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UNIVERSITY OF SAN DIEGO
Hahn School of Nursing and Health Science

DOCTOR OF NURSING PRACTICE PORTFOLIO

by

Eric T. Tobin BSN

A portfolio presented to the
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requirements for the degree

DOCTOR OF NURSING PRACTICE
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Final Manuscript

Transitional Care of Adult Patients with Diabetes Following Hospitalizations

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Abstract

Purpose: The purpose of this evidence-based practice project was to incorporate a diabetes transitional care program using group visits to improve self-care management behaviors and glycemic control in diabetic patients at a southern California hospital.

Background: Diabetes is a challenging healthcare problem associated with significant mortality and morbidity issues. In 2012, 29.1 million people, or 9.3% of the U.S. population, were diagnosed with diabetes, and 28.9 million of those patients were 20 years of age and older. Today, diabetes is of epidemic proportion worldwide, and a projection of 5.4% of the adult population will have diabetes by 2025. The growing incidence of diabetes can be attributed to an increase in obesity, lack of exercise, diet high in processed sugars, and overall lack of diabetes self-care. Research consistently supports transitional care as an effective evidence-based solution for enhancing the overall management of patients with diabetes as reflected in improved self-management and glycemic control. At the project facility, there was no formalized transitional care program for diabetes patients.

Practice Change Process: Patients 18 years of age and older, who were hospitalized and had an A1C > 7.5% were selected to participate in the transitional diabetes care program. Following discharge from the hospital, the patients were seen within a 14-day period. Selected participants joined in a 90-minute multi-disciplinary group visit to discuss evidence-based care regarding diabetes management. Patients were educated based on the American Association of Diabetes Education (AADE) - 7 Self-Care Behaviors during their stay in the hospital. The Diabetes Knowledge Questionnaire was administered pre and post practice change in order to measure the patient's knowledge regarding diabetes self-care management.

Results: This evidence-based project had 3 participants who attended the group visits and completed the pre and post intervention. The overall knowledge scores improved from a mean of 72% to 87%, a 15% improvement, while the mean A1C levels were reduced from 9.2% to 7.1%, a 1.9% decrease.

Conclusions: Transitional care provides a multi-faceted approach to evidence-based diabetic self-care management. Patients were empowered with self-care knowledge and management skills promoting improved diabetes self-care behaviors and glycemic control. Advanced practice registered nurses (APRNs) possess the knowledge and skills to assume leadership roles in the development and implementation of transitional care programs for diabetic patients.

Introduction

Diabetes is a significant healthcare problem throughout the United States (U.S.), affecting 29.1 million people, or 9.3% of the population, and the majority are 18 years of age and older (Center for Disease Control and Prevention, [CDC], 2014). The growing incidence of diabetes can be attributed to an increase in obesity, lack of exercise, diet high in processed sugars, and overall lack of diabetes self-care. Due to the epidemic nature of diabetes, it is both a national and global healthcare problem (Raskaba et al., 2012). Thus, healthcare providers must develop and incorporate evidence-based patient self-care management programs in order to more effectively empower diabetic patients to enhance diabetes management.

Type 2 diabetes is a complicated, challenging disease that, without effective patient management, can cause numerous complications and result in untimely death. The direct healthcare costs associated with diabetes management was estimated at \$116 billion dollars in 2007; this escalated to \$176 billion dollars in 2012 (American Diabetes Association [ADA], 2014; Center for Disease Control and Prevention, 2014). Of those expenditures, \$69 billion dollars was spent on indirect costs, such as premature mortality, decreased productivity, and disability (ADA, 2014; Center for Disease Control and Prevention, 2014).

Type 2 diabetes is a manageable disease when appropriate lifestyle modifications are incorporated into a patient's daily routine (Gucciardi, Chan, Manuel, & Sidani, 2013). These modifications primarily focus on proper diet, exercise, and weight management. Oral medications and/or insulin may also be necessary. Self-care management plays a vital role in diabetes by providing an opportunity to improve health and quality of life

(Gucciardi et al., 2013). There is a plethora of evidence-based data supporting patient-centered care as a key component in the decision-making process for effective diabetes management (Inzucchi et al., 2012). Patients must independently monitor their glucose and track data to determine whether glucose levels are trending upward; thus, creating an essential patient-led intervention to blood glucose control. Lifestyle modification such as management of weight, avoidance of refined sugars, and incorporating appropriate amounts of exercise are essential components to managing diabetes (Gorter, Tuytel, De Leeuw, Bensing, & Rutten, 2011). Ultimately, the patient and healthcare professional must work together toward optimal diabetes management.

