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Staff Education on the Management of Diabetes Among Type 2 Diabetic Black American Patients

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Executive Summary: Staff Education Project

Staff Education on the Management of Diabetes Among Type 2 Diabetic Black American Patients

by

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Summary

The aim of this staff education project was to increase nurses' knowledge and confidence in providing patient education for diabetes self-management. Insufficient nurse knowledge regarding diabetes care and management was the gap in The practice-focused question was: Among Black American patients, does increasing nurses' knowledge regarding implementation of diabetes-self management education programs result in a measurable increase in knowledge about diabetes management, ultimately contributing to improved expected diabetic outcomes involving glycemic control and reduced complications?

Analytical strategies included descriptive and comparative analysis of deidentified pre- and post-knowledge assessments to evaluate the program's impact on learning outcomes. An anonymous satisfaction survey was used to assess education experience. The intervention suggested improved nursing overall knowledge of diabetes self-management. The post-test percentage score increased on average 25.72 points. Education increases nurses' confidence and capacity to provide effective patient self-care education, which leads to improved patient care outcomes due to application of this knowledge.

Recommendations include correlating patient outcomes pre- and postintervention, integrating training into new hire orientation, and making specialized diabetes education modules a mandatory annual competency. This staff education project has potential implications that positively impact and advance diabetes care and patient education through improved nursing knowledge. Implementation and sustainment of this training will lead to promoting health equity for minority populations burdened by diabetes.

Background

The primary goal of this staff education project was to enhance project site nurses' knowledge of diabetes and their confidence in educating patients. The gap in practice was lack of knowledge among nurses regarding diabetes management, evidenced by poor glycemic indexes and complications among Black American patients. The burden of diabetes is continually growing, with impacts among a wide range of populations, especially Black Americans. According to Wadi et al. (2022), 460 million adults are living with diabetes with type II diabetes, disproportionately affecting Black American populations. Proper or effective glycemic control is among the most crucial components in terms of care and management among patients with diabetes, especially type 2 diabetes (Yahaya et al., 2023).

The selected DNP project site reported a high incidence of poor glycemic indexes in their patient population. The selected DNP site also reported over 50% of Black American patients presented with diabetes complications. It Selection of this topic is driven by recognition of a potentially significant gap in practice. This gap was noted through a report that was provided by clinic leadership and a review of patients' deidentified and aggregate data on diabetic complications and associated risk factors that were identified in this clinical practice. This choice is underscored by prevalence of patients experiencing nephrology complications, which were attributed to inadequate diabetes management despite administration of medications and treatments.

These findings support the need for implementation of the educational program in the facility. According to Wang et al. (2023), most non-endocrinology nurses possess inadequate knowledge of diabetes, highlighting the need for diabetes knowledge training for nursing professionals. Albagawi et al. (2023) asserted there

exists a significant gap between perceived comprehension as compared to actual knowledge they have regarding diabetes care.

The practice-focused question for the DNP project was: Among Black American patients, does increasing nurses' knowledge on implementation of diabetes-self management education programs for nurses result in a measurable increase in knowledge about diabetes management, ultimately contributing to improved expected diabetic outcomes such as glycemic control and reduced complications? The purpose of the project was to implement a diabetes nurse education program to enhance nurses' knowledge of diabetes management. The overarching goal is to enhance staff confidence in educating Black American patients on diabetes self-management, which potentially leads to positive social change by empowering patients with diabetes to adopt better self-management strategies and improve outcomes.

Staff pre-knowledge assessment feedback from nurses demonstrated a lack of confidence involving management of glycemic index control. A meeting that was held on February 5, 2024 at the DNP project site with the administrator, preceptor, and some clinical staff led to confirming this is a known gap which could be addressed via this staff education project. Local clinic staff supported this DNP project to focus on improving clinic-wide knowledge and enhancing patient care quality, which would have a positive social impact in terms of mitigating risks and complications related to diabetes.

