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Screening for Social Determinants of Health in Diabetic Patients Served in Primary Healthcare Centers

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Abstract

Background: Social Determinants of Health (SDOH), such as food, transportation, housing, and financial status, plays a significant role in a diabetic patient’s health care outcome. However, primary healthcare centers lack a systematic method of identifying patients with unmet social needs in order to provide appropriate referrals to community resources.

Objective: This project seeks to improve the screening methods of SDOH in a midwestern federally qualified primary healthcare center by incorporating an evidence based SDOH screening tool. This SDOH screening tool is tailored towards diabetic patients.

Method: Kotter’s Eight Step Change model guided the implementation process of this quality improvement project.

Results: There was no significant increase in the referral rates made to community services in relation to social needs, such as transportation, food, housing, and financial issues. This finding is related to (a) stakeholder’s limited time and resources to distribute the SDOH screening tool, (b) frequent modifications made to workflow, (c) patients having previous established community resources, and (d) patient-provider schedule fluctuations.

Conclusions: Although no significant increase in the referral rates to community resources were seen, this project assisted the site in assessing the limitations and strengths of implementing a SDOH screening tool. Some of the recommendations presented after the project evaluation are incorporating an annual SDOH screening tool for all patients and track patient referrals through the Electronic Health Record (EHR).

Key words: Social determinants, health outcome, diabetes, screening tools, and primary care.
Screening for Social Determinants of Health in Diabetic Patients Served in Primary Healthcare Centers

The World Health Organization (WHO) defines SDOH as "conditions in which people are born, grow, live, work, and age" (Guise et al., 2017, p.2). The concepts within SDOH can be further examined by the phenomenal framework created by WHO (Solar and Irwin, 2010; see Appendix A). When disparities in social determinants occur it is shown to have an impact on an individual and a community’s health outcomes (Guise et al., 2017). These impacts are primarily seen in underserved populations or patients with chronic illnesses, such as diabetes (Guise et al., 2017). Countries that underinvest in assessing and addressing the impact of SDOH lag in positive healthcare outcomes and have a lower mortality rate when compared to nations that invest more resources and time into SDOH (DeVoe et al., 2016). A sector in the healthcare systems that has the opportunity to significantly address SDOH is primary healthcare centers.

Primary healthcare centers reach out to over 22 million people in the United States (DeVoe et al., 2016). Among the population served in primary care offices, 93% have low income, 35% are uninsured, and 23% have limited English proficiency (Li et al., 2016). These SDOH have a direct impact on healthcare outcomes. As a result, organizations, such as WHO, Institute of Medicine (IOM), and Centers for Disease Control and Prevention (CDC) have initiated programs to guide primary healthcare centers to address SDOH, in order to enhance health care access, quality patient care, and reduce health care disparities (Adler et al., 2016; DeVoe et al., 2016; Guise et al., 2017). Therefore, primary healthcare centers should thrive when addressing this national health concern.

A key recommendation relayed to primary healthcare centers by WHO, IOM, and CDC is to implement a evidence-based SDOH screening tool (Adler et al., 2016; DeVoe et al., 2016).
This screening process consists of assessing an individual’s unmet social needs, such as: food supply, insurance coverage, financial strains, housing status, social support, language barriers, and education level (Borschuck et al., 2015; Carrasquillo et al., 2017). Furthermore, evidence based toolkits suggest that organizations should tailor SDOH screening tools based on the population served, in order to provide meaningful services to patients (Health Leads, 2016; Henkel and Schulman, 2017; LaForge et al., 2018). During this screening process, it is imperative for healthcare centers to promote partnerships with community resources, in order to adequately attend to patients’ unmet SDOH (DeVoe et al., 2016).

The linkage between addressing SDOH and improved patient health outcomes is also seen in diabetic patients (Carrasquillo et al., 2017). Domains of SDOH, such as food supply, housing issues, educational level, unreliable transportation, and financial strains, such as insurance coverage, have been associated with increased Hemoglobin A1c (HbA1c) levels and non-compliance to medications (Borschuck et al., 2015; Carrasquillo et al., 2017; Li et al., 2016; Walker et al., 2014). Addressing these SDOH is also shown to improve adherence and awareness in regards to preventative diabetic care such as vision and foot exams (Gallman et al., 2017; Lu et al., 2016).

The purpose of this Doctor of Nursing Practice (DNP) project was to implement a tailored SDOH for diabetic patients, in order to increase referral rates to appropriate community services. By addressing patient’s SDOH needs, the ultimate goal is to improve patient healthcare outcome. Based on the results of the project, there were recommendations and sustainability plans presented to the organization.
Method

Context

XXX is midwestern federally qualified primary healthcare center that works with the underserved population. To examine the current system that XXX uses to assess SDOH, an organization assessment was conducted using the Burke and Litwin model (Burke & Litwin, 1992; see Appendix B). In addition, a strength, weakness, opportunity, and threat analysis was completed (SWOT; see Appendix C). XXX’s current method of identifying and referring patients with unmet SDOH to community resources is selective. Patients’ that are eligible to be screened must have Medicare/Medicaid, reside in a selected health center county, have more than two unmet SDOH, and have at least one emergency department (ED) visit within the last 12 months. Patients who meet these criteria were referred to a local community resource. However, these narrow referral criteria left a significant amount of diabetic patients unscreened and without any guidance on how to navigate community resources (see Appendix D). This dilemma is a concern given the site’s opportunity to improve in diabetic quality measures (see Appendix E).

