

Screening for Diabetes-Related Distress in an Outpatient Endocrine Clinic

by

Jheneale R. Grandison

Under Supervision of

Kimberly Callender

Second Reader

Debra Bingham

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Abstract

Problem: Identification and treatment of diabetes-related distress (DD) are essential for diabetes management, quality of life, and reducing health care costs for people with diabetes. There was no standardized workflow for DD screening in an outpatient endocrine clinic that manages approximately 2000 persons with diabetes.

Purpose: The purpose of this quality improvement (QI) project was to implement a screening and referral program for DD in an outpatient endocrine clinic.

Methods: The QI project was implemented between August 31, 2020 – December 7, 2020. DD was measured using the Problem Areas in Diabetes-5 (PAID-5) scale (0 – 20) points. An ambulatory systems analyst created a flowsheet in Epic for the PAID-5 questionnaire and routed the PAID-5 to MyChart. Patients completed the PAID-5 on MyChart one week before the appointment or in-person during the encounter. Providers referred individuals with a PAID-5 score ≥ 8 to a mental health provider (MHP). Pre-and-post analysis of PAID-5 scores assessed for the reduction of PAID-5 scores and A1C values.

Results: The PAID-5 screening compliance was 72% ($n = 744/1028$). It was identified that 31% ($n = 228$) had a PAID-5 score ≥ 8 . Of those 228, only 24% received a referral to a MHP. Half the patients refused a referral, and 7% were already seeing a MHP. The average PAID-5 score was 5, and the baseline A1C value was 8% ($< 5.7\%$).

Conclusions: Screening for DD in adults with diabetes utilizing the PAID-5 questionnaire is feasible and can facilitate the referral of distressed patients to MHP's. Long-term implications for the practice change include a holistic and comprehensive approach to the management of diabetes and diabetes-related outcomes, including reduction of A1C values in individuals referred to a MHP.

Introduction

In 2018, approximately 34.2 million people, or 10.5% of the US adult population, were diagnosed with having diabetes. Also, 50% of adults with diabetes had an A1c value of 7.0% or higher (Center for Disease Control and Prevention, 2020). The American Diabetes Association (ADA) suggests that providers consider assessing and routinely monitoring diabetes distress, especially when treatment goals are unmet (ADA, 2019). Adults with diabetes are at higher risk of psychological distress. Depression affects one in five adults with type 2 diabetes (T2D) (Owens-Gary et al., 2018). More specifically, a meta-analysis of 55 studies found that diabetes-related distress was present in 36% of people screened using the Problem Areas in Diabetes-5 (Perrin et al., 2017).

According to Owens-Gary et al. (2018), “Diabetes distress is distinct from depression, diabetes distress results from the emotional burden (e.g., worry, frustration, anger, burnout) of managing T2D” (p. 320). Depression and DD often overlap; about 4.5% of adults with diabetes screen positive for both. Moreover, depression and DD are considered bi-directional, where depression or depressive symptoms exacerbates DD. Both conditions negatively affect glycemic control. Routine screening for diabetes-related distress is essential for improving the quality of life in people with diabetes and reducing healthcare costs in patients (Owens-Gary et al., 2018).

The practice site was not screening for DD, thus, overlooking approximately 2000 patients. The purpose of this QI project was to implement a diabetes-related distress screening and referral program in an outpatient endocrinology specialty clinic of a large academic medical center. It was anticipated that this practice change will promote evidence-based care, improve diabetes self-management, and increase utilization of resources. Long-term implications for the practice change include a reduction in A1C values in individuals referred to a MHP.

Literature Review

This evidence review provides a synthesis of the evidence supporting the implementation of diabetes distress screening. The review includes studies supporting the validity and reliability of the *Problem Areas in Diabetes* (PAID-5) questionnaire and the clinical utility of the tool. The quality of the evidence level and quality was adapted from the Melnyk & Fineout-Overholt (2005) *Rating System for Hierarchy of Evidence* see Appendix A.

Given that depression and diabetes-related distress often overlaps, proper identification is necessary to tailor treatment. The PAID is a 20-item questionnaire developed by Polonsky et al. (1997). The PAID seeks to identify the negative emotional experiences of living with diabetes that result in diabetes-related distress. However, due to the tool's length, the clinical utility is reduced in a busy practice. As a result, McGuire et al. (2010) developed the PAID-5, a short form of the PAID-20 that achieved a statistically significant correlation between the PAID-5 total score and the PAID-20, $r = 0.92$, $p < 0.001$. Therefore, the PAID-5 has been considered a valid and reliable screening tool for identifying diabetes-related distress (Lee et al., 2014; Vislapuu et al., 2019; McGuire et al., 2010).

After conducting test-retest reliability, the PAID-5 demonstrated temporal stability (Lee et al., 2014; Vislapuu et al., 2019). The PAID-5 also demonstrated convergent validity; the questionnaire is moderately correlated with a comparable depression scale and negatively correlated with the WHO-5 (a well-being scale) (Lee et al., 2014; Vislapuu et al., 2019; Reddy et al., 2013). Overall, the PAID-5 was found to be diagnostically acceptable, attaining a sensitivity rate of 95% and a specificity rate of 89% for patients with diabetes (McGuire et al., 2010).

Moreover, Chawla et al. (2010) conducted a non-experimental study that supported the PAID instrument's implementation. The result indicates that PAID can facilitate patient-provider

communication, positively impact the encounter, and significantly impact patients with poor glycemic control. Clinical improvement of A1c values was seen more often in patients with poor glycemic control. The study also found that the PAID was most useful at the initial encounter instead of follow-up visits. In people with diabetes, increased PAID-5 values were significantly correlated with poor glycemic control (Reddy et al., 2013; Chawla et al., 2010).

