

Lowering A1c Through Integrated Behavioral Health Group Visits

SIDDHARTH MARTHI, BA, MD'22; JAMIE HANDY; KRISTIN DAVID, PsyD; MARTIN KERZER, DO

ABSTRACT

INTRODUCTION & OBJECTIVE: Suboptimal adherence to medication and lifestyle modification continues to be a problem in diabetic patients in the US. Previous studies have investigated the potential of group educational visits in improving medication adherence and short-term health outcomes, but few have done so using a biopsychosocial approach in visits. This study aimed to evaluate the effect that group visits, conducted using an integrated behavioral health model at a primary care practice, had on A1c and distress levels in diabetic adults.

METHODS: Using the Diabetic Distress Scale (DDS), 15 adults were identified as having moderate diabetic distress (> 3.0) between December 2016 and May 2017 and invited to attend a group visit in May 2017 to address identified barriers. Of those, nine attended. The group visit, conducted by a psychologist, sought to reduce diabetic distress by targeting behavioral and social factors, including improving social and familial support, using diabetes online forums, and improving mind-body connection. Repeat A1c and DDS measurements for all nine visit participants were collected three months after.

RESULTS: Group visit participants experienced a decrease in A1c ($p=0.011$). All nine participants had a decrease in their post-intervention DDS. Of the six patients who had positive DDS screens but did not attend, three had increased A1c, two had no change, one had a decrease, and one did not have a repeat A1c.

CONCLUSIONS: Multidisciplinary group visits targeting the biopsychosocial model may be an efficient supplement to the individual medical visit to further improve control of diabetic distress and short-term morbidity in Rhode Island.

KEYWORDS: diabetes, group visits, psychosocial, behavioral health

Usually, these are offered in addition to a patient's usual primary care visits, and involve a clinician engaging a cohort of at-risk patients in basic disease and medication education and semi-private medical evaluation.² While the details of the group visits vary from practice to practice, they are almost universally shown to be beneficial to patients. In particular, substantial literature has shown some of the benefits to include improving clinician efficiency, reducing health care costs, widening accessibility to quality care, and increasing patient engagement in their own medical management, which subsequently leads to increased medication adherence and decreased morbidity long-term.^{3,4} Group visits for managing diabetes and pre-diabetes have been studied as well, and when conducted in addition to usual primary care follow-up visits, have been shown to decrease A1c levels, increase medication adherence, and encourage lifestyle modification.⁵⁻⁷ Most of these group visits target illnesses with a central focus on basic medical education and medication management tips, with an ancillary focus on behavioral factors such as nutrition and mood.⁸ However, the diagnosis and management of a chronic illness comes with significant emotional burden that often impedes proper care and medication adherence. Few previously studied group visits for chronic illness have been designed with a primary focus on the biopsychosocial model.

In 2017, the team at Associates in Primary Care of Medicine (APCM) in Warwick conducted a pilot study to do so. APCM has had an integrated behavioral health (IBH) model for several years and employs a psychologist, who is fully integrated into the providers' electronic health record, to conduct brief, solution-focused interventions for patients, as needs are identified by the medical providers. Group visits focusing on mindfulness and empowerment for diabetic patients were led by the in-house psychologist, along with a nurse care manager, in order to improve health outcomes, better understand and quantify the potential for behavioral health group visits and their impact on quantifiable diabetes measures, and serve as a model for other primary care practices.

INTRODUCTION

As chronic illnesses become increasingly prevalent and taxing to the US healthcare system, group visits have been heavily explored as a means of managing various chronic conditions, including asthma, obesity, and osteoporosis.¹

METHODS

The Diabetic Distress Scale (DDS) is a questionnaire, first published in 2005, which assesses patients' distress associated with their diabetes and its management in four realms:

Figure 1.