According to Conroy, Lee, Pendleton, and Bates (2014), the prevalence of diabetes increases with age and is higher among African Americans, Asian/Pacific Islanders, and Hispanics. In addition, their work indicates that the increased rate is noted among minorities with lower education attainment and family income compared to non-Hispanic Whites. California has over 2.3 million adults with diabetes, which is one out of every 12 adults (Conroy et al., 2014). In the United States, California has the largest population of people with diabetes and the highest costs, at \$27.6 billion dollars (American Diabetes Association [ADA], 2015). The incidence of diabetes is primarily attributable to the ethnic diversity within the state. California statistics indicate that Hispanics and African Americans have two times higher occurrence: “1 in 20 non-Hispanic Whites have type 2 diabetes, compared with 1 in 10 Hispanics and 1 in 11 African Americans” (Conroy et al., 2014, p. 24).

In 2009, (C. Anunciado, personal communication, November 26, 2014) one southern California medical center had a daily average census of 17.5 patients

hospitalized with diabetes; this daily average census increased to 73 in 2014. The average length of stay declined from 6 days in 2009 to 5.6 days in 2014, with a readmission rate of 14% to 15% (C. Anunciado, personal communication, January 13, 2015). It is important to note that these numbers represent all types of diabetes diagnoses including a primary diagnosis of diabetes type 1 and 2, gestational diabetes, and secondary diagnoses related to diabetes.

Summary of the Evidence

Transitional care encompasses a patient-centered approach to providing quality health care (Naylor, Aiken, Kurtzman, Olds, & Hirschman, 2011). As patients are transferred throughout the health care system, evidence shows that transitional care is beneficial in avoiding preventable outcomes among at-risk populations such as diabetes (Naylor et al., 2011). Without a transitional care program, patients frequently experience adverse effects that result in re-hospitalizations within 30 days from discharge accounting for an estimated \$15 billion dollars in Medicare costs which contributes significantly to the overall health care expenditures nationally (Naylor et al., 2011). Transitional care programs should be utilized to help reduce readmissions by addressing the post discharge concern of patients and enhancing their self-care abilities (Naylor et al., 2011).

One evidence-based approach to providing transitional care for patients with diabetes is through group visits or shared medical appointments. The majority of research conducted regarding group visits has been performed with a diabetic population (Edelman, Gierisch, McDuffie, Oddone, & Williams, 2014). According to Dontje and Forrest, (2011) and Gucciardi et al. (2013), group based interventions have provided effective diabetes self-management education and have helped to reduce A1C levels

while providing patients with the opportunity to interact with each other and address health concerns collectively.

Housden, Wong, and Dawes (2013) conducted a systematic review from 1947 to February 2012 consisting of randomized controlled trials (RCTs), and observational studies of patients aged 16–80 years old with type 1 or 2 diabetes who experienced healthcare management using group medical visits. Of the 13 RCTs, group medical visits were found to be effective in reducing A1C levels. Also, a RCT evaluated the effectiveness of group visits which consisted of a structured group education program for the management of diabetes type 2 in the Western Cape, South Africa, with outcomes indicating group visits assisted in a 1% reduction in A1C and was a cost-effective intervention (Mash, Levitt, Steyn, Zwarenstein, & Rollnick, 2012). Furthermore, the RCT by Mohamed, Al-Lenjawi, Amuna, Zotor, and Elmahdi (2013) consisted of group sessions lasting 3-4 hours based on a theory of empowerment and health belief models. This trial maintained a cultural sensitivity in relation to language (Arabic), food habits, and health beliefs. The intervention group illustrated an improvement in diabetes knowledge, attitude enrichment, and enhanced self-management skills (Mohamed et al., 2013).

Prezio et al. (2013) performed a RCT to tailor diabetes education and management for uninsured Mexican Americans. Participants with an initial A1C > 8% experienced a decrease of 1.6% measured 12 months post-implementation of this education program as compared to the control group. The results of this RCT speak positively for culturally tailored diabetes education programs led by healthcare professionals.