To bridge the gap in diabetic patient care, a tailored SDOH screening tool for all diabetic patients, regardless of residence or insurance coverage, was formulated. The tool listed domains that significantly correlate with diabetic health outcome, such as transportation, food supply, housing, health literacy, and financial issue (Borschuck et al., 2015; Carrasquillo et al., 2017; Li et al., 2016; Walker et al., 2014). To formulate this tailored screening tool, four evidence-based SDOH screening tools were appraised, in order to select the most appropriate tool for the site.

The four screening tools that were compared and contrasted were (a) Health Related Social Needs (Henkel et al., 2017), (b) Protocol for Responding to and Assisting Patient Assets
Risks and Experience (National Association of Community Health Centers, 2016), (c) Health Leads Social Needs Assessment (Health Leads, 2016), and (d) the IOM screening tool (Billioux et al., 2017; see Appendix F). For the purpose of this project, the Health Lead’s SDOH screening tool was selected because it listed the five key domains that significantly impact diabetic patients. Furthermore, in comparison the tailored SDOH screening tool has 10 questions compared to the site’s SDOH screening tool, which has 19 questions. Furthermore, the tailored screening tool was written at a fifth grade reading level to accommodate individuals with low literacy (see Appendix G). The tailored screening tool was given to all diabetic patients (Type 1, Type 2, and prediabetes) seen by the three selected healthcare providers.

**Intervention**

Kotter’s Eight-Step Change model and the Expert Recommendation for Implementation Change (ERIC) panel were used to guide the implementation of this project (Powell, 2015; Stragala, 2010; see Appendix H). A timeline for the DNP project was also outlined in congruent with Kotter’s model (see Appendix I). The stakeholders consisted of receptionists (n=3), medical assistants (n=3), a care manager (n=1), a community health worker (n=1), diabetic patients, and a site manager (n=1). The timeframe of the intervention was from January 10 through March 1, 2019. Before the implementation stage education and a workflow module was given to all the stakeholders (see Appendix J).

The workflow consisted of the receptionist distributing the screening tool to patients during patient check-in at the lobby using a verbal script explaining the reason for the SDOH screening (see Appendix K). The completed screening tool was then returned to the receptionist and stored in a folder. If patients needed additional time to complete the forms, they took the forms with them to the exam room and completed it while waiting for the provider. After
completion, the medical assistants collected the forms. The DNP student then collected all the completed forms and reviewed which patients needed assistance related to transportation, food, health literacy, housing, and financial issues. Based on the patient’s social needs, referral to a community resource or the care manager was completed. If the patient has health literacy difficulty, they were connected with a diabetic educator.

**Measures**

The number of referrals made to community resources and the rate of compliance to HbA1c and annual foot/vision exam was examined. Furthermore, EHR audits was completed in relation to patients having established resources such as community assistance, care management, and diabetic educator. Workflow barriers and facilitators were also evaluated. All patient data was protected by the site’s EHR system and established protocols.

**Analysis**

This project consisted of both quantitative and qualitative data. The quantitative data consisted of (a) the number of forms completed or declined, (b) number of patient-provider schedule change that interfered with data collection, (c) unmet SDOH that was identified by the screening tool, (d) follow up calls completed to patients that identified unmet SDOH, (e) type of community resources patients are connected with, and (f) trends of insurance coverage and ED admissions. The qualitative data included the perception of the workflow from the stakeholders and the changes made to the workflow as the project progressed.

**Ethical Consideration**

Ethical consideration was taken before beginning this project. Grand Valley State University Human Research Review Committee’s for Institutional Review Board reviewed the purpose and method of this project. The board approved this project as having ethical
methodology and passed it has a quality improvement study. (see Appendix L).

Results

Screening Tool Completion

A total of 142 diabetic patients were expected to be screened for SDOH, from January 10 through March 1, 2019 (There was no data collected between January 28 through February 1, 2019 due to a snow storm). From the anticipated 142 diabetic patients, 56 did not attend the appointment as scheduled and 25 forms were not distributed due to miscommunications or busy workload/time limitation. Therefore, 61 patients received the screening tool, of which 53 were completed and 8 were declined (see Appendix N). Within the 53 completed forms, two patients completed the forms twice in different appointments and there was no variation in their answers. Nonetheless, the completion rate for the tailored SDOH screening tool was 86.8 % and the completion rate for the original site’s SDOH screening (using a selective criteria) was 79.6 %. In other words, there was a 9 % increase (small effect) in completion rate for the tailored screening tool.