Skovlund et al. (2019) published a review of data reported directly by the patient. The review covers patient-reported outcome measures (PROMs) or patient-reported input (PRI) using validated patient questionnaires to provide person-centered care; this review found that PROMs are needed to reduce disease burden. The PAID instrument is one of the most widely used in clinical practice. The instrument is primarily used on an annual basis and can remove one of the barriers for use if successfully integrated into the electronic health record (EHR). The PAID-5 instrument covers each psychometric domain of the longer scale in five questions; the brevity of the tool allows for increased utilization in outpatient clinics and facilitates the determination of the prevalence of diabetes-related distress (McGuire et al., 2010; Skovlund et al., 2019; Vislapuu et al., 2019).

Across all studies for adults with diabetes, there appears to be good quality evidence (VI-B) demonstrating the validity and reliability of the PAID-5 and its clinical utility in practice (Tables 1 & 2).

Theoretical Framework

John Keller's ARCS Model of Motivational Design was the chosen theory of this QI project because the ARCS model was designed for promoting and sustaining motivation. The model assumes that if a person is motivated to achieve a goal, hardly anything can stop them; the model is grounded in the expectancy theory (Keller, 2009). The model has four steps: Attention, Relevance, Confidence, and Satisfaction (ARCS). Data was gathered to support the need for

screening people with diabetes which was used to increase attention to the practice change. The evidence was shared with the providers for feedback.

Screening for DD was relevant for the practice; this was the leverage used to propel the QI project. The medical director, a key stakeholder, actively sought ways to screen patients for DD using a unique tool to the population, which was distinct from depression screening. Years prior, an attempt was made to implement screening for DD at the clinic using the PAID-20; however, the project was unsuccessful due to the tool's length, the burden on the staff to fill out the tool with each patient, and provider time constraints.

Team confidence was increased after the first staff meeting based on feedback provided by the staff. Consequently, weekly data was provided to the team to increase the QI project's success and provide additional opportunities to learn how the implementation can be improved. Lastly, the staff was satisfied knowing that their workflow would be minimally impacted. The PAID-5 will be self-administered in the office or before the visit using the MyChart application. The tool will be embedded in a flowsheet in the EHR for data collection purposes. An algorithm was created to refer patients who screen positive. Overall, these factors increased learner motivation, a key concept in this model.

Methods

The purpose of this QI project was to implement a DD screening and referral program in an outpatient endocrinology specialty clinic of a large academic medical center. We implemented the project between August 31, 2020 – December 7, 2020. DD was measured using the PAID-5 questionnaire (see Appendix B). The PAID-5 consists of five questions on a 5-point Likert scale (0 = not a problem to 4 = serious problem). Brian McGuire, Ph.D., granted permission to use the PAID-5 scale (see Figure 1). The project goal was to identify individuals

experiencing DD and refer PAID-5 scores ≥ 8 to a MHP. Inclusion criteria included adults with a diagnosis of diabetes. Exclusions included age less than 18 years and pregnant women.

The QI project team comprised the DNP project lead, one nurse practitioner, and the medical director. During the pre-implementation phase, an ambulatory systems analyst created a flowsheet in Epic for the PAID-5 questionnaire and routed the PAID-5 to MyChart (see Figures 2 & 3). The DNP project lead then created an educational brochure that functioned as a patient resource and implementation aid (see Appendix C). The brochure was placed in the exam rooms, and a digital copy was attached to the questionnaire in MyChart. Lastly, the care team (providers, dietitians, and medical assistants [MA]) received virtual education one week before implementation.

During the implementation phase, patients completed the PAID-5 on MyChart one week before the appointment or in-person during the encounter. The Coronavirus (COVID-19) pandemic caused increased telemedicine utilization; thus, providers facilitated the PAID-5 questionnaire during telemedicine encounters. For in-office appointments, MA's distributed a paper copy of the PAID-5 for patients to self-report documented the responses into the PAID-5 flowsheet, and notified the provider of positive screens. Lastly, the provider discussed the results with patients scoring ≥ 8 and recommended referral to a MHP for further assessment. Each patient received a copy of the DD brochure regardless of their PAID-5 score.

The projects' structure, process, and outcome measures were assessed weekly through chart audits, which directed implementation tactics. The primary measures were PAID-5 screening compliance and mental health referral compliance. Secondary measures include PAID-5 scores and hemoglobin A1C value percentage; changes in the PAID-5 scores and A1C values were compared pre-and post-intervention. Screening compliance was determined by measuring

the number of persons screened divided by the total number of encounters. The mental health referral compliance was determined by the number of persons referred out of the number of persons who should have been referred based on PAID-5 scores ≥ 8 . Weekly emails were sent to the staff, discussing the primary outcomes, areas for improvement, and a visual depiction using run charts (see Figure 4). The DNP project lead provided individualized staff education to members of the care team. Two Epic SmartPhrases were embedded in the provider note template for increased clinical utility. The SmartPhrase used for the PAID-5 questionnaire was (.DDPAID5), while (.DDHANDOUT) was used for the DD brochure's digital version.

The data collected during the implementation period was securely managed using Research Electronic Data Capture (REDCap), a web-based application hosted under the institution's licensure (Harris et al., 2009). The DNP project lead designed the data collection instrument for the baseline and 3-month post-intervention data is presented in Appendix D & E. Data were de-identified before exporting to protect individuals' confidentiality and privacy. All exported data was stored on a password-protected computer and appropriately discarded upon completion of the project. Finally, the project was deemed *Not Human Subjects Research* (NHSR) by the University of Maryland, Baltimore Institutional Review Board, and the institutions' Clinical QI Review Committee.

