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Undiagnosed Depression and Patients with Type 2 Diabetes Mellitus

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Abstract*: Background: Diabetes adversely affects 29.1 million people in the United States and 387 million worldwide ("American Diabetes," 2014; "International Diabetes," 2014). Yet patients with diabetes have a higher risk of depression and decreased glycemic control, adherence to diet, exercise, and taking medications (Huang, Wei, Wu, Chen, & Guo, 2013; Singh, Raju, Dubey, Kurrey, Bansal, & Malik, 2014; Zhao, Chen, Lin, & Sigal, 2006). There is compelling evidence that strategies are urgently needed to address undiagnosed depression in patients with diabetes to alter the course of complications and disease severity. Objective: The purpose of this project is to determine the relationship between depressive symptoms and glycemic control (hemoglobin A1C) in patients with Type 2 Diabetes Mellitus (T2DM). Design: Data collection occurred at a large adult diabetes clinic in the Mid-West. A convenience sample of 30 T2DM patients with no history of depression completed the Beck Depression Inventory (BDI-2). Demographic data and HbA1C scores were obtained. Results: Of the 30 T2DM patients, 80 % had BDI-2 scores of <14 which indicates minimal depression. In this population, the top three depressive symptoms included loss of energy, changes in sleep, and tired/fatigued. Conclusions: Depressive symptomotology was found in this population of (DMT2) patients which may necessitate further evaluation of emotional difficulties. Significant depressive symptoms were associated with loss of energy, changes in sleep, and tired/fatigued. The findings in this study are not generalizable yet warrant further review beyond the scope of this project to determine the best strategies to alleviate symptoms of depression for this patient population.*

Keywords*: Beck Depression Inventory-2, depression, Diabetes Mellitus Type 2, undiagnosed depression*

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I. INTRODUCTION

Diabetes adversely affects 29.1 million people in the United States and 387 million worldwide ("American Diabetes," 2014; "International Diabetes," 2014). Diabetes care that includes lifestyle modifications, such as exercise, diet, and blood sugar monitoring and comprehensive clinical treatment (HbA1c and retinal examinations) promotes optimal health outcomes (Lin et al., 2004). Yet patients with diabetes have a higher risk of depression and decreased glycemic control, adherence to diet, exercise, and taking medications (Huang, Wei, Wu, Chen, & Guo, 2013; Singh, Raju, Dubey, Kurrey, Bansal, & Malik, 2014; Zhao, Chen, Lin, & Sigal, 2006). Depression affects 350 million people worldwide and ranges from short lived mood fluctuations to long-lasting suffering with moderate to severe intensity (World Health Organization [WHO], 2012).Diabetic patients are twice as likely to have undiagnosed depression, moreover, depression screening of patients with diabetes improves clinical practice and optimizes self-care behaviors and glycemic control (Tsi, Chaing, & Lee, 2008). Yet, Schierhout et al. (2013) reported low rates of depression screening in primary care due to competing demands. Strategies that address depression in patients with diabetes are urgently needed to alter the course of complications and disease severity.

Background and Significance

Diabetes Mellitus (DM) is a metabolic disease in which the pancreas does not produce enough insulin, which results in an increase of blood glucose levels. Diabetes is classified into two categories: type 1 diabetes mellitus (T1DM) and type 2 diabetes mellitus (T2DM). DM results from the body's failure to produce insulin and requires an affected person to be on oral hypoglycemic or insulin therapy. T2DM is a result of increased insulin resistance, obesity, and a metabolic disturbance that disrupts the insulin and glucose body response (Zhaoa, Chena, Lina, and Sigalb, 2006).Routine clinical visits are recommended by the American Diabetic

Association (ADA) to test A1C at least two times a year in patients with stable glycemic control and test quarterly if treatment changes or patients are not meeting glycemic goals (Diabetic Care, 2015).
The stress and intensity of T2DM self care management and the loss of quality of life have been well documented (Landman et al., 2010; Maddigan, Feeny, Majumdar, Farris, & Johnson, 2006). Additional factors compound clinical outcomes including language and cultural barriers, low health literacy, and high out-of-pocket costs.Patient distress and non-compliance are associated with poor glycemic control and significant morbidity and mortality (Egede & Ellis, 2010; Wertheimer & Santella, 2003). Patients with T2DM and undiagnosed depression must be assessed in the clinical setting and provided treatment in order to improve outcomes and reduce negative impacts on complication rates, disability, and productivity.

A strategy that can improve outcomes of T2DM patients is the early detection and treatment of undiagnosed depression in the clinical setting. Formulating the best plan of care can reduce risk and improve outcomes. The current literature shows a multitude reliable and valid depression instruments (Patient Health Questionnaire [PHQ]; the General Health Questionnaire; the Center for Epidemiological Studies Depression Scale; the Diagnostic and Statistical Manual of Mental Disorders, fourth edition [DSM-IV]; Hospital Anxiety and Depression Scale [HADS]; Beck Depression Inventory [BDI]) yet warns practitioners to rule out any physical cause of mental disorders before making a final diagnosis and emphasizes integrated services (Avasthi et al., 2015; Bajaj, Agarwal, Varma, & Singh, 2012; Kerr & Kerr, 2001).The instrument selected for this project in was the Beck Depression Inventory – II (BDI-II). The BDI-II is a widely used assessment scale that measures presence and severity of depression. Each symptom is self rated as being present or absent yielding a total score range of 0 – 63 classifying 0-13 as minimal depression; 14-19 as mild depression; 20-28 as moderate depression; and 29-63 as severe depression. High BDI-II scores are associated with high HbA1C scores (Andreoulakis, Hyphantis, Kandylis, & Iacovides, 2012); clinical strategies can identify ofdepressive symptoms in patients with T2DM utilizing available measures.

