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Health Coaching for Patients With Type 2 Diabetes Mellitus to Decrease 30-Day Hospital Readmissions

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ABSTRACT

Purpose/Objectives: The purpose of this program was to provide health coaching to patients with a primary or secondary diagnosis of Type 2 diabetes mellitus (T2DM) to increase self-management skills and reduce 30-day readmissions.

Primary Practice Setting: The setting was a 273-bed, acute care not-for-profit hospital in the southern region of the United States.

Findings/Conclusions: Health coaching that emphasized self-management, empowered patients to set healthy goals, and provided support through weekly reminders to improve self-management for patients with T2DM in this pilot program. The majority of patients reported accomplishment of goals with 16 out of 20 patients who did not require inpatient stay 30 days after discharge from the acute care facility.

Implications for Case Management Practice: The T2DM piloted program can easily be modified to fit other chronic illness that require routine monitoring and complex regimens to remain healthy. Case managers have the opportunity to coach on the importance of lifestyle modification and self-management support for patients with chronic illness with follow-up interactive phone visits after hospital discharge. Motivation and confidence through coaching may increase self-efficacy and better management of self-care and reduce the burden of unplanned hospital readmissions.

Key words: *diabetes mellitus, health coaching, readmissions*

Diabetes mellitus (DM) affects more than 425 million individuals worldwide, and the number continues to rise because of an aging population, increase in obesity, and living longer with diabetes (International Diabetes Federation, 2017). More than 90% of DM cases are Type 2 diabetes mellitus (T2DM), adult-onset, which is the most common form of the disease (Alabama Department of Public Health, 2017). Type 2 diabetes mellitus is a multisystem, metabolic syndrome caused by an insufficient response of insulin, and the risk factors are age, gender, race, weight, medical history, and family history. In the United States, one in four individuals diagnosed with T2DM is older than 60 years, with additional safety issues for older adults, which may include impaired vision, difficulty in walking, lack of transportation, and no caregivers for support (American Diabetes Association [ADA], 2013). The issues can negatively affect self-management and impose additional cost and time requirements in achieving health goals, making success more challenging.

Treatment complexities, along with these functional limitations, make self-management for the majority of T2DM patients increasingly difficult. Studies indicate that patients with T2DM have improved outcomes with diabetes knowledge and self-efficacy to support positive self-management behaviors (Odgers-Jewell et al., 2017). Nutrition and exercise are essential in glucose management. Lifestyle and behavior modification, along with medication adherence, are needed to control glucose levels. The majority of T2DM care is self-managed but it requires education and health coaching, such as repeated reminders, to increase adherence to the medication regimen, lifestyle changes, and proactive behavior modifications due to the burden of this chronic illness. Coaching and support from a case manager are essential in implementing successful behavior modification.

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This article describes a program developed for patients with T2DM, which included health coaching. The eventual aim of this health-coaching program is to equip patients with the confidence, self-efficacy, and knowledge for self-care, with the goal of reducing hospital readmissions (Centers for Medicare & Medicaid Services, 2015).

Conceptual Framework

Bandura's (1997) self-efficacy theory was the guiding framework in planning this T2DM program to decrease 30-day readmissions. The author states that when people perceive control in their lives, feel actions are effective, and believe in their personal capabilities, self-efficacy is increased (Bandura, 1997). According to Bandura, there are four ways to increase an individual's self-efficacy; sound thinking, motivation, coping with stress, and depression.

Sound thinking is to set priorities and visualize desired outcomes without focusing on personal weakness or deficiencies that could impede success. Motivation is the belief that one's goals can be reached through a plan of action, perseverance, and resilience. Coping strategies for resilience and seeking support for encouragement have a positive impact on reduction of stress and depression (Bandura, 1997).

Personal efficacy regulates emotions (Bandura, 1997). Individuals with a high sense of self-efficacy are less anxious of threatening situations, act to reduce threats, cope by extinguishing disturbing thoughts, and seek support as needed to tolerate anxiety. On the contrary, those who lack self-efficacy perceive threatening situations with magnified distress, feel unable to control environment, and lack coping skills to stop disturbing thoughts for control of depression and anxiety (Bandura, 1997).