Nurses at the DNP project site also expressed a lack of confidence in providing diabetes self-care education to patients and identified a gap in clinical practice. According to Love (2022), Africans living in high-income countries have generally poor knowledge and understanding of diabetes, with many holding erroneous beliefs about diet and physical exercise. Piya et al. (2022) stated there were

low confidence levels among nurses in diabetes management. Reed (2021) stated disparities in terms of nurses' understanding of diabetes led to the inability to provide adequate patient education. De la Fuente Coria et al. (2020) concluded educational interventions positively impact patient blood glucose and glycated hemoglobin levels. Furthermore, educational interventions were the most powerful tool to enhance patients' self-management practices. Nursing staff caring for diabetes patients must be equipped with in-depth knowledge to provide these patients with the most accurate knowledge and direction to improve health literacy and self-care (Albagawi et al., 2023). Campbell (2019) found interventions that were aimed at increasing nurses' knowledge were crucial in terms of educating patients for better self-management.

Nurses must fully understand patient HbA1c levels and the importance of regularly monitoring these levels in patients. Recommendations for stable diabetic patients are to check these levels twice annually. Those patients who are less than stable and are undergoing frequent or regular medication changes should have their HbA1c levels checked every 3 months until they are at therapeutic levels (Eyth & Naik, 2019). The clinic currently does not have clear protocols and processes for monitoring patient hHbA1c levels that meet these recommendations. Implementing the educational intervention will help the organization and nursing staff develop consistent monitoring levels.

Site leadership highlighted after multiple observations and feedback from nurses, it was evident they lacked confidence in providing nutrition guidance. There were gaps in terms of knowledge and comfort with dietary education, which is critical for effective glycemic index control. Effective nutritional management aids in glycemic control and improves overall wellbeing. Educating nurses would enhance their confidence in disseminating relevant and effective information to patients. By

offering diabetes education to patients, it is possible for the healthcare institution to achieve optimal levels of disease control. According to Martos-Cabrera et al. (2021), health education can provide patients with knowledge and skills they need to effectively manage their glucose and Hgba1c levels, therefore avoiding long-term consequences. Patients could gain knowledge, improving health literacy involving diabetes self-care.

Evidence in literature that supports the importance of staff education related to diabetes management is substantial. I used the following databases: ScienceDirect, PubMed, and Scopus as well as Johns Hopkins levels of evidence for evidence appraisal. Twenty-two articles were identified and appraised, 10 of which were selected for the project. Out of the 10 articles, there were two level I articles, four level III articles, two level II articles, and one level V articles, all of which were classified as strong and good quality. This proves there was adequate evidence in literature supporting the need for implementation of nursing educational programs to address the clinical problem.

Staff Education Project Development

Participants

Primary participants in this education project were seven clinical professionals: four registered nurses, one medical assistant, one dietician, and one physical therapist. Nurses were among the primary beneficiaries of the project. Their roles also included implementation of the education intervention. The medical assistant provided updated information on diabetes patients and their histories. The dietician provided critical information regarding nutrition that aids in diabetes management. The physical therapist provided collaboration opportunities and critical information on diabetes management, including effective exercise modifications. The

clinic administrator approved project processes and made major decisions on resources. The clinical site preceptor is a physician who served as the subject matter expert for content and subsequent clinical support.

Procedures

Knowledge Assessment

This stage entailed carrying out knowledge assessments and interviewing clinical volunteer participants who were tasked with taking care of diabetic patients. An online pre-knowledge assessment survey was conducted with the aim of identifying any gaps in nurses' knowledge and practice regarding diabetes, including diagnosing, monitoring, and care. After reviewing deidentified and aggregate data from this pre-knowledge assessment, the report was presented to clinic management, which included the administrator and DNP project preceptor. All team members reviewed and noted specific knowledge gaps and the need to educate nurses and other clinical professionals on diabetes management. The preceptor and administrator gave their approval and pledged their collaboration for the project. Participants received online survey links to complete pre and post-knowledge assessments. To maintain confidentiality, pre and post-knowledge assessments did not include personal or demographic data. Participants chose a letter and number to identify and pair their pre and post-knowledge assessments for comparative analysis.