Study Purpose and Aims

The purpose of this study is to determine the relationship between depressive symptoms and glycemic control in patients with type II diabetes mellitus (T2DM). The aims of this study were to: (1) analyze demographics, HbA1C, and BDI – II scores of T2DM patients; (2) determine if there is direct, indirect, or no relation between HbA1C and BDI-II scores; and (3) determine which symptoms are most prevalent in this population.

II. CONCLUSION

This project noted content and context for patients with T2DM who were tested for depressive symptoms prior to a scheduled office visit. While there are many elements that must be considered in managing T2DM, there is compelling evidence for utilizing evidence based guidelines and strategies, developed by the ADA, that can improve patient outcomes. Successful management of T2DM requires early detection and treatment of depressive symptoms.

III. LITERATURE REVIEW

A literature review was conducted to determine the specificity of depression in relation to diabetes and glycemic control. An electronic history search was performed utilizing several data bases such as: CINAHL, Ovid MEDLINE, Cochrane Database of Systematic Reviews, and PsycINFO. Keywords: undiagnosed depression, compliance, diabetes type 2, and of glycated hemoglobin A1C of primary sources. Further search history was narrowed to include studies conducted in English from January 2004 to January 2014. The key terms were combined to yield approximately 55 research articles on the topic. Ten articles used instruments to screen for depression or to assess for depressive symptoms. Each study reported the association of depression in patients with diabetes and impact on glycemic control. No articles were found that compared quantitative measures for depression. Very little is known about the evidence - practice gap in screening diabetes patients for depression.

It is well known that diabetes and depression co-exist yet diabetes patients with depression are at risk of being poorly managed in primary care (Gonzalez, Shreck, Psaros, Safren, 2015; Huang et al., 2013). Patients with diabetes must learn complex tasks and actively participate in their diabetes management. Undiagnosed depression can halt this ongoing process of knowledge and skill due to its association with “patient initiated behaviors that are difficult to maintain” (Lin et al., 2004, p. 154). The following literature review examines the evidence on depression, glycemic control, and type 2 diabetes in order to ensure that health care providers have the knowledge to promote informed patient decision making and quality care.

Patient Education on Diabetes Management and the Treatment of Depression

Patient education on diabetes management is an important clinical intervention that can reduce complications, morbidity, and mortality. One study showed improved glycemic control in patients with type two diabetes mellitus (T2DM) after patient education on diabetes self-management and medication adherence (Al Hyek et al., 2013). Utilizing the hospital anxiety and depression scale (HADs) before diabetes education and after six months, Al Hyek et al. noted that T2DM patients showed improvement in depression level ($p = 0.03$). This study monitored depression at baseline and six months yet overlooked an important discussion on improved self-monitoring of blood glucose ($p = 0.0001$) and reduced distress. Nonetheless, the evidence supported exposure to diabetes management education improved mental health.

Psychosocial Interventions and Outcomes of Diabetes Patients with Depression

Harkness et al. (2010) examined 49 randomized control trials (RTCs): 53% of the RTCs were interventions for diabetes management (education, skills training, exercise); 29% focused on psychosocial interventions to manage mental health (problem solving, cognitive behavior therapy, social support); and, 18% acknowledged both. Only the psychosocial interventions showed improvement in A1C and mental health (standardized mean difference 0.29 [95% CI - 0.37 to -0.21], $1^2 = 45\%$; and, – 0.25 to – 0.07, $1^2 = 56\%$, respectively). Typical treatment of diabetes and mental health are often separate, yet interventions that focus on both mental health and physical health provide literal biopsychosocial care and can improve diabetes management and reduce distress or vice versa (Harkness et al., 2010). Harkness et al. (2010) concluded that conventional interventions fail at improving both physical and mental health outcomes of diabetic patients with depression, challenging the health care provider to individualize patient interventions.

Unidirectional and Bidirectional Qualities of Depression and Diabetes

Papelbaum et al. (2011) found depression in 18.6% patients with diabetes with Structured Clinical Interview for DSM-IV and Beck Depression Inventory (BDI) measures. Higher levels of glycated hemoglobin (8.6 ± 2.0 vs. 7.5 ± 1.8; $p = 0.05$) were confirmed in patients diagnosed with depression (Papelbaum et al., 2011). In another study, a meta-analysis of depression and T2DM showed depression was associated with a 60% increased risk of T2DM (Mezuk, Eaton, Albrecht, & Golden, 2008). Golden et al. (2008) presented a bidirectional association between depression and diabetes utilizing the Center for Epidemiologic Studies – Depression Scale (CES-D) and a repeated measures of two temporal hypotheses. Golden et al. showed the risk of T2DM was 22.0 and 16.6 per 1000 person-years with and without elevated depressive symptoms, respectively. Simultaneously, Golden et al. reported the incidence of elevated depressive symptoms per 1000 person years at 36.8 for patients with normal fasting blood glucose (FBG), 27.9 for impaired FBG, 32.1 for untreated T2DM, and 61.9 for treated T2DM. These studies on depression, diabetes, and glycemic control highlight the need for careful monitoring of depressive symptoms in patients with T2DM and the physiological consequences and interactions of depression on health outcomes.