Social support and encouragement enable an individual to be resilient and strong when faced with obstacles (Bandura, 1997). Individuals who have confidence and motivation will focus on goals with the faith they are able to control actions and if there is a setback, the individual with high self-efficacy will increase efforts, recover confidence, and master the task viewing his or her own capabilities as adequate to overcome difficult challenges (Bandura, 1997). This individual also has a firm anticipation of optimal outcomes and success with set goals.

Primary Practice Setting

Bandura's self-efficacy theory served as a guiding framework for the development of the health-coaching program. Twenty patients who were hospitalized with a primary or secondary diagnosis of T2DM participated in the health-coaching program. Inclusion criteria were English-speaking and 20 years of age or older. Individuals were also required to be able to communicate verbally and have telephone services available. The health-coaching program was approved by the health care system's institutional review committee.

Recruitment for patients took place in the privacy of each patient's hospital room. Participation was voluntary, and patients signed an informed consent. Following consent, patients participated in a face-to-face semistructured interview (see Figure 1) and identified self-care priorities with use of a Likert scale. The case manager collected demographic data to include age, gender, race, body mass index (BMI), and glucose level from the patient's hospital chart and confirmed demographic data with the patient.

The specific objectives were to use coaching principles to stress long-term lifestyle behavioral changes in diet, exercise, medication adherence, symptom management, and maintenance of consistent health care appointments. The other objectives were to improve each patient's glucose management and ascertain whether patients achieve personalized goals.

The health-coaching program included a pre- and post-Diabetes Education Quiz during the face-to-face interview (Merck Sharp & Dohme [MSD], 2010). All 20 patients (100%) completed the quiz and a semistructured interview about their self-care priorities. The health coaching program's effectiveness was evaluated with the same quiz administered following the patient's discharge from the hospital. This quiz was given via telephone on Day 28 after discharge. Thirteen patients (72%) completed the postdischarge quiz.

Type 2 Diabetes Semi-structured Interview

Would you be willing to participate in this program by answering 15 questions? Yes No

Purpose: To explore how you care for your diabetes. In answering, please use this scale for the first five questions: (Hand rating scale to participant.)

1		2		3		4		5
Not at all Important								Extremely Important

A. How satisfied are you with how you manage your diabetes in?
1. Monitoring your blood sugar___
2. Eating foods that help control your diabetes___
3. Keeping a daily exercise program___
4. Obtaining enough sleep to maintain your day's activity___
5. Maintaining your medication schedule___

B. The next questions relate to your goal setting in managing your diabetes. Could you tell me when you/how you

6. Test your blood sugar?
7. Get your HbAlc level tested?
8. Eat five servings of fruits and vegetables daily?
9. Drink 8 glasses of plain water daily?
10. Exercise and what you do on a daily basis?
11. Obtain sufficient sleep to maintain your daily activity?
12. Visit your health care provider?
13. Remind yourself when your medications are due?

C. In setting your goals, what do you see as your first and second priority?

#1 _____

#2_____

D. As we close, is there anything else that you would like to add about managing your diabetes?
_____
_____

Thank you very much for your participation.

FIGURE 1
Type 2 diabetes semistructured interview. Adapted from *The Relationship Between the Attitudes of Nursing Assistants Toward the Elderly and the Level of Satisfaction With the Care Provided by Family Members and/or Visitors of Nursing Home Residents,* by M. M. Hays, 1986, Huntsville, AL: The University of Alabama in Huntsville. Unpublished master's thesis.

Health coaching focuses on each patient's self-management options with the aim of presenting possibilities for lifestyle changes. The case manager selected five self-management tasks based on a review of the coaching strategies for patients discharged from an acute care facility. The case manager provided each patient with a 6-×-2.5-in. laminated Likert scale for rating the self-management tasks. The patients rated the self-management tasks using a scale of 1–5, with 1 being not at all important and 5 being extremely important. The five self-management tasks were medication adherence, blood glucose monitoring, diet, exercise, and sleep. The case manager discussed with patients each of the tasks to help them select the two most important ones for them personally. The patient chose two priority goals to focus on for optimal self-management.

