nutritious foods, found a significant increase in FI prevalence among adults having reported a significant life change within the past year (i.e. death of a loved, major illness, and job loss) (Banks et al., 2021). Thus, screening is generally recommended to be done universally, rather than targeting specific subpopulations.

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The Hunger Vital Sign is perhaps one of the most commonly used food insecurity screening tools in health care settings. The HVS™ is a highly validated tool, and with only 2 questions, can be easily incorporated into the workflow of acute care settings. While the HVS™ focuses primarily on financial barriers to nutrition, King and colleagues (2019) piloted a tool specifically for use in older adults, which addresses a variety of barriers to nutrition access. The FI tool (FIT) addresses potential barriers such as transportation, physical ability to shop for and prepare meals, financial limitations, and whether they participate in a food delivery of assistance program. In the study by King et al. (2019), screening utilizing FIT was performed by clinicians. There are no other studies utilizing FIT at this time, thus there is limited evidence surrounding its use and applicability in current practice.

One of the primary reasons for focusing on older adults is that there is significant underutilization of SNAP. One recent study screened older adults (60+) in an emergency room for FI utilizing the HVS™, in addition to screening for other health-related social needs (Aylward et al., 2021). This study not only successfully identified food insecure seniors in an acute care setting, but also found that older adults were overall receptive to the screening and referral process and were interested in learning more about a variety of resources for FI and other health-related social needs (Aylward et al., 2021).

(Comparison) Reasons for not screening or Lack of screening

According to a cross-sectional analysis of the 2017-2018 National Survey of Healthcare Organizations and Systems, only 29.6% of clinics and 39.8% of hospitals reported screening for food insecurity (Fraze et al., 2019). A small qualitative survey of primary care providers across several different regions in the United States assessed their knowledge and thoughts on screening for food insecurity among adults 60 and older (Pooler et al., 2018). While nearly all providers felt it was important to screen for food insecurity and recognized the health implications, many cited lack of time and lack of appropriate resources and support for those who screened positive for food insecurity as

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perceived barriers in implementing this practice (Pooler et al., 2018). Many providers did not feel confident in their ability to address food insecurity in their patients, and thus avoided asking (Pooler et al., 2018).

Outcomes of FI Screenings and Interventions in Healthcare Settings

Prior food insecurity research heavily focused on the pediatric population. However, older adults are quickly becoming a target for food insecurity research given the higher incidence of comorbid medical conditions and their continual underutilization of resources such as SNAP. Recent research indicates that older adults are receptive to food insecurity screening and face a variety of barriers in terms of access to nutrition (Aylwayrd et al., 2021; King et al., 2019).

One of the greatest challenges for healthcare providers and organizations is effectively addressing food insecurity once it is identified. While screening is being encouraged, there is limited research on referral processes and outcomes. This is in part due to the challenges of referral tracking between community organization systems and provider organizations (Hoyt Stenmark et al., 2018). There is also limited research regarding alternative healthcare-based food insecurity interventions. In a systematic review of interventions addressing food insecurity, 17 of the 23 studies evaluated were deemed low or very low quality, and the remaining 6 were deemed of moderate quality (De Marchis et al., 2019).

Kaiser Permanente Colorado piloted a food insecurity screening and referral program at two pediatric clinics beginning in 2011, utilizing the Hunger Vital Sign (Hoyt Stenmark et al., 2018). A key finding from this study was the importance of facilitating referrals. This pilot found a drastic increase in resource utilization when the clinic made the referral for individuals, as opposed to providing the individuals with the hotline number (Hoyt Stenmark et al., 2018). The number of food insecure individuals who spoke with Hunger Free Colorado (HFC) hotline navigators increased from 5% to 75% (Hoyt Stenmark et al., 2018). More high-quality studies are needed regarding referral processes and

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outcomes, such as enrollment in programs and their impact on food insecurity and health outcomes. As cited by Hoyt Stenmark and colleagues (2018), one of the challenges to effectively evaluating food insecurity screening and referral programs is a lack of referral tracking capacity.

