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Goal setting in diabetes self-management: Taking the baby steps to success

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Abstract

Objective—To evaluate the usefulness of a diabetes self-management guide and a brief counseling intervention in helping patients set and achieve their behavioral goals.

Methods—We conducted a quasi-experimental study using a one group pretest posttest design to assess the effectiveness of a goal setting intervention along with a self-management guide. English- and Spanish-speaking patients with diabetes had one in-person session and two telephone follow-up calls with a non-clinical provider over a 12–16-week period. At each call and at the end of the study, we assessed success in achieving behavioral goals and problem solving toward those goals. Satisfaction with the self-management guide was assessed at the end of the study.

Results—We enrolled 250 patients across three sites and 229 patients completed the study. Most patients chose to set goals in diet and exercise domains. 93% of patients achieved at least one behavioral goal during the study and 73% achieved at least two behavioral goals. Many patients exhibited problem solving behavior to achieve their goals. We found no significant differences in reported achievement of behavior goals by literacy or language. Patients were very satisfied with the guide.

Conclusions—A brief goal setting intervention along with a diabetes self-management guide helped patients set and achieve healthy behavioral goals.

Practice implications—Non-clinical providers can successfully help a diverse range of patients with diabetes set and achieve behavioral goals.

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Keywords

Patient education; Literacy; Diabetes; Self-care; Goal setting

1. Introduction

Patient directed and clinician facilitated goal setting is an increasingly popular method of behavioral counseling in primary care settings. This method has been used in chronic disease self-management training [1,2] and is central in many newly developed diabetes education programs [3,4]. These programs have incorporated goal setting to help patients improve their self-efficacy in diabetes management, change their behavior, and improve their health outcomes [1,2]. Quality improvement programs in primary care now emphasize the role of goal setting when implementing the self-management support part of the chronic care model [5]. In fact, diabetes quality improvement programs often track whether a patient has a self-management goal documented in the chart as a performance measure [6].

Previous work on goal setting in primary care encounters demonstrated that primary care physicians can be trained to help patients set goals and that it can lead to behavior change [7]. However, the same study reported problems with the feasibility of physicians performing this service in the context of the primary care visit [8]. Although some advocates argue that the goal setting framework should not add appreciable time to the visit [2], time limitations and competing demands make additional tasks difficult for the primary care physician. Models of care that can delegate aspects of patient care to other team members may be a more feasible alternative [9].

In many primary care clinical settings, goal setting is not a routine part of clinical care. Three factors may contribute to the lack of regular goal setting in clinical settings. First, patient education materials are usually not designed to facilitate goal setting. Most educational materials provide information but do not facilitate discussion or patient-directed behavioral goals. As such, clinicians and their patients frequently adhere to an interaction model focused on information transfer rather than motivation and problem solving for achievable behavioral change. Second, many clinicians are not trained to help patients create achievable, short-term behavioral goals. For example, clinicians may believe they need to set the goals for the patient and may lack knowledge and skills in facilitating patient-directed small goals or action plans. Third, physicians lack time and the practice is not designed to have someone else help the patient set goals [8,10].

With this in mind, we developed a diabetes self-management guide in English and Spanish and a brief counseling intervention to help facilitate goal setting and to improve self-efficacy in diabetes management. We designed the guide and counseling intervention for use by any practice staff member and for patients of all literacy levels [11]. In a separate paper, we reported that patients who received this intervention had improved activation, self-efficacy, diabetes knowledge, and self-care, and less diabetes distress [12]. The objective of this study was to evaluate the usefulness of the guide and brief counseling intervention in helping patients set and achieve their behavioral goals from the patient's perspective. We also

assessed how often patients used problem solving skills during the process of goal attainment, and measured their satisfaction with the guide.

2. Methods

2.1. Design

We conducted a quasi-experimental study using a one group pretest posttest design to assess the usefulness of a goal setting intervention using the American College of Physicians Foundation *Living with Diabetes* Guide [11]. The study was conducted between August 2006 and June 2007 in three academic internal medicine practices in California, Louisiana, and North Carolina. Participants enrolled in the study were followed for 12–16 weeks to assess the goal setting process, behavioral change, problem solving behaviors, and satisfaction with the Guide.

This study was approved by the Institutional Review Boards at the University of North Carolina at Chapel Hill, Louisiana State University, and the University of California, San Francisco. Written consent was obtained from all participants. Because we were likely to encounter participants with low literacy skills, we designed the consent form with plain language, and read it aloud to those with difficulty understanding the form.