The health-coaching program used self-efficacy to empower patients to set healthy goals and provide support through weekly reminders (Wong-Rieger & Rieger, 2013). The patients used the self-management tasks to set priority goals in collaboration with the case manager. Eighteen of the 20 patients identified two priority goals; the others selected only one priority goal. No one priority goal was selected by the majority of the patients, which supports the individualization of each patient and the need for health coaching.

The purpose of setting priority goals is to take steps toward desired lifestyle changes. The case manager supported the desired lifestyle changes via telephone on Days 3, 7, 14, and 28. See Figure 2 for a script of the telephone visit. The phone calls provided a forum for monitoring the progress of the patient-selected goals and to maintain an interactive dialogue regarding the scheduled primary care provider appointments, symptom management, and the patient's condition after discharge.

The case manager sent personalized letters via postal mail at the start and end of the health-coaching program. The mailed letters contained the planned call schedule and a reminder of priority goals, intended to provide personal encouragement. Patients were encouraged to schedule an appointment with a primary care provider upon discharge from the acute care facility and were asked to maintain glucose readings on the log mailed to their residence or on the log provided with personal glucometer.

Findings

The health-coaching program sample consisted of 20 patients admitted to an acute care facility with a primary or secondary diagnosis of T2DM. The ages ranged from 44 to 90 years, with a mean age of 67 years. The BMI ranged from 21.7 to 49.3, with a mean of 30.9. A healthy BMI is 18.5–24.9; 90%

Telephone Visit

Date_____ Time_____ Duration_____

Hello, I am the case manager that met you during your hospitalization.

Set Goals:

How successful have you been in reaching your first and second priority goal?

#1_____

#2_____

What questions do you have about managing diabetes?

_____

Identify Barriers:

Have you had any T2DM signs/symptoms? Have you checked your blood sugar today?

_____

What helps you to make steps toward your goal?

_____

Motivation: Do you feel in control when you:

#1_____

#2_____

Do you have a scheduled healthcare appointment? _____

Support:

Do you have a spouse, family, or friend to support you in reaching your goals?

_____

Thank you- I will be calling again next week-Goodbye.

FIGURE 2
Telephone visit. T2DM = Type 2 diabetes mellitus.

of the patients had a BMI above 24.9, with 50% greater than a 30 BMI. The glucose levels of patients ranged from 72 to 343, with a mean of 167 mg/dl with 25% of the patients having greater than 200 mg/dl. The number of comorbidities ranged from one to eight, with a mean of three comorbidities per patient.

The Diabetes Education Quiz administered during the program revealed that three patients answered all questions correctly and one patient missed the same question in the pre- and postquiz (MSD, 2010). Comparison results revealed that eight patients gained knowledge with more questions answered correctly upon postquiz by a range of two to four questions per patient than the initial quiz.

The self-management tasks rated with the use of a Likert scale revealed that 13 of the 20 patients (65%) perceived medication as the most important self-management task, yet one patient perceived the medication schedule as the least important task. Patients rated the remaining choices of blood glucose monitoring, exercise, and sleep closely as to the most and least important self-management tasks. Of interest is that 20% of the patients viewed managing food choices as extremely important and 20% as not at all important.

Next, each patient generated self-management priority goals (see Table 1). Although 13 of the 20 patients rated adhering to their medication regimen as the most important self-management option, only two chose this as a priority. Again, the patients closely rated the remaining priorities. Twenty percent ($n = 4$) chose exercise, and 20% ($n = 4$) chose glucose monitoring with food intake, adherence to prescribed medications, and weight loss rated last.

Twenty-eight days after their discharge home, patients self-reported their improvement in achieving their identified priority goals. Six verbalized an increase in exercise, and five patients reported an improved adjustment in eating habits and medication adherence. Four patients reported improved glucose management although only 58% recorded daily readings.