Results

The PAID-5 screening compliance was 72% (n= 744/1028) and 31% (n= 228/744) of the patients screened had a PAID-5 score ≥ 8 . However, of the 228 patients with a positive score, 24% were referred, half refused, and 7% were already seeing a MHP. The patient population was 55% female and 45% male, the average PAID-5 score was 5, and the baseline A1C value was 8% (< 5.7%).

Throughout the implementation phase, various tactics were used weekly to support or alter the practice change based on the data and the desired outcomes. For example, the DNP project lead encouraged the Registered Dietitians (RDs) to screen patients missed during the clinical encounters to increase screening compliance. The RDs would then screen patients that were being seen for diabetes education; this change led to an increase in screening compliance by 8% during week 3. Moreover, to further increase screening compliance, a celebratory image was attached to congratulate the PAID-5 champions for the week (Figure 5). As a result, week 4 ended with a 12% increase in PAID-5 screening compliance after implementing weekly PAID-5 champion emails.

Multiple efforts were made to increase MHP referral compliance. During the first four weeks, the main barrier reported by some providers include discomfort in addressing patients who screened positive. These providers were not comfortable addressing the problem, did not know how to guide the conversation, or did not appropriately document the referral refusal in the EHR. Therefore, one-liners were created to facilitate the discussion. Prescribers were emailed two scripts, “It sounds like you are struggling with some aspects of your diabetes care. I would like to refer you to someone to talk to” and “According to your answers on the PAID-5, it sounds like living with diabetes is challenging for you. I would like to refer you to someone to talk to.” Providers were encouraged to utilize one of the scripts when addressing patients who screen positive using the PAID-5 tool. Moreover, if the clinical documentation did not address the referral of patients scoring ≥ 8 to a MHP, the DNP project lead contacted each patient and offered the referral.

Discussion

At the conclusion of the QI project, it was determined that screening for DD with the PAID-5 tool is feasible in this outpatient endocrine clinic. The project findings are consistent with the literature. The QI project identified that 31% of the patients screened had DD compared to 36% reported in a meta-analysis (Perrin et al., 2017). The PAID-5 tool was successfully used by the staff for the purpose of identifying patients with diabetes who are at risk for diabetes-related distress and facilitated the referral of distressed patients to MHPs. However, implementation of the PAID-5 tool revealed the challenges surrounding the stigma of mental health. Half the patients with a PAID-5 score ≥ 8 refused a MHP referral; one patient stated, “I don’t have a mental health problem.”

Of note, this QI project was conducted in an outpatient endocrine clinic, limiting the generalizability of the findings. Moreover, during weeks 13, 16, and 18, there was a decrease in screening during the Thanksgiving, Christmas, and New Year’s holidays, in addition to limited office hours for that week. Further limitations include the short duration of the QI project and the Coronavirus pandemic (COVID-19). The COVID-19 pandemic increased telemedicine utilization. As a result, some providers found it challenging to navigate the PAID-5 EPIC flowsheet during the Telemedicine encounter. The 18-week QI project was too short to provide meaningful outcomes such as changes in the PAID-5 score and changes in the A1C value pre- and post-intervention.

Conclusion

Diabetes-related distress is a highly prevalent condition in people diagnosed with diabetes. This QI project confirmed that the PAID-5 has clinical utility in an outpatient endocrine setting. The project results have significant implications for clinical practice; screening for DD provides a holistic and comprehensive approach to the management of diabetes and diabetes-

related outcomes. The DNP project lead successfully implemented a practice change supported by the ADA; using a validated screening tool, DD can be routinely monitored, and patients referred when appropriate.

Embedding the PAID-5 tool into the EHR increases the potential for sustained practice change and provides data points for quality measures. Screening for DD in this outpatient endocrine clinic identified the prevalence of DD and provided insights on future methods of reducing the mental health stigma. Future practice implications include identifying methods to increase mental health referrals for patients experiencing DD, and data collection over a longer timeframe is needed to track meaningful patient outcomes.

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Tables

Table 1

Evidence Review Table

Chawla, A., Saha, C., & Marrero, D. G. (2010). A Novel Application of the Problem Areas in Diabetes (PAID) Instrument to Improve Glycemic Control and Patient Satisfaction. <i>The Diabetes Educator</i> , 36(2), 337–344. https://doi.org/10.1177/0145721709354607					Level VI
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
<p>“The purpose of this study was to use the Problem Areas in Diabetes (PAID) instrument in a novel manner and assess whether providing primary care physicians the results of the questionnaire completed by their patients immediately prior to a clinical encounter would result in improvement in a patient’s glycemic control and/or post-encounter satisfaction score” (p. 337).</p>	<p>longitudinal pilot study</p>	<p>Sampling Technique: random convenience sampling</p> <p>The study was carried out at four separate offices</p> <p>Accepted: <i>n</i> = 61</p> <p>Eligible participants: newly diagnosed diabetic patients ≥ 18 years of age and those with longstanding disease; type 1 or type 2 diabetes diagnosis.</p> <p>Exclusion: severe visual or cognitive impairment</p> <p>Group homogeneity: 54% male and 46% female with ages from 41 to 91 (p. 337)</p>	<p>Intervention: “...patients completed the PAID questionnaire, and results were provided to the physician before the clinical encounter” (p. 337). Patients were also given a post-interview satisfaction survey.</p> <p>Patients were divided into three groups based on A1C values at the baseline visit</p>	<p>Measurement Baseline, 3-month, and 6-month clinic visit data were collected, and satisfaction was measured post-encounter.</p> <p>A1C was checked at all three visits; the first visit served as the baseline value.</p>	<p>A1C values are significantly correlated to PAID-5 scores and satisfaction scores at baseline. Moreover, the PAID instrument facilitates a therapeutic dialogue between patient and physician, has the most effect at the initial encounter, and makes the most impact on at-risk patients presenting with poor glycemic control (p. 337).</p>