2.2. Participants

Eligible participants included English- and Spanish-speaking patients aged >18 years who had a diagnosis of type 2 diabetes and could be contacted by telephone. We excluded patients who, according to their referring health care provider, were not responsible for, or capable of, managing their own diabetes care (e.g. residents of skilled nursing facilities, those with significant cognitive impairments). All Spanish-speaking patients were recruited from the California site. Patients were referred to the study by their health care providers and completed the informed-consent process with a trained research assistant (RA).

2.3. Enrollment and baseline interview

Once consent was obtained, the RA conducted a structured interview to determine participants' sociodemographic characteristics (age, gender, race, years of education, insurance status and length of time with diabetes). Participants' last available body mass index (BMI) and hemoglobin A1C (HbA1C, mean = 76 days before recruitment) were collected through clinical information systems. Patient literacy was assessed pre-intervention using the short version of the Test of Functional Health Literacy in Adults (S-TOFHLA) [13,14]. The S-TOFHLA is a reading comprehension test commonly used in health care settings. In this study, we categorized people scoring in the inadequate or marginal range to have “lower literacy” and those scoring in the adequate range to have “higher literacy”. After the baseline interview, the RA began the intervention.

2.4. Intervention

The intervention consisted of an in-person introduction to the Guide and a brief in-person counseling session designed to take approximately 15 min. The initial intervention was followed by two brief telephone counseling sessions at 2 and 4 weeks. All patient contacts

were conducted by research assistants (RAs) trained in patient-centered goal setting. Spanish-speaking patients received the counseling from an RA fluent in Spanish. RAs from all three sites were trained in a 1-day, in-person session led by the study team's clinician-investigators. RA training focused particular attention on interviewing and patient-centered goal setting, using the materials and techniques published by Lorig [2] and Bodenheimer et al. [15].

The Guide covers five topics of diet, physical activity, blood glucose monitoring, medication adherence, and insulin use [11] (http://foundation.acponline.org/hl/diabguide.htm). It was designed to be easily understandable across literacy levels and to be culturally appropriate in a variety of contexts. The guide is grounded in social cognitive theory principles including modeling, problem solving, and goal setting skills. Each chapter ends with a section on setting a small achievable goal (action plan). The guide was designed to facilitate communication between the patient and their health care team, not to replace conversation. The development of the guide included patient and provider input and an iterative process of design and user feedback [11]. The guide helps to align the needs and desires of the patients and providers.

Modeling our intervention after that described by Lorig [2], RAs asked participants to identify an area of their diabetes on which they were willing to work. After the patient chose an area, the RA asked for a specific behavior. Counseling related to the action plan included 5 elements: (1) the action plan is patient-generated and not provider-generated. The provider may give some general advice on areas of importance, but the specific plan is decided upon by the patient. (2) Action plans are behaviors, not results. For example, “I will lose 5 lbs.” is not a behavior but a result. “I will walk 10 min a day for 3 days in the next week” is a specific behavior that can be controlled by the patient. (3) The plan should be specific about what behavior, how, when, and where it will be done. (4) The patient needs to have confidence that they will succeed. Participants rated their confidence in their ability to complete their action plans on a scale from 0 to 10. Using the action plan model described by Bodenheimer et al. [15], RAs encouraged those who rated their confidence lower than 7 to fine tune their action plan to make it more achievable [15]. For example, if the patient said I will walk every day next week, but had a confidence level of 4, the RA might suggest 3 days a week rather than every day. This approach also allowed the RA to help the patient use problem solving skills to overcome barriers to achieving the behaviors they desire. (5) The action plan statement was short term (e.g. 1 week) and should be followed by a decision to continue the same behavior and/or to perform additional behavior change. In the Guide and in our counseling, we referred to these short-term, achievable action plans as “baby steps.”

Approximately 2 and 4 weeks after the initial visit, RAs contacted participants by telephone. RAs assessed participants' progress with their most recent action plan. They then elicited participants' specific plans for sustaining and for creating additional action plans. If needed, RAs helped participants identify self-management barriers and generate ideas to overcome them. At every contact, the patient was expected to make an action plan, even if it was small in scope.

2.5. Outcome measures

Outcome data were collected via phone or face-to-face interview. At each contact, the RA recorded the action plan made by the patient. Action plans were coded by the domain (e.g., diet, exercise). During the follow-up contacts (2 weeks, 4 weeks and 12–16 weeks), the RA assessed whether the participant remembered the action plan, and whether the participant had achieved the behavioral goal and sustained it. This was assessed using the following response items: completely achieved and sustained behavior change, completely achieved but not sustained, not achieved but some behavior change, no behavior change. RAs also asked participants to describe any problem solving around the action plan and any additional behavior changes made (i.e., behavior change related to the same domain or a different domain), which the RA then transcribed verbatim. We did not expect problem solving in every case as there were not always clear barriers to overcome.

