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Theory in Practice: Helping Providers Address Depression in Diabetes Care

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Abstract

Introduction—A Continuing Education (CE) program based on the theory of planned behavior was designed to understand and improve health care providers' practice patterns in screening, assessing, and treating and/or referring patients with diabetes for depression treatment.

Methods—Participants completed assessments of attitudes, confidence, intentions, and behaviors regarding depression management at three time points: immediately prior to the CE program (baseline), immediately after the CE program (posttest) and six-weeks after the CE program (follow-up).

Results—Ninety eight providers attended the CE program; 71 completed the baseline assessment; 66 completed the posttest assessment, and 37 completed the 6-week follow-up. Compared to baseline, at posttest providers reported significantly more favorable attitudes, fewer negative attitudes, greater confidence, and greater intention to address depression with their diabetes patients. At six weeks follow-up, there was a marginally significant increase in educating patients about depression, but no other depression management practices changed. Intention to change and confidence predicted some depression practice patterns at follow-up. Fewer barriers were a consistent predictor of depression practice patterns at follow-up.

Discussion—In the short-term, provider attitudes, confidence, and intentions to address depression with their patients improved. Intention, confidence, and especially barriers are important intervention targets.

- Depression is a common comorbidity of diabetes.
- Healthcare providers must be better prepared to manage depression in their diabetes patients.
- Educating health professionals is one approach to improving depression care.
- Healthcare systems must address barriers to providers' efforts to manage depression.
- Continuing education programs should aim to enhance providers' intentions, confidence, and skills to overcome barriers to addressing depression in clinical care.

Keywords

depression; diabetes; continuing education; theory of planned behavior

An estimated 18–31% of persons with diabetes also have depression, which is more than double that of persons without diabetes.¹ Diabetes patients with comorbid depression develop decreased physical functioning, and experience increased health care costs,² and higher rates of disabling and life-threatening diabetes complications. Unfortunately, up to one half of depressed patients in the general population are undiagnosed or undertreated and rates are as low or even lower for patients with diabetes.^{3–5} This has been identified as a major public health issue.^{6–8} Depression usually first presents in medical rather than mental health settings. Thus, healthcare providers must be better prepared to manage depression in their diabetes patients.

The depression management practice gap may be due to barriers on many levels, including but not limited to a lack of clear depression treatment guidelines.⁹ Despite the substantial discoveries regarding neurotransmitters¹⁰ and the effectiveness of both pharmaceutical and non-pharmaceutical treatments, much less is known about how these treatments work and for whom. As a result, non-mental healthcare providers may not be well prepared to treat patients with suspected depression.

Other barriers to depression management in practice are provider-related.¹¹ Competing medical demands require that providers prioritize services and defer some services to subsequent visits. ¹² The respective responsibilities of the primary care provider, diabetes specialist, and mental health specialist are often unclear. Other barriers include visit duration, reimbursement structures, and availability of affordable mental health services. Yet, recent evidence suggests that evidence-based treatment for depression is cost efficient, despite the difficulties created by everyday practice.

Educating health professionals is one approach to improving depression care.^{13–16} In a recent review, Glied, Herzog, and Frank¹⁷ examined existing studies of the cost-effectiveness of various strategies for treating depression in primary care settings and assessed their net benefit on quality adjusted life years. The strategies were not themselves drugs or therapies; rather, they were organizational in nature and focused on training primary care staff and restructuring primary care practices. They found that enhanced care strategies that focus primarily on improving recognition and treatment of depression in primary care, through clinician training aimed at improving management of depression,¹⁸ most consistently produced positive net benefits.¹⁷

Continuing Education Grounded in Behavior Change Theory

Continuing education (CE) programs based largely on delivering *information alone* are largely ineffective.^{19–22} Adopting a theoretical framework for behavior change when designing, implementing, and evaluating CE programs can systematically define, promote, and explain provider behavior change.

The theory of planned behavior (TPB) has predicted the uptake of new techniques by healthcare providers.^{21, 23–26} According to the TPB, intentions to perform a behavior are the most immediate antecedents to behavioral performance and represent a convergence of positive attitudes, social approbation, and perceived control.²⁷ Intention to change here refers to the belief in the rightness of an act or course of action, which Overton and MacVicar²⁸ define as an *attitudinal* commitment to change. This is distinguished from a *behavioral* commitment which is a habitual binding to an increasing number of undeviating

acts. Perceived control originates from Bandura's (1977) social cognitive theory, which suggests that self-efficacy (one's confidence in performing a behavior) is the most critical determinant of behavioral performance.²⁹ Previous studies have shown that practice behaviors are influenced by intention,³⁰ confidence,²⁶ and attitudes.^{31–33}

The practice gap has prompted the need for educational communication strategies that modify intentions, confidence, and attitudes towards behaviors.³⁴ Thus, the TPB is well justified for CE activities.^{35, 36} Wakefield ³⁷ states that a critical element of testing the effects of such interventions is often lacking, i.e., participants must be surveyed later and asked if the intended change was made and, if not made, what prevented the change.