Naik et al. (2011) explored using group visits in a primary care setting with diabetic patients to reduce A1C levels over three months. They focused the group visits on empowering patients through diet, medication management, home monitoring, and exercise. The intervention group was compared to traditional diabetes education and concluded participants in the group visits had an average decrease in A1C of approximately 0.8% compared to 0.04% within the traditional group. In addition, a systematic review by Edelman et al. (2014) of 17 studies regarding diabetic patients who experienced shared medical appointments (SMA) compared to usual care demonstrated that shared medical appointments improved glycemic control. The systematic review included 13 RCTs that examined the effects of SMA on patients with type 2 diabetes, type 1 diabetes, and heterogeneous mix of type 1 and 2. In addition, 5 of the 17 studies reviewed by Edelman et al. (2014) evaluated readmission and emergency rooms outcomes with results indicating participants had decreased readmission rates and emergency room visits (Clancy, Coupe, Magruder, Huang, & Wolfman, 2003; Cohen et al., 2011; Edelman et al., 2010; Sadur et al., 2011; Taveira, Dooley, Coohen, Khatana, & Wu, 2011).

Lastly, one transitional care program led by a nurse practitioner and a master's prepared nurse (Naylor et al., 2013) evaluated participants at baseline and two months post-intervention. The study evaluated transitional care as a modality to improve patient health status and quality of life post-hospitalization and demonstrated improvement with decreased readmission rates from 60 to 45 patients within a period of 3 months. The cost saving from the transitional care program was \$2170 per member at one year (Naylor et al., 2013)

Setting and Sample

This evidence-based project was conducted in an inpatient diabetes clinic located within a southern California medical center. The patients were referred to the inpatient diabetes clinic following hospital admission with a diagnosis of diabetes or diabetes-related complications. The majority of the population was Hispanic with uncontrolled type 1 or type 2 diabetes. The sample size initially consisted of 14 participants, but only 3 participants completed the practice change.

Practice Change Process

The foundation for this evidence-based project was the Evidence-Based Practice Institute Model by Brown and Ecoff, in collaboration with the Consortium for Nursing Excellence (2007) that focuses on improving patient care and outcomes. The model is based on research literature and utilization related to evidence-based practice and change theory as seen in Figure 1.

Institutional Review Board (IRB) approval was obtained from the clinical agency and the affiliated university. Following approval, a facility-approved interpreter translated all documents from English to Spanish. This ensured that both English and Spanish speaking patients were able to participate in the project.

Patients 18 years of age and older with a primary or secondary diagnosis of diabetes who were hospitalized and had an A1C $> 7.5\%$ were invited to participate in the transitional diabetes care program. Participants were visited while hospitalized and informed about the purpose of the transitional care program. If interested, they were provided with an Informed Consent and Protected Health Information (PHI) Authorization form, and received a copy of the authorization agreement for the

transitional care program. The project coordinator then collected all signed authorization forms and the participants were given a flyer with the date, time, and location of the group visits. Furthermore, an evaluation of their knowledge was assessed using the Diabetes Knowledge Questionnaire (DKQ-24) (Garcia, Villagomez, Brown, Kouzekanani, & Hanis, 2001), during which participants were verbally asked questions. Individual responses were reviewed with participants immediately after completion. If questions were answered incorrectly, education was then provided.

Prior to discharge from the hospital, the patients scheduled an appointment within a 14-day time frame. Three to four days prior to the appointment, participants were reminded by telephone contact. Selected patients participated in a 90-minute multi-disciplinary group visit to discuss evidence-based care regarding diabetes management. During these group meetings led by the nurse practitioners and diabetes educators, all participants had opportunities to discuss their concerns with health care professionals, including group leaders, dietitians, and a pharmacist. Participants were educated based on the American Association of Diabetes Education (AADE) - 7 Self-Care Behaviors (2015) while attending the group appointments. The AADE-7 Self-Care Behaviors are “healthy eating, being active, monitoring, taking medication, problem solving, reducing risks, and healthy coping” (American Association of Diabetes Educators [AADE], 2015, p. 1). Meetings were conducted every two weeks allowing for adequate recruitment and participation. The group size ranged from 6-10 patients and included their family members or friends. This permitted participants to address their concerns in one setting. Participants received additional printed materials relating to their diabetes management.