<p>Lee, E.-H., Lee, Y. W., Lee, K.-W., Kim, Y. S., & Nam, M.-S. (2014). Measurement of diabetes-related emotional distress using the Problem Areas in Diabetes scale: Psychometric evaluations show that the short form is better than the full form. <i>Health and Quality of Life Outcomes</i>, 12(1). http://dx.doi.org/10.1186/s12955-014-0142-z</p>					Level VI
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
<p>“The PAID and PAID-5 were translated into Korean (K-PAID and K-PAID-5 using a forward-and backward translation technique...this study evaluated the psychometric properties of both the full- and short-form PAID.”</p>	Questionnaire	<p>Sampling Technique: convenience sampling</p> <p>Eligible participants: individuals with a diagnosis of type 2 diabetes (T2D), at least 20 years of age, and fluent in the Korean language were accepted</p> <p>Excluded: N/a Accepted: $n = 440$ Control: N/a Intervention: N/a</p> <p>Power analysis: The confirmatory factor analysis (CFA) was used to determine the sample size required for the study. The CFA was 10–20 times the number of observed (measured) variables, thus satisfying the present study’s sample size based on this criterion.</p> <p>Group Homogeneity: the group was homogenous; approximately half the of the participants were male ($n = 226$), most</p>	<p>Control: K-PAID-5 questionnaire Intervention: K-PAID-5 questionnaire</p> <p>Treatment fidelity Participants were given a stamped, self-addressed return envelope for the questionnaire. They were asked to take the envelopes home, complete the questionnaire, and then return them by post in the envelope provided. Research assistants were to send them cellular-phone text-message reminders for completion.</p>	<p>Measurement tools</p> <p>Factorial-construct validity: “The model was considered to adequately fit when the following criteria were satisfied: ratio of the χ^2 value of the degrees of freedom (CMIN/DF) <3.0, goodness-of-fit index (GFI) >0.90, comparative-fit index (CFI) >0.90, normed-fit index (NFI) >0.90, root-mean-square residual (RMR) <0.08, and root-mean-square error of the approximation (RMSEA) <0.08” (p. 3)</p> <p>Internal-consistency reliability: Reliability was present given Cronbach’s alpha noted as ≥ 0.70.</p> <p>Test-retest reliability: “The test-retest reliability was evaluated using the Intraclass Correlation Coefficient (ICC) with</p>	<p>Factorial-construct validity: the one-factor model demonstrated excellent goodness-of-fit indices (CMIN/ DF = 2.884, GFI = 0.990, CFI = 0.993, NFI = 0.989, RMR = 0.039, and RMSEA = 0.066)</p> <p>Internal-consistency reliability: “The Cronbach’s alpha value of the K-PAID-5 as a one-factor scale was 0.87” (p.4)</p> <p>Test-retest reliability: The K-PAID-5 was completed a second time by $n = 58$. The ICC was 0.89,</p>

		were employed ($n = 216$) and married/living with a partner ($n = 351$).		a criterion of ≥ 0.70 " (p. 4) Convergent validity: The convergent validity was evaluated using Pearson's correlation Known-groups validity: The known-groups validity was analyzed using t-test and Cohen's effect size.	indicating temporal stability. Convergent validity: The K-PAID-5 was ($r = 0.48$, $p < 0.001$) when evaluated against the Center for Epidemiologic Studies Depression Scale and was found to be moderately correlated with the CES-D score reflecting convergent validity. Known-groups validity: "The mean scores of the K-PAID-5 were significantly higher for females than for males ($t = -3.30$, $p = 0.001$, Cohen's $d = 0.31$), reflecting satisfactory known-groups validity" (p. 6).
McGuire, B. E., Morrison, T. G., Hermanns, N., Skovlund, S., Eldrup, E., Gagliardino, J., Kokoszka, A., Mathews, D., Pibernik, M., Rodriguez, J., Wit, M., & Snoek, F. J. (2010). Short-form measures of diabetes-related emotional distress: The Problem Areas in Diabetes Scale (PAID)-5 and PAID-1. <i>Diabetologia</i> , 53(1), 66–69. https://doi.org/10.1007/s00125-009-1559-5					Level VI
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
"We wanted to identify a five-item short form of the Problem Areas in Diabetes Scale and a single-item measure for rapid screening of diabetes-related emotional distress."	Principal-components analysis	Sampling Technique: two randomized subsamples Eligible participants: respondents were from the ongoing international,	Control: N/a Intervention: N/a Intervention fidelity: use of an existing database	Measurement tools Construct validity: Exploratory factor analysis (EFA)	Construct validity: Exploratory factor analysis (EFA) one-factor solution accounted for 59.3% of the variance.