At the final follow-up (12–16 weeks) patients also completed a satisfaction questionnaire. Patients were asked how helpful each chapter of the guide was and how likely they would continue to do each of the following: use the guide, recommend it to others, and bring it to future appointments. Responses were recorded on a 5-point Likert-type scale ranging from “extremely likely” to “extremely unlikely” or “extremely helpful” to “not helpful”.

At one site (NC) the RA recorded the time spent on each phone call.

2.6. Analysis

All analyses were conducted using Stata version 9.2. Descriptive statistics were generated for the demographic and health-related characteristics of the sample. Independent *t*-tests and chi square statistics were generated to identify differences between participants who completed the study and those lost to follow up. Descriptive statistics were also generated for the outcome variables at each follow-up session. Chi square statistics were generated to assess for differences in goal achievement by literacy (lower vs. higher literacy), and language (English vs. Spanish).

2.7. Role of the funding source

The American College of Physicians Foundation had no role in the analysis and interpretation of the data, nor the decision to report these data in a peer reviewed journal.

3. Results

3.1. Participants

250 patients with type 2 diabetes (DM) (80 from CA, 85 from LA and 85 from NC) agreed to participate (Table 1). Most were racial and ethnic minorities (45% were African-American and 33% Hispanic) and female (65%). Almost half of the participants reported that they were uninsured, did not finish high school, and/or demonstrated lower literacy. Average length of time since diagnosis was 9 years.

3.2. Completion of intervention

Most patients (229 (92%)) participated in all four planned study contacts (baseline and 2, 4, and 12–16 weeks). Of the 20 participants who did not complete the study, 10 were lost to follow-up after the baseline assessment, 8 after the 2-week assessment, and 2 after the 4-week call. Patients who were lost to follow-up at some point during the study ($n = 20$) were younger (51 years vs. 56 years, $p = 0.01$), more educated (12 years vs. 10 years, $p = 0.03$), had higher literacy levels (75% vs. 55% with higher literacy, $p = 0.04$), and were more likely to be African-American (70% vs. 43%, $p = 0.01$) and less likely to be Hispanic (15% vs. 35%, $p = 0.04$) than those participating in all study contacts. They were also less likely to have a regular physician (35% vs. 65%, $p = 0.003$), and to have Medicare insurance (5% vs. 25%, $p = 0.02$).

The 2 and 4 weeks telephone contacts at the NC site averaged 14 min each (range 5–30, S.D. = 4.3). The mean number of contact attempts per telephone interview was 1.7 (range 1–6).

3.3. Goal setting domains

Over the course of the study, diet and exercise were the most commonly selected domains for setting goals (Table 2). The goals had substantial range in their scope. For example, some participants chose to “walk around my block one time for 3 days a week”, “dance in my living room like I saw in the Guide everyday for 2 songs”, “eat a half a candy bar instead of a whole candy bar for my after work snack”, “eat less fast food by cooking 2 meals a week”, or “read the chapter on eating right”. We have provided several example goals in Table 3.

3.4. Goal setting outcomes

A majority of participants reported achieving and sustaining their behavioral goals at each follow-up session (Table 4), however, only one-third (33%) reported achieving and sustaining their goals at all 3 follow-up sessions. Seven percent of subjects did not achieve any goals set during the study (Table 5), and 73% of patients achieved and sustained at least 2 behavioral goals. We examined the data at the individual level to identify if more patients became engaged and successful as they were in the program longer, but there were no trends toward more or less success in reaching goals with more time in the program.

Most patients reported some behavior change, even if they did not achieve and sustain their goal. Many patients even reported making behavior changes that were completely separate from their stated goal. We found that some patients demonstrated problem solving around their goals (Table 6). We found no significant differences in reported behavior change by literacy or by language.

3.5. Satisfaction with the Guide

Overall, participants reported satisfaction with the Guide and would recommend the guide to others (Table 7). They reported that the most useful parts of the guide were messages on diet and exercise.

4. Discussion and conclusion

4.1. Discussion

In this study we describe the process of goal setting in the context of an educational intervention for patients with diabetes. Our results suggest that a user-friendly guide that focuses on strategies for achieving healthy behavior changes coupled with brief counseling and two brief follow-up calls can lead to behavior change. We also found that patients who set goals and achieved them often initiated additional behavioral changes. This intervention required a modest amount of staff time to complete, but did not require clinical expertise. As we expected from qualitative data gathered during the development of the materials, most patients selected diet and or exercise for their behavior change [11]. The findings from this study are consistent with our finding that this intervention increases knowledge, self-efficacy, activation, and self-care, and decreases diabetes distress when measured by structured questionnaires [12].