Curriculum Development

In this stage, staff education material was developed, including a PowerPoint presentation and brochures. Content involved gaps that were identified in the pre-knowledge assessment to meet learning objectives for education. It is vital that educational material be interactive to enhance participants' engagement levels. To enhance interaction, educational material included relevant images that aligned with

content, and I avoided extraneous words. The medical director at the DNP project site is an expert in diabetes and nephrology and served as the subject matter expert for content review and approval.

Delivery Plan

During this stage, gaps were identified, and a plan to mitigate that gap through staff education was carried out to ascertain suitability and effectiveness of learning materials. This education included seven participants who completed the initial pre-knowledge assessment. After conducting an analysis of pre-knowledge assessments and obtaining feedback from participants, requisite changes were made to staff education and training.

Education sessions included holistic coverage of types of diabetes, nutrition, exercises, complications associated with diabetes, and self-management, which were delivered using a didactic instructional methodology. In-person staff training was conducted after nurses' shifts, and it lasted for 1 hour. The PowerPoint presentation was 45 minutes long, with the last 15 minutes dedicated to discussion and questions. Brochures were handed out during training sessions to enhance self-learning among nurses in their free time. The training activity included different techniques, such as collaborative learning and simulations, to cater to all learners' needs. After the presentation, a link was provided to each participant so they could complete post-knowledge assessments using previously selected letter and number identifiers.

Collection and Analysis of Evidence

Pre- and Post-Knowledge Assessment

Pre- and post-knowledge assessment is critical to assessing effectiveness of the education program. Knowledge assessments aligned with content as well as intended learning objectives for staff education. The site medical director served as

the subject matter expert to review and approve content via assessment tools. Assessment tools were identically administered through an anonymous online survey platform, which participants accessed through a link. Participants were asked to use numbers and letters to identify their pre- and post-knowledge assessments for comparison purposes while ensuring participant anonymity. Seven participants took the pre, and post-knowledge assessments. Participants also received anonymous online satisfaction surveys after the presentation to assess satisfaction with the education experience, including presentation and materials; in addition, they were offered the opportunity to identify additional educational needs.

Analysis

Deidentified and aggregate reports from the online survey were collected for analysis. After collecting data from the online survey, results were manually entered into an Excel spreadsheet. Descriptive analysis was used to evaluate changes in knowledge pre- and post-staff education. Comparative analysis was used to analyze individual responses from knowledge assessments to assess improvements and gaps.

The initial seven participant scores were logged using a structured format into an Excel spreadsheet for analysis. Percentage scores for both assessments were further used to determine improvements and calculated percentages of improvement from pre to post-knowledge assessment. Nurses' pre- and post-knowledge assessment scores per question were tabulated to identify deviations between first and second responses to each individual question and gauge whether there were improvements in responses. Percentage scores per question were also compared to evaluate improvements in specific content areas.

Results

Post-Implementation Results

Educational intervention improved nurses' knowledge of diabetes self-care according to the post-project analysis (see Table 1). Most learners demonstrated substantial improvements in their test scores, with Learners 3 and 5 achieving up to a 40% increase. However, two learners showed minimal improvement, with Learner 4 having no improvement and Learner 2 showing only a 10% increase. The post-test percentage score increased on average 25.72 points.

Table 1

*Learner Performance Summary (*N= *7)*

Learners	**Pre-test performance (%)**	**Post-test performance (%)**	**Improvement**
Learner 1	50	80	30
Learner 2	70	80	10
Learner 3	50	90	40
Learner 4	70	70	0
Learner 5	50	90	40
Learner 6	60	90	30
Learner 7	60	90	30
M	58.57	84.29	25.72

There were marked enhancements in terms of correct responses, but questions 3, 5, and 10, which involved adverse diabetes effects, recommended physical activity levels, and blood sugar/Hgba1c testing frequency, respectively, showed no improvement. Pre and Post-test question analysis demonstrated improvements in terms of answers to most questions. However, questions 3, 5, and 10 showed no improvement, with 67%, 29%, and 71% incorrect responses, respectively. While results indicate areas where learning objectives were not met, further evaluation is needed to determine whether this reflects content delivery challenges, question design

issues, or both. Future iterations of this educational program would benefit from a thorough psychometric analysis of assessment tools to ensure question validity and reliability. Additionally, alignment between educational content and assessment questions should be carefully evaluated to ensure proper measurement of learning outcomes. For current project findings, adverse diabetes effects, activity levels, and blood testing frequencies may require alternative teaching strategies and validated assessment methods for future educational interventions.

