The Comprehensive Diabetes and Depression Program

Abby Wilder, PharmD Candidate 2019; Sarah Schmidt, PharmD; Mark A. Strand, PhD; Brody Maack, PharmD.
College of Health Professions, North Dakota State University; Family HealthCare, Fargo, ND

BACKGROUND

- Patients with Type 2 Diabetes (T2DM) have an elevated rate of depression.(1)
- Furthermore, patients who live below the poverty line have a rate of depression of 15.4%, compared to 6.2% in persons at or above the poverty line.(2)
- Symptoms of depression and their severity are associated with poorer diabetes control, greater cardiovascular disease risk and greater mortality among T2DM patients.(3)
- Barriers to diabetes and depression treatment include: inadequate training, lack of time to screen, limited availability of mental health providers and overlap of medical and depressive symptoms.(4,5) Furthermore, there will be a projected shortage of 16,940 behavioral health providers by 2025.(6)
- Collaborative care for depression improves depression and glycemic outcomes in people with comorbid depression and diabetes.(7)
- The Comprehensive Diabetes and Depression Program (CDDP) set out to test the value of collaborative care for patients with comorbid diabetes and depression, specifically with the addition of a pharmacist to the care team.

METHODS AND MATERIALS

- From March 2016 to October 2017, patients with diabetes and depression symptoms (PHQ-9 ≥10) were referred for CDDP enrollment (Fig 1).
- 57 patients were referred, with 23 patients enrolling and completing the program.
- The analysis compared baseline outcome measure values with the lowest achieved value during the patient’s one year study period.

RESULTS

Table 1. CDDP Baseline Patient Characteristics.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean (SD)</th>
<th>% (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>54.1 (9.12)</td>
<td></td>
</tr>
<tr>
<td>A1c (%)</td>
<td>8.01 (2.15)</td>
<td></td>
</tr>
<tr>
<td>PHQ-9</td>
<td>12.87 (5.55)</td>
<td></td>
</tr>
<tr>
<td>LDL (mg/dL)</td>
<td>103 (38.44)</td>
<td></td>
</tr>
<tr>
<td>SBP (mm Hg)</td>
<td>134.96 (18.21)</td>
<td></td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>36.08 (13.86)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>78.3 (18)</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>21.7 (5)</td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-native English</td>
<td>34.8 (8)</td>
<td></td>
</tr>
<tr>
<td>Native English</td>
<td>65.2 (12)</td>
<td></td>
</tr>
</tbody>
</table>

Clinical Pharmacist: provided medication management and counseling
Diabetes Educator: provided diabetes self-management techniques and lifestyle education

Figure 1. Patient care flow diagram for the CDDP.

Figure 2. Panel A: HbA1c scores compared to mean and target values with vertical lines representing patients 1-23
Panel B: PHQ-9 scores compared to mean and target values with vertical lines representing patients 1-23

Table 2. Baseline and lowest values for outcome measures.

<table>
<thead>
<tr>
<th>Outcome Measure</th>
<th>Baseline Mean (95% CI)</th>
<th>Lowest Mean (95% CI)</th>
<th>T-test p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1c (%)</td>
<td>8.01 (7.07, 9.94)</td>
<td>7.34 (6.70, 7.97)</td>
<td>0.005</td>
</tr>
<tr>
<td>PHQ-9</td>
<td>13.04 (10.07, 15.41)</td>
<td>9.17 (6.92, 11.43)</td>
<td>0.005</td>
</tr>
<tr>
<td>LDL (mg/dL)</td>
<td>102.95 (86.70, 119.21)</td>
<td>101.0 (78.58, 123.27)</td>
<td>0.348</td>
</tr>
<tr>
<td>SBP (mm Hg)</td>
<td>134.96 (126.30, 143.61)</td>
<td>120.48 (114.10, 126.85)</td>
<td>0.002</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>36.08 (30.08, 42.07)</td>
<td>34.50 (28.71, 40.27)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Figure 3. Mean number of visits to the members of the care team.

