Original Article

Healthcare Technician Delivered Screening of Adults with Diabetes to Improve Primary Care Provider Recognition of Depression

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Abstract

Purpose: The purpose of this study was to implement a continuous quality improvement project aimed at improving primary care provider recognition of depression. **Materials and Methods:** A randomized, blinded, pre- and post-test design was implemented with 92 adults attending an academic internal medicine clinic. Subjects were assigned to an intervention where healthcare technicians (HCT) trained in the fundamentals of diabetes education delivered brief probing questions about self-care behavior and tailored talking points to encourage patients to talk to their primary care physician about their emotional health. The control group received a sham intervention that included only information on standards of diabetes care. Measures included both a paper-and-pencil screening of depression and the Primary Healthcare Questionnaire-8 (PHQ-8). Outcomes were evaluated for antidepressant and/or counseling treatment modalities once the possibility of depression was identified. **Results:** Both the control and intervention groups improved from pre-test to 3-month post-test scores on the PHQ-8 in clinically significant ways, but continued to have moderate to severe depression symptoms. There was a significant likelihood of receiving antidepressant therapy and/or counseling in those who scored high on the PHQ-8. **Conclusion:** HCT can be trained to talk to patients about emotional health issues during routine primary care visits. Depression screening measures can be administered as part of the triage routine at the start of a primary care visit, along with tasks such as vital signs. Answering a screening measure can help create awareness of symptoms and feelings that can prompt discussion during the patient–provider encounter that can result in the diagnosis and treatment of depression.

Keywords: Depression, diabetes, healthcare technicians, primary care

Introduction

Emotional reactions to a diabetes diagnosis include disease-related distress and depression, potentially resulting in suboptimal self-care behavior.[1] Identifying emotional distress and psychological factors that ultimately influence self-care behavior[2] is important for predicting who may be at risk of nonadherence to diabetes care recommendations. The purpose of this paper is to describe a quality improvement study aimed at integrating identification of emotional reactions as a barrier to self-management behavior as part of a larger study that tested the provision of diabetes self-care education by healthcare technicians (HCTs) in a primary care clinic.

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Depression is a state of mood that includes symptoms such as loss of interest and pleasure, feeling down and hopeless, difficulty sleeping, energy and appetite changes, feeling bad about oneself, trouble concentrating, change in the speed at which tasks are accomplished, and feeling one is better off dead. Depression occurs in varying degrees ranging from mild to major depression with suicidal risk.[3] It is one of the most common illnesses in the United States with a 16.2% prevalence rate.[4] The co-morbid prevalence rate of depression with diabetes is double that of those without diabetes.[5] People experiencing symptoms of depression often appear in primary care clinics, with 35% of all primary care patients meeting

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the diagnostic criteria for a form of depression[6] oftentimes with nonspecific symptoms. Diabetes self-care behavior (i.e., medication adherence, diet) tends to be suboptimal in those with depression and associated with poor glycemic control.[7] A potential benefit to maintaining an office-based procedure to screen patients for depression is the fostering of awareness of the role emotions play in a patient coping with chronic disease self-care. When routinely incorporated into the care routines of the office staff, screening facilitates an environment of comfort with discussion about sensitive topics such as emotions and mental health issues.

The rate of depression in primary care is underappreciated, considering that many providers do not have systems in place to make screening a matter of routine practice. For many patients, emotional reactions and mental health issues are sensitive topics. Some have been found to be reluctant to disclose symptoms of depression to their providers, possibly due to reluctance to engage in an emotional dialog, not wanting to become too personal, fear of antidepressant prescriptions and/or being referred to counseling and/or being labeled as a "psychiatric patient," with concerns about confidentiality.[8] Concordantly, primary care providers are encouraged to screen for depression as an essential part of routine care.[9] Collectively, inhibited disclosure and underemployment of routine screenings for depression may be associated with healthcare utilization costs that are 65% more for those with diabetes than for those who are not depressed in Medicaid samples.[10] While screening for depression is not a National Committee on Quality Assurance Health Plan Employer Data and Information Set (HEDIS) outcome measure, demonstrating that treatment has been initiated once depression has been identified is an HEDIS outcome measure.[11] Based on the benefits to identifying depression in those with diabetes, the following hypotheses were tested:

Hypothesis I

Individuals who are engaged in a discussion about emotional reactions to diabetes and depression during a routine part of a primary care visit (triage when vital signs are taken) will be more likely to have a post-intervention improvement from pre-intervention depression scores that will differ from those who only receive a depression screening survey to complete.