Supplemental Nutrition Assistance Program (SNAP)

In examining a screening and referral process, it is important to understand whether the community resources that provide nutritional assistance benefit individuals with FI. Caouette and colleagues (2020) demonstrated that food insecure seniors have an increased risk for engaging in CRN. A study by Srinivasan and Pooler (2018) demonstrated that SNAP may help counteract CRN in older adults. Srinivasan & Pooler (2018) found a protective effect of SNAP participation among older adults in regard to CRN. SNAP participants aged 60 and older were less likely to engage in CRN (Srinivasan & Pooler, 2018). Furthermore, there is significant underutilization of SNAP by older adults. Less than half of all eligible adults over the age of 60 were enrolled in SNAP in 2014, where 89% of eligible adults aged 18-59 were enrolled in SNAP (as cited in Pooler et al., 2018). According to Pooler and colleagues, this may in part be related to the fact that eligibility criteria changes after the age of 60, which previous applicants may be unaware of (2018).

Rationale

Addressing food insecurity requires an interdisciplinary approach and necessitates the knowledge and skills of social workers and dietitians, as well as partnership and collaboration with community resources. While there is significant research to support the severity and health consequences of food insecurity, screening has yet to become routine practice in most organizations. The Iowa Model was utilized for implementation of this evidence-based practice change. Key steps in the Iowa Model included ensuring the topic was an organizational priority, there was sufficient evidence to support it, and piloting the practice change.

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The Iowa Model was originally developed by nurses at the University of Iowa in the 1990s (Iowa Model Collaborative, 2017). The Iowa Model has been used in application of EBP and was useful in demonstrating not only the research supporting this practice change, but how in which it aligned with organizational values, and the development of the pilot project to evaluate whether it resulted in improved patient care.

Food insecurity is a social issue, and as evidenced by Franz and colleagues (2019), hospitals rarely address health-related social needs, at least not directly. According to Franz and colleagues (2019) this is perhaps because they do not feel it is within their responsibilities or capabilities, or some hospitals support community organizations to do so. The Iowa Model helped demonstrate the appropriateness of the project and its potential application in a hospital setting. If implementation of a food insecurity screening and referral process on the cardiac unit results in positive outcomes, the practice change can then be potentially expanded across the health system.

This capstone project was based on several assumptions drawn from available literature regarding FI among older adults. Given the significant underutilization of resources such as SNAP by older adults, it was assumed that there were gaps in knowledge among this population regarding available resources, eligibility, and how to access them. Additionally, it was assumed that food insecurity is often unnoticed or discussed between patients and providers when screening for food insecurity is not a routine practice within the health care setting. Another assumption was that food insecurity may be more prevalent among those who are acutely ill due to unexpected medical costs, possible resultant changes in functional status, necessity of diet-related interventions, and the association of FI with poor health outcomes and cardiovascular-related mortality.

Literature supported the use of FI screening, especially among older adults. Given the significant underutilization of resources such as SNAP, there appeared to be a lack of awareness of available resources. Aylward and colleagues (2019) also demonstrated that older adults can be receptive to

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screening for food insecurity, and many may have a desire for more resources and information regarding FI and other health-related social needs.

Purpose

The purpose of this capstone project was to determine whether implementation of FI screening in an inpatient cardiac unit allowed for improved identification of individuals with FI that would lead to increased referrals to nutrition resources on an inpatient cardiac unit, and to determine whether utilization of available resources for FI was associated with HVS™ screening results.

Methods

Context

This capstone project was conducted in a Midwest regional hospital located in an urban city with a population of approximately 475,000. This regional hospital is a 374-bed voluntary non-profit acute care facility. The capstone project was isolated to a 45-bed inpatient cardiac unit. According to CMS data regarding Medicare patient inpatient utilization at this hospital, 499 Medicare patients required inpatient cardiology services and 461 required cardiovascular surgery services (American Hospital Directory [AHD], 2020). The average length of stay for cardiac and cardiovascular surgery ranged from 3-4 days (AHD, 2020).