To our knowledge, no CE activity has focused on improving providers' identification and treatment of depression among patients with diabetes. We developed such a CE program grounded in critical elements of behavior change derived from the theory of planned behavior. It was evaluated by measuring the core constructs of TPB, and relating them to depression management practice patterns at follow-up.

Methods

Participants

Healthcare providers in Connecticut were invited to a free CE program that included a free dinner and continuing education credits. Efforts were made to recruit healthcare providers whose practices would include a substantial proportion of patients with diabetes including certified diabetes educators, internal medicine physicians, and primary care nurse practitioners. Healthcare providers who do not specialize in diabetes (e.g., oncologists) were not specifically targeted for recruitment but were welcome to attend if they registered. Attendees were recruited via the department of public health website, professional association listserves, local healthcare advocacy groups, emails to diabetes program directors at area hospitals and outpatient clinics, and professional association mailings. All interested respondents were allowed to attend. This program was approved by the authors' respective Institutional Review Boards (JW & CK).

Continuing Education Activity

The educational needs of the learners were determined through key informant interviews with local leaders in diabetes care including diabetes educators, primary care physicians, and the department of health diabetes program director.

The CE program described here followed principles of effective interventions; it engaged community stake holders, health care professionals, and paraprofessionals in a participatory process that was centered on learning and empowering, and it linked identification, planning, action, and evaluation.¹⁵

The CE program was delivered in two different geographic locations on two consecutive evenings in 2008. Connecticut is a small, densely populated state, and the 2 locations chosen were picked to maximize attendance statewide. Sessions were scheduled in the evening to minimize conflicts with outpatient work demands. Each 2-hour session was led by a clinical health psychologist (JW) and a physician who covered prevalence and risk factors for depression in diabetes, signs and symptoms of depression, effective depression treatments, and coordination with mental health professionals. Case vignettes presented common barriers to depression management. We also reviewed and made available the PHQ,³⁸ a reliable, valid, widely used, and publicly available depression screening measure for use in medical settings. Finally, free/low-cost mental health services in Connecticut and their agencies' contact information were reviewed.

Measures

Original depression management measures may be accessed at www.jcehp.com

Demographics—Health care provider characteristics and healthcare setting characteristics were measured with questions adapted from a Canadian study of mental health practice patterns among family practitioners.³⁹use in

Self-efficacy regarding ability to manage patient depression—Depression management self-efficacy was measured with a scale developed by Gerrity et al.⁴⁰ The scale consists of 4 items on a 4-point Likert scale from 1=“not confident” to 4=“very confident.” An example item is, “I can diagnose depression.” This scale shows factorial validity, acceptable internal consistency reliability with Cronbach alpha=.86, construct validity, and sensitivity to change.⁴⁰ It has been successfully used in a large samples of various healthcare providers.^{41, 42} We added three items regarding confidence in identifying, referring, and discussing depression. The resulting 7-item confidence scale showed excellent internal consistency in our sample, alpha=.93. It also showed evidence of criterion validity; self-efficacy was positively associated with self-reported routine depression screening, $r=.32$, $*p<.05$.

Barriers to patient depression management—Barriers to depression management were measured with an eighteen item scale developed by Williams et al.⁴³ The scale asks the respondent to recall their last depressed patient. It asks, “The following items are factors that health care providers have reported limited their ability to recognize or intervene regarding depression. How much did each factor affect you in your last depressed diabetic patient?” We modified the wording slightly to say “your last depressed diabetic patient”. Responses are on a 3-point Likert scale from 1= “did not limit” to 3= “limited a great deal.” An example item is, “Poor reimbursement for depression treatment.” Olson reports evidence of factorial validity, and adequate internal consistencies for each factor with alphas ranging from .67 to .79.^{41, 42} An abbreviated 13-item yielded alpha=.74.⁴⁰ Internal consistency was very good in our sample, alpha=.84. It also showed evidence of criterion validity; barriers were negatively associated with self-reported routine depression screening, $r=-.32$, $*p<.05$.