SDOH Needs Identified

From the 53 completed forms, 32 patients had no SDOH need and the remaining 19 patients reported having unmet SDOD needs (7 patients reported more than one unmet SDOD). From the 19 diabetic patients, 4 of the patients required transportation assistance, 5 have food supply issues, 9 expressed financial strain, 9 reported having low health literacy, and 2 reported housing issues (see Appendices M, N, and O).

Most of the patients screened for SDOH already had connections to community resources. From the 53 patients that completed the forms there were only three patients without insurance coverage. Based on the healthcare provider’s note these three patients were directed to
the site’s financial office for assistance. Furthermore, an estimate of 26 patients had relationships established with a care manager in terms of addressing SDOH within the past year. In addition, an estimate of 18 patients had a diabetic educator following them within the past year in order to address any health literacy barrier that can impact health outcome such as monitoring blood sugar level, medication education, and diet modifications. A detailed audit was completed in regards to the 19 patients that identified as having unmet SDOH in order to assessing if these patients already have established resources (see Appendix P).

The audit of the 19 patients reporting an unmet SDOH need revealed that most patients already had established resources in terms of assistance with transportation (n=3), food supply (n=4), housing (n=2), financial strain (n=5) and health literacy (n=4). Of the 19 patients, 5 patients reported having health literacy need and one patient reported a financial assistance need, however these patients declined assistance at this time. Patients that neither have nor declined assistance were called over the phone and community resource information was provided (n=5). Completing this audit highlighted the importance for the site to have a standard screening method to assess SDOH and charting the results from follow ups, in an established place. This intervention will help the site avoid duplication in screening and providing resource to patients that already have help.

**Workflow Process**

There were three workflow modifications made over the course of this project. From January 10 through January 21, 2019 the original workflow was piloted with the receptionists distributing the forms in the lobby to the patients. If the patients did not complete the forms in the lobby, the medical assistants collected the completed forms in the exam rooms. This workflow resulted in staff miscommunication and inconsistency of where the completed forms
were kept. The significant barrier was the work overload stated by the receptionist. The receptionist found it difficult to use a paper charting in order to track only diabetic patients in order to distribute the screening tool.

Based on these barriers and observation, a second workflow was formulated. During January 22 through February 17, 2019 the workflow was modified so that the medical assistant would screen patients in the exam room during their normal tasks of completing other screenings tools, before the provider entered. In order to help the medical assistants, the DNP student labeled the diabetic patients in the EHR system. However, this workflow was perceived hectic and time consuming for the medical assistants given the number of patients they work with and the various screenings tools and intervention they have to complete in a limited amount of time.

Based on the DNP student’s assessment of the second workflow and a follow up meeting with the medical assistants and receptionists, another workflow was formulated form February 18 through March 1, 2019. The third workflow consisted of the receptionists distributing the screening tool, however, instead of using paper tracking the DNP student used the EHR to “flag” the diabetic patients that needed to be screened. This modification to the workflow helped the receptionist to easily identify and distribute the screening tool to the selected diabetic patients. Nonetheless, by February 22 the site’s management explained that the project’s workflow was strenuous for the stakeholders. It was discussed that to sustain the SDOH screening using the diabetic-specific tool an addition assessment of staff resources and time needs to be conducted (see Appendix Q).

Discussion

The first challenge of this project was manually identifying diabetic patients scheduled in a given week. Weekly, the DNP student reviewed the patient schedule and identified the
diabetics patients scheduled to be seen in that week. This workflow process presented with two technical issues. The first issue was that the workflow process was not sustainable given the limited time and other various tasks the stakeholders are required to accomplish. The second issue was that the weekly patient schedule changed frequently leaving a significant number of patients unscreened (n=56). In order to overcome this barrier, a stakeholder needs to be delegated to complete daily audits and ensure that the patient schedule is up to date. Nonetheless, the completion rate of the tailored screening tool was higher than the original screening tool of the site. This can also be a result of the DNP student serving as a facilitator by monitoring the implementation process and auditing results.

The second finding of this project was the workflow modifications. As explained previously, the workflow process was modified three times. These modifications were based on the feedback from stakeholders and the DNP student’s evaluation. When modifying the workflow, the DNP student utilized the concept of “Build on the Change” explained in Kotter’s model (Stragalas, 2010).

Kotter explains the concept “Build on the change” as a process of building on the progress made in a project thus far (Stragalas, 2010). The DNP student used the first results from the initial workflow as a leverage to provide encouragement to stakeholders and continue progressing based on modifications made to the workflow (Stragalas, 2010). Specific strategies used from the ERIC panel are tailoring strategies to overcome barriers, providing ongoing consultation, providing technical assistance, and auditing/providing feedback (Powell, 2015). Although evidence-based implementation was used during the progression of this project, a successful workflow could not be maintained given the other competing work tasks of the
stakeholders. Therefore, further organizational assessment needs to be completed in order to present a feasible workflow to ensure success in the future.