Hypothesis II

Individuals who are administered a screening survey for depression during the routine primary care visit and who score high on the depression screening will be more likely to be offered treatment for depression than those who score low on the screening.

Materials and Methods

Human subjects were administered paper-and-pencil surveys as part of a randomized, blinded, pre-and post-test design as part of a continuous quality improvement project was conducted in a northeast coast urban safety net clinic servicing mostly Medicaid and charity care recipients. The primary providers are resident physicians overseen by an attending preceptor. The study was approved by the Institutional Review Board of the University of Medicine and Dentistry of New Jersey. Written informed consent was obtained prior to data collection. Adults were deemed eligible if they indicated they had diabetes and if they were able to understand English well enough to answer surveys. Individuals who attend the diabetes subspecialty clinic were excluded. A $10 gift card incentive was provided when 3-month study-end data were completed.

Delivery of the intervention

HCTs (n = 20) were blinded and randomized to one of the two groups that were fully trained in delivering basic diabetes education with a certified diabetes educator's oversight or trained in a sham intervention (control) where diabetes standards of care contained in the HEDIS outcome data set were reviewed. The HCTs assigned to deliver the intervention were trained using the curriculum from the American Association of Diabetes Educators' Fundamentals of Diabetes Care course for HCTs (available online for free at www. Diabeteseducator. org/professional resources/products/fundamentals).[12] In order to maintain treatment fidelity, the curriculum was delivered in small groups (two at a time) at various times and using power point presentations without the HCTs being told the course was available online. The course was taught by a certified diabetes educator and both the sham and intervention-assigned HCTs received closely resembled presentations to maintain blinding. The HCTs were also told that the diabetes educator would decide which forms to be administered to the patient depending upon her expert opinion, again to maintain blinding.

Consented patients were randomized to receive either an HCT trained in the intervention or the control/sham intervention. Along with taking vital signs, the HCT asked the patients questions about their obtaining HEDIS required outcomes (i.e., Have you had an HbA1c done?) if assigned to the control/sham group, or if assigned to the intervention group, their diabetes self-care behaviors and their emotional reactions or experience with depression. The questions were: "Does diabetes affect you emotionally, making you angry, scared, or upset?"; "Do things other than having diabetes make you depressed?"; and "Do you take depression medication?" The HCTs were trained to tell the patients to "talk to [their] doctor about [their] feelings today." The intervention was intentionally brief, need-based, and promoted follow-up dialog with providers, not replacing a full diabetes self-management education session or the physician's assessment and intervention.

Measures

If a patient asked what he or she should do about their feelings as they completed the depression survey, they were asked to discuss their feelings with their doctor on that day. Descriptive questions included items about education, race, ethnicity, and past experiences with diabetes education.

Depression

The Primary healthcare questionnaire-8

The PHQ-8 includes items that assess almost every characteristic of the guidelines for diagnosing depression, included in the DSM-IV, except suicidality. The measure has been shown to hold validity in multiethnic populations and takes under 5 min to score, making it useful in busy primary care practices. High scores indicate likelihood of depression. When used in pre- and post-test format, a change with a reduction in 5 points is considered to be a clinical improvement.[13]

Several single additional unstructured items were included in the descriptive survey: "Do you have a feeling and thinking problem (depression, anxious, other)?"; "Does your feeling or thinking problem make it difficult to care for diabetes (yes/no)?"; How difficult is it to care for diabetes because of the feeling and thinking problem?" (the response set for this item was *"very hard, hard, slightly hard"*); "Do you take pills for depression?"; "How would you rate your own risk of depression?" (the response set for this item was in Likert form: "*almost no risk, slight risk, moderate risk, high risk*").