Most patients admitted to the cardiac unit were age 60 or over. Frequent reasons for admission included acute myocardial infarction, atrial fibrillation, congestive heart failure, or procedures such as heart valve repair and replacements, coronary artery bypass surgery, cardioversions, and ablations. Nurse-to-patient ratios range from 1:1- 1:4, depending on patient acuity. Nursing experience ranged from new graduates to 20 or more years.

While all individuals admitted to the cardiac unit were screened for malnutrition, there was no current food insecurity screening process in place. A positive malnutrition screen triggered a dietitian

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consult. If patients voluntarily admitted to having food insecurity or the RN felt there were unmet social needs, a social work consult was ordered. The cardiac unit had a social worker on staff that was only assigned to cardiac unit patients in this hospital.

Every weekday, nurses on this cardiac unit held interdisciplinary rounds, including (but not limited to) the unit social worker, the unit Registered Dietician, a chaplain and care coordinators to address discharge needs. Social work interventions for individuals requesting nutritional assistance included facilitating referrals to Meals on Wheels (MOW), providing paperwork for SNAP, and providing lists of local food pantries.

This intervention was discussed in detail with the cardiac unit manager and the staff development nurse for the cardiac unit, who was responsible for disseminating education on nursing procedures, policies, and practice changes, and who served as a clinical partner to this capstone student.

Intervention

Staff Education

This capstone project implemented a food insecurity screening among adults ages 60 and older, utilizing the Hunger Vital Sign™ (HVS). The HVS™ is a screening tool designed to better identify patients who screen positive for food insecurity. Prior to implementing FI screening, an educational presentation was sent via e-mail to all cardiac unit staff nurses. To enhance staff education and involvement, this capstone student provided in-person education to a group of charge nurses in a meeting. The educational presentation included a brief description of food insecurity and key health outcomes associated with food insecurity in older adults. Education material demonstrated the target population, the screening tool, the screening process, next steps for positive screens, and completed screening form collection and storage. Charge nurses who attended the in-person meeting were asked to assist in ensuring screening forms are completed on appropriate patients by inquiring whether the screening was completed with the RN after they receive a new admission or transfer.

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Screening

The project was initially intended to be 6 weeks in duration. However, due to unit circumstances and high patient volumes, the screening period was reduced to 2 weeks. Screenings were conducted from March 21, 2022, through April 4, 2022 for a total of 14 days. When a patient aged 60 or older was transferred or admitted to the cardiac unit, the assigned RN verbally administered the screening during the admission history process. The screening form consisted of three questions, the first two of which are the Hunger Vital Sign. The third question, which asked about nutrition resource utilization, was added to the screening form to further understand current use of resources for FI. This capstone student and other staff RNs were responsible for the verbal administration, documentation, and collection of the screening forms. Patient responses were recorded on the printed screening tool form accordingly. In addition to the two-question screening tool, the RN then asked the patient if they used any of the following resources including SNAP, Meals on Wheels, or food pantries, and placed a check mark where applicable.

The second half of the screening form asked the administering nurse to determine whether the screening was positive or negative based on patient responses. When a patient screened positive, the nurse placed a check mark in the “positive” box. A printed list of local resources (see Appendix D) providing nutritional assistance was stapled to the screening form. If the screening was positive (a response of “sometimes true” or often true” to either or both questions), the nurse provided the patient with the resource list. For every positive screen, the RN also ordered a social work consult through the patient EMR, and typed “positive HVS” in the comment section. The registered nurse who administered the screening then placed the completed screening form in a designated folder at the charge nurse desk. The folder was labeled “Completed HVS Screening Forms”.