Two to three months following the completion of their participation in the group visits, participants were asked to return for a follow-up A1C. They were contacted via telephone immediately prior to that time frame, with a reminder about the pending A1C collection as well as post-intervention knowledge assessment using the DKQ-24 (Garcia, Villagomez, Brown, Kouzekanani, & Hanis, 2001). Upon answering the questionnaire and completing laboratory results, the data were collected and information was de-identified for purposes of data management.

Evaluation Methods and Benchmarks

The goal was to have a 20% improvement in self-care knowledge and a 10% reduction in A1C levels. Patient satisfaction was self-reported for the group visits. Data were collected using (1) the Diabetes Knowledge Questionnaire (DKQ -24) and (2) A1C levels. The DKQ-24 questionnaire was chosen due to the instrument's established reliability and validity with both English and Spanish speaking participants (Garcia et al., 2001). Participants completed both a pre and post-test questionnaire to assess their level of knowledge. When enrollees completed the questionnaire, the correct responses were reviewed with them. Both post-test knowledge and A1C levels were reassessed two to three months after discharge.

Results

Although 14 participants attended the group visits, only 3 completed the program. The mean pre-test knowledge score was 72.1%, and the mean baseline A1C score was 9.3% (see Table 1). Post-intervention results indicated an improvement in the knowledge scores and a reduction in A1C levels. The mean knowledge score improved to 87%, and the mean A1C was reduced to 7.1%.

The goal was to improve diabetes knowledge by 20% and experience a 10% reduction in A1C levels. The overall results displayed that participants had a reduction of 1.9% for A1C results and a 15% improvement in knowledge scores. This appears to correspond to participants exhibiting an increase in diabetes management skills and knowledge during group visit sessions (see Graphs 1 and 2).

Discussion

Although the participation numbers were small, the project data is consistent with previous research regarding the success of using group visits with diabetes patients (Dontje & Forrest, 2011). The use of group-based intervention seemed instrumental in helping to decrease participants' A1C levels and improve self-care management skills by enhancing their knowledge. The improvement in A1C levels is significant as a 1% decrease in glycemic hemoglobin results in a 21% decrease in diabetes related deaths and 37% reduction in microvascular problems (Burke & O'Grady, 2012).

There were limitations experienced with this transitional care program resulting in some important lessons that future similar projects might benefit. The most prominent limitation to the project was the rate of no-shows, which was 64% of the participants. Of those who did not participate, 34% were still unwell, having been transferred to a skilled nursing facility for further treatment. The other participants were discharged home but continued to receive antibiotic therapy. This impeded follow up group visits because treatment times often conflicted. Furthermore, 4% of the participants were still hospitalized (see Table 3).

Dontje & Forrest (2011) noted through their research, that only 10-20% of eligible patients attended group visits, although no reason for this finding was given. In

this project, 14 out of 36 enrollees (39%) initially attended the group visits, with a final enrollment of 3 participants (8.3%). Difficulties in retention, including issues with transportation, and work and family obligations, were discussed among the health care professionals as limitations to completing the program; but issues with completion were also anticipated as participants saw their physical health improving.

Other limitations were regarding the follow-up A1C and the post-intervention knowledge questionnaire. As participants completed their group visit, they received follow-up care through their primary care provider and a follow-up A1C was completed during those visits. Participants were directed to follow up with a specific laboratory but this did not always occur. Post-intervention data were difficult to obtain because of such challenges in contacting participants through telephone calls, participant schedule conflicts, and others' not completing the process. Due to these difficulties in contacting participants' post-intervention, using patient satisfaction scores would have assisted in evaluating the quality and effectiveness of the group intervention more effectively.

Maintaining high quality health care is valuable for both patients and healthcare systems. For this type of evidence-based project, healthcare payers can potentially be reimbursed \$180 per patient when seen within 14 days after discharge in a transitional care program. The estimated revenue would be \$3600 per month. The probability of success was 80% with an estimated total cost of \$700 per month for the group visits. This amount included the nurse practitioner, diabetes educator, nutritionist, and pharmacist to lead the group sessions. The target cost had 90% probability of being achieved. When calculating the cost-benefit, the transitional care program had the potential to generate an estimated \$4.57 per \$1 spent on the program.