DISCUSSION

- This study was limited due to small sample size, high no-show rates, lack of successful co-referrals to the diabetes educator and inability to include a behavioral health specialist.
- This pilot study demonstrated the ability to impact a high risk, underserved population, as evident by significant and possibly clinically meaningful improvements in A1C, PHQ-9, SBP and BMI.
- Future research should explore solutions to resolve barriers identified, such as: increasing diabetes educator visits by scheduling same day appointments, providing reminder calls and incentives to decrease no-show rates, and the inclusion of a behavioral health specialist if possible.

CONCLUSIONS

Diabetes and depression are difficult comorbid conditions to treat. Adding the burden of underserved, low income, uninsured populations makes the challenge even greater. The collaboration of care with clinical pharmacists, primary care providers and diabetes educators is difficult to implement, however provides the potential to positively impact high risk patients by lowering cardiovascular risk through improved diabetes and depression symptoms.

REFERENCES

THE IMPACT OF SOCIAL SUPPORT ON DEPRESSION SYMPTOMS IN FARMERS

ANDREA BJORNSTAD1, LEACEY BROWN2, LEE WEIDAUER2
1DEPARTMENT OF COUNSELING & HUMAN DEVELOPMENT 2SDSU EXTENSION 3DEPARTMENT OF HEALTH & NUTRITIONAL SCIENCES

INTRODUCTION
The mental health of agricultural producers is an international concern. Prevalence rates of depression in agricultural workers have varied from 7.4% to 24%. In 2012, the Center for Disease Control and Prevention (CDC) listed agriculture as the occupational group with the highest rate of suicide overall (44.3 per 100,000 population).

RESEARCH QUESTIONS
Limited studies have examined social support as a protective factor in farmers. Within the sources of support (significant other, family, friends), little knowledge exists regarding the types of social support that would most benefit farmers and ranchers. To fill this gap, the current study addressed two research questions:

1. What is the relationship between depression and social support?
2. Do differences exist between types of social support and depression?

METHODS
Procedure
Farmers were required to be over the age of 18 and engage in farming or ranching at least part-time to qualify for participation in the study. The Land Grant University Cooperative Extension System provides outreach services for communities across each state. Extension personnel throughout one Midwestern state distributed information regarding the study through multiple methods including email distribution lists to producers and direct interactions at farming events during the summer and winter months. A $10.00 gift card incentive was provided to participants who completed the survey.

Measures
Farmers (N = 172) completed the Major Depression Inventory (MDI) and the Multidimensional Scale of Perceived Social Support (MSPSS). The MDI inquires about depressive symptoms within the past two weeks measured on a Likert scale [e.g., 0 = no time, to 5 (all the time)]. A score between 20-24 indicates mild depression, 25-29 suggests moderate depression, and 30 or more indicates severe depression.

The MSPSS is a brief 12-item self-report measure that assesses perceived social support from three subscales: family, friends, and a significant other. A mean score between 1 to 2.9 indicates low support, 3 to 5 suggests medium support, and 5.1 to 7 is considered high support.

Analysis
Linear regression was used to predict risk factors for depression.

RESULTS
Relationship Between Social Support & Depression
Low social support scores on the MSPSS in the subscales as well as the total mean score were significantly related to higher depression scores on the MDI.

Differences in Types of Support
Those with higher depression scores reported less perceived social support from friends.

Risk Factors for Depression:
• Single
• Military veteran
• Farm/Ranch is only source of income
• Lack of friendship(s)

DISCUSSION
• The results suggested a similar prevalence of depression symptoms to other recent studies.
• Of great concern, 12.8% reported life was not worth living at least some of the time. The survey did not include a specific suicide inventory to measure suicidal thoughts and behaviors; however, with agricultural workers at the top of the occupational list for completed suicide, the response to the question further validates the need for a more thorough examination.
• Farmers with previous military experience were more likely to suffer from depression than farmers with no prior military service. Further exploration is needed to determine how previous military experience impacts depression in veteran farmers.
• Farmers reported strong social support from family members but reported difficulties with talking to family members about their problems.
• Farmers with low social support may live in isolated geographic locations and lack resources to initiate relationships or connect with friends.
• In the case of a challenging situation, only 12.3% reported a willingness to seek counseling services. Reluctance to seeking treatment from a mental health provider may derive from the permissive mental health stigma within agriculture, lower mental health literacy, and the lack of accessibility of mental health services in rural areas.
• The results highlight the importance of friendship and the need to create opportunities for farmers to interact with one another for peer support to share thoughts and feelings related to farming challenges.