Impact on the Organization

Enhanced Care Delivery

The success of this educational intervention for nurses has important implications for healthcare organization. Improving nursing knowledge can have positive effects on how care is delivered to patients (Wang et al., 2023). Wadi et al. (2022) found culturally-informed diabetes programs led by well-trained healthcare workers contributed to better patient outcomes among Black Americans. De la Fuente Coria et al. (2020) showed educational interventions that were delivered by nurses resulted in improved metabolic control and patients reaching treatment targets more often.

Organizational Quality Improvement

Furthermore, by showing a commitment to ongoing nursing education and evidence-based practice, healthcare organizations can enhance their diabetes care programs (Martos-Cabrera et al., 2021). Results of this intervention serve as a foundation for future initiatives to continually improve care quality for diabetes and other chronic illnesses. According to Piya et al. (2022), structured nursing education programs can lead to measurable improvements in inpatient diabetes management and care. Additionally, Albagawi et al. (2023) found addressing gaps between nurses'

perceived and actual knowledge through targeted education programs increases organizational capacity for diabetes care.

Limitations

Sample and Design Constraints

While the intervention increased nursing knowledge, the small sample size of seven learners severely limited generalizability and statistical power. The lack of a control group also makes it difficult to solely attribute improvements to the intervention. The brief intervention duration presents an issue related to limited learning depth, as longer interventions tend to lead to more sustainable knowledge gains.

Implications for Future Research

These constraints significantly temper conclusions and highlight the need for more robust research designs. However, these results can provide preliminary insights to guide larger programs, though findings should be interpreted cautiously.

Significance

This project has the potential for importance beyond the local site, as diabetes is an international health concern relying heavily on patient self-care education. By demonstrating an educational intervention's effectiveness in terms of improving nursing knowledge, this project can potentially serve as a model for enhancing diabetes care at other organizations. Insights can inform similar interventions in various settings. Adverse effects, activity levels, and blood testing can guide education elsewhere. This project demonstrates the vitality of continued education and evaluation to ascertain high-quality evidence-based diabetes care. As a template for expanding nurse capabilities, this intervention has potential implications for elevating diabetes management through improved patient education worldwide.

Conclusions

Educational interventions considerably impact operations of the organization since it helped augment nursing knowledge and confidence in terms of caring for diabetic patients, serving as a foundation for improved patient education and outcomes. The project also demonstrated the vitality of ongoing staff training to enhance organizational capacity for diabetes management. Furthermore, the organization gained crucial experience regarding the process of implementing and evaluating a nursing education program.

Future recommendations to improve efficacy of the intervention should include collecting and analyzing data on patient Hgba1c levels, adherence to suggested medication, and diabetes self-care knowledge before and after nursing education to be able to correlate improvements in patient outcomes with staff training. It is also important to develop a sustainability plan to help integrate diabetes management training into new hire orientation for all clinical staff who regularly interact with diabetes patients and have mandatory annual competency training that should help in retaining knowledge. Furthermore, to promote ongoing learning, annual competencies should include completing one new specialized training module each year on topics like nutrition, physical activity, monitoring, and complications related to evidence-based diabetes care.

Lastly, this project has potential implications for nursing practice and positive social change, diversity, equity, and inclusion, given its potential to advance diabetes care and patient education. Through augmenting nursing knowledge, the applied intervention has the potential to advance care of diabetic patients through education**,** although findings must be interpreted with caution, given limitations. Overall, this project may serve as a model to elevate evidence-based practice via staff training,

which could foster health equity for underserved and minority populations, such as Black Americans, who are disproportionately affected by diabetes.

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