Implementing Diabetic Eye Care Education for Healthcare Professionals

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Title: Implementing Diabetic Eye Care Education for Healthcare Professionals

Comprehensive DNP Project Report

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Implementing Diabetic Eye Care Education for Healthcare Professionals

Abstract

Background: Diabetic retinopathy (DR) is the most common cause of diabetic eye complications and a leading cause of preventable vision loss in American adults. Skaggs et al. (2017) reported that DR screening prevents vision loss by 95%. The evidence reports that only 60% of people with diabetes have attended the recommended DR screenings (Flaxel et al., 2020). Emerging evidence supports patient education about diabetic eye care and its guidelines by health care professionals (HCPs) as the main facilitator to accomplish this goal (Khair et al., 2020; Moinul et al., 2020). Healthcare professionals are pivotal in encouraging or discouraging DR screening attendance.

Local Problem: The U.S. Census data 2010 reports that Maine has 60% of the rural state population (World Population Review, 2023). The rural areas have a higher disparity between the number of practicing ophthalmologists and patients with diabetes (AAO, 2020). The number of people with diabetes in Maine is 1.7% higher than the average national rate (CDC - BRFSS 2013 Survey Data and Documentation, 2022). It suggests that rural healthcare challenges in receiving timely care are due to the distance.

Methods: Diabetes and Healthy Eyes Toolkit, developed by the National Eye Health Education Program (NEHEP) for health educators, was used to implement a Doctor of Nursing Practice student-led quality improvement change of practice project. It included a PowerPoint and pre- and post-assessment questionnaires distributed to the clinical staff before and after the education presentation to measure the knowledge changes and willingness to change in participants’ practice after the presentation. The data collection of both assessment outcomes was entered into Qualtrics with Excel for statistical analysis.
Interventions: This DNP student presented the 60-minute educational session on diabetes eye care and its guidelines to ensure early detection and timely treatment to prevent diabetic eye complications. The specific aim was a 10% increase in knowledge and clinicians' willingness to change practice from the baseline.

Results: The knowledge level of the HCPs was 84% (N=27) before and 92% (N=21) after the educational intervention. The HCPs willing to change their practice to educate patients after the presentation were 81%.

Conclusions: The education session on diabetic eye complications and its guidelines for clinicians at the project site improved their knowledge and willingness to educate the patients.

Keywords: diabetic retinopathy, screenings, adults, attendance, factors, education
Implementing Diabetic Eye Care Education for Health Care Professionals

Introduction

Background

The number of people with diabetes mellitus (DM) continues to rise rapidly in the United States. The National Diabetes Statistics Reports that 38.4 million people have diabetes, including 29.4 million adults. Additionally, 97.6 million adults aged 18 years or older have prediabetes, including 27.2 million adults aged 65 years or older (Centers for Disease Control and Prevention [CDC], 2023). Based on projections, this number will increase to 44.1 million by 2034 (Walton et al., 2016). DM is a chronic progressive metabolic disease leading to injury of multiple organ systems, such as blindness, heart disease, kidney failure, and amputations. Diabetic eye diseases include diabetic retinopathy, which damages the blood vessels in the retina; cataracts, which clouds the eye’s lens; and glaucoma, which damages the optic nerve.

Among all diabetic eye diseases, diabetic retinopathy is the most common cause of diabetic eye complications and a leading cause of preventable vision loss in American adults (National Eye Institute [NEI], 2016). Approximately 90% of people with type I diabetes and 60% of those with type II diabetes will develop DR within 20 years of diagnosis (Walton et al., 2016). The American Diabetes Association (ADA) recommends that people with Type 2 diabetes (T2DM) are screened first at the time of diagnosis and then at least annually; people with Type 1 diabetes (T1DM) are screened within five years after the onset of diabetes and then at least annually after. Additionally, abnormal findings from the DR screening need to be referred to a dilated comprehensive eye examination (Flaxel et al., 2020).

The recommended diabetic eye care guidelines by the ADA were supported by most health insurance to cover eye examinations for diabetic eye diseases. However, the study
reported that about 60% of people with diabetes attended recommended DR screenings (Flaxel et al.). In 2017, the estimated cost of vision loss and eye problems in the United States was $139 billion annually for direct medical costs, indirect costs, and lost productivity (Rein et al., 2021). If everyone with diabetes receives DR screening and timely treatments per guidelines, $624 million and 400,000 person-years of vision annually could be saved in the U.S. (Ting et al., 2016). Healthy People 2030 recognizes the gap between the recommended DR eye exams and the attendance to DR eye exams among people with diabetes. To close this gap, Healthy People 2030 announced the DM objectives: reduce vision loss from diabetic retinopathy from 33.0% (2017) to 16.5%; increase the proportion of adults with diabetes who have a yearly eye exam from 64.8% (2019) to 70.3%; increase the proportion of people with diabetes who get formal diabetes education from 55.1% (2019) to 55.2% (Office of Disease Prevention and Health Promotion [ODPHP], n.d.).

Exploring factors of non-attendance and attendance determinants in adults with diabetes could provide a reliable foundation for identifying effective interventions to improve the screening attendance rate. The studies and surveys on diabetic eye screening attendance have shown many reasons for non-attendance, with inconsistent results depending on the sample population and study designs. A few studies proposed providing health education about DR to people with diabetes as an encouraging facilitator to improve the screening attendance rate (Khair et al., 2020; Moinul et al., 2020; Lawrenson et al., 2018). This literature review aimed to evaluate which factors encourage or prevent those patients from attending the recommended diabetic eye screening among adults diagnosed with diabetes.

**Problem Description**
Emerging evidence supports that patient education by HCPs about diabetic eye care is the main facilitator of increasing patients' knowledge about DR and their attendance at DR screening (Khair et al., 2020; Moinul et al., 2020). American Academy of Ophthalmology (AAO) reported the presence of a supply and demand gap between the number of practicing ophthalmologists (19,216) and the number of patients with diabetes in the U.S. (29 million) (AAO, 2020). It indicates the need to decrease the burden on ophthalmologists by DR screening in primary care and then refer only those requiring consultation. When the primary care providers (PCPs) refer patients to ophthalmologists, it is the perfect time to educate patients that DR screening is essential to early detect damage to blood vessels in the retina and timely treat it because DR is a silent disease until it is too late to restore a vision loss. Furthermore, PCPs have more frequent patient visits than specialty providers, providing more opportunities to educate patients during visits. However, PCPs are not encouraged to educate patients with diabetes (Moinul et al., 2020). Cavanet et al. (2017) and Bidassie (2017) stressed that all HCPs, including PCPs, must educate patients on self-management for better patient compliance outcomes.

The DNP project aimed to increase the attendance rate of DR screening among diabetic patients. To accomplish this goal, this DNP student implemented an educational session for clinicians at the project site so that the clinicians educate the patients about diabetic eye care and its guidelines during clinic visits.

Local Problem

This federal healthcare system implemented a teleretinal screening program at the community-based outpatient clinics (CBOCs) in 2006 to reduce their high diabetic population. It improved the DR attendance rate (Lynch & Maa, 2016). The U.S. Census data reported that Maine has a rural population of 61.3% (World Population Review, 2023). They face challenges
in accessing care and timely care due to populated land extending across the Canadian border. Furthermore, Maine had a 1.7% higher number of adults with diabetes than the average national rate (CDC – 2021 BRFSS Survey Data and Documentation, 2023), as well as an estimated 9,000 people annually with newly diagnosed diabetes. Diabetes and prediabetes cost an estimated $1.6 billion annually in Maine (Main.gov, n.d.). Although this federal healthcare system has a TRSP at the CBOCs, the above reports indicated that the project site may experience a similar issue with a low DR screening attendance rate related to rural healthcare barriers in access care, and clinicians may not encourage to educate patients about the importance of DR screening (Moinul et al., 2020). Based on the needs assessment, the project site was selected to implement the DNP project to educate clinicians about diabetic eye care during clinical visits.

**Setting**

The project site, one of Maine’s large federal medical centers, was selected for the DNP project. The patient population at this site included male and female adults from a highly rural population. The nationwide TRSP, including the project site, was implemented in this healthcare system in 2006 (Darkins, 2014). The evidence indicated that the project site may experience rural healthcare barriers and geographical challenges, contributing to a lack of care access.

**Specific Aim**

This DNP student led the project aimed to develop, implement, and evaluate a diabetic eye care educational session for clinicians at the project site. The goal was to improve the clinicians’ knowledge about diabetic eye complications and its guidelines by 10% from pre-assessment and post-assessment, as well as increase the clinicians’ willingness to change their practice to educate patients after the educational session. Objectives included the participants identifying the essential parts of ocular anatomy that are affected by diabetic complications, its
risk factors, the purpose of eye screening guidelines, the value of patient education during clinical visits, and their willingness to change their practice to educate patients.