FUNDING
Support for this project was provided by the Research/Scholarship Support Fund at South Dakota State University.
Attitude Changes of Pharmacists After Participating in an Opioid Misuse Prevention Training

Siri Burck, PharmD Candidate  Mark A. Strand, PhD  Heidi Eukel, PharmD
North Dakota State University College of Health Professions

Background
In a primary care setting, as many as one in four patients receiving long-term opioid therapy struggles with opioid addiction. The purpose of this project was to train pharmacists in the community setting on naloxone prescribing, naloxone administration, use of the Opioid Risk Tool (ORT) for screening for risk of opioid use disorder, and opioid use disorder consultation and referral.

Hypothesis
Attitudes of pharmacists towards opioid misusers and addiction affect the way they view patients at risk for opioid misuse and their beliefs about how to serve them.

Objective
1. Explain steps in designing a prevention-based training course for pharmacists.
2. Describe how to create a tool for assessing attitudes and beliefs about addiction among pharmacists

Methods
For this project, a 3-hour live training was designed, covering:
• Science of addiction
• Introduction to the ORT to screen for risk of opioid misuse
• Abuse potential counseling and referral
• Naloxone prescribing, dispensing and consultation

Forty-three pharmacists were administered a 12-item survey pre- and post-training. Results were entered into Qualtrics, and analyzed using Microsoft Excel. Mean scores were compared using the student’s t-test.

Assessment Tool
This 12-item survey was created based on previously validated instruments: the Substance Abuse Attitude Survey (SAAS),1 the Jefferson Scale of Physician Empathy,2 and two surveys by McCormick3 and Barry4. The purpose was to assess the attitudes of pharmacists towards addiction as a disease, drug misuse patients, and the benefits of screening (Table 1). Responses were on a scale from 1 (strongly disagree) to 5 (strongly agree).

Results
• Individuals who agree that screening is an important tool to help with opioid misuse prevention tend to:
  o Have greater sympathy (r=-0.657)
  o Value counseling (r=0.426), the patient’s perspective (r=0.545) and the benefits of naloxone use (r=0.559)
  o Agree that family history plays a role in addiction (r=0.444)
• Those who agree that pharmacists are key players in the fight against the opioid epidemic tend to:
  o Value counseling (r=0.486), the patient’s perspective (r=0.618), and naloxone use (r=0.504)
  o Agree that addiction is a disease (r=0.512) and screening is an important tool (r=0.477)

Discussion
Attitudes toward patients who misuse opioids can change through training. After the training, pharmacists’ agreement increased in their understanding of addiction as a disease, the importance of the pharmacist’s role in screening and counseling, as well as the belief that naloxone is an important tool for at-risk patients.

Attitudes of pharmacists towards opioid misusers and addiction were associated with their view of patients at risk for opioid misuse and opportunities to serve them. Pharmacists who value screening and counseling, and who see themselves as critical in preventing opioid misuse, tend to have greater sympathy for their patients, and recognize that addiction is a disease with many elements outside patient control.