Furthermore, the average diagnosis-related group (DRG) payment was estimated at \$5,000 per readmission (Chaudhry, 2011). The estimated readmission rate was 60 patients per month with a diagnosis of diabetes (C. Anunciado, personal communication, January 13, 2015). The readmission cost was an estimated loss of \$300,000 per month related to the cost of diabetes. The transitional care program was anticipated to include 20 patients per month, theoretically preventing 12 patients from being readmitted and, thereby, decreasing the readmission rate by 20%. Based on this formula, this program would save the facility \$60,000 per month and generate an estimated cost savings of \$720,000 per year.

From a health policy perspective, the Affordable Care Act of 2010 provides \$500 million to a health and community organization which provides at least one transitional care program for high-risk Medicare beneficiaries (Centers for Medicare and Medicaid Services [CMS], 2015). At this project site, this program was designed to extend from 2011 to 2015 (Naylor et al., 2011) in order to improve outcomes by developing a transitional care program focused on quality patient-centered care. The successful outcomes of this small evidence-based project has led to continued efforts by the project site to expand implementation for improved participation in the diabetic transitional care program.

Conclusion

This evidence-based project suggested that transitional care may be a good strategy for effective management for diabetes patients post hospitalization to enhance their glycemic control. The use of follow-up care assisted in improving patient understanding of their diet and overall nutritional needs with diabetes management. One

participant stated that they were grateful for this opportunity for learning because they do not have enough time for an in-depth discussion on diet, medication, and life style modification with their primary care provider (Participant N, personal communication, February 26, 2015) Another participant expressed that the group visits felt more personal and tailored to the holistic approach of diabetes management (Participant E, personal communication, March 12, 2015). In addition, the reinforcement on medication management in relation to glycemic control proved to be beneficial to participants. Thus, effective self-care management of diabetes can help reduce long-term complications from this disease.

Lastly, advanced practice registered nurses (APRN's) have the knowledge and skills to provide leadership in both development and implementation of such a diabetes transitional care program. Specifically, nurse practitioners prepared as primary care practitioners not only have advanced knowledge and skill in conducting physical examinations, but can also prescribe, refer, and consult with other members of the multidisciplinary team in order to promote seamless care, especially at the time of transition from the hospital to the community.

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Figure 1. Evidence-Based Practice Institute Model

Table 1. Mean Scores of Participants

Participants	Baseline A1C	Post A1C	Pre-Test Scores	Post-Test Scores
C	8.7	5.9	70.8	88
F	11.1	7.1	62.5	83
K	8	8.2	83	91
Mean	9.27	7.07	72.1	87.33

Graph 1. Pre and post A1C results of participants C, F, and K

Graph 2. Pre and post knowledge scores of participants C, F, and K

Table 2. Barrier to group visits reported in percentage of the population enrolled

Barriers to Group Visits	
Categories of Barriers and Reasons Given	Percentage of the Population Enrolled
No Show - Appointment time - Transportation - Did not show	64%
Sick - Antibiotic therapy treatment - Transferred to Skilled Nursing Facility (SNF)	32%
Hospitalized	1%

Abstract

TRANSITIONAL CARE FOR ADULT PATIENTS WITH DIABETES MELLITUS

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Chula Vista, CA

Purpose: The purpose of this evidence-based practice project is to incorporate a diabetes transitional care program using a shared medical appointment model to improve patient self-care management behaviors and glycemic control in diabetic patients at a southern California hospital.

Background: Diabetes is a challenging healthcare problem associated with significant mortality and morbidity issues. In 2012, 29.1 million people, or 9.3% of the U.S. population, had a diagnosis of diabetes mellitus and 28.9 million of those patients were 20 years of age and older. Today, diabetes is of epidemic proportion worldwide and an additional 5.4% of the adult population is projected to be diagnosed with diabetes by 2025. The growing incidence of diabetes can be attributed to an increase in obesity, lack of exercise, diet high in processed sugars, and/or overall lack of diabetes self-management knowledge. Research consistently supports transitional care as an effective evidence-based solution for enhancing the overall management of patients with diabetes as reflected in improved self-management and glycemic control. At the project facility,

there is no formalized transitional care program for diabetes patients in place.