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If the nurse determined that the screening was negative (a response of “never true” to both screening questions), the nurse placed a check mark in the box next to “negative”. The nurse then placed the completed screening form in the same designated folder at the charge nurse desk.

Data Collection

Both positive and negative screening forms were stored in the same folder. This capstone student collected the folder of completed screening forms for data analysis. No personal patient identifiers were on the screening forms. All data utilized for analysis was obtained from the screening forms.

Study of the Intervention

To assess the efficacy of implementing a screening, this capstone student examined the number of individuals screened, and the number of positive screens identified. The percentage of positive screens was compared to national and state trends to assess for similarities or differences.

To assess whether the desired interventions were provided for positive screens (a social work consult and providing a list of nutrition resources), each screening form had a check mark box to assess whether the resource list was provided or not, and whether a social work referral was made or not. This capstone student reviewed the de-identified screening forms to identify the number of positive and negative screens, and whether the positive screens were provided with the attached resource list and a social work consult, which were identified by check marks in the appropriate boxes.

The screening form was a single printed page, which was completed by the RN verbally screening the patient using the HVST[™] screening tool and placing a check mark in the box that reflected that patient’s response. When a patient screened positive, the RN removed the attached nutrition resource list, which was stapled to the back of the screening form, and handed it to the patient. When

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an RN completed a screening form checking all applicable boxes, the RN placed the completed screening form in a designated folder which was located at the charge nurse's desk. The screening forms did not contain any patient identifiers and were used for data analysis. Both positive and negative screening forms were utilized in data analysis. This capstone student utilized an excel document for storage and analysis of all collected data.

Analyzed data included demographic data (age and gender), HVS™ screening results, and self-reported use of any of the three nutrition resources. One of the outcomes measured was the incidence of food insecurity among the screened individuals. This was measured by number of positive screens over total number of screens. Another outcome examined was the number positive screens in which resource lists were provided, which was identified by the check mark in the appropriate box. Finally, a third outcome was examining what number of individuals screened were utilizing SNAP, Meals on Wheels, and/or food pantries for nutritional assistance.

Measures

The screening form consisted of two parts, a 2-item screening tool, and an assessment of whether the exam was positive or negative. The screening tool utilized was the Hunger Vital Sign™ (HVS), published by Hager and colleagues in 2010. Utilization of the HVS™ only required appropriate citation and did not require developer permission for use. The HVS™ consists of two questions:

“ Within the past 12 months we worried whether our food would run out before we got money to buy more.”

“ Within the past 12 months the food we bought just didn't last and we didn't have money to get more.”

A response of “often true” or “sometimes true” to either of the two questions indicated a positive screen for food insecurity. If the patient responded “never true” to both questions, the screen was considered negative. All screening forms were collected in a designated folder at the charge nurse

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desk. The Hunger Vital Sign was utilized to screen for food insecurity. After the HVS™ screening tool, a third additional question asked about current utilization of any of three nutritional resources. The bottom half of the screening form that was used in this capstone project had a box for the RN to check whether the screening was positive or negative. Below the “positive” box was an option to check “yes” or “no” as to whether the resource list was provided, and whether a social work consult was ordered. This was to help remind the RN to complete these actions for positive screens.

Makelarski and colleagues (2017) evaluated the sensitivity and specificity of the original HVS™ when compared to the 18-item Household Food Security Survey (HFSS). The 18-item HFSS, considered the golden standard of FI screening, is commonly used in research and national surveys to assess for food insecurity (Makelarski et al., 2017). The 6-item HFSS is a shortened version that has 98% sensitivity and 92% specificity when compared to the original 18-item form (as cited in Makelarski et al., 2017). The HVS™, initially published in 2010 by Hager and colleagues, has been commonly used in FI screening studies among all age levels, and has been validated for use in children and adults. With only two questions, it is ideal for use in acute care settings. Makelarski et al. (2017) found it had a 97% sensitivity and 83% specificity when compared to the 18-item HFSS. Makelarski et al. (2017) also found compared utilizing a 12-month recall with a 30-day recall for all screening tools in the study. The 12-month recall improved sensitivity with all screening forms included in their study.