**Available Knowledge**

The evidence in this literature review of the six studies with high and good strength and quality EBP levels I, II, and III suggested that lack of knowledge about DR is the main barrier, and knowledge about the DR with a recommendation by HCPs is the main facilitator of screening attendance. The barriers prevent screening attendance, and the facilitators encourage it in this review.

**PICOT Question**

The PICO question that guided the literature search was: Among adults diagnosed with diabetes, what factors encourage or prevent those patients from attending the recommended diabetic retinopathy screening?

**Search Methodology**

An initial comprehensive literature search started by searching PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Joanna Briggs Institute EBP Database, Scopus, APA PsychInfo, and Cochrane Database of Systemic Reviews. The key search terms focused explicitly on diabetic retinopathy, screenings, attendance, adults, and factors were extracted. In PubMed, the MeSH terms used were "diabetic retinopathy" AND "screening" to examine the first result. They applied filters for full text, clinical trials, randomized control trials, system reviews, and meta-analyses of the last ten years. Initially, fifty-four studies were retrieved. The retrieved articles were reduced to twenty-eight by modifying search details for "attendance.” Twenty-eight articles were reduced to twenty by modifying the search details of "adults" until twelve articles with adding "factors" were retrieved.
In CINAHL, the subject terms used were diabet* and limited to the peer-reviewed, English language, publication date last ten years, focusing on adult patients over 18 years old. The retrieved articles were reduced to three by adding screen* and adults* in the select field. In Scopus, the keywords "diabetic retinopathy AND screening AND attendance AND Adults AND factors" were searched, and relevant articles were reduced to two with a limiting year, document type, language, and source type. In APA PsycInfo, subject terms used were Diabetic retinopathy AND screening AND compliance or adherence. The articles were reduced by limiting source type, published date, language, and age. In the Cochrane Database of Systemic Reviews, the subject terms used were diabetic retinopathy AND screen* AND compliance or adherence and limited to year of publication, Cochrane Library Source, and document type. One article was retrieved from both trials. Fifty-four articles were retrieved from the initial comprehensive literature search.

Additional search strategies included ancestry searches of relevant articles found in citations of the research results and Google Scholar searches to build up appropriate search terms identified in the relevant studies: compliance, facilitators, factors, and barriers. The six articles were retrieved from both searches. The inclusion criteria were only original sources of quantitative, qualitative, and mixed-methods peer-reviewed research written in English, published between 2012 and 2022, and international studies. Exclusion criteria were secondary sources, unpublished manuscripts, non-DR eye disease studies, pregnancy, age under 18 years old, years of publication older than ten years, and evidence levels IV and V.

The Johns Hopkins Nursing Research Evidence Appraisal Tool was used to determine the quality rating of articles (Dang & Dearholt, 2022). The quantitative and qualitative articles reviewed included strength of evidence A, B, and quality levels I, II, and III. A total of six
studies were selected to answer the PICO question and to imply possible changes in clinical practice. Six studies were conducted in the United States, Canada, Irish, Australia, and Bangladesh, except for one systemic review that included 16 studies with no restrictions in the country of origin. The three studies (Chen et al., 2018; Kashim et al., 2018; Kelly et al., 2021) focused on barriers to DRS attendance with the EBP levels II and III studies. The other three studies focused on facilitators of DRS attendance with EBP level III Qualitative (Lake et al., 2017), including the two studies with EBP level I RCT with high-quality (Khair et al., 2020) and Level II high-quality experimental trial (Moinul et al., 2020) that focused on exploring the efficacy of health education as the primary facilitator to improve knowledge of DR and attendance to DRS (Appendix C: Evaluation Table).

Integrated Review of the Literature

Factors Prevent Diabetic Retinopathy Screening Attendance Among Diabetic Adults.

The first three studies with strength of high/good and quality EBP levels I, II, and III explored factors of DRS non-attendance. These studies focused on the different barriers to attendance. The study in the United States without a national DRS program identified that lack of health insurance was the main barrier to attendance (Chen et al., 2018). However, this finding was not supported by other studies. Bresnick et al. (2020) reported that people aged 65 plus years with Medicare who have minimized costs and opened DR screening access still showed low DR screening attendance. Chen et al. (2020) also reported that the increased coverage with Medicaid after introducing the Affordable Care Act did not lead to increased utilization of DR screening services.
On the other hand, Kelly et al. (2021), with an Irish national DRS program, identified that lack of knowledge about DR was the main barrier to non-attendance along with the other barriers, including low socio-economic status (SES), specific age groups, and ethnic minorities. Similarly, a systematic review by Kashim et al. (2018) identified lower SES and English deprivation as the main barriers, including the youngest and oldest age groups as the second most referenced barriers. Findings of the main barrier in Kelly et al. (2021) and Kashim et al. (2018) studies indicated that social determinants of health could influence the outcomes of lack of knowledge about DR and nonattendance in the countries with a national DRS program and without a national DRS program. Lake et al. (2017) compared barriers and facilitators in the younger and older age groups and reported that the lack of knowledge was the common barrier among both age groups. To further understand the other influencing factors, this review evaluated facilitators of DR screening attendance.

Factors Encourage Diabetic Retinopathy Screening Attendance Among Diabetic Adults.

The second three studies with strength high/good and quality EBP levels I, II, and III studies focused on facilitators to DR screening attendance. Lake et al. (2017) reported the influence of healthcare professionals for the younger age group and perceived personal health risks for the older age group as the main facilitators. The result of thirty semi-structured interviews using compliance with the Annual Diabetic Eye Exams Survey (CADEES) suggested that the influence of HCPs demonstrated more strongly associated with screening compliance-promoting behaviors than the perceived personal health risk for both age groups. Additionally, the reported belief about the benefits of screening, early detection of DR, and feeling reassured outweighed the negatives. Predictions of perceived personal benefits greatly empower the actions
of younger age groups to prevent negative health consequences. This was aligned with the core constructs of the Health Belief Model (HBM) (Rosenstock, 1974). Yet, the findings of the literature review supported DR screening recommendation by HCPs as the primary facilitator and lack of knowledge about diabetic eye care as the primary barrier, supporting that health education about DR by HCPs could be a solution for improving DR screening attendance rate.

The following two studies evaluated the effectiveness of health education interventions using different intervention strategies. Khair et al. (2020) implemented the personalized face-to-face home-based health education session followed by a telephone reminder strategy in Bangladesh. They reported a 36.1% (p<0.001) increase in the DRS attendance rate between the health education intervention group (64.3%) and the non-intervention group (28.2%). The finding indicated that participants’ perception of susceptibility to vision problems might be significantly increased after health education intervention and contributed to attendance, which was reported by Lake et al. (2017). However, implementing personalized health education might not be cost-effective in many other countries.

Moinul et al. (2020) used a brief visual-oral education presentation in the outpatient clinic to improve patients' understanding of eye diseases and pre- and post-assessment to evaluate participant knowledge changes. They reported an 80.2% increase in awareness of the importance of an annual diabetic eye exam, a 33.7% increase in correctly identifying the recommended DR screening guidelines, and a 14.9% increase in attendance to referred eye exams in a high-risk cohort. The facilitating factors for attendance were fear of losing vision (55.4%), recommendation of HCPs (19.8%), and education for DR eye care (14.7%), which was congruent with the findings of Khair et al. (2020). These findings indicated that the brief and cost-effective visual-oral education presentation with pre- and post-assessment questions
improved the patient’s knowledge and attendance rate. Unfortunately, the questions used in the study of Moinul et al. (2020) were not validated by any published surveys concerning bias in the results.

Khair et al. (2020) and Moinul et al. (2020) succeeded in increasing DR eye exam attendance rates from health education interventions to clinical settings by enforcing self-efficacy of the HBM concept. This success convinced the DNP student that providing education about the DR and its guidelines by HCPs are the most influential factors in improving DR screening attendance, which answers the PICO question. Furthermore, the positive outcomes from education interventions might encourage HCPs’ willingness to change their practice to educate the patients. The validity of the findings was enforced by selecting articles with strength and quality.

However, the bias in the definitions of attendance, SES, diabetes diagnoses, and visual acuity compromised the outcomes’ reliability. The bias of sample, recruitment, recall, and settings weakened the generalization of outcomes.

**Summary/Synthesis of the Evidence**

With a mixture of quantitative and qualitative studies in this review, six studies were complementary in providing a deeper and broader understanding of barriers and facilitators for DR screening attendance from HCPs and patients’ views. To increase the attendance rate, it is necessary to know why patients do not attend, what encourages them to attend, and how to modify the DR screening program for the target population. Despite the difference with or without a national DRS program among countries, this review suggested that a lack of knowledge about DR prevented screening attendance, and health education with recommendations by HCPs encouraged screening attendance. This applies to the concept of
extended HBM, self-efficacy, patients’ self-perception of benefits, fear of vision complications after health education, and recommendations of HCPs, which might result in enforcing their confidence to take necessary actions. This literature review also suggested that tailoring influencing factors to the target population could close the gap between the recommended and attended screening rates.