Practice Change Process: The purpose of this evidence-based practice project is to enhance diabetes patient self-care knowledge by 20% and improve patient glycemic control by a 10% reduction in HgbA1C levels. Patients 18 years of age and older with a primary or secondary diagnosis of diabetes who are hospitalized and have a HgbA1C > 7.5% will be selected to participate in the transitional diabetes care program. Following discharge from the hospital, the patient will be seen within a 14-day time frame. Using Pender's theory of Health Promotion as a foundation for the project, selected patients will participate in a 90-minute multi-disciplinary medical appointment to discuss evidence-based care regarding diabetes management. Patients are educated on the American Association of Diabetes Education (AADE) - 7 Self-Care Behaviors when in the hospital. The Diabetes Knowledge Questionnaire will be administered pre and post intervention in order to measure the patient's knowledge regarding diabetes self-care management. In addition, glycemic control will be determined through Hgb A1C levels obtained at baseline and two - three months post-intervention.

Outcomes: In progress. It is anticipated that participants will have a 20% improvement in diabetes self-care knowledge and a 10% reduction in Hgb A1C levels two – three months post intervention.

Conclusions: Transitional diabetes patient care provides a multi-faceted approach to evidence-based diabetes self-care management. Patients are empowered with self-care management skills promoting improved diabetes self-care behaviors and glycemic control. Transitional care can play an important role in improving quality of life, reducing costs, and improving access to health care for adults with diabetes. Advanced practice

nurses possess the knowledge and skills to assume a leadership role in the development and implementation of transitional care programs for diabetes patients.

Transitional Care of Adult Patients with Diabetes Following Hospitalization

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Crisamar J. Anunciado PhD, FNP-BC, BC-ADM

Background

- Diabetes is a multifaceted disease, with many providers overwhelmed as to the best strategies for disease management¹¹
- 29.1 million Americans, 9.3% of the population, have diabetes diagnosis and 28.9 million are 18 y/o and older⁴
- 36% of all hospitalizations are a combination of short-term diabetic complications and uncontrolled diabetes⁵
- California has the greatest incidence of diabetes and the highest costs at \$27.6 billion^{2,6}
- California has over 2.3 million adults with diabetes; this is one out of every 12 adults⁶
- In 2009, the daily average of hospitalized patients with diabetes was 20. In 2014, the average was 80 at a southern California hospital¹⁷

Purpose

- The purpose of this evidence-based practice project was to incorporate a diabetes transitional care program for adults utilizing group visits to improve patient self-care management behaviors and glycemic control in diabetic patients

Evidence

- Transitional care is an effective evidence-based solution for enhancing the overall management of patients with diabetes¹⁴
- A systematic review of group medical visits from 1947 to February 2012, indicated group visits are a successful intervention for A1C reductions¹⁰
- A systematic review of 17 studies, including 13 RCT studies, noted that shared medical appointments were associated with a decrease mean in A1C⁷
- A randomized control trial demonstrated that following a 12 month educational intervention, there was improvement in A1C levels of uninsured Mexican Americans¹⁵

Practice Change Process

- IRB approval was obtained from both the clinical agency and USD
- Diabetic patients included 18 years of age or older, and with an A1C > 7.5% on admission
- Diabetic patients were recruited based on their discharge date, so they could follow-up within 14 days after discharge
- Prior to discharge participants completed Diabetes Knowledge Questionnaire (DKQ-24)¹⁸
- A detailed review of the DKQ was conducted pre and post intervention
- Participants met in 90 minute group visit(s) led by a nurse practitioner, diabetic educator, nutritionist and pharmacist
- Group visits occurred in a bilingual setting consisting of 6-10 participants, including their families, and/or friends
- Components of meetings focused on education geared towards self-management, nutrition, and medication adherence
- Participants were contacted 2-3 months post discharge for follow-up A1C and DKQ post-test

Evaluation Methods and Benchmarks

- A pre-test was performed using the DKQ-24 to measure patients knowledge regarding self-care management during hospitalization
- 2-3 months after discharge post-test knowledge measures were reassessed
- A1C levels were monitored at base line and 2-3 months post-intervention
- Patient satisfaction was self-reported for group visits intervention
- The goal was to attain a 20% improvement in diabetes knowledge and a 10% reduction in A1C levels.