The current literature review established associations between depression, glycemic control, and T2DM. This evidence supports the importance of early identification of depression in patients with T2DM and diabetes management education and psychosocial interventions for glycemic control. A first step in addressing depression in patients with T2DM is to determine the rate of depression in T2DM patients.

Gaps in the Literature

There is a paucity of current literature on undiagnosed depression and T2DM. The articles analyzed in this his literature review did provide a conclusive relationship between poor glycemic control and depression. However, the BDI-II was endorsed as the most widely use depression screening measures.

Nursing Theory

Two theoretical models were considered for this project: Newman's Systems Model and Orem Self Care Model. Newman's theoretical model focused on a dynamic open systems model and a holistic careconcept which integrate components including psychological, physiological, sociocultural, developmental, and spiritual dimensions. Within an open system, ones mental health plays an important role. The Orem Self Care Model focuses on self-care and how disease and injury affect human functioning; thereby affecting people's physiological and psychological mechanisms (Tomey and Alligood, 2002). The interrelationship between these two theories provide practices that can be translated and tested in patient care.

IV. CONCLUSION

The results of this literature review covered three key themes including patient education on diabetes and the treatment of depression; psychosocial interventions and outcomes of diabetes patients with depression; and the unidirectional and bidirectional qualities of depression and diabetes. It is essential to assess T2DM

patients for depression in the clinical setting and develop strategies that intentionally handle these sensitive issues. The three themes identified from the current literature may help to understand the dynamics of glycemic control and depression which has not been well understood and is central to this project.

V. METHODOLOGY

The project's questions posed in Chapter One acknowledge the importance of screening for depression in patient with T2DM.The aims of this project was to: (1) analyze demographics, HbA1C, and BDI – II scores of T2DM patients; (2) determine if there is direct, indirect, or no relation between HbA1C and BDI-II scores; and (3) determine which symptoms are most prevalent in this population.

Setting and Sample

This project utilized a prospective study design from a convenient sample of 30 diabetic patients from a private clinic in San Antonio, Texas. Potential participants were recruited and asked if they would like to participate in a practice improvement project. Patients were screened for the following inclusion criteria: (1) patients between 18 to 75 years old; (2) both male and female; (3) an established diabetic patient; (4) type 2 diabetes mellitus for longer than 1 year; (5) diabetic medications including oral and injectable agents to include insulin; (6) no prior mental health diagnoses; (7) and must be able to complete a survey. The exclusion criteria was the following: (1) type 1 diabetes; (2) current or prior psychiatric diagnosis of depression or treatment of other psychiatric illness; (3) history of stroke, brain surgery, head injury, dementia, current pregnancy, or recent infection or illness that could have affected glucose control; and (4) inability to independently complete the Beck Depression Inventory II (BDI-2) due to vision impairment, literacy, or language barrier.

Data Sources, Collection Forms, and Data Management

Beck Depression Inventory – II. The Beck Depression Inventory II (BDI-II) survey is a depression screening instrument utilized in this project. The survey identifies depression symptoms and consists of a twenty one multiple choice questions. Each item is intended to assess a specific symptom and degree of depression according to the psychiatric literature (Shaban, Fosbury, Kerr, & Cavan, 2006). The BDI-II was revised in1996 to clarify and define the criteria for depressive symptoms as stated in the Diagnostic and Statistical Manual of Mental Disorders ([DSM-IV]; APA, 1996). The BDI-II showed "high reliability, capacity to discriminate between depressed and non-depressed subjects, and improved concurrent, content, and structural validity" (Wang & Gorenstein, 2013, p.416). There is sufficient empirical evidence in that validates the reliability and validity of the BDI – II (Faye & Yarandi, 2004).

Hemoglobinopathy. According to the American Diabetes Association (ADA), the glycated hemoglobin (HbA1c) is a biometric marker intended to reflect the average blood glucose levels over a three month period. The HbA1c test is relatively stable and has less variability with fewer interferences from environmental factors. The reliability and validity of this biomarker has been intensively studied and is currently the diagnostic standard for diabetes and was utilized in this project.

Demographics and Patient Information

An Information Sheet was used to collect the following data from the EMR: a) sex, b) age, c) ethnic group, d) confirmed T2DM, e) history of mental health, f) most recent hemoglobin A1C, g) recent weight, and h) list of diabetic medications. All data collected was kept separated from identifiable data i.e. HIPAA forms and the consent forms. The hemoglobin A1C is essential data for this project as it represents a three month average of a patient's glycemic control. Clinical information including patient demographics are readily available in the patient's EMR for data collection. Participant's laboratory and clinical data were accessed only by authorized personnel and the PI has authorization to access patient records. The PI currently has worked within theclinic site for several years, establishing the PI's integrity and providing a solid background for trust and rapport. The PI secured and protected personal or identifiable participant information such as name and date of birth for the duration of this project by securing the Information Sheet and the DBI-II survey in a locked drawer accessed only by the PI.