DDS: 17-Item Questionnaire Each item is scored on a 1-6 Likert Scale
Feeling that diabetes is taking up too much of my mental and physical energy every day
Feeling that my doctor doesn't know enough about diabetes and diabetes care
Feeling angry, scared, and/or depressed when I think about living with diabetes
Feeling that my doctor doesn't give me clear enough directions on how to manage my diabetes
Feeling that I am not testing my blood sugars frequently enough
Feeling that I am often failing with my diabetes routine
Feeling that friends or family are not supportive enough of self-care efforts
Feeling that diabetes controls my life
Feeling that my doctor doesn't take my concerns seriously enough
Not feeling confident in my day-to-day ability to manage diabetes
Feeling that I will end up with serious, long-term complications, no matter what I do
Feeling that I am not sticking closely enough to a good meal plan
Feeling that friends or family don't appreciate how difficult living with diabetes can be
Feeling overwhelmed by the demands of living with diabetes
Feeling that I don't have a doctor who I can see regularly enough about my diabetes
Not feeling motivated to keep up my diabetes self management
Feeling that friends or family don't give me the emotional support that I would like

emotional burden, physician distress, regimen distress, and interpersonal distress using a Likert scale.⁹ The 17-item questionnaire was administered to approximately 30 adults with type two diabetes who visited the clinic between December 2016 and May 2017. A table detailing the contents of the DDS is shown in **Figure 1**. Fifteen respondents scored above a 3.0, the threshold for moderate diabetic distress, and were counseled and invited to attend the first group visit. Nine of the fifteen (60%) attended. After the first visit, in May 2017, repeat A1c values were obtained for all fifteen respondents, and repeat DDS scores were obtained for the nine attendees.

Four additional visits, referred to as "Diabetes Empowerment Visits," were held every other month following data collection. They aimed to help patients understand diabetes distress, review behavioral factors associated with diabetes, understand assertiveness and its role in diabetes management, and explore the mind-body connection. The psychologist worked with groups of patients to identify specific ways to create home environments conducive to diabetic management and construct a circle of support through

friends, family, and online forums to assist with lifestyle modification and medication adherence. A special emphasis was placed on the mind-body connection in diabetes and the link between increasing stress levels, cortisol, and blood glucose was demonstrated to all participants. The psychologist explored ways in which patients could exercise healthy assertiveness in order to advocate for themselves and minimize their own stress responses during their day-to-day life. Additionally, cognitive-behavioral therapy (CBT) interventions were conducted throughout the visits to normalize patients' diabetes-related frustrations and improve perceived control over their illness. A nurse care manager, who was also a certified diabetes educator (CDE), assisted at each session with education regarding topics in healthy eating and medication adherence that were related to the behavioral issues discussed by the psychologist. At each visit, relevant handouts and supplementary materials were created and given to each participant to promote adherence and continued education at home. After participation in multiple sessions, participants were interviewed regarding their experiences and feedback.

RESULTS

A1c

Eight of the nine (88.9%) group participants experienced a decrease in A1c at three month follow-up, producing a significant overall decrease in A1c ($p = 0.011$). Pre- and post-A1c measurements for all nine participants are shown in **Figure 2**. Of the six respondents who did not attend the group visit, three experienced an increased A1c, two experienced no change in A1c. One patient was lost to follow-up and a repeat A1c was not obtained. A1c levels were measured at three-month, six-month, and one-year follow-up in the post-study period for each of the nine initial participants. These results are shown in **Figure 3**. Of note, some, but not all, of the nine participants continued to attend group visits that were offered during the post-study period.