The single items, "Does diabetes affect you emotionally, making you angry, scared, or upset?" (adapted from the brief illness perception questionnaire[14]); "Do things other than having diabetes make you depressed?"; and "Do you take depression medication?" were asked as part of the intervention by the HCTs and each item was left open for the HCT to write in patient responses. Medical records were not accessed to obtain the actual rate of antidepressant prescription or counseling referrals, relying on self-reported data.

Statistical analysis

GPOWER[15] estimated that a sample of 100 with 50 in each group would provide 80% power to detect a small effect in change of the primary outcome of depression from pre- to post-test with an alpha of 0.05. Data were entered into SPSS version 18.0.[16] Ordinal least squares regression was used to estimate the likelihood of controlling for baseline active medication or counseling for depression and the predictive ability of scores on the PHQ-8 for study-end outcomes: Depression medication and/or counseling as an estimate of physician-initiated treatment for depression. Pre- and post-test differences in mean scores were estimated using Student's *t*-tests. Missing values were allowed on the depression measure by estimating a mean score if at least two items were completed.

Results

Sample characteristics

Of the subjects eligible and enrolled (n = 103), 92 subjects completed the baseline data, with no patients formally dropping out, giving a response rate of 89%. Of the initial 103 subjects completing the baseline data, responses are presented except where participants omitted answers (i.e., "Do not wish to answer" was not selected). Males represented 38%, while females represented 61% of the sample. Approximately 31% of the sample was aged 22-49 years, and 43% was aged 50-59 years, with the remaining sample being of age 60-89 years. Patients self-reported race as Black (47%), White (14%), multiracial (22%), Asian (8%), native Hawaiian or Pacific Island (2%), or do not know/do not wish to answer (6%), and ethnicity as Hispanic (29%) or non-Hispanic (65%) or do not know/do not wish to answer (6%). Half of the sample was born in the United States (50%). About 8% reported having been previously diagnosed with depression and 66% reported endorsed that a feeling or thinking problem makes it at least "slightly hard" to care for diabetes. The sample represented those of very low income strata with 38% earning less than $10,000 from all sources annually, 29% earning $10,000-19,000, and 8% earning $20,000-59,000, and 35% by preference not disclosing household income. Only 27% of the sample reported ever receiving formal diabetes self-management education. Duration of diabetes was asked as a control variable and was found to range from 1 year (17%) to 52 years (1%), with half of the sample having diabetes for at least 8 years. Analysis of variance using depression at baseline and at the end of the study revealed no significant differences in depression scores by any demographic variable, including age, income, gender, education level, race, or ethnicity.

Improvement in depression symptoms pre- and post-intervention

Self-reported depression, without the assessment of a structured survey, was endorsed by a single-item question in the history form by n = 48 subjects. A second question asking patients if they have a thinking or feeling problem that makes it difficult to take care of diabetes was answered by n = 24 subjects. Then, when the HCT asked the intervention group if they experience emotional affects from having diabetes, n = 25 subjects replied affirmatively, with n = 16 stating that things other than diabetes depress them and n = 7 reported having taken depression medication before. (Note: The sham/control group was not asked these questions since they were specific to the intervention.) The prevalence of depression in this sample was likely to be high according to the scores on the PHQ-8, whereby the cut-off was considered to be 5 for mild depression and a score of 10 was considered moderate depression, and the entire sample had a mean score of 28 (SD 6.9) at baseline (range 12-36), indicating some degree of depressive symptoms.