This literature review concluded that lack of knowledge, education about the DR, and a recommendation of HCPs were the main factors influencing the determination of diabetic patients’ screening behaviors, which answered the PICO question. With an understanding of these influencing factors and the purpose of DR screening and providing necessary health education to the HCPs, they would be highly encouraged to educate patients during clinic visits. Moreover, such training could equip the HCPs to tailor interventions to the target populations.

**Rationale**

*Description of Conceptual Framework*

The project idea was guided by the Health Belief Model (HBM), a conceptual framework for predicting and explaining whether a person will act necessary to prevent a specified health condition. The HBM initially proposed the five core constructs: 1) perceived severity, 2) perceived susceptibility, 3) cues to action, 4) the perceived benefits, and 5) the perceived barriers that all contribute to the likelihood of the action being followed (Rosenstock, 1974). The main limitations of HBM were the low predictive capability of the determinants and the need for clear rules for combining the variables and the relationships between them (Norman & Brain, 2005). To mitigate the limitations, *self-efficacy* from social cognitive theory (SCT) was added as an extension core construct to the HBM. The author of SCT identified self-efficacy as the confidence people have in performing a behavior (Rosenstock et al., 1988). Self-efficacy in the
HBM brought the values of delimiting the dimension of the barrier and offering new and more productive variables for research and practice (Appendix K: Extended Health Belief Model).

The principle of HBM applied to this project can be explained by specific behavior (attending education) results in perceived benefits (vital roles of patient’s education), and the concept of self-efficacy explains an individual’s belief in their ability to take a particular action (willingness to educate patients). Enforcing self-efficacy is needed to develop sustainable health behaviors (Rosenstock et al., 1988). The EHBM offers variables like the measurement of knowledge before and after the educational session for intervention.

**Methods**

**Context**

The project site has a 112,626 population, 90% over 40 years old, and 60% live in rural areas (Veterans Affairs [VA], n.d.-a). This federal Healthcare System includes medical centers and clinics in Connecticut, Maine, Massachusetts, New Hampshire, Vermont, and Rhode Island. The project site offers primary care with 15 specialty care support and ten social programs serving the entire state. The facilities include a Medical Center, seven community-based outpatient clinics (CBOCs), and two Access Clinics. The project site is affiliated with over 20 institutions and organizations supporting this healthcare system's educational mission. Its mission is to Partner with the population to provide exceptional healthcare for body, mind, and spirit.

This DNP student, who works as a referral care team (RCT) nurse, had the opportunity to observe high diabetic complications at the project site due to a lack of knowledge about diabetic care. This prompted the need to encourage HCPs to educate patients during visits. The education service office (ESO) staff explained that the QI project involved collaboration with the ESO and
the Research and Innovation department to get approval for the DNP project presentation because the project site supports all multidisciplinary committee work related to patient-centered research and evidence-based practice.

**Key Stakeholders**

The essential key stakeholders for the project were the Education Service Office (ESO), which provided the project approval, and the Office of Nursing Services (ONS) committee, which encouraged nurses to participate in activities such as presentations, education, certification, training, or committee work (VA, n.d.-b). Other key stakeholders in this project are the primary care and outpatient specialty clinic staff as providers, registered nurses (RNs), pharmacists, social workers, and clinical associates. The ONS commits to the Pathway to Excellence for nurses to support the redesigned model and a Magnet Recognition for Excellence journey. This framework incorporates four important concepts for supporting nursing excellence: fostering inter-professional collaboration, advancing professional practice, sustaining a culture of excellence, and empowering engagement. Its standards focus on shared decision-making, leadership, safety, quality improvement, well-being, and professional development, encouraging nurses to participate in activities such as presentations, furthering education, certification, training, or committee work (VA, n.d.-b).

The ONS created the Pathway to Excellence Committee to establish nursing excellence. With evolving changes in the organizational care model over ten years and the practice of the organizational PACT chronic complex disease care model with ONS’s commitment to nursing excellence, the stakeholders’ perspectives were receptive to the DNP project topic of the diabetic eye complication QI project. This project’s activities align with the five Pathway standards except for safety, which strongly supported obtaining the agency’s approval.
It was crucial to develop the stakeholder grid promptly to identify power dynamics interest levels and understand their opinions on the project. This DNP student communicated with identified stakeholders early and often to ensure that stakeholders fully understood the project’s goals and benefits. They could actively support the project when needed. One of the highest powers and highly interested stakeholders was the ESO staff for obtaining the project approval. Others include the project site primary care and outpatient specialty providers, RNs, pharmacists, and social workers. They were the target participants in this project because they have the most frequent contact with patients with diabetes and can play a critical role in increasing the DR screening attendance rate by educating patients, identifying the barriers to attending, and modifying barriers during clinic visits. The Pathway to Excellence Committee coordinator encouraged nurses to present the quality improvement (QI) project and participate in the project presentation. The committee coordinator facilitated when the project approval process was delayed. The USF’s academic advisor and administrative staff assisted with the complicated and lengthy federal bureaucratic approval process.

The high-power and low-interest groups include the Research & Innovation Dept., the union, and the ONS. Under the federal agency policy, they jointly initiated the project authority and developed the project presentation details with the ESO (VA Maine Home, n.d.). The ONS is committed to the Pathway to Excellence for the nurses and their activities (VA, n.d.-b). The low-power and high-interest groups included Public Affairs Office (PAO) staff for project announcements and intra-network communication, and librarians assisted with agency data searches. Patients are the low-power and low-interest group. They were the indirect target population from the positive outcomes of HCP’s education interventions.

*Organizational Level of Awareness for Changes*
This federal healthcare system implemented the national patient-centered medical homes model, Patient Aligned Care Teams (PACT), along with PACT-related QI goals in 2010. The PACT aimed to transform the healthcare system’s primary care delivery process (Bidassie, 2017). Although the key changes of essential elements had been implemented over four years in the PACT practice to achieve team-based care, improved access, and care management (Safety Net Medical Home Initiative, n.d.), the post-implementation evaluations from patient, provider, and staff surveys and qualitative interviews, identified persistent frustration with implementation barriers and the extra work burden related to PACT interventions, including patients’ lack of understanding. Key stakeholders of the PACT practice suggested that the existing PACT teams would better manage primary care patients with chronic complex diseases that require long-term close coordination and management with interdisciplinary teams.

In 2018, redesigning the PACT chronic complex disease care model was initiated (Goldman et al., 2018). The DNP project was linked with the mission of this institution, which is “to partner with patients to provide exceptional healthcare for body, mind, and spirit.” To embrace the organizational mission, the institution adopted the PACT chronic complex disease care model, and its QI project goals emphasize the role of nurses in educating patients (Bidassie, 2017). The ONS supported the nursing activities, such as presentations, training, and educating patients (VA, n. d.-b).

**Interventions**

The Lunch and Learn (L & L) Micro-Soft teams’ meeting educational session covered necessary information and strategies to educate patients during clinic visits to improve clinicians’ knowledge about diabetic eye care and encourage their willingness to educate patients during visits. This DNP student identified the appropriate educational materials for the health educators’
training, the Diabetes and Healthy Eyes Toolkit, developed by the National Eye Health Education Program (NEHEP) of the National Eye Institute (NEI). It included a flipchart PowerPoint and pre- and post-assessment questionnaire to effectively educate diabetic people about eye diseases in a group setting (NEI, n.d.). It focused on essential information about diabetic complications, how diabetes damages the eye, and why getting diabetic eye exams is critical to ensure early detection and timely treatment, which was aligned with the project’s objectives. To obtain project approval, this DNP student collaborated on the process, the internal virtual network system, and MS team meetings with all involved stakeholders.

After receiving an agency approval letter, this DNP student collaborated on scheduling the presentation date, time, and announcement with the PAO at the project site. The flyer with a brief overview of the educational session and course format, along with the invitation link to the L & L Microsoft (MS) meeting presentation, was sent via the clinical staff group email to invite clinicians. It was posted on the internal Outlook calendar for an alternative link. The two reminders were sent out two weeks before the presentation date and two days before the presentation date via the internal group email. The pre-and post-assessment questionnaire comprised ten multiple-choice questions with one open-ended question for the post-assessment to evaluate the participants’ feedback for willingness to change their practice to educate patients. Both assessment questionnaire links were uploaded to clinic staff via MS Forms applications on the implementation date.