Research Procedure

A Nurse Practitioner in the clinic was the principal investigator (PI) of this project and acknowledge a provider – patient relationship with potential patient participants. Protection and respect for the privacy of all potential participants required special precautions. The PI completed the enrollment and consent processes. The PI explained the study procedures to potential patient participants providing enough time to enroll so potential participants can thoroughly consider what his/her participation means; no nurse managers or physicians were present during the enrollment or the consent process in order to minimize coercion. Once 30 participants completed the BDI-II survey, the project was concluded. Potential participants were informed that

their future care at the clinic would not be affected if they choose not to participate. There was no compensation however because of the nature of the BDI-II there was potential risk for emotional impact. Special attention and care was provided to participants who appeared visibly upset during the survey; the survey would be discontinued and the patient participant would be counseled by the PI making available mental health referrals. The PI had been fully informed of the IRB rules and regulations prior to screening and interviewing potential participants.

A medical assistant completed an information sheet on potential patient participants. The PI coded the Information Sheet and the BDI-2 and performed all enrollment and consent procedures. Participants were given time to thoroughly read the consent form and have questions answered before signing the consent. Each participant was assigned an identification number to maintain confidentiality. A list of participant names and identification numbers were kept separate from the data collected. Once consent had been obtained, the participant were taken to a private designated area. The private designated area is a small office located next to the PI's examination room. The clinic site had granted exclusive use of this office while the project was in progress.

The PI administered the BDI-II and provided the participant 30 minutes to complete it. The survey has 21 questions and typically takes five to 10 minutes to complete. The principal investigator was available in close proximity to answer any participant questions or if the participant decides to withdraw from the project. If a participant decided to withdraw from the project, the PI assured him/her that current and future care in the clinic would not be compromised. Once participants completed the survey, it was collected by the PI in order to maintain confidentiality. The PI reviewed the completed survey. If the risk of suicide was disclosed, the prevention hotline was contacted immediately, however, no patient required this service in this project. The PI calculated the BDI-II score immediately after the participant completes the survey. If the participant's BDI – II score was >14, the PI explained that the participant could have mild, moderate, or severe depression. At that time the participant would be provided with mental health handouts so the participant may schedule a mental health evaluation at their convenience. The PI did not initiate treatment for participants with a score of > 14. The BDI-II survey was secured in a locked file. The patient participant was taken by the PI's medical assistant to the patient waiting area to proceed with the scheduled office visit. To reduce or minimize bias, the PI will be blinded to the outcome of interest by assigning each participant an identification number.

Data Analysis

Data analysis included mean, standard deviation, and range of scores from HbA1C and the BDI-II survey; additional t-tests with possible ANOVA were considered. The demographic data was presented. Male and females were grouped by HbA1C scores (HbA1C 5-7; HbA1C 8-10; HbA1C >11) then compared to grouped scores of BDI-II (0-13 minimum depression; 14-19 mild depression; 20-28 moderate depression; 29-63 severe depression). Further assessment of symptoms were evaluated. A chi squared test, the Mann-Whitney U test for independent grouping or Pearson correlatin coefficient weretests considered to determine if differences in the groups were statistically significant. Yet due to a small sample size a statistical effect may not be a measureable.

Resources

The clinic in-house laboratory was utilized which holds a certified laboratory facility accreditation by the State of Texas under the National Environmental Laboratory Accreditation Program (NELAP) and the Texas Commission on Environmental Quality (TCEQ). Copies of the Beck Depression Inventory II (BDI-II) survey were obtained with written permission.

Project Budget and Justification

No budget or funding was requested for this project.

Project Timeline

Upon approval from the Institutional Review Board on July 6 2015, the project and recruitment began. Data was analyzed and reported on July 23, 2015.

Protection of Human Subjects

Approval for the research was obtained from the Institutional Review Board in a Midwest university as well as approval from the outpatient clinical site in San Antonio Texas.

Presentation of Data

In Chapter Four, the findings of this DNP project are presented. The outpatient setting is discussed followed by the results from the questions posed. Incidental findings are presented i.e. top symptoms of depression to allow a full impression of the patient with T2DM and undiagnosed depression.

VI. FINDINGS

In this chapter, demographics, HbA1C, and BDI-II scores of patients with T2DM are reported. Further, an analysis of the relationship between BDI-II scores and HbA1C is presented. Finally, the most prevelant depressive symptoms for this population are revealed.

Demographics and Data Collection

The DNP project and participants met the criteria presented in Chapter Three. Administrators from a large outpatient clinic in San Antonio Texas granted permission to collect essential laboratory data i.e. HbA1C and survey responses i.e. BDI-II from consented patients with T2DM duringregular business hours. It was determined necessary to include this project in the outpatient context to confirm the need for depression assessment and subsequent interventions. A sample of 30 outpatient participants were selected based on inclusion/exclusion criteria. There were 18 (60%) female participants and 12 (40%) male participants ranging in age from 37 to 77 years of age with a mean age of 65. 23 (±9.6). Eighteen (60%) of participants were Hispanic, 10 (33%) participants were White, and two (7%) participants were African American.

The 30 patients completed the Beck Depression Inventory II (BDI-II) and the most recent glycated hemoglobin HbA1C was collected from the electronic medical record (EMR). The mean score from the BDI-II was 7.47 (±3.9) with scores ranging from 2 – 20. The A1C mean score was 8.3 (±1.9) ranging from 6.1 to 13.5. No correlation was found between BDI-II categories and A1C scores due to 80% of BDI-II scores clustering under one category, minimum depression.