Table 1. Pre- and Post-Training Mean Scores Demonstrating Attitude Changes

<table>
<thead>
<tr>
<th>Statement</th>
<th>Pre Mean (n=43)</th>
<th>Post Mean (n=44)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Opioid addiction frequently is outside the control of the affected person.</td>
<td>3.58</td>
<td>4.20</td>
<td>0.023</td>
</tr>
<tr>
<td>2. A family history can make some patients more likely to abuse prescription pain medications.</td>
<td>4.35</td>
<td>4.73</td>
<td>0.030</td>
</tr>
<tr>
<td>3. Counseling is the best way to support a patient at risk of prescription opioid abuse.</td>
<td>4.30</td>
<td>4.61</td>
<td>0.042</td>
</tr>
<tr>
<td>4. Self-reported screening tools are of limited value because patients are dishonest in completing them.</td>
<td>3.19</td>
<td>2.75</td>
<td>0.048</td>
</tr>
<tr>
<td>5. A pharmacist who views things from the patient’s perspective can render better care.</td>
<td>4.51</td>
<td>4.77</td>
<td>0.048</td>
</tr>
<tr>
<td>6. Naloxone is an important tool for patients at risk of opioid abuse.</td>
<td>4.44</td>
<td>4.66</td>
<td>0.050</td>
</tr>
<tr>
<td>7. Opioid addiction is a disease.</td>
<td>4.37</td>
<td>4.73</td>
<td>0.060</td>
</tr>
<tr>
<td>8. Screening for opioid misuse can identify people at risk for this disorder.</td>
<td>4.35</td>
<td>4.70</td>
<td>0.064</td>
</tr>
<tr>
<td>9. An opioid-dependent patient requires excessive pharmacist time.</td>
<td>3.44</td>
<td>3.23</td>
<td>0.067</td>
</tr>
<tr>
<td>10. Pharmacists are key players in the fight against the opioid epidemic.</td>
<td>4.53</td>
<td>4.70</td>
<td>0.140</td>
</tr>
<tr>
<td>11. Some people lack the self-discipline to use prescription pain medication without becoming addicted.</td>
<td>3.16</td>
<td>3.19</td>
<td>0.920</td>
</tr>
<tr>
<td>12. I have no sympathy for opioid misusers.</td>
<td>1.65</td>
<td>1.54</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Conclusion
This opioid epidemic requires engagement of all healthcare professionals. Pharmacists are the first line professionals for patients picking up opioid prescriptions in the community setting, and therefore are in the ideal position to provide proactive, empathetic care to help patients use opioids safely and prevent misuse of these medications.

References
INTRODUCTION and PROBLEM

Due to a lack of primary care providers (PCP) in a rural family practice clinic, patient access to health care is being compromised with patients experiencing difficulties scheduling appointments within a timely manner.

Periodic health exams (PHE) can be time consuming and lack strong evidence that they improve patient outcomes, however, the actual preventative health services (PHS) reduce morbidity and mortality rates.

Suggestions have been made to incorporate preventative health services counseling into other office visits to eliminate lengthy PHE or by use of a panel managed approach.

PROJECT PURPOSE

1. Develop and implement an evidence-based panel managed preventative health service protocol using a team-based approach with the primary aim to improve patient access by decreasing the number of days to schedule an appointment with a PCP in a rural family practice clinic over a 3-month period.

2. Secondary aim is that the high patient census of the urgent care walk-in clinic related to inappropriate use should improve.

THEORETICAL FRAMEWORK

The McGill Model of Nursing’s (MMN) focus is health promotion with a strong emphasis on family. Health promotion is considered the primary role of the nurse (Gottlieb & Rowat, 1987).

PROJECT DESIGN

- The sample population consisted of patients between the ages of 18-64 that designated either of the two participating providers in this pilot as their PCP. Patients were further filtered by those that had not seen their PCP in over 12 months. If patients had documented chronic illnesses that fell outside the preventative health service protocol, they were eliminated.

- Thirteen, prioritized, grade A or B, criteria from the USPSTF (2014), were selected by a group of PCP at the clinical project site were used in the initial development of the preventive service panel managed protocol. The selected USPSTF preventative services were initially filtered to include only grade A or B recommendations by the USPSTF. Then the group of PCP identified the most commonly addressed preventative services within the project’s age range of 18-64 with the exception of obstetric recommendations. The project coordinator eliminated one of the criteria as the recommended ages for the preventative service fell outside this project’s age range of 18-64.

- Suggestions have been made to incorporate preventative health services counseling into other office visits to eliminate lengthy PHE or by use of a panel managed approach.

CONCLUSIONS

The development of a preventative health services protocol was successful, which was congruent with recommended efforts to compensate for the PCP shortage.

Despite somewhat conflicting results and several limitations experienced in the implementation portion of this project, a panel managed preventative health service protocol has the potential to benefit the healthcare system by displacing some of the workload from PCP to nonclinician staff and improve compliance of recommended PHS.

Recommendations of implementation over a longer timeframe, appropriate allocated staff, and data collection of the recommended PHS patients obtained, may strengthen future, similar projects.

REFERENCES