Figure 2. Change in A1c after IBH group visit

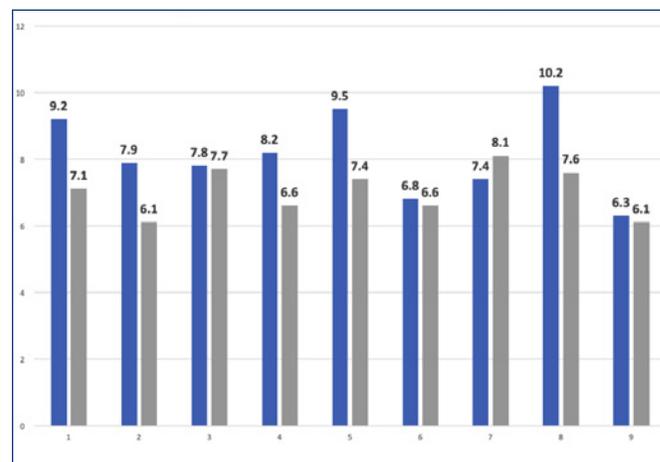


Figure 3. Follow-up A1c levels for nine study participants

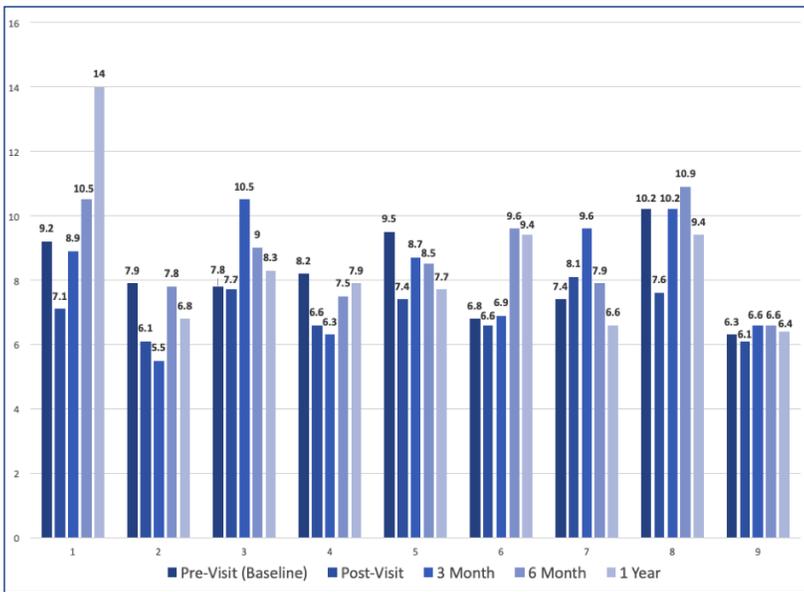
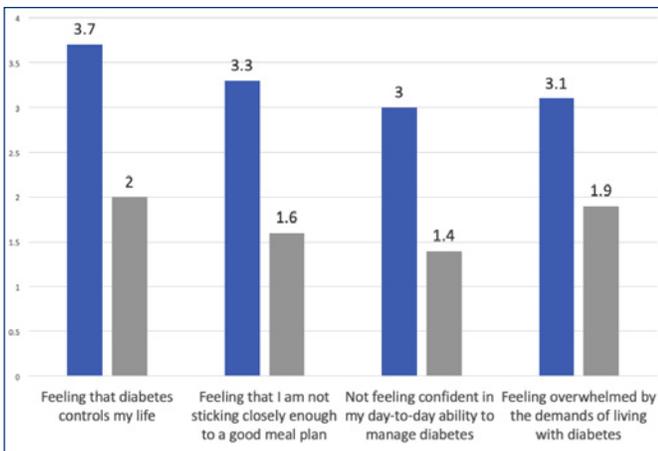


Figure 4. Changes in DDS scores for selected statements



Diabetic Distress Scores (DDS)

All nine participants experienced a decrease in DDS scores after the first group visit. Of note, for the following statements on the DDS, all participants reported that distress levels decreased substantially: “feeling like diabetes controls my life,” “feeling like I am not sticking closely to a meal plan,” “not feeling confident in my day-to-day ability to manage diabetes,” and “feeling overwhelmed by the demands of living with diabetes.” Average pre- and post-DDS scores for each of these statements are shown in **Figure 4**. Repeat DDS values were not obtained for the six respondents who did not participate in the group visit.