The BDI-II category for *minimal depression* had an A1C mean score of 7.3 (±1.81) ranging from 6 to 13.5. The BDI-II for *moderate depression* had an A1C mean score of 9.8 (±3.09) ranging from 6.2 to 11.6 (see Table 4.1). No correlation was found between BDI-II and age, gender, or ethnic/racial background due to data clustering under one category, minimum depression. Three participants scored between 20-28 on the BDI-II for moderate depression and provided mental health resources as outlined in Chapter Three and approved by the Maryville University IRB committee.

Table 4.1

BDI-II, A1C, and Patients with T2DM (n=30)

	A1C			A1C (5-7)		A1C (8-10)		A1C (>11)	
	5 to 7	8 to 10	> 11	Male	Female	Male	Female	Male	Female
BDI-II	n = 16	n = 10	n = 4	n = 16		n= 10		n= 4	
Minimum (1-13)	15	10	2	4	11	7	3		2
Mild (14-19)									
Moderate (20-28)	1		2		1			1	1
Severe (29-63)									

Incidental findings included the identification of the top threedepressive symptoms most frequently self-identified: a) *Loss of Energy*97%, 29 patients responded, mean score 1.9(± 0.48) ranging from 0 to 3; b) *Changes in Sleeping Pattern*83%, 25 patients responded, mean score 2.9(±1.3) ranging from 0 to 3; and c) *Tired/Fatigue* 78%, 23 patients responded, mean score 1.5(±0.64) ranging from 0 to 3 (see Figure 4.1). Based on linear regression, using HbA1C as a dependent variable, the following model can be used to predict HbA1C in this patient population: a1c=6.86+0.197*bdi (see Table 4.2).

Table 4.2

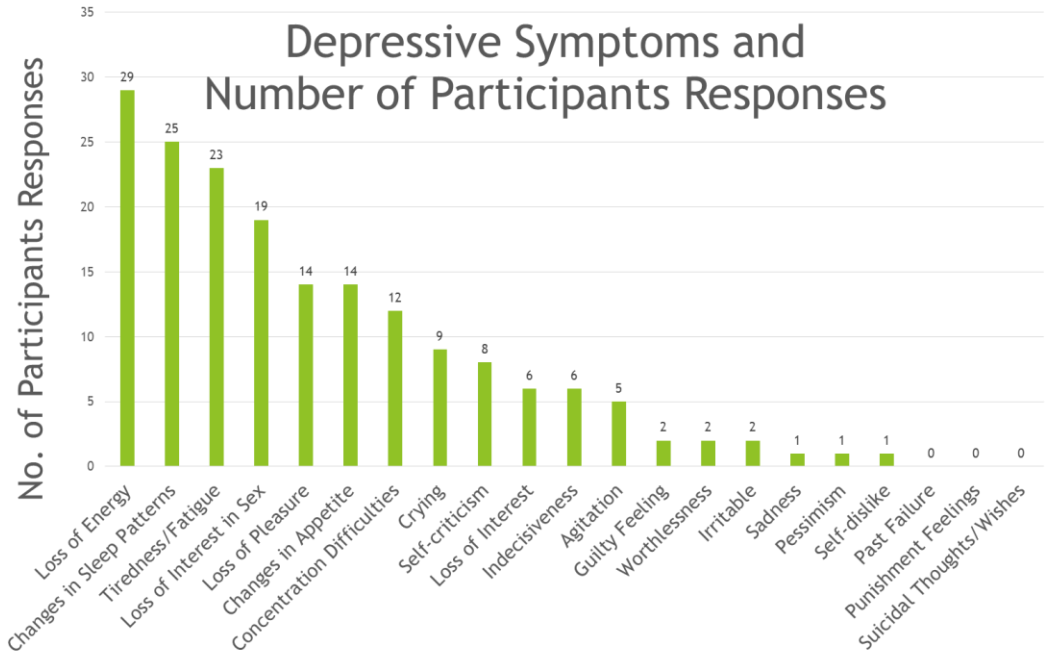
Model for A1C Prediction Using BDI-II Scores

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.860	.785		8.739	.000
	bdi	.197	.089	.384	2.202	.036

a. Dependent Variable: A1c

Figure 4.1 *Depressive Symptoms of Patients with T2DM (n=30)*



Project Questions

Data for this DNP project were presented in this chapter. The findings showedthis population of patients with T2DM clustered under minimal depression (BDI-II scores 1-13). Additionally, participants self identified loss of energy, changes in sleep patterns, and tiredness as their top three depression symptoms. For the three participants with scores in the moderate depression (BDI-II 20-28), the primary investigator was able to provide immediate mental health resources and counsel. It is reasonable to include the BDI-II survey to predict depression in this population of patients with T2DM.

VII. DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

A discussion of this DNP project will be presented in this section, as well as the implications to practice and recommendations for future projects. The goals of this DNP project were achieved: to examine the relationship between HbA1C and undiagnosed depression and capture the top depression symptoms of this patient population.