The case manager scheduled 100 outpatient phone calls with five per patient. Of the scheduled phone calls, 69% were completed by the patients (see Table 2). The phone calls ranged from 2 to 24 min per patient, with an average of 6.78 min per call. Nine patients averaged more telephone minutes than the group. Interestingly, there were no readmissions in 30 days for these nine patients with higher than average minutes.

Ninety-five percent of the patients reported scheduling a primary care provider appointment; 68% made the visit. Cancellation of appointments due to inclement weather resulted in three rescheduled appointments for the following month.

Readmission Results

Readmissions to the acute care facility within 30 days of discharge included four patients: three female and one male ranging from 7 to 28 days of inpatient stay with an average of 18 days. Two patients who did not receive coaching, as they did not answer the scheduled phone call, went to the emergency department (ED) within 2 weeks of discharge and readmitted to the acute care facility. One patient admission was due to nausea and vomiting; the second was diagnosed with a cerebral vascular accident.

Within the first 2 weeks following each patient's discharge, the case manager identified 12 of the 19 patients who interacted via phone (63.16%) and spoke of weakness and fatigue. Four others (21%) reported nausea, vomiting, diarrhea, and just feeling ill. Three patients (15.79%) denied any indication of illness. Five patients verbalized reporting signs and symptoms to his or her primary care provider with new medications prescribed for edema (2), infection (2), and inflammation (1), with no ED visit 30 days after discharge. Sixteen patients (80%) in the health-coaching program remained at home and did not require inpatient stay 30 days after discharge from the hospital. This supports the need for individual, personalized coaching.

The patients' self-reported 30-day improvement indicated some level of positive adjustment in lifestyle

TABLE 1
Priority Goal as Identified by Patients With T2DM During Semistructured Interview

Exercise	4
Glucose monitoring	4
Sleep	3
Water intake	3
Diet	2
Medication	2
Weight loss	2
Total	20

TABLE 2
Inpatient and Outpatient Tasks Completed by Case Manager

Tasks	Completed	Completed
Inpatient semistructured interviews	20	100%
Outpatient phone calls	69	69%
Outpatient quiz	12	60%

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behaviors related to set goals. For example, six patients reported an increase in their daily exercise although none recorded the level of their activity by distance or minutes. The four readmissions, in addition to their T2DM, also had other conditions that heavily impacted their health status. Not all hospital readmissions are preventable, but ongoing evidence-based education and health-coaching interventions will contribute to increased T2DM self-management (Shupe, 2014).

Cost of Intervention

According to the ADA, the economic cost of diabetes in the United States in 2017 was $327 billion, with expenditures 2.3 times higher in patients diagnosed with diabetes than in those absent of diabetes. The cost per individual readmission varied by diagnosis, the unit setting, and number of days in hospital (ADA, 2018).

The piloted program was completed per one case manager. The coaching intervention will cost employee time for interview and phone intervention according to an average salary of $53,000 per year (Nurse Journal, 2017).

Implications for Case Management Practice

The findings indicated that the guidance of a case manager for health coaching can decrease 30-day hospital readmissions, reduce ED visits, and hence reduce costs to patients and their families. Personalized one-on-one coaching for 20 patients with T2DM resulted in more opportunities for the patients to better manage their environment upon returning home. The literature provided substantive findings on using coaching to develop the health-coaching program for improved outcomes in diabetes self-management (Krok-Schoen et al., 2017).

The most effective coaching interventions focus on the task that individuals view as most important from his or her perspective. Successful outcomes in the initial stages of behavioral change are important for increasing the individual's ability to produce the desired result. In addition, reminders that respect the adult's past experiences, abilities, and desires are most effective. Adults want and need to be involved in the planning and evaluation of their activities. Second, their own life experiences provide the basis for their learning activities.

Next, they want to learn content that has immediate application such as solving the specific problems raised by their current T2DM. The adult learner is focused on the needed tasks rather than memorizing content although he or she wants a reason for what is being taught. Finally, a wide range of learner backgrounds and experiences challenge the educator to find ways to allow the learner opportunities for self-discovery. A coach can be a significant key in imparting the confidence and the motivation to undertake a change in lifestyle behaviors. Knowledge alone is not enough.