Analysis

Descriptive statistics were used for data analysis. Since there was currently no screening in place for FI within the context of this project setting, positive screens were attributed to the use of a screening tool within this population. The screening form was designed to avoid any collection of identifiable patient information. Data was stored in an Excel document. Data analysis and bar charts were also performed using Excel.

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The first outcome was examining the number of positive responses to the food insecurity screening. The positivity rate was determined by looking at total number of individuals with positive screens over the total number of individuals screened. Demographic data included age and sex. Age was input as direct age, except for those over the age of 90. To protect patient privacy, anyone 90 or older was assigned the age 90 in data input. Sex included options for male or female.

This capstone student examined the completion rate for resource list being provided for positive screens. The intent is for the completion rate to be 100%. Anything lower than 100% would perhaps indicate difficulty or issues with this process and prompt further investigation. Lastly, this capstone student examined responses to the resource utilization question.

Ethical Considerations

This capstone student had completed Collaborative Institutional Training Initiative (CITI) training. Prior to beginning this project, this capstone student obtained IRB approval from the educational institution as well as the approval of the IRB at the hospital where the project took place. Approval to perform this project on the cardiac unit was given by the cardiac unit manager as well as this capstone student's clinical partner.

This capstone student was an employee within the project setting. As a registered nurse, this capstone student participated in the majority of the screening administrations. Patients could decline screenings if they desired and were informed of the purpose of the screening and this capstones role in the screening process. Patients could choose to not answer screening questions, and those who screen positive could decline the resource list.

Results

A total of 41 individual screenings were completed in the 2-week timeframe. Of the total sample 56.1% were male ($n=23$), and 43.9% ($n=18$) were female. The average age of the sample was 75.51 years. Overall, 9.76% ($n=4$) of the sample screened positive for food insecurity. One hundred percent

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($n=4$) were given the resource list as desired. Approximately 9.76% ($n=4$) of the sample reported using one of the three listed resources (SNAP, MOW, Food Pantries) and none of these used more than one resource. Of those who used additional resources, 50% ($n=2$) reported using MOW and the other 50% ($n=4$) reported using food pantries. None of the individuals screened reported using the Supplemental nutrition Assistance Program (SNAP).

Individuals who screened positive for food insecurity tended to be younger than those who screened negative, $M=67$ years and $M=77.3$ years respectively. Comparing positive rate between sexes, 16.7% ($n=3$) of females screened were positive compared to 4.3% ($n=1$) of males. Interestingly, only one of the four individuals who screened positive utilized one of the three resources. The other three did not claim to use any resources.

Discussion

Summary

Overall, 4 of the 41 individuals screened positive for food insecurity. The average age for individuals who screened positive for FI was younger than the age for individuals who screened negative for FI. Additionally, three of the four positive screens were females. There were no statistically significant relationships between sex, utilization of any nutrition resource, or specific nutrition sources with HVS™ screening results. The project was initially intended to be longer in duration, which would have allowed for a larger sample size, and more importantly, a larger number of positive screens, from which data analysis could have been more meaningful.

The positivity rate was higher than the estimated prevalence of food insecurity among this population in the state of Nebraska. This could be attributable to selection bias, as FI has been demonstrated to be related to worse health outcomes. Additionally, only one of the four positive screens utilized any nutrition resource, and none of the individuals screened utilized SNAP. It is well documented that eligible older adults underutilize SNAP. Perhaps this can be said for strengths of this

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project including cost-effectiveness. Cost-effectiveness could further be reduced by incorporating the screening into the EMR. This project also demonstrated reliability by using a consistent screening with a set of three standard questions. Lastly, versatility was another strength of this project, as it could easily be incorporated into a variety of settings within acute care settings, as well as clinics.