Discussion of Project Findings

This DNP project illustrated the ease at which a provider can evaluate depression in patients with T2DM. Also, results from the BDI-II showed this patient population had depression at a minimal level and revealed the top three symptoms of depression: loss of energy, changes in sleeping pattern, and tired/fatiqued. Further, a model was developed to predict HbA1Cin this patient population using BDI-II scores. While depression is not routinely assessed using the BDI-II survey in this clinical setting, the integration of the depression assessment tool provideduseful data with the potential to improve patient outcomes. Clinical practice that is responsive to current data can promote health, prevent illness, and contribute to a culture ofpatient safety and quality outcomes. Evidence based practice of this calibur can lead to the delivery of more individualized care plans, more efficient coordination of resources, and health care policies that identify action plans and priorities.

Implications

Implications from this study are instructive to the primary care provider at this clinical site in that despite overall BDI-II scores for minimal depression in this patient population, patients with T2DM may have early signs of depression or depressive symptoms that can be easily identified and treated. From the current evidence, Papelbaum et al. (2011) noted the connection between depression and diabetes as diabetic patients with depression hadhigher levels of glycated hemoglobin.Mezuk and collegues (2008) showed depression was

associated with a 60% increased risk of T2DM. These studiesidentify a) areas of opportunity for improved care based on evidence and b) the need for robust depression screening tools to be utilized in the clinical setting.

One limitation of this project involved the depression screening tool (BDI-II) in that clinical depression requires a formal psychiatric diagnosis based on a mental health history with predetermined criteria. Also, the majority of this patient population was Hispanic which may pose another limitation in that the BDI-II has not been validated or tested in Hispanic cultures. Finally, to improve the generalizability of these findings, Polit and Beck (2011) support the need for a larger sample size.

Recommendations

Plato's line, *the unexamined life is not worth living* could be applied to this DNP project in that a practice examined is one that is highly valued. Implementing evidence to improve practice and patient outcomes is relevant to the profession of nursing. Findings from this project indicate an opportunity toevaluate/screen for depression as part of each office visit in patients with T2DM. Additionally and beyond the scope of this project, multidisciplinary teams should meet with frequency to develop strategies and resources that address depression or depressive symptoms of patients with T2DM.Nurse practitioners (NP's) are held accountable to be competent in activities related to quality of practice, collaboration, and leadership. Scientific evidence evaluated and incorporated into practice and is responsible patient care and is a reflection of the nursing professions long standing social contract to provide the very best health care to those in need.