		<p>multicenter studies' Diabetes Attitudes, Wishes, and Needs [DAWN] and Monitoring Individual Needs in Diabetes [MIND] study who completed the PAID questionnaire.</p> <p>Excluded: N/a Accepted: $n = 1153$ Control: N/a Intervention: N/a Power analysis: N/a</p> <p>Group Homogeneity: the group was fairly homogenous; a little over half of the participants were female ($n = 601$), most were employed ($n = 424$), and a majority has type 2 diabetes ($n = 725$).</p>		<p>Internal-consistency reliability: Cronbach's alpha</p> <p>Convergent validity: Pearson's correlation</p> <p>Known-groups validity: t-test and Cohen's effect size</p>	<p>Internal-consistency reliability: Subsample 1 Cronbach's α 0.86 and subsample 2 Cronbach's α 0.83.</p> <p>Convergent validity: Validity of the PAID-5 was also demonstrated by a statistically significant correlation ($r=-0.47$, $p<0.001$) when measured against the well-being (the WHO-5), suggesting that as diabetes-related distress increases, well-being decreases.</p> <p>The PAID-5 total score correlated significantly with the PAID-20 total score, $r=0.92$, $p<0.001$.</p> <p>Known-groups validity: based on the results on the PAID- 5, women had a significantly higher mean score than men (women's mean score=6.81, $SD=5.27$; men's mean score=5.23, $SD=4.74$), ($t [587]=3.79$, $p<0.001$, Cohen's $d=0.32$); suggesting satisfactory known-groups validity.</p>
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				Diagnostic accuracy: sensitivity and specificity	Diagnostic accuracy: The diagnostic accuracy of the PAID-5 scale was acceptable, attaining a sensitivity rate of 95% and a specificity rate of 89%.
Reddy, J., Wilhelm, K., & Campbell, L. (2013). Putting PAID to diabetes-related distress: the potential utility of the problem areas in diabetes (PAID) scale in patients with diabetes. <i>Psychosomatics</i> , 54(1), 44–51. https://doi.org/10.1016/j.psych.2012.08.004					Level VI
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
<p>“We hypothesized that (1) DM-related distress is associated with (i) high levels of general distress, (ii) high levels of current depression, and (iii) a diagnosis of past depressive disorder. (2) The relationship between past depression and DM related distress is no longer present after controlling for current depressive disorder. (3) Greater DM-related distress is associated with impaired glycemic control (higher HbA1c levels)”</p>	Cross-sectional	<p>The study was carried out at two Diabetes Clinics (St. Vincent’s Hospital and the Prince of Wales Hospital, Sydney)</p> <p>Eligible participants: people with diabetes</p> <p>N =184 Type 1 (n = 51) and Type 2 (n = 133)</p> <p>Group Homogeneity: 53% were male, and 75% had T2DM</p>	<p>Intervention: completion of the PAID, PHQ-9, Kessler-10 psychological distress (K10), and Short-Form Survey (SF-12) instruments</p>	<p>Measurement tools</p> <p>PHQ has criterion, construct, and external validity</p> <p>K 10 - suitable for screening the general population and has an internal consistency (Cronbach’s alpha) of 0.93</p> <p>SF 12 – comprised of a physical and mental component, “test-retest reliabilities of 0.86 to 0.89 and 0.76 to 0.78, respectively, and a predictive validity of 0.91 for the PCS-12 and 0.94 for the MCS-12” (p. 46).</p> <p>PAID - demonstrated sensitivity to change;</p>	<p>DM-related distress correlated positively with HbA1c, PHQ-9 depression, K10, and SF-12 MCS (mental component summary) scores (all p 0.01), and negatively with age (p 0.01).</p> <p>Regression analysis revealed a significant association between PAID with PHQ-9 depression scores (p 0.01) and with HbA1c (p 0.01).</p> <p>PWD with a history of depressive disorder had higher PAID scores than those without (p 0.05), which was significant even after controlling for current</p>

				therefore, it suitable as an outcome measure. It has internal reliability $\alpha = 0.90$, and test-retest reliability of $r = 0.83$ have been established	depression scores (p 0.05). There was a significant negative correlation between PAID scores and participant age ($r = -0.288$, p 0.01)
Vislapuu, M., Broström, A., Igland, J., Vorderstrasse, A., & Iversen, M. M. (2019). Psychometric properties of the Norwegian version of the short form of The Problem Areas in Diabetes scale (PAID-5): A validation study. <i>BMJ Open</i> , 9(2). http://dx.doi.org/10.1136/bmjopen-2018-022903					Level VI
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
This study aimed to examine the psychometric properties of the PAID-5 scale.	A cross-sectional survey design	<p>Sampling Technique: consecutive sampling strategy</p> <p>Eligible participants: Patients were considered eligible to participate in the study if they were diagnosed with T1D or T2D more than one year ago, were between the ages of 18 and 65 years old, had the mental capacity to participate, and were able to read and write in the Norwegian language.</p> <p>Excluded: Patients did not meet the criteria were those that were diagnosed with gestational diabetes, short life expectancy/terminal</p>	<p>Control: Questionnaire (68 questions) which included the PAID-5 (5 question screening tool)</p> <p>Intervention: Questionnaire (68 questions) which included the PAID-5 (5 question screening tool)</p> <p>Intervention fidelity: “Patients meeting the inclusion criteria received the questionnaire (68 questions in total) by mail, an information letter, a consent form to accept, prepaid envelopes and stamps” (p. 2).</p>	<p>Measurement tools</p> <p>Construct validity: Assessed with the goodness-of-fit index (GFI), comparative fit index (CFI), root mean squared error of approximation (RMSEA) and standardized root mean square residual (SRMR), a ratio of χ^2 value of the DF (CMIN/DF) and normed fit index (NFI).</p> <p>The model was considered to fit the data when the following criteria were satisfied: GFI>0.90, CFI>0.95, RMSEA<0.08, SRMR <0.08, CMIN/ DF< 3, and NFI>0.95.</p>	<p>Construct validity: GFI=0.984, CFI=0.995, RMSEA=0.061, SRMR=0.024, CMIN/DF=1.5, and NFI=0.984 shows excellent fit. The overall $\chi^2=6.0$, df=4 (p-value of 0.195), showed a good model fit.</p>