The third finding of this project was that most patients already had connections to community resources based on their unmet SDOH. After an audit was completed, the results showed that the site has not been consistency in their utilization of SDOH screening tool and with the follow up in regards to the SDOH screening tools completed. As a result, some patients were screened multiple times or already had established community resources. This assessment leads to the recommendation that all patients should have one standard SDOH screening completed annually and documented in the EHR. Furthermore, resources and follow up that are provided should be charted in a designated location in order to avoid resources redundancy, save stakeholders’ time, and be cost efficient.

The fourth finding was the correlation seen between ED and unmet SDOH. From the 19 patients six visited the ED over the past 12 months. It is shown that poor health, low income, fluctuating insurance status, housing issues and material/social deprivation is correlated with increase ED utilization (Doran et al., 2016; Tozer et al., 2014). Based on this information, it is recommended that primary care offices pay close attention to screening and assisting unmet SDOH. Overall, addressing unmet SDOH can decrease unwarranted ED utilization, which will consequently lower healthcare cost and increase preventative healthcare awareness.

The fifth finding was patients declining assistance in regards to health literacy. Squires et al., (2012) explains health literacy skills are mediated by a various constructs such as emotions, perceived norms, motivation, self-efficacy, perceived relevance of the content, cognitive functioning, and vision/hearing issues. Most commonly, shame and stigmatization of reporting low health literacy is a significant hindrance for patients not to seek assistance from healthcare
providers (Cornett 2009; Wolf et al., 2007). To overcome this barrier healthcare providers need to pay close attention to clues indicating low health literacy (Cornett, 2009). Furthermore, it is important to maintain an environment that encourages respect, support, and rapport (Cornett, 2009).

The sixth finding was the self-report completed by patients in regards HbA1c check, vision exam, and foot exam completion (see Appendix R). Majority of patients reported being up to date with HbA1c screening. The least compliance was annual vision screening followed by annual foot exam. In this project, the impact of SDOH on HbA1c, vision exam, and foot exam was not fully examined given the barriers of completing the SDOH screening tool and the limited time period of the project. However, studies suggest that attending to unmet SDOH can help prevent complication from diabetes such as diabetic related foot ulcer or retinopathy which are often over looked as a result of unmet SDOH (Gallman et al., 2017; Lu et al., 2016). Moving forward as the site continues to grow in screening and addressing SDOH, further analysis on the impact of HbA1c, vision exam, and foot exam can be reviewed.

**Limitations**

The first limitation of this project was establishing a workflow that is feasible to all the stakeholders. Among the three healthcare providers there is variation in the process of the medical assistants completing a patient pre-visit preparation. A patient pre-visit preparation consists of the medical assistants gathering patient information and other screenings that are due for that visit. The variation of this workflow process among the medical assistants could have impacted the rate in which the patients completed the SDOH screening tool. Therefore, as a result of the staff’s competing job tasks it was difficult for them to track diabetic patients and
distribute the forms. A more feasible workflow process is having the EHR system annually flag the stakeholders when diabetic patients are due to be screened for SDOH.

The second limitation is that the site only has one care manager and community health worker. When screening for SDOH it is important to follow up if patients are receiving the assistance that they need from the community resource in order to evaluate if meaningful care is being provided. However, given the competing tasks of the care manager and community health worker they were not able to complete follow up calls. Instead the DNP student assisted in this gap in patient care.

The third limitation was using paper to chart and track progress. The screening tool was in paper format, which took time for the DNP student to manually review. Using an EHR system would enhance the efficacy and accuracy of documentation. As previously stated, using an EHR will increase the efficiency in tracking which patients have been screened and have established community resource.

**Recommendations and Sustainability**

After the completion and evaluation of the project three main recommendations were presented. The first recommendation is having a standard SDOH screening tool to be used annually for all patients in the office without any exclusion criteria. This will allow for the site to have at least one assessment of every patient’s SDOH status, which will help provide a comprehensive patient care plan. Furthermore, it will be a more feasible task for the stakeholders as opposed to tracking patients that meet only particular criteria. This initiative will also help the site meet the requirement it needs to be recognized as a Patient Medical Center Home (PMCH). By 2020, the site has a goal to meet the standard of PMCH standard by following the guide of Michigan Department of Health and Human Services (2018). Achieving PMCH standards will
help the site provide quality patient care and gain reimbursement benefits. The result of this project will be an informative gateway for the site as they aim to meet their 2020 goal.