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Appendix A

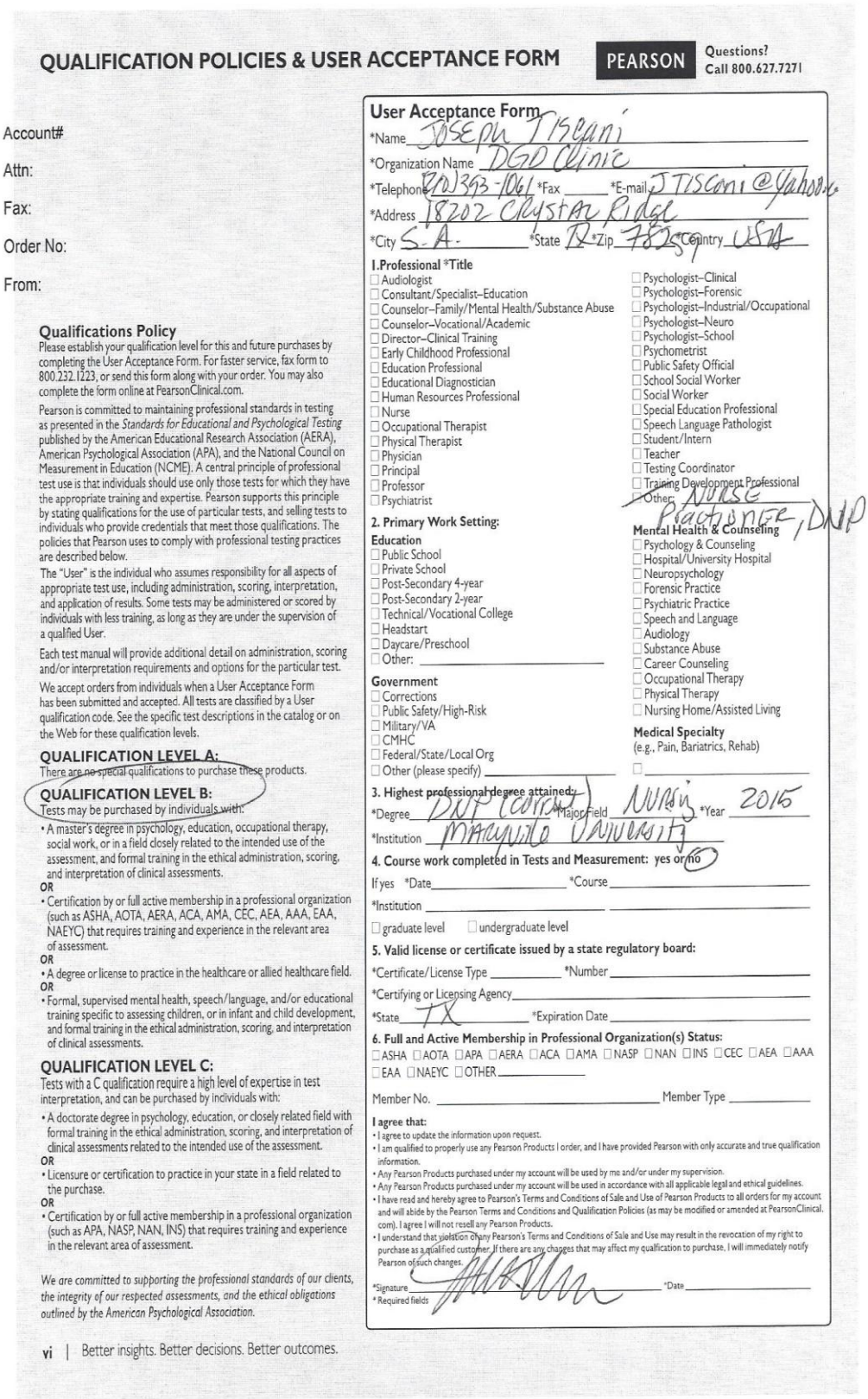
Information Sheet

This demographic information will be obtained from the medical record and stored in a locked cabinet, available to the principal investigator only.

1. What is the participant's sex?
   Male _____
   Female _
2. Current age of the participant? _____
   With which ethnic/racial group does the participant most identify?
   American Indian/Alaska Native _____
   Asian _____
   Black/African American _____
   Native Hawaiian/Pacific Islander _____
   White _____
   Other _____
4. Confirmed T2DM > 1 year (please circle one): Yes No
5. Current A1C: _____
6. Current weight: _____
7. List of diabetic medications (oral hypoglycemic and insulin):

_____
_____
_____
_____

8. Confirmed participant ability to complete survey (please circle one): Yes No
9. No history of mental health diagnoses (please circle one): Yes No



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Please establish your qualification level for this and future purchases by completing the User Acceptance Form. For faster service, fax form to 800.232.1223, or send this form along with your order. You may also complete the form online at PearsonClinical.com.

Pearson is committed to maintaining professional standards in testing as presented in the *Standards for Educational and Psychological Testing* published by the American Educational Research Association (AERA), American Psychological Association (APA), and the National Council on Measurement in Education (NCME). A central principle of professional test use is that individuals should use only those tests for which they have the appropriate training and expertise. Pearson supports this principle by stating qualifications for the use of particular tests, and selling tests to individuals who provide credentials that meet those qualifications. The policies that Pearson uses to comply with professional testing practices are described below.

The "User" is the individual who assumes responsibility for all aspects of appropriate test use, including administration, scoring, interpretation, and application of results. Some tests may be administered or scored by individuals with less training, as long as they are under the supervision of a qualified User.

Each test manual will provide additional detail on administration, scoring and/or interpretation requirements and options for the particular test.

We accept orders from individuals when a User Acceptance Form has been submitted and accepted. All tests are classified by a User qualification code. See the specific test descriptions in the catalog or on the Web for these qualification levels.

QUALIFICATION LEVEL A:
There are no special qualifications to purchase these products.

QUALIFICATION LEVEL B:
Tests may be purchased by individuals with:

- A master's degree in psychology, education, occupational therapy, social work, or in a field closely related to the intended use of the assessment, and formal training in the ethical administration, scoring, and interpretation of clinical assessments.

OR

- Certification by or full active membership in a professional organization (such as ASHA, AOTA, AERA, ACA, AMA, CEC, AEA, AAA, EAA, NAEYC) that requires training and experience in the relevant area of assessment.

OR

- A degree or license to practice in the healthcare or allied healthcare field.

OR

- Formal, supervised mental health, speech/language, and/or educational training specific to assessing children, or in infant and child development, and formal training in the ethical administration, scoring, and interpretation of clinical assessments.

QUALIFICATION LEVEL C:
Tests with a C qualification require a high level of expertise in test interpretation, and can be purchased by individuals with:

- A doctorate degree in psychology, education, or closely related field with formal training in the ethical administration, scoring, and interpretation of clinical assessments related to the intended use of the assessment.

OR

- Licensure or certification to practice in your state in a field related to the purchase.

OR

- Certification by or full active membership in a professional organization (such as APA, NASP, NAN, INS) that requires training and experience in the relevant area of assessment.

We are committed to supporting the professional standards of our clients, the integrity of our respected assessments, and the ethical obligations outlined by the American Psychological Association.

User Acceptance Form

*Name JOSEPH TISCANI

*Organization Name DGD Clinic

*Telephone 210 393-1061 *Fax _____ *E-mail JTISCANI@Yahoo.c

*Address 18202 Crystal Ridge

*City S.A. *State TX *Zip 7825 *Country USA

1.Professional *Title

- ☐ Audiologist
- ☐ Consultant/Specialist–Education
- ☐ Counselor–Family/Mental Health/Substance Abuse
- ☐ Counselor–Vocational/Academic
- ☐ Director–Clinical Training
- ☐ Early Childhood Professional
- ☐ Education Professional
- ☐ Educational Diagnostician
- ☐ Human Resources Professional
- ☐ Nurse
- ☐ Occupational Therapist
- ☐ Physical Therapist
- ☐ Physician
- ☐ Principal
- ☐ Professor
- ☐ Psychiatrist
- ☐ Psychologist–Clinical
- ☐ Psychologist–Forensic
- ☐ Psychologist–Industrial/Occupational
- ☐ Psychologist–Neuro
- ☐ Psychologist–School
- ☐ Psychometrist
- ☐ Public Safety Official
- ☐ School Social Worker
- ☐ Social Worker
- ☐ Special Education Professional
- ☐ Speech Language Pathologist
- ☐ Student/Intern
- ☐ Teacher
- ☐ Testing Coordinator
- ☐ Training Development Professional
- ☐ Other: NURSE PRACTIONER, DNP