		<p>illness, and if patients were unable to provide informed consent.</p> <p>Accepted: $n = 143$ Control: N/A Intervention: N/A</p> <p>Power analysis: Estimating sample size was determined through confirmatory factor analysis (CFA); it was determined that 90 – 190 cases are required for a one-factor model.</p> <p>Group Homogeneity: Demographics of the questionnaire returned $n = 143$ yielding a response rate of 42%. The group was predominantly male 54.5 %, and type 1 diabetic (60%).</p>		<p>Internal-consistency reliability: Cronbach’s α was used to determine internal consistency for the PAID-5 scale total scores.</p> <p>Test-retest reliability: To examine the stability of the PAID-5 measured by an Intraclass Correlation Coefficient (ICC).</p> <p>Convergent validity: Assessed by Pearson’s correlations to examine the relationships between PAID-5 scores and Well-being (WHO-5)</p>	<p>Internal-consistency reliability: The Cronbach’s α for the PAID-5 scale was 0.89.</p> <p>Test-retest reliability: PAID-5 was completed a second time by $n = 92$ resulted in an ICC of 0.81 (95% CI 0.70 to 0.87, $p < 0.001$).</p> <p>Convergent validity: CV was confirmed by a negative correlation between the PAID-5 and WHO-5 scale ($r = -0.363$, $p < 0.001$). Moreover, a significant correlation between the PAID-5 total score and the PAID-20 total score ($r = 0.923$, $p < 0.001$) was also found.</p> <p>Group Homogeneity: It was determined that there was no significant difference in PAID-5 scores between persons with type 1 diabetes (mean=5.59, SD=4.58) and persons with type 2 diabetes (mean=4.95, SD=3.93, $p = 0.38$).</p>
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Table 2

Synthesis Table

Evidence-Based Practice Question (PICO): Are the psychometric properties of the Problem Areas in Diabetes (PAID-5) scale valid for use in adult patients with diabetes to identify diabetes distress?			
Level of Evidence	# of Studies	Summary of Findings	Overall Quality
VI	5	<p>(Lee et al., 2014; Vislapuu et al., 2019), determined that after conducting test-retest reliability, the PAID-5 demonstrated temporal stability. Moreover, the latter two studies also conducted convergent validity of the PAID-5; (Reddy et al., 2013; Lee et al., 2014) found the PAID-5 to be moderately correlated with a comparable depression scale, whereas, Vislapuu et al. (2019) found a negative correlation between the PAID-5 and the WHO-5 (a well-being scale). Overall, the PAID-5 was diagnostically acceptable, attaining a sensitivity rate of 95% and a specificity rate of 89% for patients with diabetes.</p> <p>Four studies (Chawla et al., 2010; Lee et al., 2014; McGuire et al., 2010; Vislapuu et al., 2019) found the short form of the PAID-20 (the PAID-5) to have excellent construct validity and satisfactory internal consistency reliability.</p>	<p>B. All the studies were determined to be of good quality. Each study had well-defined methods for determining the reliability and validity of the PAID-5 scale. As discussed in the evidence review, the studies conducted by (Lee et al., 2014; Vislapuu et al., 2019) had adequate sample sizes. Each study conducted resulted in reasonably consistent results that were sufficient for the criteria presented. Each study used reliable and valid measures to deem the constructs of the scale fit for use in the suggested population. The conclusions and recommendations are reasonably consistent. The PAID-5 has a significant advantage in a practical context and is considered a valuable screening instrument in outpatient clinics.</p> <p>The study conducted by McGuire et al. (2010) had a large sample size but did not report the study’s power analysis. However, the two study groups were randomized into subgroups. With that in mind, the study had similar findings compared to the literature.</p>


Figure 1*Permission to use the PAID-5*

 **Jheneale Grandison** <jgrandison@umaryland.edu>
to brian.mcguire ▾ Wed, Oct 28, 10:11 PM (1 day ago) ☆ ↶ ⋮

Hello Mr. McGuire,

I am fulfilling the requirements for the doctor of nursing practice degree (DNP) at the University of Maryland, Baltimore. I am seeking permission to use your shortened version (PAID-5) for screening patients at an endocrine clinic for diabetes distress with appropriate acknowledgment in the manuscript.

I look forward to hearing from you,
--
Jheneale Grandison, BSN, RN
University of Maryland | School of Nursing '21
Adult Primary Care Gerontology Doctor of Nursing Practice Student
C: 347-962-8555
E: jgrandison@umaryland.edu

 **McGuire, Brian** <brian.mcguire@nuigalway.ie>
to me ▾ 4:31 AM (18 hours ago) ☆ ↶ ⋮

CAUTION: This message originated from a non-UMB email system. Hover over any links before clicking and use caution opening attachments.

Hi Jheneale, feel free to use the PAID-5, there is no license needed.

All the best with your studies.