Intention to change depression management practices—Intention to change depression management practices was measured with an eight item scale developed by Gerrity et al.⁴⁰ It asks “Given the realities of your work situation, how likely are you to implement each of the following strategies regarding depression in the next 6 months?” Responses were on a 4-point Likert scale from 1= “unlikely” to 4= “almost certain.” An example item is, “Use depression screening instruments.” The scale was developed using separate large development and validation samples. It showed good internal consistency with alpha=.75. In our sample, alpha=.74. It also showed evidence of criterion validity; intentions were positively associated with self-reported routine depression screening, $r=.27$, $*p<.05$.

Attitudes regarding depression management—The 8-item Pediatricians Attitudes regarding Maternal Depression (PAMD) scale was adapted for use in our study.⁴⁴ It asks, “How strongly do you agree or disagree with the following statements?” Responses are on a 5-point Likert scale from 1=“strongly disagree” to 5=“strongly agree.” An example of a positive attitude item is, “Recognizing depression is my responsibility”, and a negative attitude item is, “I feel like I’m invading my patient’s privacy if I ask about depression.” The PAMD has a theoretically meaningful factor structure, acceptable internal consistency coefficients, and good construct validity. Alpha in our sample for positive attitudes was .81,

and for negative attitudes was .64. It also showed evidence of criterion validity; negative attitudes scale were negatively associated with self-reported routine depression screening, $r = -.30$, $*p < .05$.

Depression management practices—A published measure that examines practice patterns for the management of depression in medical patients by primary care providers and pediatricians was adapted for use in our project.^{41, 42} Olson piloted the measure for face validity, clarity, and response variability, and then revised accordingly. Two broad sets of questions are asked. The first set asked generally about depression screening and treatment (e.g., “Do you routinely use validated depression screening questionnaires?” Yes or No). The second set of questions asked the participant to recall the last patient (which we modified to say ‘patient *with diabetes*’) for whom depression was suspected. Questions asked about how that specific patient was handled (e.g., “Did you perform any of the following patient education activities? Circle all that apply”). The format of recalling their last case was chosen to limit overgeneralization and social desirability in responses. These sets of questions showed evidence of construct validity in our sample. For example, participants who endorsed routine use of depression screening tools reported fewer barriers to effective depression management, $F(1,55) = 6.37$, $*p < .05$.

Participant satisfaction with the CE program—Attendees were asked to evaluate the CE program by indicating how well the educational activity met each of its six learning objectives. Responses were on a 4-point Likert scale from 0=“did not meet at all” to 4=“completely met.”

Data Collection and Analysis

Participants completed assessments at three time points: immediately prior to the CE program (baseline), immediately after the CE program (posttest) and six-weeks after the CE program (follow-up).

Data were analyzed using SPSS v15. Due to attrition, to evaluate the effects of the intervention, we employed a conservative intent-to-treat analysis, and we employed a conservative Bonferroni-adjusted criterion of $p < .003$ (i.e., .05 divided by the number of tests). To investigate the determinants of depression management behaviors at follow-up, multiple and logistic regressions were performed. Because our goal in these regression analyses was accurate prediction, rather than detecting the effects of the intervention, we only included participants with data at all 3 time points and set alpha a priori at .05.

Results

Participants

Seventy-one attendees completed assessments at baseline; $n = 66$ (93% of baseline) completed posttest, and $n = 37$ (52% of baseline) completed six-week follow-up. See Table 1 for participant characteristics.

Baseline Patient Depression Care

Baseline depression care evidenced a significant practice gap. Fifty percent of participants ($n = 36$) reported ever using a depression screening questionnaire, and only 28% ($n = 20$) used one regularly. Of those who used any screening measure, only one-third used a validated screening measure.

Participants were asked to report how they responded to the last patient with diabetes they suspected had depression. For most of the sample, suspected depression was based solely on

the “overall impression of the patient” (35%, n=25), or “overall impression and assessment of one or two depressive symptoms” (an additional 35%, n=25). The most common patient education activity was discussion with patients about depression treatment and referral options (60%, n=43), followed by discussing the etiology of depression (20%, n=14). The most common interventions were to refer the patient back to their primary care provider (52%, n=37), refer the patient to a mental health professional (31%, n=22), and recommend lifestyle changes such as exercise and stress management (27%, n=19). However, a substantial minority of providers (21%, n=15) did not discuss suspected depression with their patient. Overall, few practitioners were at criterion performance levels at baseline.