Tables and Graphs

Transitional Care of Adult Patients With Diabetes Following Hospitalization

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Background and Significance

National Data

- 29.1 million Americans, 9.3% of the population, have a diagnosis of diabetes and 28.9 million are 18 years and older ⁴
- Nationally, California has the greatest incidence of diabetes and thus the highest costs at \$27.6 billion.^{2,6}

State Data

- California has over 2.3 million adults with diabetes; this is one out of every 12 adults. ⁶
- Statistics indicate that the incidence of diabetes is twice as great in Hispanics and African Americans.⁶
- Diabetic complications and uncontrolled diabetes accounts for 36% of all short-term hospitalizations. ⁶

Background and Significance

Local Data

- In 2009, the daily average of hospitalized patients with diabetes was 20. In 2014, the average was 80.
- In 2009, the average length of stay was 6 days. In 2014, the average length of stay was 5.4 days.
- The estimated readmission rate for diabetic patients are 63 per month.

Purpose

The purpose of this evidence-based practice project is to incorporate a diabetes translational care program for adults utilizing group visits to improve patient self-care management behaviors and glycemic control in diabetic patients.

PICO

In adult patients with diabetes and a A1C ≥ 7.5 %, does transitional care using group visits improve diabetes self-care management behaviors and glycemic control in contrast to usual care?

Synopsis of Evidence

Systematic Reviews

- A systematic review focused on interventions to improve glycemic control in type 1 or 2 diabetes was conducted from 1947 to February 2012. Group medical visits were found to be successful as the basis for the intervention.¹¹
- 17 studies, including 13 RCT studies, noted that shared medical appointments were associated with a decrease mean in A1C.⁸
- 13 studies identified 38 interventions in relation to successful outcomes.¹⁰

EBP Design and Model: The Catalyst Model³

Practice Change Process

- IRB approval was obtained from both Sharp and USD
- Diabetic patients included were 18 years of age or older, and with a an A1C > 7.5% on admission
- Based on their discharge date, diabetic patients were recruited, so they could follow-up within 14 days after discharge.
- Content contained within the Diabetes Knowledge Questionnaire (DKQ-24)⁹ was the focus of patient education.
- Prior to discharge participants completed the initial DKQ.

Practice Change Process “Cont.”

- Participants met in 90 minute group visit(s) led by a nurse practitioner, diabetic educator, nutritionist and pharmacist.
- Group visits occurred in a bilingual setting consisting of 6-10 participants, including their families, and/or friends.
- Education during meetings focused on self-management, nutrition, and medication adherence¹
- Participants were contacted 2-3 months post discharge for follow-up A1C and DKQ post-test.

Evaluation Methods

Diabetes Knowledge Questionnaire (DKQ-24)⁹

- A pre-test prior to receiving diabetes education
- Post-test 2-3 months post-intervention