Interpretation

The screening effectively identified food insecure individuals. Had screening not been in place, these individuals may not have been identified as food insecure and may not have received any information regarding nutrition resources. Three of the four food insecure individuals did not use any nutrition resources. This may be related to a knowledge gap in availability and eligibility for resources. Additionally, the percentage of individuals over the age of 60 who screened positive for food insecurity was 9.76%. This is more than twice the rate of food insecurity among adults over the age of 60 in the state of Nebraska, which is estimated to be 4%. This difference could be due to the low number of screens, and the limited power of the study. However, this could also be due to screening a higher risk population, by screening individuals with significant health issues and increased health expenditures. Research has demonstrated that individuals with food insecurity have worse health outcomes, and particularly cardiovascular disease. Therefore, one would expect to have a higher prevalence of food insecurity among adults requiring hospitalization for cardiovascular related illness.

Limitations

The results of this study are limited by the small sample size and low number of positive screens. The data from this project has limited generalizability as it is within a specific population. However, considering the widespread prevalence of cardiovascular disease, it may not be too far from the general population. Unfortunately, due to the limited number of screens, it is difficult to gather any significant meaningful data regarding the relationship between resource use and HVS™ screening results.

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An additional limitation is that there is limited knowledge regarding use of the HVS™ specifically in an acute care setting among older adults. Most high-quality data is generated from national surveys such as the NHANES. The only meta-analysis available typically have to do with interventions to address FI, not to implement a screening process. After implementing a screening process, especially with use of the EMR, more meaningful data could be determined.

Another limitation of this project is that it did not include a follow-up and therefore was difficult to know whether individuals who were provided with the nutrition resource lists actually utilized or reached out to any of the organizations. The study by Hoyt-Stenmark and colleagues (2018) indicated that individuals were more likely to speak with a SNAP outreach navigator if the referral was done for the patient. Unfortunately, due to limited data-sharing platforms between these resources and hospitals, healthcare providers and researchers currently lack data in whether referrals are utilized.

In its present form, the project lacks sustainability, as data was collected on printed paper forms intended to avoid collection of PHI. Although staff compliance was not a measure in this study, the majority of screenings were administered by this capstone student, as staff frequently cited forgetting to obtain and administer the screening form. This is not unusual, as it was a short-term project, and administering screenings was not a requirement of their daily tasks. Nurses have an extensive list of tasks and responsibilities, thus, any additional task should be well-warranted streamlined if it would be incorporated into their workload. Screening administration required staff nurses to step out of their usual routine, and was not mandatory, only requested. However, the HVS™ screening tool could easily be incorporated into the nursing workflow by being added to the admission history ad-hoc form in the electronic medical record. This would not only make the project more sustainable, but also allow for more meaningful data collection. Furthermore, the use of the EMR could streamline a referral process, should screenings become routine, social work may benefit the patient by meeting with positive screens. Additionally, an automatically generated social work consult could further streamline the

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process. More data would be necessary before initiating referral component, to better understand whether more resources are needed to support the role of social work in addressing food insecurity.

Conclusion

The revised standards for quality improvement reporting excellence (SQUIRE 2.0) was used as a framework for reporting this project.

In conclusion, this project sought to address food insecurity in older adults admitted to an inpatient cardiac unit through implementation of a validated screening tool and providing information regarding nutrition resources. Though with limited screening results, there was an indication of a higher prevalence of food insecurity than in the general population. More research will be necessary to better identify prevalence among hospitalized adults, and affective interventions for addressing food insecurity in the inpatient setting. Given the significant health outcomes associated with FI and the underutilization of nutrition resources by older adults, incorporating a food insecurity screening using the HVS could help connect older adults with necessary resources, thus potentially improving diet quality and reducing CRN. This is exceptionally important in cardiovascular disease, where dietary and pharmacologic compliance is often crucial to disease management.

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