Providers reported several barriers to addressing depression with their patient, including: inadequate training (73%, n=52); lack of time to screen (70%, n=50); inadequate knowledge of diagnostic criteria (70%, n=50); believing patients would be reluctant to see a mental health provider (67%, n=48); limited availability of mental health providers (64%, n=45); affordability of mental health providers (63%, n=45); medical problems more pressing (62%, n=44); believing patients would be reluctant to take antidepressant medication (57%, n=40); lack of time for counseling or education (57.1%, n=40); and overlap of medical and depressive symptoms (55%, n=39).

Changes in Attitudes, Confidence, and Intention Post-CE

Positive attitudes about depression management improved from baseline (M=16.7, SD=4.0) to posttest (M=18.9, SD=3.4), $t(62)=-6.41$, $*p<.003$; and negative attitudes were reduced (M=6.8, SD=2.4 vs. M=5.7, SD=1.8), $t(64)=3.74$, $*p<.003$. Confidence increased (M=13.2, SD=5.9 vs. M=16.9, SD=6.2), $t(65)=-7.97$, $*p<.003$; as did intention (M=15.1, SD=4.6 vs. M=18.4, SD=5.1), $t(62)=-5.94$, $*p<.003$.

Participant satisfaction with the CE program

Attendee evaluations of the CE program were very favorable. The majority of respondents reported that the learning objectives of the CE program were completely met. See Table 2 for ratings of the CE program.

Changes in Attitudes, Confidence, and Barriers at 6-Week Follow-up

There was no change from baseline to follow-up on positive attitudes, negative attitudes, confidence, or barriers.

Changes in Depression Practice Patterns at 6-Week Follow-up

There was a marginally significant increase in depression education offered to patients from baseline to follow-up (M=1.27, SD=1.27 vs. M=1.56, SD=1.31), $t(64)=-3.01$, $p=.004$.

A series of z-ratios using a Bonferroni adjustment showed no difference from baseline to follow-up for the proportion of respondents who: routinely screened, used validated screening questionnaires, referred back to the PCP, referred to a mental health provider, or prescribed antidepressant medications.

Predicting Practice Patterns at 6-Week Follow-up

Using logistic regression, routine screening at follow-up was predicted from posttest confidence, posttest intention, and follow-up barriers. As a group, these variables predicted routine depression screening, $X^2(3)=9.47$, $*p<.05$, Nagelkerke $R^2=.32$. The Homer-Lemeshow test was not significant, indicating good fit of the data. Greater intention (OR=1.27, CI=1.03–1.58) and fewer barriers (OR=0.87, CI=0.76–.099) predicted greater likelihood of routine depression screening, but confidence was not an independent predictor.

Using multiple regression, the number of depression education behaviors at follow-up were predicted from posttest confidence, posttest intention, and follow-up barriers. As a group, these variables predicted patient depression education behaviors, $F(3,37)=6.14$, $*p<.003$, $R^2=.35$, adjusted $R^2=.29$. Greater confidence ($\beta=.37$, $*p<.05$) and fewer barriers ($\beta=-.39$, $*p<.05$) predicted more patient depression education, but there was only a trend for intention ($\beta=.24$, $p=.10$) to independently predict.

Using multiple regression, the number of depression interventions at follow-up were predicted from posttest confidence, posttest intention, and follow-up barriers. As a group, these variables predicted depression interventions, $F(3,37)=3.44$, $*p<.05$, $R^2=.23$, adjusted $R^2=.17$. Greater intention ($\beta=.41$, $*p<.05$) and fewer barriers ($\beta=-.36$, $*p<.05$) predicted more depression interventions, but confidence was an independent predictor.

Discussion

Overall, we found partial support for the TPB as a theoretical basis to shape provider behavior. We also found that healthcare systems barriers can thwart the behavior change attempts of even confident providers with positive attitudes and intention to change.

Consistent with past reports,⁴ at baseline, providers reported a significant practice gap in screening, educating, treating, and referring for treatment their diabetic patients suspected of depression. We found that immediately following the CE program, provider attitudes towards managing patient depression improved, as did their intentions and confidence. This is consistent with other reports of short-term changes in these domains following CE.⁴⁵

Although like similar efforts,⁴⁶ our program itself was not very successful at maintaining these short-term changes, nor in changing depression management practice patterns, TPB was successful in predicting follow-up provider behavior. Intention and confidence differentially predicted depression management activities at follow-up. However, posttest attitudes were not associated with practice behaviors at six-weeks. According to the TPB, attitudes may be only indirectly associated with behavior through relations with intentions.^{27, 47}

In a way that integrates our results, the most consistent finding was that barriers predicted each practice behavior at follow-up. We included information about barriers in our CE, yet past findings show that learners who receive such information do not change more than learners who do not.⁴⁸ Webb and Sheeran⁴⁹ outlines three classes of factors that may moderate whether an intention to change behavior results in that new behavior. Personal control, social reaction, and situational factors can each affect the behavior's probability. One can imagine the low personal control, negative social reaction, and circumstances in a busy healthcare setting that would be formidable barriers to depression management. Thus, reliance on provider training alone, in the absence of these system modifications, may place undue expectations for change on busy healthcare providers.