A1C levels

- Base line
- 2-3 months post-intervention

Diabetes Knowledge Questionnaire (DKQ-24)⁹

Item #	QUESTIONARIO DE CONOCIMIENTO DE DIABETES/ DIABETES KNOWLEDGE QUESTIONNAIRE- PREGUNTAS/QUESTIONS	SI/YES	NO	NO SE/ DON'T KNOW
1	El comer mucha azúcar y otras comidas dulces es una causa de la diabetes. Eating too much sugar and other sweet foods is a cause of diabetes.			
2	La causa común de la diabetes es la falta de insulina efectiva en el cuerpo. The usual cause of diabetes is lack of effective insulin in the body.			
3	La diabetes es causada porque los riñones no pueden mantener el azúcar fuera de la orina. Diabetes is caused by failure of the kidneys to keep sugar out of the urine.			
4	Los riñones producen la insulina. Kidneys produce insulin.			
5	En la diabetes que no se está tratando, la cantidad de azúcar en la sangre usualmente sube. In untreated diabetes, the amount of sugar in the blood usually increases.			
6	Si yo soy diabético, mis hijos tendrán más riesgo de ser diabéticos. If I am diabetic, my children have a higher chance of being diabetic.			
7	Se puede curar la diabetes. Diabetes can be cured.			
8	Un nivel de azúcar de 210 en prueba de sangre hecha en ayunas es muy alto. A fasting blood sugar level of 210 is too high.			
9	La mejor manera de chequear mi diabetes es haciendo pruebas de orina. The best way to check my diabetes is by testing my urine.			
10	El ejercicio regular aumentará la necesidad de insulina u otro medicamento para la diabetes. Regular exercise will increase the need for insulin or other diabetic medication.			
11	Hay dos tipos principales de diabetes: Tipo 1 (dependiente de insulina) y Tipo 2 (no-dependiente de insulina). There are two main types of diabetes: Type 1 (insulin-dependent) and Type 2 (non-insulin-dependent).			
12	Una reacción de insulina es causada por mucha comida. An insulin reaction is caused by too much food.			
13	La medicina es más importante que la dieta y el ejercicio para controlar mi diabetes. Medication is more important than diet and exercise to control my diabetes.			
14	La diabetes frecuentemente causa mala circulación. Diabetes often causes poor circulation.			
15	Cortaduras y rasguños cicatrizan más despacio en diabéticos. Cuts and abrasions on diabetics heal more slowly.			
16	Los diabéticos deberían poner cuidado extra al cortarse las uñas de los dedos de los pies. Diabetics should take extra care when cutting their toenails.			
17	Una persona con diabetes debería limpiar una cortadura primero con yodo y alcohol. A person with diabetes should cleanse a cut with iodine and alcohol.			
18	La manera en que preparo mi comida es igual de importante que las comidas que como. The way I prepare my food is as important as the foods I eat.			
19	La diabetes puede dañar mis riñones. Diabetes can damage my kidneys.			
20	La diabetes puede causar que no siento en mis manos, dedos y pies. Diabetes can cause loss of feeling in my hands, fingers, and feet.			
21	El temblar y sudar son señales de azúcar alta en la sangre. Shaking and sweating are signs of high blood sugar.			
22	El orinar seguido y la sed son señales de azúcar baja en la sangre. Frequent urination and thirst are signs of low blood sugar.			
23	Los calcetines y las medias elásticas apretadas no son malos para los diabéticos. Tight elastic hose or socks are not bad for diabetics.			
24	Una dieta diabética consiste principalmente de comidas especiales. A diabetic diet consists mostly of special foods.			

This product was adapted from the DKQ "Diabetes Knowledge Questionnaire," Garcia and Associates for the diabetes self management project at Gateway Community Health Centers, Inc. with support from the Robert Wood Johnson Foundation® in Princeton, NJ. & www.diabetesinitiative.org

Results

- 14 out of 36 (39%) attended the group visits
- Mean Pre-test scores -71.2%
- Mean Baseline A1C -10.7%
- Participants self-report increased diabetic management skills
- Post-test data in progress

Results

Baseline A1C & Pre-Test Scores

Pre-test results show a correlation between participants knowledge and baseline A1C

Cost

- Centers for Medicare and Medicaid Services (CMS) will reimburse \$180 per patient that is seen within 14 days after discharge in a transitional care program.
- The estimated total cost for conducting group visits is \$700 per month.
- The estimated revenue is \$2160 - \$3600 per month.
- Transitional care program will generate an estimate of \$2.74 - \$4.57 per \$1 spent for the program.
- The estimated revenue is based on a group size of 6 -10 patients

Conclusions

- Group visits provide a multi-faceted approach to management of adult patients with diabetes.
- The patient-centered approach used with group visits promoted individual diabetes self-management education and reduction in A1C levels.
- Transitional care is essential for all adult diabetes patients in order to assist them in maintaining adequate glycemic control.
- Patients can be empowered with using self-care management skills using a group visit approach.

Nursing Implications

- Advanced practice nurses possess the knowledge and skills to develop and implement a transitional care program.
- APRN's must be educationally prepared to assume leadership roles in promoting successful diabetes transitional care programs.
- APRN's must be highly familiar with each patient's health history and physical examination details in order to optimize patient outcomes.
- APRN's must be knowledgeable about health policy legislation such as the ACA (e.g., the Community Based Care Transitions Program) in order to provide optimal patient care.

Questions

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