The participants were allowed to voluntarily and anonymously respond to pre- and post-assessment data to avoid any potential violation of the agency policy (Appendix J: CQI Method and/or Data Collection Tools). They were instructed to enter the same house number of their mailing address as an identity code for both assessments and to write their willingness to change
practice to educate patients. The educational session was one hour and consisted of 15 PowerPoint slides. This DNP student collected data from both assessments and deposited the data to Excel and Qualtrics for evaluation. The pre-assessment was used to assess the participants’ baseline knowledge, and the post-assessment after the presentation was used to assess the improvement of their knowledge. The response data was automatically collected and exported into an MS Excel spreadsheet for analysis. The project results were reported to all stakeholders to complete the project (Appendices L: Graph Analysis for No of Participants in Pre- & Post-Assessment, M: Graph Analysis for Pre- & Post-Assessment Scores, O: Graph Analysis for Willingness to Change the Current Practice).

**Gap Analysis**

This literature review identified a gap between the recommended and attended DR screening among adults with diabetes, which is associated with knowledge about diabetic eye care. This gap can be closed by implementing Diabetic Eye Care Education sessions for clinicians focused on how diabetes damages the eye and the importance of DR screening for early detection and timely treatment. Successful education could improve clinicians’ knowledge about diabetic eye care and its guidelines and participants’ willingness to educate patients during visits (Appendix D: Gap Analysis).

**Gantt Chart**

The Gantt chart was created to describe the project planning from May 2022 to January 2023 to complete the project. The literature review was completed in January 2022. The initial statement of determination (SOD), along with attachments of the educational materials, was submitted to the education service office in July 2022. The SOD and educational materials have
been edited and modified multiple times to adapt to the ESO request. The presentation was completed on January 12, 2023 (Appendix E: Gantt Chart).

**Work Breakdown Structure**

The work breakdown structure (WBS) was developed to manage the design and monitoring of project activities in five phases: initiation, planning, execution, control, and closeout (Appendix F: Work Breakdown Structure). The deliverables included reviewing the literature, identifying gap analysis, communicating and submitting the SOD to the ESO at the project site to obtain the project approval, developing educational PowerPoint slides to educate HCPs via MS team meetings, and collecting the pre-and post-assessment from participants, performing data analysis, developing a project report summary.

**Responsibility/Communication Matrix**

This DNP student was responsible for the project developing the learning module and questionnaires. The progress and implementation of the project are collaborated with the ESO and reported to the academic advisor and chair of the DNP committee at the University of San Francisco (USF). The agency advisory members are the RCT unit nurse manager and the union representative (Appendix G: Responsibility/Communication Matrix). Obtaining the request for an agency letter of approval had been complicated and delayed by the ESO due to federal bureaucratic process and confusion in policy by the ESO about the DNP dual status of being a virtual employee at the project site and a DNP student who requested the DNP project approval (Appendix B: Letter of Support from Agency).

**SWOT Analysis**

Several factors could impact the implementation of the proposed educational session. Evaluating strengths, weaknesses, opportunities, and threats (SWOT) analysis guide to build on
strengths, minimize weaknesses, and seize opportunities to achieve the objectives of project implementation (Appendix H: SWOT Analysis). The strength is that this project aims to increase clinicians’ knowledge about diabetic eye complications and eye exam guidelines and their willingness to educate patients aligned with the pathway standards that support the role of nurses in educating patients (Biddassie, 2017). The institutional support for the QI project to improve diabetic complications would provide a better opportunity for project approval. The Pathway to Excellence Committee encourages Nurses’ professional development activities for QI project presentation and participation. Lack of internal grapevine support as a remote employee negatively impacted recruiting adequate participants and obtaining agency approval within an exclusive federal institution. The biggest threat might be a lack of clinicians’ participation and responses to pre- and post-assessment from shifting institutional and personal priorities.

**Goals and Objectives**

The project aims to increase knowledge about diabetic eye care and its guidelines and willingness to change practice to educate patients during visits by 10% between the pre- and post-assessment responses among clinicians in the project site by January 31, 2023. Objectives included: the participants identify the essential parts of ocular anatomy that are affected by diabetic complications, its risk factors, the purpose of eye screening guidelines, the value of patient education during clinical visits, and their willingness to change their practice to educate patients. The pre-and post-assessment questionnaire responses will be measured to evaluate the effectiveness of the project. The baseline data in the pre-assessment will be collected before implementation and compared to post-implementation to determine if the 10% increase in knowledge and willingness rates is obtained.

**Comprehensive Financial Analysis**
Proposed Solution.

The proposed solution was implementing an education session for the clinicians in Hospital T to improve their knowledge about diabetic eye complications and guidelines and their willingness to change practice to educate patients during visits by 10% between the pre- and post-assessment responses on 1/31/2023. The start-up cost is allocated for educational sessions and preparation and participants’ average hourly wage with the estimated total cost of $19,121 (Appendix I: Comprehensive Financial Analysis). The project anticipated increasing clinicians’ knowledge about diabetic eye care and willingness to educate patients during visits. If clinicians are willing to educate patients by recognizing their vital roles in influencing patients' healthcare decisions, it will facilitate patients’ DR screening attendance.

Implementation Costs.

As a start-up cost, a one-hour educational session, including completion of pre- and post-assessment, was allocated for the clinicians who accepted the internal email invitation and were employed at the project site. Clinicians included providers, RNs, pharmacists, social workers, and clinical associates. Among the 44 initial participants, 21 clinicians stayed for an hour to complete the pre- and post-assessment. Most of them were nurses and nurse educators. For the implementation cost, RNs’ average hourly wage ($75/hour) and NP’s average hourly wage in the U.S. ($90/hour) were used for education, and an additional 30% of employee benefits to their total pay. The cost per employee was multiplied by the number of participants who stayed for an hour to complete both assessments. Also, 135 hours of the DNP student’s time was allocated for preparing and presenting the educational session. The Data Collection, analysis, and report afterward required the additional costs of storage, estimated at $10/month for buying 10 GM based on a Google search and $75/month for internet access service fee assessed at $680 for
eight months. A total of $19,121 was calculated for implementing the educational session. (Appendix I: Comprehensive Financial Analysis).

The educational presentation with PowerPoint using internal L&L meetings did not need new equipment and personnel or office space, enabling its implementation to be systemically and financially feasible within the project site microsystem. The required expenditures were time for staff education, the preparation of DNP student projects and materials, and the salary of all staff members involved.

Cost Avoidance.

The average cost of vision loss for an adult over 18 years in 2023 is $16,838 (CDC, 2022) plus 3.7% ($623) of the inflation (U.S. Bureau of Labor Statistics, n.d.), the total cost is $17,461 per person. This total cost per person’s vision loss was multiplied by the estimated DR prevalence number in Hospital T, 3,221, by applying the 26% of DR prevalence in the U.S. to the estimated number of 12,389 people with diabetes in Hospital T (CDC, 2023). This calculation used 11% of the diabetes prevalence rate to the estimated patients 112,626 at the project site (Veterans Affairs [VA], n.d.-a).

The cost avoidance is $5,624,190 by avoiding 10% of vision loss (Appendix I: Comprehensive Financial Analysis).

Cost Savings.

Subtracting an implementation cost of $19,121 from the cost avoidance of $5,624,190, the cost savings by preventing 10% vision loss at the project site are $5,605,069 (Appendix I: Comprehensive Financial Analysis).

Study of the Interventions
The power/Interest grid was used for stakeholder prioritization (Appendix P: Power/Interest Grid for Stakeholder Prioritization) and for identifying key stakeholders at the project site to implement the project. The project was planned to run from May 2022 to January 2023 (Appendix E: Gantt Chart). This DNP student was solely responsible for the implementation of an education session by conducting a local problem assessment, developing a budget, identifying key stakeholders, obtaining an agency approval letter for the project, creating an educational curriculum, and presenting one-hour sessions for clinical staff, collecting/analyzing/reporting data afterward. The key stakeholders were the ESO, who processed the agency approval for implementing the project, and the PAO staff, who scheduled and announced the presentation date to clinicians, including reminders.

The target participants were the project site's primary care and outpatient specialty clinicians. Because they have the most frequent contact with diabetic patients, they can increase DR screening attendance by educating patients, identifying the barriers to attending, and modifying them during visits. Weekly emails, MS team meetings, and phone calls were utilized to communicate with stakeholders and to address questions, issues, and coordination. Clinicians’ knowledge improvement from the educational session enforced their willingness to educate patients. Also, this focused educational information could be used efficiently and effectively for patient education during visits. Both interventions could increase patients' knowledge and screening attendance.

**Outcome Measures**

The project aimed as follows: 1) to measure clinicians' knowledge of diabetic eye complications, its guidelines, and preventive measures for diabetic-related vision loss by 10%
level; 2) to measure clinicians' willingness to change practice to educate patients about diabetic eye care.

**CQI Method and Data Collection Tools**

First, the educational materials for the clinicians’ and patients’ training programs, Diabetes and Healthy Eyes Toolkit, were identified as educational tools because they were designed to help educate the communities about diabetic eye disease (NEI, n.d.). The flipchart PowerPoint, pre- and post-assessment questionnaires and participant handout information were selected to ensure the validity and reliability of the assessment content measure.