The second recommendation is to incorporate an alerting system into the EHR. The site can use technology to alert and remind stakeholders to help patients complete a SDOH screening tool during annual health visits. Incorporating alerting system and electronic SDOH screening tool will help the stakeholder’s be efficient at their task (Foraker et al., 2015). In addition, charting in the EHR will help the staff keep track of patient information and also use the data for statistical analysis of the site standing in terms of SDOH (Foraker et al., 2015). Lastly, screening for the SDOH annually by using EHR as a facilitator will help standardized the policy/system process of distributing the SDOH screening tool to patients. This standardized system will limit the variation of workflow among the stakeholders during the patient pre-visit preparation.

The third recommendation is to create a folder within the EHR system in which the care manager and community health work can track a patient’s progress in regards to services provided to patients. One of the challenges this project encountered was tracking the type of resources the patients already have been connected to and whether the resources have been helpful. Therefore, it will be beneficial to collaborate with the information technology department to design a folder for the care manager to chart in so that the interdisciplinary team will only search in one location to assess a patient social history. This will help the site be efficient in pulling out relevant data, understanding the patient status in terms of SDOH, and also promoting follow up.

Conclusion

Addressing patients’ unmet SDOH has been shown to improve patient health outcomes and guide patient centered care, particularly in diabetic patients. The indicators measured to gauge the success of this project were referral rates made to community services based on unmet
SDOH. The projects result showed no significant increase in the referral rates made to community services as a result of barriers in the implementation process of the workflow. Other findings of this project were low report of unmet SDOH and patients already having established community resource. Some of the recommendations presented after the completion of this project are incorporating an annual screening tool for all patients with the utilization of EHR. The EHR system will also enhance the staff’s efficiency in tracking patient’s SDOH needs and completing timely follow-ups. Overall, these recommendations will help the site better understand the SDOH status of their patients in order to provider patient-centered care.
Reference


Addressing social determinants of health and health disparities. *National Academy of Medicine*, 1-16.


doi:10.1097/JAC.0000000000000221


doi:10.5888/pcd13.160193


Appendix B

Burke-Litwin Organizational Assessment Model

Appendix C

SWOT Analysis

<table>
<thead>
<tr>
<th>Strength</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The site has skilled members such as the care manager and community</td>
<td>• Uninsured patients are not eligible to be screened by the sites SDOH</td>
</tr>
<tr>
<td>health worker that can assist in referring patients to community resources.</td>
<td>screening.</td>
</tr>
<tr>
<td>• The site has a diabetic educator to help patients that have low health</td>
<td>• Patients that are eligible for referrals must have at least one ED</td>
</tr>
<tr>
<td>literacy.</td>
<td>admission over the past 12 months, have Medicare/Medicaid, and live in a</td>
</tr>
<tr>
<td>• There are technological resources to help will referral tracking in a</td>
<td>selected health center county.</td>
</tr>
<tr>
<td>systematic manner.</td>
<td>• Adequate focus on chronic illness, such as diabetes and SDOH, is not</td>
</tr>
<tr>
<td>• The site’s culture and climate is flexible and adaptable to change in practice.</td>
<td>addressed although there is a need for quality improvement in this sector.</td>
</tr>
<tr>
<td></td>
<td>• The site’s SDOH screening tools is long and is not user friendly.</td>
</tr>
<tr>
<td></td>
<td>• The site has no standard tracking system. Therefore, there can be</td>
</tr>
<tr>
<td></td>
<td>duplications of referrals.</td>
</tr>
<tr>
<td></td>
<td>• The staff has other various demanding tasks and limited time.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Collaboration can occur with external community health services to provide support to patients that are in need of transportation, food, insurance, employment, housing or legal support.</td>
<td>• The site’s initiative to screen SDOH is lead by an external funded grant. As a result the site is not allowed to make modification to their SDOH screening tool based on the organization’s weakness, needs, and work culture.</td>
</tr>
</tbody>
</table>

Table 3. SWOT Analysis of XXX
Appendix D

Referral Rate Based on Unmet SDOH using the Site’s Original Screening Tool

<table>
<thead>
<tr>
<th></th>
<th>Diabetic Patients (N=25)</th>
<th>Non-Diabetic patients (N=34)</th>
<th>SDOH Screening Tool Completed (N=59)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Risk Patients</strong>**</td>
<td>2 (2 of 25)</td>
<td>10 (10 of 34)</td>
<td>12 (12 of 59)</td>
</tr>
<tr>
<td>(These patients were referred to community resource)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Low Risk Patients</strong>**</td>
<td>19 (19 of 25)</td>
<td>16 (16 of 34)</td>
<td>35 (35 of 59)</td>
</tr>
<tr>
<td>(These patients were NOT referred to community resource)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Declined Forms</strong>**</td>
<td>4 (4 of 25)</td>
<td>8 (8 of 34)</td>
<td>12 (12 of 59)</td>
</tr>
<tr>
<td>(These patients were NOT referred to community service)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key:** **Definition of the terms High Risk Patients, Low Risk Patients, and Declined Forms**

**Low-Risk Patient**
- Patient identifies at least one SDOH need on the screening tool AND reports 1 or 0 emergency department visits within the last 12 months
- Patients is offered community resource pamphlet
- No further follow-up

**High-Risk Patient**
- Patient identifies at least one SDOH need on the screening tool AND reports 2 or more emergency department visits within the last 12 months
- Referred to community service.