Our study is consistent with results from other studies that have tested self-management goal setting among primary care patients. Handley et al. demonstrated that goal setting was effective in the context of primary care for behavior change to improve cardiovascular health outcomes [7]. As in our study, Handley found that most patients focused on diet or exercise for their self-management. Estabrooks et al. found similar results with their computer-based diabetes education program [3]. This style of self-management support seems acceptable to patients and beneficial for self-reported behavior change. MacGregor et al. reported on the feasibility of clinicians facilitating action plans with patients in primary care [8]. Although the method was very popular, most physicians did not feel they had the time to add goal setting to their already packed agendas [8]. Most physicians felt that others in the practice could facilitate action plans with patients [8].

From the patient perspective, diet and exercise are critical for their health [11]. Few patients focused on medication taking as their action plan. This may reflect the perception of patients that taking medication is easy or straightforward compared with making diet or exercise changes. Alternatively, this may reflect a bias among patients that changing diet and exercise are more important than taking medications, even medications of proven benefit. For diabetes, factors such as blood pressure, cholesterol, and blood sugar control may be most readily addressed through medication therapy. Certainly, advances in diet and exercise benefit the patient, but further study to ensure that medication therapy was addressed when important would help us better understand the clinical benefit and role of this type of intervention for chronic illness care.

The study cannot separate the effects of the self-management guide from the reinforcement provided with three goal setting sessions. We designed the guide to facilitate interaction between patients and their care providers. Although some patients may be able to benefit from the guide with little assistance, we felt most patients would need some coaching and reinforcement. There is little evidence that written materials created for patients can lead to substantial behavior change on their own [16–19], although some Internet-based programs may be able to facilitate enough interaction to help patients change behaviors [3]. At this time we are not clear how much reach Internet-based interventions will have for more

vulnerable patient populations such as ethnic minorities, non-English speakers, and those of older age or low educational attainment [20,21]. Because of these factors, we built coaching into the intervention.

We trained research assistants who did not have a clinical background to perform the intervention. As such, we feel that our intervention could be implemented in a variety of clinical settings. Although some practices will choose to have physicians facilitate self-management support and goal setting, many practices may wish to have other members of the clinic staff perform this role. For example, health educators, nurses, medical assistants, or social workers are all candidates for performing this intervention. Indeed, the concept of action plans is somewhat foreign to physicians who regularly offer lists of recommendations to patients that represent what they should do, rather than what they can do, in the next week. Thus, other types of health workers may more easily be able to adopt this counseling style. Subsequent work will examine various models for practices to employ this type of self-management support and appropriate training mechanisms for physician and non-physician providers.

Our study has several limitations. First, we do not have a control group for comparison, and therefore, we cannot be certain that any behavior change was attributable to the intervention. However it is unlikely that, in the absence of a self-management support intervention, patients are regularly setting goals and achieving them as described in this paper. Nonetheless, other styles of diabetes self-management education that patients may have been exposed to, such as standard diabetes education, may lead to behavior changes via different mechanisms. Second, all outcomes in this paper were assessed through self-report. Some successful behavior change was likely reported to please the interviewer because of social desirability even when the goal was not achieved. Conversely, changes in rates of goal attainment from 1 week to the next suggests integrity in the self-reports. Third, by its very design, our study encouraged patients to start with small achievable steps that would then lead to greater behavior change over the long term. This study was not designed to assess the quantity or magnitude of behavior change. Future studies should consider evaluating the total magnitude of behavior change over longer periods of time to see if this intervention is sustainable and results in important clinical changes. Fourth, our intervention was performed by a research assistant rather than a usual member of the clinical care staff. Fifth, RAs were not blinded to the results of the pre-survey. As such, the RA had information about the patient's literacy, knowledge, self-efficacy, and diabetes related distress. Knowledge of these characteristics of the patient may have helped the RA deliver the intervention more effectively than someone administering the intervention with this information. We doubt, however, that this was an important effect. Sixth, our analysis only evaluated the participants who were still in the study at the time of each call. By using this strategy, we may have slightly overestimated the percent completing goals because those lost to follow-up may be less likely to have completed their goal. Because follow-up and retention was excellent in this study, this effect would be very small and would not change the overall conclusions of this study. Finally, the study was designed to test the intervention from the patient's point of view. Future studies should evaluate this type of self-management support from the clinician's point of view and begin to understand a variety of methods for

implementing in regular clinical practice and affects on intermediate outcomes such as hemoglobin A1C and blood pressure [7,8].