Second, this DNP student incorporated additional critical information from the Diabetic Eye Screening education PPT, which was developed by the National Telehealth Training Team of the federal Office of Connected Care for TRS Imagers to perform patient education with a standardized approach, to the Diabetes and Healthy Eyes Toolkit to create a tailored DNP project educational slide content to the target population. The final 15 slides were presented to clinicians via the project site’s internal virtual network system MS team meetings.

Third, the pre-and post-assessment outcomes were compared to analyze the knowledge changes, including the open-ended question answers.

**Analysis**

The pre- and post-assessment questionnaires were implemented at the MS forms site for the online collection of data. It was transferred to Excel for statistical analysis. Excel was used for data management and for constructing statistical analyses with graphs. Descriptive analysis was used to explain the results, including the number of participants, percentages of correct answers before and after, and percentage of clinicians' willingness to change practice to educate
patients about diabetic eye care. The quality of data analysis was consulted and validated with the USF IT Qualtrics student training instructor.

**Ethical Considerations**

The USF Institutional Review Board (IRB) approved the DNP project for the Protection of Human. Subjects were not required because this DNP project was considered non-research, and the patients were not directly involved. The project provided education sessions to the clinicians via the agency’s internal remote network system at the project site. The project request form, including a SOD, was completed by this DNP student and was authorized by the DNP chair and committee (Appendix A: Non-Research Approval Documents (Statement of Determination)). The project was aligned with the USF's core Jesuit values, the Jesuit superior’s responsibility to care for each person in the community. This value was aligned with the 2015 American Nurses Association (ANA) Code of Ethics Provisions 5.2, in which the nurses assess, intervene, evaluate, advocate, educate, and conduct research for the care of others and society. California AB-1400 Bill for All and Medicare for All Act (MAA), which proposed a national health program for all Americans in 2021, is congruent with the ANA code of ethics (Koseff, 2022).

DR meets the World Health Organization (WHO) criteria for screening programs, which require early or latent stage detection for potential risk of health problems and treatment to prevent the incidence of permanent loss (Skaggs et al., 2017). These ethical and policy considerations supported the HCPs’ ethical responsibility and empowered them to take action for a perceived patient benefit.

**Results**
A total of 44 participated, and 27, the pre-and 21, responded to the post-assessment (Appendix L: Graph Analysis for No of Participants in Pre-& Post-Assessment). The outcome showed that the knowledge level of clinicians about diabetic eye care was 84%(N=27) before and 92% (N=21) after the completion of the educational session, which met the targeted goal (Appendix M: Graph Analysis for Pre-& Post-Assessment Scores). 81% of participants were willing to change their practice to educate patients after participating in the educational session (Appendix O: Graph Analysis for Willingness to Change the Current Practice). The data analysis identified that the three IDs were submitted twice in the pre-assessment, and two IDs were submitted to the post-assessment collection only,

Moreover, the analysis of responses in both assessments revealed follows: a 25% increase from 56% correct answers before to 81% after in question number 1- glaucoma is a diabetic-related eye disease; a 19% increase from 33% correct answers before to 52% after in question number 8- diabetic eye disease usually has early warning signs; and a 22% increase from 7% of a 10/10 total score before to 29% after (Appendix M: Graph Analysis for Pre-& Post-Assessment Scores).

**Discussion**

**Summary**

This DNP student remotely communicated, coordinated, presented, and evaluated the DNP project presentation alone between stakeholders at the project site and the USF academic staff for eight months. The 15-slide PowerPoint presentation for one hour via an L& L Micro-Soft teams’ meeting covered the project objectives to educate clinicians at the project site on 01/12/2023. The outcomes of the pre- and post-assessment were reported to all stakeholders on 1/15/2023. The result demonstrated that clinicians’ knowledge was increased by 8%, and their
willingness to educate patients was 81%. This high increase in clinicians’ willingness to educate patients post-assessment demonstrated that the educational presentation enforced clinicians’ self-efficacy to act on perceived benefits.

**Interpretation**

The recruiting of inadequate participants, less than 30, was anticipated as the main threat to this DNP project per the SWOT analysis. The data analysis identified the duplicated submission of the pre-assessments and a partial submission of the post-assessment only that indicated the participant might be confused about following the submission instruction for the pre-assessment link that was uploaded to the MS team chat box at the beginning of the presentation or missed the instruction and the link due to joining late. These findings demonstrated an inadequate data delivery and collection process due to the need for an additional support team to manage troubleshooting during pre- and post-assessment implementation. An 8% improvement in clinicians’ knowledge enforced 81% of participants’ self-efficacy in educating patients based on clinicians’ perceived benefits of their vital role in influencing patients' healthcare determinations. If the project site continues to neglect to encourage clinicians to educate patients with diabetes during visits, in that case, it will continue to add more expenses to manage the growing number of diabetic eye complications annually.

Also, a few remarkable improvements in the questionnaire were identified. For example, the correct answers for diabetic eye disease have early warning signs from 33% pre-to 56% post-assessment, indicating that future education needs to focus more on the early signs and symptoms. The number of participants who answered questions 100% correctly was changed from 7% pre- to 29% post-assessment, indicating that the educational content and strategy of basic crucial information with visual presentation were effective. If clinicians provide
appropriate handouts and online information about diabetic eye care and its guidelines as take-home education, patients’ knowledge will be improved. 19% of participants answered with the following comments for the question of willingness to educate patients, such as if the opportunity presents and became more knowledgeable regarding diabetic eye care; very informative on taking the opportunity to educate patients; and this education is good enforcement. These comments indicated a lack of opportunities to be trained and encouraged at the project site. The total implementation cost of educational sessions was only $19,121 compared to the cost saving of $5,605,069 for preventing 10% vision loss for diabetic patients at the project site (Appendix I). Furthermore, Skaggs et al. (2017) reported that DR screening is the best way to prevent vision, with a 95% prevention rate.

This educational session was needed to improve the quality of care at the project site. It highlighted clinicians’ vital role in educating patients and encouraged their confidence in acting. Future projects could implement tailored education sessions for clinicians focusing on newly diagnosed diabetes patients who need to build sustainable self-efficacy to attend screenings per guidelines at the early stage of the disease.

Limitations

Obtaining the request for agency approval letter has been very complicated and lengthy from the ESO with bureaucratic process and inconsistent chain of communication as well as confusion about this DNP student’s dual status of being a virtual employee at the project site and a DNP student at the USF who requested a project presentation. The main challenges to implementing this project were remote communication from the west to the east region and managing the implementation process alone due to the lack of an internal grapevine network as a relatively new virtual employee in a large multilayered federal institution. Innumeros and intense communication and coordination were required to clarify confusion and inconsistent
information among stakeholders. Other limitations included recruiting adequate participants, getting agency approval promptly, and finding support to manage troubleshooting for the project.

The agency approval and presentation options with the L & L MS team meeting presentation were delayed several months. To manage these stressors, barriers, and challenges, this DNP student utilized several strategies for six months: a strategic approach with a positive and persistent attitude to navigate the complicated and lengthy federal bureaucratic process, systems thinking to explore alternative ways to reduce the barriers, responding to requests with clarification and consulting with additional stakeholders in stakeholder prioritization to maintain clear and close communication with the stakeholders, coalition and rational persuasion negotiation to maximize the shared decision-making process to achieve project goals, and adapting a mindful leader with the skills of being positive, compassionate, and honest (Gonzalez, M., 2012). The small number of participants and missing data weakened the generalization and reliability of project results. Only one project manager for managing the remote implementation compromised recruiting and pre- and post-assessment delivery and collection process.

Conclusions

Diabetic retinopathy is the most prevalent and preventable complication of diabetes mellitus in American adults. DR screening attendance is low, at 60%, in the U.S. (Flaxel et al., 2020). Emerging evidence supports that patient education about diabetic eye care and its guidelines by HCPs is the main facilitator (Khair et al., 2020; Moinul et al., 2020). HCPs have a vital role in encouraging or discouraging DR screening attendance. Skaggs et al. (2017) reported that DR screening is the best way to prevent vision, with a 95% prevention rate. The project of implementing education sessions for clinicians successfully achieved its goals and objectives at the project site. The outcomes demonstrated that the evidence-based education session for
clinicians was needed and significantly encouraged clinicians’ willingness to change practice to educate the patient.