**Declines**
- Patient declines
- Patient will be offered again during the next visit
- Patient not offered a screening / community referral summary
- No further follow-up takes place

Table 4. Data collected from June 11 through July 21, 2018. This table shows the number of “High Risk Patients” that qualified for referral, “Low Risk Patients” that did not qualify for referral, and patients that declined screening. Furthermore, the table shows the number of diabetic patients that qualified as “High Risk Patients” and were referred to community service.
Appendix E

Compliance in Diabetic Quality Measures

<table>
<thead>
<tr>
<th>Quality Measure Due</th>
<th>Number of Diabetic Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Number of Patients (n=593)</td>
<td></td>
</tr>
<tr>
<td>Vision Exam Due</td>
<td>310 (310 of 593)</td>
<td>52%</td>
</tr>
<tr>
<td>Foot Exam Due</td>
<td>321 (321 of 593)</td>
<td>54%</td>
</tr>
<tr>
<td>HbA1c Level Exam Due</td>
<td>201 (201 of 593)</td>
<td>34%</td>
</tr>
<tr>
<td>HbA1c &lt; 9%</td>
<td>435 (435 of 593)</td>
<td>75%</td>
</tr>
</tbody>
</table>

Table 5. Quality measures on diabetic patients that were scheduled from June 6 through July 21, 2018 (XXX, 2018). There were 593 diabetic patients scheduled to be seen between the eight healthcare providers at the site. No filters were applied when pulling this data such as age, gender, ethnicity, residency or insurance.
## Appendix F
Comparison of Four Different SDOH Screening Tool

<table>
<thead>
<tr>
<th>IOM Social Need Domains</th>
<th>Health Related Social Need Screening Tool (HSNR)</th>
<th>PRAPARE Tool</th>
<th>Health Leads Social Needs Assessment Tool (HLSNA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol use</td>
<td></td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>Race and ethnicity</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Residential address</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Tobacco use</td>
<td></td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>Median income</td>
<td></td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Financial strain</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>-Food scarcity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Housing scarcity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intimate partner violence</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Physical activity</td>
<td></td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>Social connection/isolation</td>
<td></td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Stress</td>
<td></td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>Other Optional:</td>
<td>Other Optional: Employment, health insurance,</td>
<td>Other Optional:</td>
<td>Other Optional: childcare, employment,</td>
</tr>
<tr>
<td>Transportation</td>
<td>language, seasonal or migrant farm work as main</td>
<td>transportation,</td>
<td>and transportation</td>
</tr>
<tr>
<td></td>
<td>source of income, transportation, and veteran</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>status</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix G

SDOH Screening Tool Tailored for Diabetic Patients


This tool was adopted from Heath Leads toolkit. Some content was omitted and other domains included based on evidence-based recommendations. No permission was needed to use content.
Appendix I

DNP Project Timeline

**Creating Climate for Change**

**Step 1 and 2**
- October 2018: Create Urgency by meeting with stakeholder individual to discuss project.
- November 2018: Build Coalition by collaborating with staff.

**Engaging and Enabling the Organization**

**Step 3**
- November-December 2018: Create a Vision by presenting proposal defense to stakeholders.

**Step 4-5**
- November 2018: Communicate Vision and Remove Obstacles by conducting an educational session.
- January 2019 pilot project and monitoring outcomes.

**Implementing and sustaining for change**

**Step 6-7**
- January-February 2019: Create Wins and Build on Changes by implementing project, auditing results, and proving feedback.

**Step 8**
- March 2019: Anchor the Change by reviewing results and providing recommendations.
- April 16th: Present project defense to
### Appendix J