Brian

Professor Brian McGuire
Professor of Clinical Psychology & HRB Research Leader
Co-Director, Centre for Pain Research
School of Psychology
National University of Ireland, Galway
Tel. 091 493266

Figure 2

PAID-5 Embedded in Epic Flowsheet

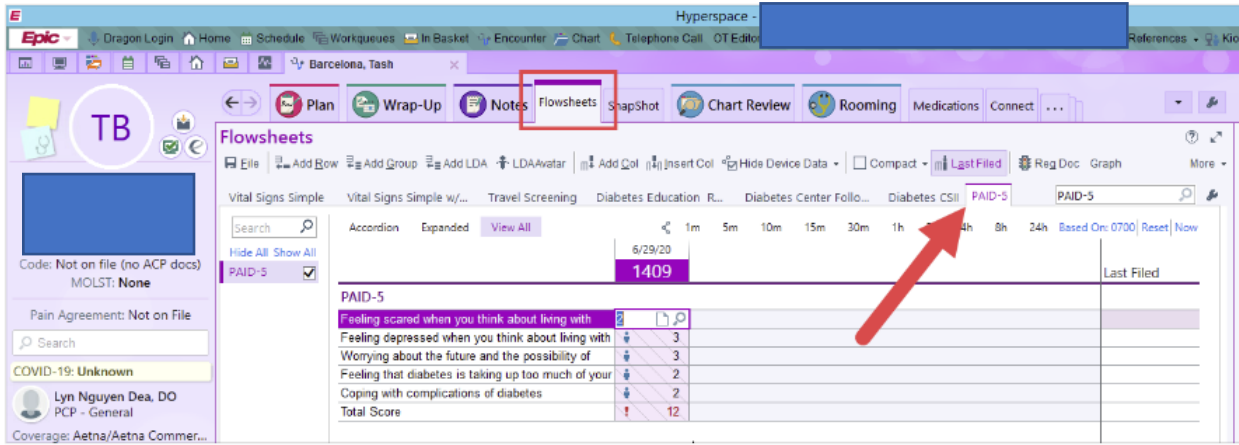


Figure 3

PAID-5 Embedded into MyChart

The screenshot shows the MyChart interface for a Diabetes PAID-5 screening. At the top, there is a navigation bar with icons for Menu, Visits, Messages, Test Results, and Medications. The main content area is titled "Diabetes PAID-5" and includes a message header: "Attached to a message from [redacted] received 6/23/2020". Below this, instructions state: "Instructions: Which of the following diabetes issues are currently a problem for you? Select the option that gives the best answer for you. Please provide an answer for each question." A legend indicates that an asterisk (*) denotes a required field. There are five questions, each with five response options: "Not a problem", "Minor problem", "Moderate problem", "Somewhat serious", and "Serious problem". The questions are: 1. "Feeling scared when you think about living with diabetes", 2. "Feeling depressed when you think about living with diabetes", 3. "Worrying about the future and the possibility of serious complications", 4. "Feeling that diabetes is taking up too much of your mental and physical energy every day", and 5. "Coping with complications of diabetes". At the bottom of the form, there are three buttons: "CONTINUE" (grey), "FINISH LATER" (yellow), and "CANCEL" (red).

Figure 4

PAID-5 Screening Compliance Percentage

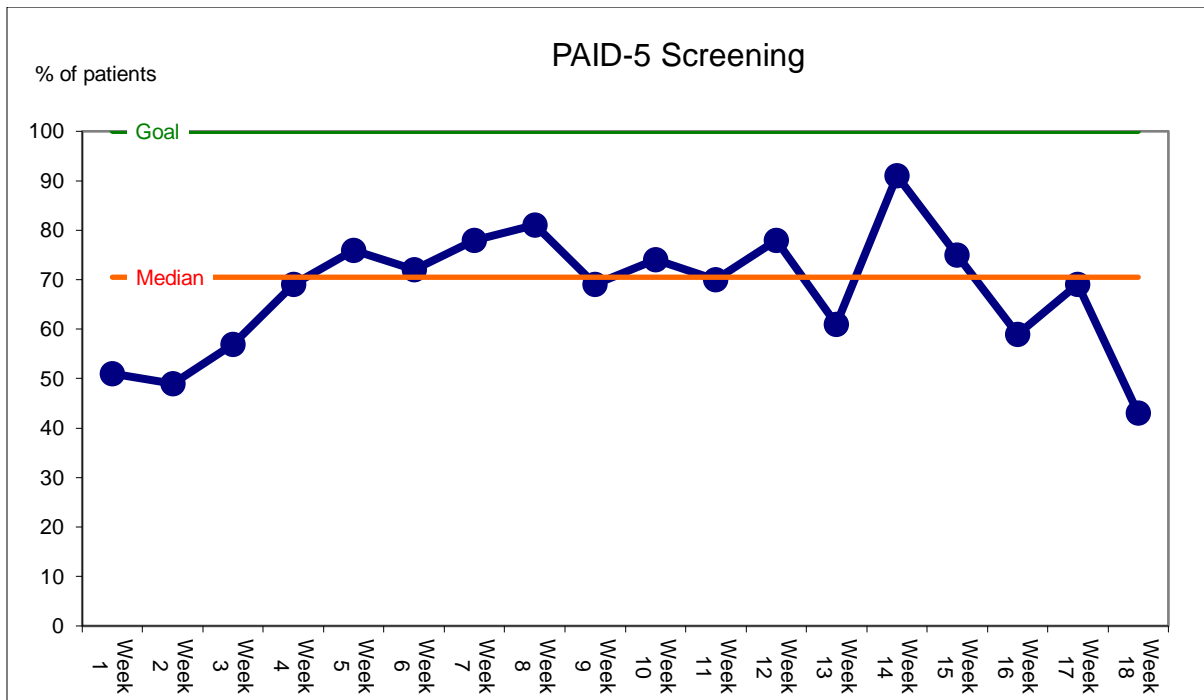


Figure 5

Weekly PAID-5 Champions



Appendix A

Rating System for Hierarchy of Evidence

(Adapted from Melnyk & Fineout-Overholt, 2005)