Limitations

Several limitations should be mentioned. First, participants were self-selected. Second, because there was no control group, observed changes could be due to an unmeasured factor. Third, outcomes were per self-report which may be influenced by social desirability. Fourth, there was considerable attrition. Only a very small incentive was offered to these healthcare providers for participation in the follow up assessment (\$5 gift card for coffee), which may have been inadequate. Yet, we cannot rule out that those who chose not to participate derived less benefit from the CE than those who did participate. Fifth, the sample size was small, predominantly composed of female nurses, so results may not generalize to

other healthcare professionals. It is also possible that with a small sample we were underpowered to detect true differences from pre- to posttest and follow-up that would have appeared with a larger sample size. While these limitations constrain our ability to make strong conclusions with the data, our findings highlight the importance of targeting provider intentions, confidence, and strategies to reduce barriers in CE programs that address depression in clinical care. Future CE programs should be theory-based, rigorously evaluated, and overcome the aforementioned limitations identified in this study. Moreover, future CE programs should incorporate other CE strategies shown to influence behavior change, most notably eliciting behavioral commitment.

Implications

Health care professionals want training that is current, credible, focused, engaging, easy to use, and convenient.⁵⁰ They also want current evidence that they can consider for use in their practice.⁵¹ As illustrated in this and other studies,^{24–26} CE efforts grounded in the TPB show promise in explaining provider behavior. In addition to enhancing intentions to change, CE programs should elicit commitments to change by having providers explicitly indicate an intention to make a change as a result of an educational activity (e.g., asking providers to indicate whether they would change practice as a result of the CE program). Statements of commitment to change have been advocated to both stimulate and assess the effectiveness of CE programs^{37, 48, 52, 53}, and might serve to improve the efficacy of the CE program described here. CE programs that include strategies to effectively help providers overcome barriers to managing depression in clinical care are also needed.

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Table 1

Participant Demographic Characteristics (N=71)

Variable	n (%)
Age, M ± SD	49.1 ± 9.4
Female	66 (93)
Race/ethnicity	
Asian	5 (7.1)
Black or African American	5 (7.1)
Hispanic or Latina	7 (10)
White	53 (75.7)
Profession	
Physician	3 (4.2)
Advanced Practice Registered Nurse	12 (16.9)
Registered Nurse	33 (46.5)
Mental Health Professional	2 (2.8)
Social Worker	1 (1.4)
Diabetes Educator	13 (18.3)
Other	7 (9.9)
Certified Diabetes Educator	22 (31)
Practice Setting	
Solo Practice	2 (2.8)
Group	6 (8.5)
HMO	4 (5.6)
Hospital	30 (42.3)
Community Health Center	14 (19.7)
Government Agency	2 (2.8)
Other	13 (18.3)
Are there mental health professionals available? (yes)	42 (59.2)
Practice Location	
Urban	41 (59.4)
Suburban	21 (30.4)
Rural	2 (2.9)
All Three	5 (7.2)
How many patients do you see per week?	
< 50	48 (78.7)
50 – 90	9 (14.8)
100 – 125	4 (6.6)
What percentage of your patients has diabetes?	
0 – 20%	7 (11.1)
21 – 40%	9 (14.3)
41 – 60%	8 (12.7)
61 – 80%	5 (7.9)

Variable	n (%)
81 – 100%	34 (54)

Table 2
Attendee evaluations of the depression and diabetes continuing education learning objectives, N(%)

Learning Objective	Did not meet at all	Mostly unmet	Neither met nor unmet	Mostly met	Completely met
Define the interplay of diabetes & depression	0	0	0	5(8%)	61(92%)
Describe depression treatment models	0	0	2(3%)	18(27%)	46(70%)
Describe how diabetes impacts diabetes self- management	0	0	0	9(14%)	57(86%)
Identify depression screening models	0	1(1%)	3(4%)	12(19%)	50(76%)
Identify barriers to implementing the evidence	0	0	1(1%)	8(12%)	57(87%)
Describe a strategy to overcome a barrier to implementation	0	0	1(1%)	14(22%)	51(77%)