#### Education on Workflow

<table>
<thead>
<tr>
<th>Who</th>
<th>What</th>
<th>Where</th>
<th>When</th>
<th>How</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Receptionist</strong></td>
<td>Provide SDOH screening tool to patient</td>
<td>In the lobby</td>
<td>During Patient Checking Time</td>
<td>Explain the reason the SDOH Screening Tool. Collect completed tool and pass it to the community health worker or DNP student.</td>
</tr>
<tr>
<td><strong>Medical Assistant</strong></td>
<td>If patient hasn’t completed the tool in the lobby; medical assistant will collect the tool from the patient</td>
<td>In the exam room</td>
<td>Before or after the clinical exam</td>
<td>The Medical assistant will collect the completed screening tool and pass it to the community health worker or DNP student.</td>
</tr>
<tr>
<td><strong>Community Health Worker</strong></td>
<td>Review the SDOH screening tool</td>
<td>At the site</td>
<td>During or after the clinical visit</td>
<td>Based on the completed unmet SDOH; connect with the patient and make appropriate community referral. If indicated, connect patient with care manager and diabetic educator</td>
</tr>
<tr>
<td><strong>Care Manager</strong></td>
<td>Review referral made by community health worker</td>
<td>At the site</td>
<td>During or after the clinical visit</td>
<td>Connect patient to resources such as transportation, food supply, housing or legal support.</td>
</tr>
<tr>
<td><strong>Diabetic Educator</strong></td>
<td>Review referral made by care manager or community health worker.</td>
<td>At the site or during a scheduled clinical visit</td>
<td>During or after the clinical visit</td>
<td>Conduct education in relation to HbA1c, foot exam, vision exam, nutrition, physical exercise, blood sugar checks, and medication adherence. Relay any urge rent information to healthcare provider</td>
</tr>
<tr>
<td><strong>DNP Student</strong></td>
<td>Educate and provide information related to the screening tool and workflow structure. Guide and assist in all stages of the implementation phase.</td>
<td>At the site</td>
<td>-During or after the clinical visit. -In addition, DNP student will be at site per stakeholders request.</td>
<td>Assist in distributing and collecting the completed screening tools. Aid in tracking referral rates.</td>
</tr>
<tr>
<td><strong>Site Manager</strong></td>
<td>Over look and provide feedback on workflow</td>
<td>At the site</td>
<td>As requested by the site manager</td>
<td>During bi-weekly staff meeting. Feedback can be given verbally or in a written format</td>
</tr>
</tbody>
</table>
Appendix K

Script

Introducing Screening Tool to the Patient

[Site’s name] uses this screening tool to help us better understand your social needs and connect you to available community services, based on the areas you need assistance with, in order to improve your health outcome.

By answering these seven questions, we can help you get connected to these community services that are either at a low cost or free of charge, depending on availability. The information you provide us today, using this screening tool, will be kept confidential.

Offering Community Resources

Thank you for completing the screening tool. Based on your answer, I see you identified that you need assistance with [staff will review the selected domain on the screening tool]. We would like to help you get connect to a local service that can address this social concern at a low cost or free service. Would you like us to proceed?

Patients with no Unmet-Social Needs

Thank you for completing the screening tool. It appears that you have no unmet social needs identified based on your answers. If your answers to these questions change in the near future, please contact the office and a healthcare team member will help you complete the screening tool again.

Figure 8. Script used when distributing the SDOH screening tool to diabetic patients.
Appendix L

IRB Approval Letter

DATE: October 24, 2018

TO: Marie VanderKool
FROM: HRRC
STUDY TITLE: Impact of Social Determinates of Health on Patients with Diabetes Served in a Primary Healthcare Center
REFERENCE #: 19-120-H
SUBMISSION TYPE: HRRC Research Determination Submission
ACTION: Not Research
EFFECTIVE DATE: October 24, 2018
REVIEW TYPE: Administrative Review

Thank you for your submission of materials for your planned scholarly activity. It has been determined that this project does not meet the definition of research* according to current federal regulations. The project, therefore, does not require further review and approval by the Human Research Review Committee (HRRC).

A summary of the reviewed project and determination is as follows:

The purpose of this doctoral project is to pilot an evidence-based Social Determinants of Health screening tool tailored to the diabetic patients' specific social needs that impact health outcomes, such as food supply. This is a systematic investigation designed to improve the care being provided to patients at a single health center. It is not designed to contribute to generalizable knowledge. Therefore, this project does not meet the federal definition of research and IRB oversight is not required.

An archived record of this determination form can be found in IRBManager from the Dashboard by clicking the "...xForms" link under the "My Documents & Forms" menu.

If you have any questions, please contact the Office of Research Compliance and Integrity at (616) 331-3197 or roi@gvsu.edu. Please include your study title and study number in all correspondence with our office.

Sincerely,
Office of Research Compliance and Integrity

*Research is a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge (45 CFR 46.102 (d)).

Human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains: data through intervention or interaction with the individual, or identifiable private information (45 CFR 46.102 (f)).

Scholarly activities that are not covered under the Code of Federal Regulations should not be described or referred to as research in materials to participants, sponsors or in dissemination of findings.
Appendix M

Completion of SDOH Screening Tool

<table>
<thead>
<tr>
<th></th>
<th>Provider 1</th>
<th>Provider 2</th>
<th>Provider 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed Forms</td>
<td>25</td>
<td>15</td>
<td>13</td>
<td>53</td>
</tr>
<tr>
<td>Declined Forms</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Missed Forms</td>
<td>12</td>
<td>11</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>(Related to Staff’s Busy Workload and Time Limitation)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patients Did Not Attend to Appointment</td>
<td>23</td>
<td>16</td>
<td>17</td>
<td>56</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>43</td>
<td>33</td>
<td>142</td>
</tr>
</tbody>
</table>

Table 9. This table explains in detail the number of forms completed, declined or missed as a result of workflow miscommunication.
## Appendix N