**Funding**

The DNP student received no financial support from the VA or USF for research, authorship, or implementation of this project.
References

http://www.aao.org/newsroom/eye-health-statistics


https://doi.org/10.1016/j.diabres.2017.03.023

https://nccd.cdc.gov/Toolkit/DiabetesBurden/Home/Index


https://www.cdc.gov/visionhealth/resources/infographics/index.html

https://doi.org/10.1080/09286586.2018.1504311


https://worldpopulationreview.com/states
Appendices

Appendix A. DNP Statement of Non-Research Determination Form

Doctor of Nursing Practice
Statement of Non-Research Determination (SOD) Form
The SOD should be completed in NURS 7005 and NURS 791EP or NURS 7490/E

General Information

<table>
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Course Name & Number: 749A NP QUALIFYING PROJECT: PROSPECTUS DEVELOPMENT - F2

Chairperson Name: Dr. Jo Loomis
Advisor Name: Dr. Jo Loomis
Second Reader Name: Dr. Julie Mixworthy

Project Description

1. Title of Project:
Education for Diabetic Eye Care for HealthCare Professionals in Veterans Affairs (VA)

2. Brief Description of Project:
The identified issue for this DNP project is the low attendance rate to diabetic retinopathy screening (DRS) guidelines among adults with diabetes. This project aims to increase the health professionals' knowledge of diabetic eye care to educate patients during their clinic or phone visit. Diabetic retinopathy (DR) is a leading cause of new cases of legal blindness among working-age Americans. The early stage of DR is usually asymptomatic. Thus, early screening is critical to detect DR’s presence promptly. Early detection and timely treatment can reduce vision loss from DR by 90% (Skaggs et al., 2017). However, Flaxel et al. (2020) report that about 60% of people with diabetes have recommended yearly screenings for DR. In addition, they report that the duration of diabetes is a major risk factor associated with developing DR. They state that the DRS guidelines recommend an eye exam for People with type 1(T1DM) five years after the onset of their disease and at least annually after that. In comparison, those with type 2 (T2DM) should have a prompt screening at the time of diagnosis and at least annually to prevent diabetic eye complications. Emerging evidence supports that patient education by healthcare providers regarding diabetic eye complications, its risk factors, and eye exam guidelines are the main facilitators to increasing patients’ knowledge about DR and their attendance to a recommended eye exam (Khair et al., 2020; Moinul et al., 2020). Hence, providing educational sessions targeting healthcare professionals is an effective intervention to improve DRS adherence.

3. AIM Statement: What are you trying to accomplish?
The aim is to develop, implement and evaluate a diabetic eye toolkit. This toolkit will be presented to clinic staff by Dec 2022 to increase the VA healthcare professionals (HCPs) (nurses, primary care providers, optometrists, diabetes educators, pharmacists, social workers, and clinical associates) knowledge of diabetic eye complications, current diabetic eye exam guidelines, and preventive measures for diabetic-related vision loss by
at least 25% of the baseline assessment at the end of the slide presentation. Objectives include: the participants will identify risk factors for developing diabetes; the participants will identify diabetic eye diseases and affected parts of ocular anatomy; the participants will identify the current DRS guidelines for people with diabetes, and the participants will identify preventative measures for diabetic-related vision loss.

4. Brief Description of Intervention:
The educational session will cover critical information and basic strategies that pertain to providing patient education when performing the given roles of contacting patients with diabetes in outpatient clinical settings. The intervention aims to provide health professionals with standards and brief points for performing patient education clearly and accurately during a clinic or phone visit based on national guidance for performing patient education for DRS. By the end of the slide presentation, each participant will improve their knowledge of the essential parts of ocular anatomy that are affected by diabetic complications, its risk factors, the purpose of diabetic eye screening guidelines, the value of providing patient education during a visit, and available educational resources to provide to patients (Appendix C)

4a. How will this intervention be implemented?
The Department of Public Affairs will send the education invitation to the healthcare professionals in the VA. The referral care team (RCT) manager and other outpatient HCPs will support the presentation approval process by collaborating with the primary care team/VA Community care team/eye clinic, sending required documents, and scheduling the presentation date and time. After receiving an approval letter from the agency, this DNP student will send the ten pre-assessment questions (see appendix A) before the presentation via the VA group email to assess the baseline of the participants' knowledge about diabetic eye complications and recommended DRS eye exam guidelines. The attendees will also answer the twelve post-assessment questions at the end of the presentation to measure the participants' knowledge improvement (10) and feedback for the session (2), which the DNP student will collect. The educational session is 20 minutes with 12 slides. The slide contents come from the Diabetes and Healthy Eyes Toolkit for health promoters, developed by the National Eye Health Education Program (NEHEP) of the National Eye Institute (NEI). (Appendix B).

5. Outcome measurements: How will you know that a change is an improvement?
Comparing the pre-assessment and post-assessment outcomes will indicate the knowledge changes and intention of changes in participants' practice. The ten assessment questions, developed by the National Eye Health Education Program (NEHEP) of the National Eye Institute (NEI), and two questions to measure feedback for the session will be used for the reliability and validity of the measure of the assessment content. There are no concerns about participants' confidentiality since the education will be provided to the VA employees via the VA internal network system.
References


Appendix B. Letter of Support from Agency

From: Rooney, Tiffany Marie
Sent: Monday, December 5, 2022 9:59 AM
To: Moser, Misun S. (she/her/hers) <Misun.Moser@va.gov>; Alexandra Kennedy <akennedy@usfca.edu>
Cc: Cecilia Mulcahy <cmulcahy@usfca.edu>; Jo Loomis <jloomis2@usfca.edu>; Colony, Ann M. <Ann.Colony@va.gov>; Schmelman, Brad M. <Brad.Schmelman@va.gov>; Tondreau, Sonya J. <Sonya.Tondreau@va.gov>; Xiomara Rosado <arosadorio@usfca.edu>
Subject: RE: [EXTERNAL] Re: Clinical Placement Request form Nurse Practitioner.pdf

Thank you for the clarification. Based on your message to Sonya, I misunderstood. If you are not looking for academic credit from this facility, you are welcome to present a Lunch ‘n’ Learn.

r/Tiffany

Tiffany Rooney, MSN, RN, NEA-BC
Acting Deputy ADNNS
Chief, Education Service
VA Maine Healthcare System
## Appendix C. Evaluation Table

### Evaluation Table

<table>
<thead>
<tr>
<th>Purpose of Article or Review</th>
<th>Conceptual Framework</th>
<th>Design / Method</th>
<th>Sample / Setting</th>
<th>Major Variables Studied (and their Definitions)</th>
<th>Measurement of Major Variables</th>
<th>Data Analysis</th>
<th>Study Findings</th>
<th>Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) / APA Citation</th>
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<tbody>
<tr>
<td>Investigate the risk factors for non-compliance to DR follow-up appointments in a safety-net county hospital.</td>
<td>Not described</td>
<td>The survey was adapted from a previously validated survey for patients treated for DR at the Zuckerberg San Francisco General (ZSFG) Hospital retina clinic</td>
<td>N=209, mean age 58 yo; male 63%, female 37%. Inclusion: any patient diagnosed with DR with subsequent documented follow-up visits for at least 12 months. Exclusion: participants</td>
<td>IV: noncompliance with DR follow-up appointmet. DV: self-reported data, EMR data, chart verified data.</td>
<td>Follow-up compliance using EMRs; risk factors of non-compliance with 80% power and an alpha of 0.05. to describe the baseline characteristics of those with and without compliant follow-up.</td>
<td>Questionnaire and health data results were entered into REDCap, a secure database for analysis using Stata version 12 (StataCorp, College Station, TX, USA). Two-sided t-tests for continuous data.</td>
<td>64% of participants were non-compliant. Factors of non-compliance include the presence of proliferative Diabetic Retinopathy, systemic involvement, Hx of MDD, Hx of MDD</td>
<td>Level of Evidence: Level II quantitative cohort study. <strong>Worth to Practice</strong>: Findings of independent risk factors associated with non-compliance. <strong>Strengths</strong>: The largest study to look at factors for non-compliance for DR in an urban safety-net hospital with an ethnically diverse population and at most risk for lack of follow-up; confirmed the Hx of MDD</td>
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APA Citation:
between 7/1/2015 & 1/30/2016. who did not complete the survey & participants who failed to have at least one return visit

variables and chi-square tests for categorical variables. of laser procedures, Hispanic/Latino ethnicity, and having Medi-Cal or SF Health insurance. was independently associated with increased non-compliance of DR follow-up.

**Weakness:** The definition of non-adherence was stringent; recall bias for using partially self-reported data; sample bias for including only those who completed the survey and had at least one return visit.