Level of Evidence	Type of Evidence
I (1)	Evidence from systematic review, meta-analysis of randomized controlled trials (RCTs), or practice-guidelines based on a systematic review of RCTs.
II (2)	Evidence obtained from well-designed RCT and/or reports of expert committees.
III (3)	Evidence obtained from well-designed controlled trials without randomization.
IV (4)	Evidence from well-designed case-control and cohort studies
V (5)	Evidence from systematic reviews of descriptive and qualitative study
VI (6)	Evidence from a single descriptive or qualitative study
VII (7)	Evidence from the opinion of authorities

Quality Rating Based on Quality Appraisal

A: High – Consistent results with sufficient sample, adequate control, and definitive conclusion; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific literature

B: Good – reasonably consistent results; sufficient sample, some control, with a fairly definitive conclusion; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence

C: low/major flaw– little evidence with inconsistent results; insufficient sample size; conclusions cannot be drawn.

Appendix B

PAID-5 Questionnaire

PAID-5

Instructions: Which of the following diabetes issues are currently a problem for you? Circle the number that gives the best answer for you. Please provide an answer for each question.

	Not a problem	Minor problem	Moderate problem	Somewhat serious problem	Serious problem
Feeling scared when you think about living with diabetes	0	1	2	3	4
Feeling depressed when you think about living with diabetes	0	1	2	3	4
Worrying about the future and the possibility of serious complications	0	1	2	3	4
Feeling that diabetes is taking up too much of your mental and physical energy every day	0	1	2	3	4
Coping with complications of diabetes	0	1	2	3	4

For the PAID-5, a total score of ≥ 8 indicates possible diabetes related emotional distress, which warrants further assessment. On the full 20-item PAID, a score of > 33 has been suggested as indicative of likely emotional distress and a score of 38 is indicative of possible depression and, in each case, further assessment is warranted. Further assessment is facilitated by reference to the specific items endorsed as problematic by the patient. Local service protocols can be developed whereby patients scoring above an agreed score, or those endorsing particular problems areas, should be referred to a mental health professional or specialist nurse for psychological support and treatment.

Appendix C

Diabetes Distress: Are You at Risk? Brochure

ENDOCRINE CENTER

Diabetes Distress

ARE YOU AT RISK?

PAY ATTENTION TO YOUR FEELINGS

Diabetes can be frustrating. The unpredictability of blood sugar, daily schedules, and life can be overwhelming. Diabetes distress (DD) is very common and refers to the emotional burdens, worries, and individuals' experiences in having to manage a complicated and demanding disease such as diabetes.

DIABETES DISTRESS

DEALING WITH THE WEIGHT OF DIABETES

The prevalence of DD is 18-45%.

Only 24% of people reported to their health care team about how diabetes affected their lives. High levels of DD significantly impact medication-taking behaviors and are linked to higher A1C, lower self-confidence, and poorer dietary and exercise behaviors.

Other issues known to affect self-management of diabetes include attitudes about the illness, expectations for medical treatment and results, available resources (financial, social, and emotional), and psychiatric history.

DIABETES DISTRESS

COPING WITH DIABETES DISTRESS

DO ONE THING AT A TIME
When you think about everything you need to do to manage your diabetes, it can be overwhelming. To deal with diabetes distress, make a list of all the tasks you have to do to take care of yourself each day. Try to work on each task separately, one at a time.

PACE YOURSELF
As you work on your goals, like increasing physical activity, take it slowly. You don't have to meet your goals immediately. Your goal may be to walk 10 minutes, three times a day each day of the week, but you can start by walking two times a day or every other day.

TAKE TIME TO DO THINGS YOU ENJOY
Give yourself a break! Set aside time in your day to do something you really love; it could be calling a friend, playing a game with your children or grandchildren, or working on a fun project. Find out about activities near you that you can do to make new friends.

DIABETES DISTRESS

SHARE YOUR FEELINGS

TALK WITH YOUR HEALTH CARE PROVIDER

Diabetes does not go away, so what can I do to ease my distress?

Let your doctor, nurse practitioner, diabetes educator, psychologist, or social worker know how you have been feeling. They can help you problem-solve your concerns about diabetes. It is important not to feel that you have to hide your diabetes from other people.

Your health care provider may also suggest that you speak with other health care providers to get help.

ASK IF HELP IS AVAILABLE
If you are worried about the cost of your medicines, talk with your pharmacist and other health care providers. They may know about programs that can assist people with the costs of insulin, diabetes medicines, and supplies (test strips, syringes, etc.).

Appendix D

Baseline PAID-5 Screening Data Collection Form

Confidential PAID-5 Implementation QI Project
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Baseline Data

Record ID _____

Date of Encounter _____

MRN _____

Gender Female
 Male


PAID-5 Screening Complete Yes
 No

PAID-5 Score Baseline _____
(PAID-5 score scale is 0 - 20 max)

Patient Referred Yes
 No

Reason not referred Patient Refused/Not Ready
 Patient already has a MHP
 N/A
(If score is < 8, or provider did not refer select N/A)

Hb A1c Baseline _____

10/28/2020 5:36pm projectredcap.org 

Appendix E

3-Month Post-intervention Data Collection Form

Confidential PAID-5 Implementation QI Project
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Month 3 Data

Record ID _____

Date of Encounter _____

PAID-5 Screening Complete Yes
 No

PAID-5 Score Month 3 _____
(PAID-5 score scale is 0 - 20 max)

MHP appointment compliant Yes
 No
 NA
(If score is < 8 or if patient refused referral select N/A)

Hb A1c Month 3 _____

10/28/2020 5:36pm projectredcap.org 