The first step is for both patient and case manager to be aware of the obstacles that occur in managing the daily routine tasks while at the same time beginning a lifestyle focusing on health. The next step is to identify the central issue or issues from the viewpoint of the patient. Patients also need an opportunity to express their thoughts and their perceptions regarding the barriers to healthy lifestyle changes.

Professional guidance with goal setting provides a positive impact for individuals with chronic illness as it is difficult to continue never-ending daily tasks that can be stressful and overwhelming. Collaborative goals can establish a sense of ownership in establishing healthy lifestyle changes. As chronic illnesses involve managing physical, emotional, and cognitive barriers within a supportive environment, it is reasonable to assume that a similar health-coaching program would be highly beneficial in other chronic conditions (Vincent & Sanchez Birkhead, 2013).

A self-rating scale, as used in this health-coaching program, can provide insight for patients into their healthy and unhealthy habits and thus offer guidance on developing a plan to decrease barriers to successful self-management. The case manager at the patient's bedside in the days prior to discharge has an opportunity to start the patient thinking of ways to achieve early success rather than replaying the history of past failures and limiting factors. A sense of control over self-management tasks can thus be initiated prior to the patient's return home to the same environment.

Limitations

The limitations of the pilot program are a sample size of 20 patients and duration of 2 months. This period did not allow sufficient time to investigate the reason or reasons that a behavioral change

Behaviors that contribute to hospital readmissions are failure to keep primary care provider appointments, medication omissions, lack of communication with primary care providers, and a lack of patient/caregiver understanding of symptom management.

occurred or did not occur. It did not allow time to follow the impact of the individuals' A1c. The number of years diagnosed with T2DM was not asked during the interview and was not available in the patients' medical record. A longer period of time for the piloted program would allow more interface with the individuals regarding the emotional, cognitive, and financial challenges in self-management of T2DM.

The cost-effectiveness of the health-coaching program was inconclusive due to individual readmission varied by diagnosis, number of days in hospital, and a variety of health plans. Literature evaluating cost-effectiveness of health coaching is limited and indicates a need for further research (Hale & Giese, 2017).

The socioeconomic status of the patients lessened their ability to choose healthier, more costly, dietary provisions, and limiting transportation to wellness centers for group support classes also posed barriers to optimal nutrition and supervised exercise.

The opportunity to complete the planned post-discharge telephone calls also limited moments for personalized coaching. Some patients were not able to speak on the phone because of generalized fatigue and/or limited cell minutes. Not all patients recorded their blood glucose as requested; none kept a record of their activity level by length they traveled or minutes of exercise.

Conclusions

The purpose of the health-coaching program is to decrease the readmission of patients with T2DM within 30 days of their discharge from an acute care hospital. Support through coaching can lead to a decrease in anxiety and an increase in satisfaction, resulting in fewer complications resulting in readmission. The interactive phone visits to discharged patients were an opportunity to provide encouragement, inquire of glucose levels, and foster increased self-management.

Behaviors that contribute to hospital readmissions are failure to keep primary care provider appointments, medication omissions, lack of communication with primary care providers, and a lack of patient/caregiver understanding of symptom management. Health coaching with guided objectives and patient-chosen goals can guide patients to increase responsibility for choices and motivate them for long-term behavioral changes to achieve set goals.

The health-coaching program can be modified to fit other chronic illnesses that require routine daily monitoring as well as oversight of complex regimens to maintain a healthy lifestyle. A health-coaching program to reduce hospital readmissions of patients diagnosed with chronic illness will provide support and inspire confidence in those who may feel overwhelmed and frustrated at making permanent changes.

For many individuals, a culture marked by the dietary customs of families and communities involves decades of living and may foster reluctance and even resistance to change. Collaboration can provide a sense of ownership and motivation to make bit by bit incremental changes. These modifications can be enough to provide realistic goals that result in some sense of control and success for the individual. This health-coaching program indicates that health coaching is useful in lowering readmissions, improving self-management, and achieving goals in patients with T2DM.

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