Responses to SDOH Screening Tool

<table>
<thead>
<tr>
<th>Question from the SDOH Screening Tool</th>
<th>Yes Percentage (Total Number of Response)</th>
<th>No Percentage (Total number of Response)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In the last 12 months, did you ever eat less than you felt you should because there wasn’t enough money for food?</td>
<td>9.43% (5)</td>
<td>90.57% (48)</td>
<td>53</td>
</tr>
<tr>
<td>2. In the last 12 months, have you needed to see a doctor, but could not because of cost?</td>
<td>16.98% (9)</td>
<td>83.02% (44)</td>
<td>53</td>
</tr>
<tr>
<td>3. In the last 12 months, have you ever had to go without health care because you didn’t have a way to get there?</td>
<td>7.55% (4)</td>
<td>92.45% (49)</td>
<td>53</td>
</tr>
<tr>
<td>4. Are you worried that in the next 2 months you may not have stable housing?</td>
<td>3.85% (2)</td>
<td>96.15% (50)</td>
<td>52</td>
</tr>
<tr>
<td>5. Do you participate in moderate or high physical exercise at least three times a week?</td>
<td>11.32% (6)</td>
<td>88.68% (47)</td>
<td>53</td>
</tr>
<tr>
<td>6. Do you ever need help reading hospital materials?</td>
<td>16.98% (9)</td>
<td>83.02% (44)</td>
<td>53</td>
</tr>
<tr>
<td>7. If you checked YES to any boxes above, would you like to receive assistance with any of these needs?</td>
<td>26.42% (14)</td>
<td>73.58% (39)</td>
<td>53</td>
</tr>
<tr>
<td>8. Are you up to date with your: 3-6 months Hemoglobin HbA1c check?</td>
<td>97.96% (48)</td>
<td>2.04% (1)</td>
<td>49</td>
</tr>
<tr>
<td>9. Are you up to date with your: Yearly Vision Exam</td>
<td>87.76% (43)</td>
<td>12.24% (6)</td>
<td>49</td>
</tr>
<tr>
<td>10. Are you up to date with your: Yearly Foot Exam</td>
<td>95.74% (45)</td>
<td>4.26% (2)</td>
<td>47</td>
</tr>
</tbody>
</table>
Figure 10. The percentage illustrated in this figure correlates with the screening tool questions presented in Appendix N.
### Type of Resources Utilized

<table>
<thead>
<tr>
<th>Type of Resources Patient Have Related to Unmet SDOH (n=total patients)</th>
<th>Assistance Declined (n=total patients)</th>
<th>Resources/Information Provided via Phone in Person (n=total patients)</th>
<th>Total (n=total patients)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transportation</strong></td>
<td>Family/Friends (n=2)</td>
<td>Community Resource (n=1)</td>
<td>Patient called via phone and community resources were provided (n=1)</td>
</tr>
<tr>
<td><strong>Food Supply</strong></td>
<td>Community Resource (n=2)</td>
<td>Meals on wheels (n=2)</td>
<td>Patient called via phone and community resources were provided (n=1)</td>
</tr>
<tr>
<td><strong>Housing</strong></td>
<td>Family/Friends (n=2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial Strain</strong></td>
<td>Site’s financial Office (n=3)</td>
<td>Declined Assistance (n=1)</td>
<td>Patient Called via phone and community resources were provided (n=3)</td>
</tr>
<tr>
<td><strong>Health Literacy</strong></td>
<td>Diabetic Educator (n=4)</td>
<td>Declined Assistance (n=5)</td>
<td></td>
</tr>
</tbody>
</table>

Table 11. A total of 19 patients identified as having unmet SDOH. From the 19 patient 7 identified as having more than one unmet SDOH.
Appendix Q

Modifications Made to Workflow Process

January 10th- 21st
1st Workflow Process

*Process:* Receptionist and Medical Assistant, with the assistance of the DNP student, distributed screening tools using paper tracking
*Outcome:* Tracking patients with paper charting created miscommunication and consumed stakeholders’ time

January 22th- February 17th
2nd Workflow Process

*Process:* Medical assistance solely distributed the screening tools with the assistance of DNP student. EHR was used to flag selected patient to be screened
*Outcome:* Medical assistants workload and limited amount of time between patients was not favorable to workflow change

February 18th- March 1st
3rd Workflow Process

*Process:* Receptionist solely distributed the screening tools with the assistance of DNP student. EHR was used to flag selected patient to be screened
*Outcome:* Management reviewed workflow and stated that stakeholder workload and limited amount of time between patients was not favorable to workflow change
Figure 13. This figure presents the compliance rate for annual foot exam, annual vision exam, and 3-6 month Hemoglobin A1c check of the 53 patients that completed the screening tools. Of the 53 patients there were some patients that did not answer if they are up to date with their diabetic quality measures. Also, the percentage illustrated in this figure correlates with the screening tool questions presented in Appendix N.