**Feasibility:** Replicable to another safety-net county hospital.

**Conclusion:** Findings may help develop policies targeting these patients for compliance.

**Recommendations:** Encouraging health professionals with diabetic patients to recommend annual retinal checks to patients with diabetes to
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<th>Sample / Setting</th>
<th>Major Variables Studied (and their Definitions)</th>
<th>Measurement of Major Variables</th>
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<td>strengthen patient involvement in self-diabetes care; setting up a health policy supporting financial assistance for education can benefit compliance.</td>
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Definition of abbreviations: Noncompliance: categorized as non-compliant if 80% or more of the time throughout the course of a year, they failed to attend their scheduled appointments or reschedule their missed or patient-canceled appointments within 1 month of the desired follow-up date despite receiving a call from the clinic; Insurance types: Medicare, Medi-Cal, Private, and SF Health (provides health care services to uninsured San Francisco residents regardless of immigration or employment status); Major depressive disorder (MDD) per the DSM-5: a mood disorder that causes a persistent feeling of sadness and loss of interest & affects how you feel, think and behave and can lead to a variety of emotional and physical problems; Disease severity by a dilated funduscopic examination is classified as mild non-proliferative DR (NPDR), moderate NPDR, severe NPDR, or Proliferative Diabetic Retinopathy (PDR) by the attending physician in the retina clinic; DR follow-up appointments: scheduled per American Academy of Ophthalmology (AAO) preferred practice guidelines or at the discretion of the treating attending physician.
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<td>Kashim, R. M., Newton, P., &amp; Ojo, O. (2018). Diabetic retinopathy screening: A systematic review on patients' non-attendance. International Journal of Environmental Research and Public Health, 15(1). <a href="https://doi.org/10.3390/ijerph15010157">https://doi.org/10.3390/ijerph15010157</a></td>
<td>Aims to bring together all existing studies on attendance so that reasons for non-attendance can be explored.</td>
<td>A systematic review of all published and unpublished literature on non-attendance at retinal screening using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) checklist and flow chart for collecting and reporting data. Additionally, all studies on healthcare providers’ perceptions of N=31 studies on patients with type 1 diabetes or type 2 diabetes published after 2003; 2003 the cut-off. Used Keywords: patients, non-attendance, a retinal screening, barriers to access. Inclusion: no restrictions</td>
<td>Five main themes of the included studies: (1) Demographic factors of non-attending patients (2) screening invitations; screening uptake and screening outcome (3) facilitators and barriers to screening compliance (4) patients’ perceptions and their screening experiences</td>
<td>McMaster critical appraisal tool; scored out of 15 for quantitative studies and out of 16 for qualitative studies with a score of 10 as the cut-off mark for the studies; Designed a simple table in Excel to extract the same data from all included studies: study country, A general inductive approach allows for systematic analysis of the data through rigorous, repeated studying of extracted data and transcripts of the included studies. Grouping segments of texts by themes</td>
<td>Major risk factors for non-attendance; 1) higher socio-economic deprivation and English deprivation; 2) younger age patients, and much older age patients, ethnic minorities, and immigrants; 3) repeated nonattendance was linked to Level of Evidence: Level III qualitative systematic review. <strong>Worth to practice:</strong> The first systemic nationwide screening for retinopathy worldwide provided an in-depth understanding of patients’ non-attendance at the DRS exam. <strong>Strengths:</strong> The rigor and explicit methods of searching for studies, critically appraising the included studies to reduce reporting on studies with a flawed methodology, systemic analysis to preserve findings from the primary studies, allowing for identifying the reasons for non-attendance and explaining them from the healthcare professionals’ views and patients' views. <strong>Weakness:</strong> Outcome bias because only studies reporting on non-attendance were included</td>
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<td>screening non-attendance were included.</td>
<td>placed on patients’ characteristics and country of origin. Exclusion: studies carried out before 2003, written English only.</td>
<td>(5) factors that could contribute to better screening uptake.</td>
<td>participants, study design, methods, main aim and outcome, etc.; Designed a flow chart to show the study selection process.</td>
<td>until no new theme emerged from the study.</td>
<td>sight-threatening DR; 4) facilitators are HCPs screening recommend &amp; patients’ knowledge about effects of non-attendance on vision.</td>
<td>in the review; unclear definition of non-attendance; largely categorizing patients into ‘ethnic minority or ‘socio-economically deprived. <strong>Feasibility:</strong> A systemic review of facilitators to DRS attendance among diabetes. <strong>Conclusion:</strong> Screening uptake is less than optimal and needs to identify characteristics of non-attendance and reasons for non-attendance. <strong>Recommendation:</strong> Need more qualitative research looking in-depth of non-attendance and reasons of nonattendance and how the screening program can be modified to get them to attend.</td>
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Definition of abbreviations: Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA): an evidence-based minimum set of items aimed at helping authors to report a wide array of systematic reviews and meta-analyses.
### Purpose of Article or Review

Conceptual Framework

Design / Method

Sample / Setting

Major Variables Studied (and their Definitions)

Measurement of Major Variables

Data Analysis

Study Findings

Level of Evidence (Critical Appraisal Score) /

Worth to Practice /

Strengths and Weaknesses /

Feasibility /

Conclusion(s) / Recommendation(s)

### APA Citation:


### Level of Evidence: Level II quantitative Quasi-experimental cohort study.

**Worth to Practice:**
Identified specific factors leading patients to miss appointments found in this study could yield a more targeted and efficient intervention approach.

**Strengths:** A large and diverse sample size and
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<td>data. Inclusion: patients are labeled as diabetes type T1DM or T2DM. Exclusion: patients are labeled as having both T1DM &amp; T2DM, Patients who did not have an Electoral Division (ED) in their file.</td>
<td>Diabetic Retina Screen database on screening appointments between March 2013 and March 2020.</td>
<td>the first appointment, previous non-attendance, ambient temperature (binarized above and below freezing or 0 °C), and a clinic location at an optometric practice.</td>
<td>obtained SES from the 2016 Pobal HP Deprivation Index; calculated driving times for each appointment by the Open Source Routing Machine (OSRM); bimodal distribution to show non-attendance value of 0.001. Used a predictor as a linear relationship with nonattendance.</td>
<td>appointment, previous non-attendance, freezing temperatures, and use clinic appointments at optometrists; 52% of missed appointments were from patients who had missed three or more appointments; risk of non-attendance increased 24% represented a diverse range of demographic profiles; the statistical approach of a mixed-effects model demonstrated a relationship between non-attendance and variables.</td>
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<td>Measurement of Major Variables</td>
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<td>rates by age.</td>
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<td>Recommendation: Consider inter-individual variation in reasons for non-attendance, such as younger and older adults, and a reminder of the importance of screening.</td>
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Definition of abbreviations: Socio-economic data (SES); Type 1 diabetes mellitus (T1DM); Type 2 diabetes mellitus (T2DM)
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<th>Purpose of Article or Review</th>
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<th>Data Analysis</th>
<th>Study Findings</th>
<th>Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) / APA Citation:</th>
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<tr>
<td>Evaluate the efficacy of a culturally and socially appropriate, locally adapted Health Belief Model</td>
<td>A prospective open-label parallel randomized controlled trial designed for non-compliant participants from December 2018 to May 2019. Inclusion: adults (18 years or above) with N=299 participants with T2DM registered with a private diabetes hospital and referred for advanced DR management to a public tertiary hospital in the Barishal division of DV: Mean years of registration with diabetes hospital, gender, education, income, eye care, mean years of registration with diabetes hospitals, vision problem (self-perceived), duration of self-randomization by a third person; used the formula {[(p1q1 + p2q2)/(p2 – p1)] X factor for alpha and beta} with 90% power is Used intention-to-treat (ITT) method for the analysis of the primary outcomes; Pearson chi-square test to compare the referral compliance and changes in knowledge The 36.1% (p&lt;0.001) difference in referral compliance rate between the intervention (64.3%) and non-intervention Level of Evidence: Level I quantitative study. <strong>Worth to Practice:</strong> The first ever RCT was conducted in a low and middle-income country (LMIC), and it could be considered the gold standard for evaluating the effectiveness of health education.</td>
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**APA Citation:**

### Purpose of Article or Review

- **Conceptual Framework**
- **Design / Method**
- **Sample / Setting**
- **Major Variables Studied (and their Definitions)**
- **Measurement of Major Variables**
- **Data Analysis**
- **Study Findings**
- **Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion / Recommendation(s) /**