At the end of the study, the entire sample continued to have a moderate to severe degree of depressive symptoms (M = 30, SD = 6.0, range 13-38); however, both groups had a clinically significant improvement (sham/control ≈ 7 points; intervention ≈ 8 points) where a change score of 5 points is necessary to see quality of life improvement.[13] However, the depression measure at the end of the study was only completed for 54 subjects compared to 86 at baseline. This may be due to the fact that some subjects did not show up for a 3-month visit and are considered to be dropouts. In the sham intervention group, there was a significant improvement in depression scores (t = 2.4, P = 0.018; 95% CI ±1.2–±12.6) with a mean change

of 6.9 (SD 21). The intervention group benefited as well with a significant improvement in depression scores ($t = 2.8$, $P = 0.007$; 95% CI ±2.2–±13.2) with a better improvement and a mean change of 7.7 (SD 18) and less variability. Both groups benefited indicating that perhaps the group that got some discussion with the HCT did fare slightly better, but we have no way of knowing if it was a clinically significant improvement over and above the control group. It appears that just by virtue of administering the PHQ-8 to the patient, even if it is not given to the physician, patients may be prompted to initiate discussion with their providers about their feelings.

Association between depression screening scores and depression treatment

As part of the quality improvement protocol, HEDIS outcomes were evaluated for the entire sample collectively since all patients received the PHQ-8. The HEDIS outcomes for antidepressant treatment and counseling were measured by -patients' self-report of having taken action (medical records were not accessed to determine if prescriptions were provided for these treatment modalities and would be by self-report if available). At the end of the study, while controlling for baseline antidepressant use and enrollment in counseling (via self-report), the likelihood of being on a medication for depression if the patient scored high on the PHQ-8 was significant for the entire sample ($\chi^2 = 44.7$, $P = 0.01$). Similarly, the likelihood of being in counseling if scoring high on the PHQ-8 was also significant ($\chi^2 = 42.9$, $P = 0.02$). This indicates that by administering the PHQ-8 alone, patients were likely to be more informed and/or disinhibited during the patient–provider encounter, allowing for dialog about the risk of depression. An alternative plausible explanation for the findings may be that some providers could have observed patients completing the forms and inquired about them, generating dialog and concern for the patient's emotional health, a benefit for creating awareness in primary care providers. The measures are not diagnostic for depression and simply serve as a screen, requiring a follow-up diagnostic interview.[3]

Discussion

Managing diabetes on a routine daily basis involves problem solving, motivation, perseverance, and the ability to concentrate, all factors that can be impaired when one experiences depression.[17] Therefore, it is important to address depression in order to ensure optimal self-care adherence. Using HCTs as part of a sustainable model of diabetes self-management education for underserved and hard to reach populations is feasible. HCTs, when provided with a fundamental diabetes self-management curriculum and talking points to guide their interactions with patients under the supervision of a certified diabetes educator, can have an impact on patient-centered communication in primary care practices, a necessary prerequisite to the identification of depression. The HCTs in this intervention emphasized feelings and coping with diabetes using the talking points in Table 1, along with probing for depression by administering the PHQ-8 depression screening survey. The entire sample benefited from receiving a depression screening survey to complete. It was entirely up to the patient to discuss any items they may have endorsed on the surveys and they were only provided with encouragement to do so if they were in the intervention group. It is possible that effects were difficult to detect between groups because there was little variability in the scores on the PHQ-8 with so many patients scoring at least mildly depressed. There are several environmental and diabetes-specific factors that likely contribute to the sample's mild depression scores,[18] including, poverty, anxiety, insulin use, lack of social support, and the onset of complications.[19-21] Depression as a co-morbidity to diabetes has been shown to be more prevalent in African and Hispanic Americans than in Caucasian Americans.[22,23]

There was a significant likelihood of being placed on an antidepressant and/or starting counseling at the end of the intervention if the patient had a high score on the PHQ-8. The group that received the additional benefit of an HCT-led discussion on feelings and diabetes had a slightly better change in depression scores at study end, but not enough to be considered more clinically significant. In this sample, given that the depression scores were moderate to high, it is possible many of the patients have major depression.[13] However, future studies should consider using a disease-related distress scale to further delineate what symptoms are due to major depression and what may be due to coping with emotional reactions to having diabetes.[24]