DISCUSSION

With the increasing US healthcare burden caused by diabetes and the concurrent rise in support for group visits, this pilot study explored the efficacy of IBH utilization in group visits

in reducing emotional distress and improving short-term health outcomes in Rhode Island. These preliminary results showed that both goals were met, demonstrated by the reduction in A1c and DDS levels, supporting the continuation of and further research into this program, both at APCM and across the state.

The “Diabetic Empowerment Visits” serve well as an avenue for delivering care using an IBH model. As more primary care practices incorporate IBH and other aspects of the PCMH model, beginning group visits with a focus on the biopsychosocial model may be a feasible first step towards improving provision of high-quality holistic care. Though IBH group visits for diabetic management should be offered in addition to, and not in lieu of, usual diabetes follow-up visits, they have been shown to improve efficiency of subsequent usual visits and greatly increase provider and patient satisfaction in prior studies.^{2,3} In post-intervention interviews, one APCM group visit attendee stated that they “always learn something,” and another stated that they gained “the ability to take control of [their] blood sugars.” Though planning and conducting these visits involves considerable investment for the practice, long-term, diabetes group visits have been shown to decrease outpatient visit charges overall.⁴ Therefore, primary care practices should look to IBH group visits as a potential supplementary program to assist in managing diabetes affecting at-risk populations which they serve.

There is a documented positive correlation between high DDS scores and poor glycemic control, measured as increased A1c levels, in type 2 diabetics. This is primarily attributed to patients’ poorer perceived and actual control over their diabetes and poorer medication adherence.¹⁰⁻¹² Therefore, while the DDS score was not initially developed with the intention to act as a proxy for A1c levels, the covariation between DDS and A1c seen in our results is expected.

Our results in **Figure 3** begin to evaluate the effectiveness of the group visits in maintaining improved clinical outcomes after the first visit. Group visits focused on diabetes have previously been shown to reduce post-intervention A1c levels for up to two years after cessation of the intervention and return to usual follow-up care.¹³ Though there is an apparent and statistically significant reduction in A1c level in our data after the first group visit, because different subsets of the nine study participants attended each subsequent group visit, it is difficult to draw conclusions regarding group visit sustainability using this data alone. For all participants, the follow-up A1c levels eventually exceeded the initial post-intervention A1c. However, there was clear variability in rate and time of A1c increase, and trends could not be identified.

By focusing on the components of the DDS which decreased most substantially, as shown in **Figure 4**, we may begin to determine which aspects of diabetes-related stress are most impacted by the current model of group visits. Of the 17 questions included in the DDS, the four statements with a statistically significant decrease in value fall into the subcategories of “emotional burden” and “regimen distress.” This would suggest that the intervention impacted these subcategories more than “physician distress” and “interpersonal distress,” but a larger sample size and study length would be necessary to more accurately stratify the effects of the group visits before recommending targeted modifications.

Limitations

This pilot study involves a small sample, and due to the COVID-19 pandemic, group visits at APCM were temporarily suspended, impeding the collection of further data. Group visits are not currently ongoing in a virtual setting, but the practice hopes to reinstate group visits in 2021, at which point more routinely collected data will be analyzed to evaluate IBH group visit effectiveness using a longer study period and additional metrics, including PHQ-9 scores, GAD-7 scores, morbidity, and cause-specific mortality.

This study focused primarily on the evaluation of the initial group visit in May 2017. While additional Diabetic Empowerment Visits occurred after, not all of the nine initial attendees returned for each subsequent visit, making evaluation of sustainability and the long-term A1c values in **Figure 3** difficult, especially with a small sample size. Further, like other studies examining group visit impact, this study is subject to selection bias,² as the nine patients who attended the first group visit were likely to be more committed to reducing their A1c levels than the six who did not. Wider use of group visits for chronic illness is needed in order to increase the sample size of future studies and reduce loss to follow up within the study population, thereby improving result validity and allowing for evaluation of sustainability. Several variables relating to the group visits should be considered in these future studies, including frequency of visits, length of study period, length of follow-up period, and format of group visit. Further, if future studies aim to assess sustainability when using small sample sizes, it will be crucial to better define patient characteristics that may affect diabetes-related morbidity, mortality, and adherence to treatment regimens, including demographic data, comorbidities, and pre-intervention behavioral factors.