4.2. Conclusion

Our study demonstrates the feasibility and desirability of a brief goal setting intervention for patients with diabetes. A well-designed, easy to read diabetes care guide accompanied by focused coaching was successful in helping patients learn to set and achieve small behavioral goals. Such small goals may be referred to as “baby steps”, and may lead to better coping with diabetes and large behavior change over time.

4.3. Practice implications

The *Living with Diabetes* Guide and a brief goal setting intervention can help patients to adopt healthier behaviors. This study demonstrates that non-clinical personnel can learn and facilitate this process which may ease the burden on the physician. A practice may consider training nurses or other staff members to facilitate behavioral counseling using a tool like the Guide with scheduled telephone follow-up.

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Table 1

Participant demographic and health related characteristics (n = 250).

	Mean (range)
Age	56 years (29–93)
Time with diabetes	9 years (0–35)
Last A1C[a]	8.6 (4.2–16.8)
BMI[b]	34.7 (12.9–73.4)
	Frequency (%)
Gender	
Female	162 (65%)
Male	88 (35%)
Race/ethnicity	
African-American	112 (45%)
Hispanic	83 (33%)
Caucasian	55 (22%)
Language	
English	173 (69%)
Spanish	77 (31%)
Insurance[c]	
Self-pay	119 (48%)
Medicaid	66 (26%)
Medicare	58 (23%)
Private insurance	40 (16%)
Education	
<High school	109 (44%)
High school	85 (34%)
Some college	38 (15%)
College degree or more	18 (7%)
Health literacy	
Adequate	142 (57%)
Marginal	36 (14%)
Inadequate	72 (29%)
Takes insulin	109 (44%)
Takes oral medications	204 (82%)
Self-monitors glucose	211 (84%)
Has regular MD	157 (63%)
Hospitalized during the past year	72 (29%)

[a] n = 243.

[b] n = 249.

[c] Insurance categories not mutually exclusive.

Table 2

Goal setting domains for the three sessions

Domain	Percent choosing domain		
	Session 1	Session 2	Session 3
Blood glucose	4	4	4
Diet	49	43	42
Exercise	40	44	38
Insulin	1	3	1
Medication	2	1	1
Other	5	5	13

Table 3

Examples of goals set by participants.

I will walk around my block one time 3 days a week.
I will dance with my granddaughter everyday for 10–15 min.
I will bring a healthy snack to work every other day.
I will look into water aerobics classes, and try at least one.
I will eat less fast food by cooking 1 meal a day.
I will read the chapter on eating right.
I will limit the desserts I eat to 2 store-bought sweets a week.
I will take my Lantus™ after work, at least 4 times a week.
To cut back on my drinking to a maximum of 15 drinks [alcoholic beverages] per week.
I will walk or jump 2 times a week for 5 min at 1 p.m.
Talk to a social worker about how I can find a place to live.
Cut in half the amount of bread I eat at breakfast and lunch.
I will talk to my doctor about my depression.
I will ask for a new blood sugar monitor because my old one stopped working.
I will eat a half a candy bar instead of a whole candy bar for my after work snack.
Tuesday and Thursday nights I will eat only one serving of rice with dinner.

Table 4

Recall and achievement of behavioral goals

Follow-up	Remembered the action plan	Goal achieved and behavior sustained	Goal achieved, behavior not sustained	Goal not achieved, some behavior change	Other behavior change
2 weeks (*n* = 240)	95%	71%	2%	19%	44%
4 weeks (*n* = 232)	94%	66%	3%	22%	34%
12 weeks (*n* = 229)	88%	59%	3%	23%	45%
At all 3 follow-ups	79%	33%			

Table 5

Numberof subjects who achieved and sustained a given number of goals.

Number of times goals achieved/behavior sustained	Freq.	Percent
0	17	7
1	44	19
2	92	40
3	76	33
Total	229	

Table 6

Demonstration of problem solving around the action plan.

Follow-up	Demonstrated problem solving
2 weeks (*n* = 240)	13%
4 weeks (*n* = 232)	16%
12 weeks (*n* = 229)	20%

Table 7

Satisfaction with the Diabetes Guide.

	Very/extremely likely or very/extremely helpful
How likely to keep using Diabetes Guide? (*n* = 227)	75%
How likely to bring Guide to visits? (*n* = 226)	30%
How likely to recommend Guide? (*n* = 228)	81%
How likely to share Diabetes Guide? (*n* = 228)	75%
What was most useful about the guide?	
Diet information	67%
Exercise information	24%