2. Primary Work Setting:

Education

- ☐ Public School
- ☐ Private School
- ☐ Post-Secondary 4-year
- ☐ Post-Secondary 2-year
- ☐ Technical/Vocational College
- ☐ Headstart
- ☐ Daycare/Preschool
- ☐ Other: _____

Government

- ☐ Corrections
- ☐ Public Safety/High-Risk
- ☐ Military/VA
- ☐ CMHC
- ☐ Federal/State/Local Org
- ☐ Other (please specify) _____

Mental Health & Counseling

- ☐ Psychology & Counseling
- ☐ Hospital/University Hospital
- ☐ Neuropsychology
- ☐ Forensic Practice
- ☐ Psychiatric Practice
- ☐ Speech and Language
- ☐ Audiology
- ☐ Substance Abuse
- ☐ Career Counseling
- ☐ Occupational Therapy
- ☐ Physical Therapy
- ☐ Nursing Home/Assisted Living

Medical Specialty
(e.g., Pain, Bariatrics, Rehab)

- ☐ _____

3. Highest professional degree attained:

*Degree DNP (Current) *Major Field NURSING *Year 2015

*Institution MARYMOUNT UNIVERSITY

4. Course work completed in Tests and Measurement: yes or no

If yes *Date _____ *Course _____

*Institution _____ _____

☐ graduate level ☐ undergraduate level

5. Valid license or certificate issued by a state regulatory board:

*Certificate/License Type _____ *Number _____

*Certifying or Licensing Agency _____

*State TX *Expiration Date _____

6. Full and Active Membership in Professional Organization(s) Status:

☐ ASHA ☐ AOTA ☐ APA ☐ AERA ☐ ACA ☐ AMA ☐ NASP ☐ NAN ☐ INS ☐ CEC ☐ AEA ☐ AAA ☐ EAA ☐ NAEYC ☐ OTHER _____

Member No. _____ Member Type _____

I agree that:

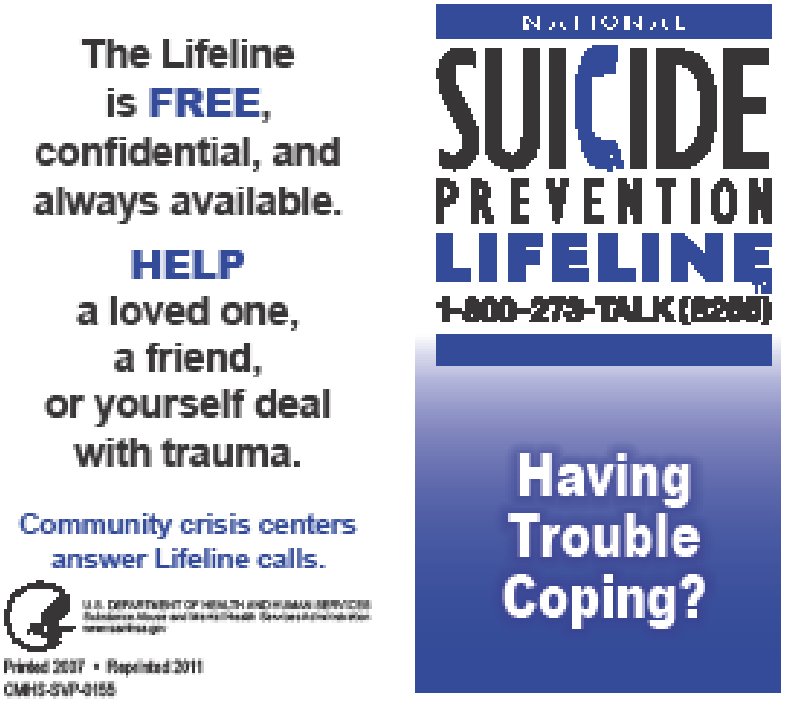
- I agree to update the information upon request.
- I am qualified to properly use any Pearson Products I order, and I have provided Pearson with only accurate and true qualification information.
- Any Pearson Products purchased under my account will be used by me and/or under my supervision.
- Any Pearson Products purchased under my account will be used in accordance with all applicable legal and ethical guidelines.
- I have read and hereby agree to Pearson's Terms and Conditions of Sale and Use of Pearson Products to all orders for my account and will abide by the Pearson Terms and Conditions and Qualification Policies (as may be modified or amended at PearsonClinical.com). I agree I will not resell any Pearson Products.
- I understand that violation of any Pearson's Terms and Conditions of Sale and Use may result in the revocation of my right to purchase as a qualified customer. If there are any changes that may affect my qualification to purchase, I will immediately notify Pearson of such changes.

*Signature _____ *Date _____

* Required fields

Appendix B

Appendix C



Dr. Joseph Tiscani. "Undiagnosed Depression and Patients with Type 2 Diabetes Mellitus." IOSR Journal of Pharmacy (IOSR-PHR), vol. 7, no. 8, 2017, pp. 61–71.