CONCLUSIONS

IBH group visits for diabetic patients, which focus primarily on addressing emotional distress and mindfulness, may be an effective way to improve short-term diabetic outcomes and stress associated with diabetes. When conducted alongside traditional individualized visits, these group visits are

also an efficient way of improving patient and provider satisfaction. As more primary practices move towards a PCMH model of care, this IBH curriculum should serve as a model for other practices. Interventions that target and measure the interaction between psychology and functional health outcomes in diabetes have been underutilized, and further study into their impact is warranted.

References

1. Jaber R, Braksmajer A, Trilling J. Group Visits for Chronic Illness Care: Models, Benefits and Challenges. *Fam Pract Manag*. 2006 Jan;13(1):37-40.
2. Housden L, Wong ST, Dawes M. Effectiveness of group medical visits for improving diabetes care: a systematic review and meta-analysis. *Can Med Assoc J*. 2013; 185: E635–44.
3. Strategy 6M: Group Visits. Content last reviewed March 2020. *Agency for Healthcare Research and Quality*, Rockville, MD.
4. Clancy DE, Dismuke CE, Magruder KM, Simpson KN, Bradford D. Do diabetes group visits lead to lower medical care charges?. *Am J Manag Care*. 2008; 14(1): 39-44.
5. Trento M, Passera P, Tomalino M, et al. Group Visits Improve Metabolic Control in Type 2 Diabetes. *Diabetes Care*. 2001; 24: 995-1000.
6. Davis AM, Sawyer DR, Vinci LM. The Potential of Group Visits in Diabetes Care. *Clinical Diabetes*. 2008 Apr; 26(2): 58-62.
7. Clancy DE, Huang P, Okonofua E, et al. Group Visits: Promoting Adherence to Diabetes Guidelines. *J Gen Intern Med*. 2007 May; 22(5): 620–624.
8. University of Colorado. (2010). *Diabetes Group Visits*. Denver, CO: Lobo I, Keech T.
9. Polonsky WH, Fisher L, Earles J, et al. Assessing psychosocial distress in diabetes: development of the diabetes distress scale. *Diabetes Care*. 2005; 28(3): 626-631.
10. Fisher L, Glasgow RE, Strycker LA. The Relationship Between Diabetes Distress and Clinical Depression With Glycemic Control Among Patients With Type 2 Diabetes. *Diabetes Care*. May 2010; 33(5): 1034-1036.
11. Islam MR, Karim MR, Habib SH, Yesmin K. Diabetes distress among type 2 diabetic patients. *Int J Med Biomed Res*. 2013; 2(2): 113-124.
12. Gonzalez JS, Shreck E, Psaros C, Safren SA. Distress and type 2 diabetes-treatment adherence: A mediating role for perceived control. *Health Psychol*. 2015; 34(5): 505-513.
13. Leung AK, Buckley K, Kurtz J. Sustainability of Clinical Benefits Gained During a Multidisciplinary Diabetes Shared Medical Appointment After Patients Return to Usual Care. *Clin Diabetes*. 2018; 36(3): 226-231.

Authors

Siddharth Marthi, BA, MD'22, Department of Medicine, Warren Alpert Medical School of Brown University.

Jamie Handy, CharterCARE Medical Associates.

Kristin David, PsyD, CharterCARE Medical Associates.

Martin Kerzer, DO, Department of Family Medicine, Warren Alpert Medical School of Brown University; CharterCARE Medical Associates.

Correspondence

Siddharth Marthi
222 Richmond St.
Providence, RI 02906
862-252-0102
smarthi@brown.edu