The lack of variability in the depression scores may have limited the ability to detect effects between subjects. Physicians were not directly provided with the results of the PHQ-8; patients in the control/sham group may have reacted to the questions and discussed their feelings, a desirable response but one that would nonetheless make it difficult to detect the effects between the control group that was not engaged in a discussion during triage about feelings and diabetes and the intervention group that

Table 1: Talking points for healthcare technicians for dealing with emotions and depression to supplement depression screening

"Many people tell me that living with diabetes can make them sad, scared, angry, guilty, or depressed. Does this ever happen to you?"
"Your doctor is very interested in knowing from you how you feel about having diabetes or dealing with other stress in your life"
"It is important to talk to your doctor today about your feelings so that he/she can work with you to make it easier to cope with your diabetes care"
"When people hide their feelings from their doctor, the doctor may not realize that the diabetes treatment plan is too much for the patient to handle. Sometimes the plan can be adjusted to make it easier"
"Sometimes sadness and feeling the blues can make it hard to take care of diabetes"
"People who take depression medicine or go to counseling sometimes find it is easier to take care of diabetes"
"Ultimately, it is up to you if you choose to talk to the doctor about your feelings today. If you are not ready to talk to your doctor, I may be able to help you find more information on how to get help with your feelings"

did receive such a discussion. Keeping with the study protocol, patients were followed only when returning for their follow-up appointment between 3 and 6 months after the study onset. Some patients chose not to complete the depression survey on their follow-up visit, consistent with the findings of others who report reluctance to disclose emotions during primary care visits.[8] An additional limitation to this study was the self-report method. Although the data were collected from the healthcare technician with whom the patient had established trust, nonetheless, impression management, social desirability, and intention to please the provider can all introduce bias to the self-reported data. The primary outcome of this study was self-management in response to an intervention delivered by HCTs to increase provider awareness of depression through a direct effect on patient self-disclosure.

Clinical practice implications

Primary care providers are usually the initial and sometimes the only contact for patients with mental health problems. There is a relative shortage of mental health providers, even when one is adequately insured or able to afford the resources.[25] Diabetes educators who can address disease-related distress and emotional reactions to having diabetes are also in demand in underserved areas.[26] The American Association of Diabetes Educator's sustainable model of education includes community healthcare workers and technician level employees who are capable of delivering basic diabetes information, creating awareness under the supervision of a certified diabetes educator. The sustainable model of care delivery can be translated using electronic communication whereby a certified diabetes educator can be contracted to provide supervised-training to HCTs and/or take calls on a per-patient basis, or receive referrals for ongoing self-management education. Having a healthcare technician provide a patient with a screening tool for depression may help facilitate discussion of depression during the patient–primary care provider encounter. Ultimately, addressing depression may improve the quality of life[27] and diabetes self-care adherence, especially in the areas of medication and diet, with diabetes-related disease distress influencing glycemic control.[28]

Conclusion

This is a report on a randomized, blinded study that tested the effect of an intervention to create awareness of depression in patients with diabetes during the routine primary care visit. If primary care practices were to routinely include administration of the PHQ-8 or another depression screening measure, patients are more likely to initiate discussion with primary care providers about depression during their visit. Primary care providers alternatively can use the opportunity to initiate discussion by asking patients how they felt about completing the survey and/or about their primary care provider assessing their emotional/mental health. The entire sample benefited from completing a depression survey as part of a routine primary care visit, with those scoring higher on the depression screening being more likely to report taking an antidepressant and/or receiving counseling at the end of the study. HCTs trained in talking to patients about emotional reactions to coping with diabetes and/or depression can have an impact on achieving HEDIS outcomes. Since the depression scores improved in this study, we can conclude that health-related quality of life and self-care of diabetes has the potential to be improved.

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