<p>| five-month-long health education on referral compliance of participants. | T2DM registered with a diabetes hospital, who had undergone preliminary screening for DR and were referred to a public tertiary-level hospital for advanced DR management between September 2017 and August 2018, did not | Bangladesh; Participants who were noncompliant with referral instructions to visit a hospital for advanced DR management were randomly divided into a health education intervention group (n = 143) and a control group (n = 156); Both groups perceived eye problems of more than five years, presence of referral, clear about referral instruction, compliance rate, and non-compliance rate. Knowledge related V during pre and post-intervention: knows that long-term uncontrolled diabetes might cause DR, knows the symptoms of DR pre-intervention, knows 10.5; a multivariate logistic regression model to identify significant predictor s of compliance to referral, a data manager measures of the two groups; univariate analysis to test the association of different variables with referral compliance as the primary outcomes; multivariate analysis with backward Likelihood Ratio (LR) on groups (28.32%) is consistent with the findings of other studies. (Lawrens on et al., 2018). The important predictors of compliance were health interventions in LMIC countries. <strong>Strengths:</strong> Demonstrated the result of the personalized health education intervention (face-to-face home-based education session followed by telephonic reminders three times over six months improved both the DRS attendance rate and knowledge of DR in |</p>
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<tr>
<td>PLOS ONE Referral compliance and Diabetic Retinopathy underwent a DFE in the previous 12 months and provided informed written consent.</td>
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<td>received information regarding DR and referral instruction at the diabetes hospital; the intervention group received education package for five months included one face-to-face health education session in local language in about 30–40</td>
<td>that the onset of DR can be delayed, knows that DR can be treated, correctly indicated one of the symptoms of DR, correctly indicated one of the treatment options for DR, understands the impact of non-compliance on vision, knows that a trained Eye Consultant at the tertiary hospital provides eye care services, knows the days and times when Eye Consultant at the</td>
<td>stationed at the tertiary hospital assessed outcome of compliance in both intervention and control groups; checked the accuracy of the</td>
<td>binary logistic regression modeling to identify significant predictors of referral compliance after adjusting for potential confounders; the significance level p&lt;0.05 for the univariate analysis and regression</td>
<td></td>
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<td>Weakness: Sample bias due to participants of this study being registered with a diabetes hospital and generally aware of diabetes, the referred facility was located in the same district as the participants’ residence as well as the diabetes hospital, result bias by a lower compliance rate report from several RCTs based in intervention groups.</td>
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hospital but not referred to the public tertiary level hospital for advanced DR management between September 2017 and August 2018, persons who had undergone a DFE in the previous 12 months, those who did not provide informed written consent.

minutes following an interview, and telephonic reminder calls three times followed by personalized education for 15 minutes; invested nine questions to assess participants’ knowledge of DR.

tertiary hospital provides eye care service. Referral compliance was defined as participants’ visit to the tertiary hospital during six months (five months intervention period and one month additional window period). An increase in knowledge about DR was measured using outcome assessment every two weeks by data manager and then ophthalmic personnel at the tertiary hospital.

outcome analysis; the strength of association by calculating odds ratio (OR) and their 95% confidence intervals (CI); chi-square test for comparing the secondary outcome of each knowledge related question of participants probably led to increased compliance is consistent with the concept of HBM.

developed countries that used varied health education modalities to increase DFE.

**Feasibility:** A cost-effective solution may be to utilize the existing network of CHWs.

**Conclusion:** This study’s multicomponent and locally adapted intensive health education intervention...
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<td>pre and post-intervention questionnaires based on a previously published study.</td>
<td>during pre and post-intervention surveys; Statistical Software for Social Science (SPSS) Version 21.0 for data analysis (IBM Corp, 2012).</td>
<td></td>
<td>succeeded in attaining a referral compliance rate. <strong>Recommendations:</strong> Effective health education must be focused, personalized, and suitably adapted to the local condition.</td>
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Definition of abbreviations: Dilated Fundus Examination (DFE); low and middle-income country (LMIC); Community Health Workers (CHWs)
### APA Citation:

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| Explore screening barriers and facilitators, contrasting younger adults with T2DM (18-39 years) with a comparator group of | Health Belief Model. | N=30 semi-structured telephone interviews (10 younger & 20 older adults); data were coded into TDF domains with salience identified by “frequency” | Younger adults (YA) and older adults (OA) with T2DM were eligible to participate in Melbourne, Australia; the study was advertised widely online (diabetes) | Participants’ demographics; self-reported clinical characteristics by age group; Fourteen facilitators and 14 barriers using | A 34-item, semi-structured interview guide was developed to explore screening 14 facilitators and 14 barriers, with five items informed by | Analysis was conducted separately for facilitators and barriers. The final step: the facilitators/barriers, and those TDF domains | Identified seven behavior change domains associated with screening among both groups: social influence (SI) was the main screening facilitator, particularly health | Level of Evidence: Level III qualitative study. | Worth to practice: The first study used the TDF, a theoretically driven behavior change framework, to systematically identify facilitators and barriers to screening behavior. | Strength: The first in-
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<td>older adults with T2DM (over 40 years).</td>
<td>of reference; screening facilitators and barriers were systematically compared between groups.</td>
<td>advocacy websites, social media young adult support groups, and in community settings; selected ten younger Age &amp; 20 older adults with average age 33 years(YAs) &amp; 63 years(OAs). Exclusion:</td>
<td>theoretical domains framework (TDF); domains for younger and older adults.</td>
<td>published. TDF-based interview guides.; the professional &amp; trained interviewer interviewed with the 39 TDF-based guided questions by the 14 TDF domains which were then rank ordered according to most frequently coded for each group were compared between YAs and OAs to identify and contrast those of greatest salience to each group. All interview transcripts were</td>
<td>professionals, for both YAs and OAs; the main screening barriers were “health issues” for OAs and cost, time-related (work hours), lack of knowledge about DR; for YAs; shared beliefs regarding consequences if screening was missed for both</td>
<td>depth exploration of the factors which influence screening behavior among YAs with T2DM who are at high risk of complication burden from diabetes.</td>
<td>Weakness: Lack of interpretability and sample bias related to being unable to recruit sufficient numbers of YAs with T2DM to confirm data saturation; the issue of discriminant validity of questionnaire items has been raised by</td>
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<td>Purpose of Article or Review</td>
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<td>Non-English speaking, other diabetes types (e.g., type 1, gestational), and evidence of cognitive impairment.</td>
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<td>the relative frequency of coding (higher frequency of utterance to indicate higher salience); an online validation activity was conducted anonymously with 16 volunteer clinicians/res</td>
<td>checked for accuracy and imported into NVivo1036.</td>
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<td>YAs and OAs were anticipated feelings of regret and expectations of vision loss; OAs primarily relying on reminders from eye health specialists for behavior regulation; YAs expressed feelings of fear about their diabetes diagnosis, other TDF studies, as authors ‘comment that the component constructs within some domains did not adequately provide the level of detail required to facilitate interpretation of their data, particularly when comparing YAs with OAs counterparts. <strong>Conclusion:</strong> This study is an important first step in establishing an evidence base for tailored resources and greater understanding</td>
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</table>
Researchers from health/clinical psychology or health service backgrounds; all interviews were recorded, professionally transcribed, and de-identified. Losing their freedoms and OAs said distress with having a chronic condition associated and fear of the severe complications.

**Recommendations:**
Tailored resources are warranted to promote screening uptake in YAs with T2DM; identified deficits can be targeted in a future eye health intervention and using content mapped to specific behavior change techniques.
Definition of abbreviations: younger adults aged 18-39 years (YA); older adults aged 40+ years (OA); the primary coder (AL); the secondary coder (JB).

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<tbody>
<tr>
<td>Determined the effect of compliance to follow-up through the implementation of a visual-oral Patient Education Model or Patient Education Strategic Framework</td>
<td>A prospective cohort study enrolled patients from nine suburban community sites in the HNHB LHIN and their</td>
<td>N=101 patients with diabetes in Southern Ontario. Inclusion: over 18 years old, literate in English, competent to give</td>
<td>Covariates: patient demographics, baseline diabetic examination, knowledge assessment of DR via</td>
<td>Results of scanned visual acuity by four-meter ETDRS chart; IOP by Tonopen (AVIAVR, Reichert). Five-line</td>
<td>Used SPSS Software for all analyses; two-tailed for all tests with a p-value &lt;0.05 statistical significance</td>
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<td></td>
<td>Level of Evidence: Level II quantitative experimental trial study. <strong>Worth to practice:</strong> The first study to explore compliance to follow-up diabetic eye screening using an education session comprised of a visual-oral presentation with a 12-slide to patients by an eye-</td>
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<td>presentation by an eye-care professional at each screening site.</td>
<td>surrounding catchment area in May 2014 and May 2016. A TRSP with an education component was implemented in the HNHB LHIN to implement a model for ongoing care and education around DR.</td>
<td>informed consent, and diagnosed with type 1 or 2 diabetes. Exclusion: patients with narrow angles at screening, a history of angle-closure glaucoma for which they could not be dilated, unwilling, or unable to complete all parts of the pre- and post-education questions to evaluate patients’ awareness of DR, factors that determined satisfaction with tele-retina technology. IV: patient education. DV: patient compliance, patient horizontal scans, macular cube scans, and two fundus images by Cirrus HD-OCT. and assess compliance of follow-up recommendations within 6 -12 months per the 2017 ICO guidelines. HbA1c levels to assess objective e; a chi-squared test to compare the proportion of patients compliant with follow-up to those who were already compliant with DR screening before the tele-retina</td>
<td>importance of annual eye exam from the 13.9% to 94.1%; 33.7% increased in correctly identified the recommend ed interval for DR screening from 63.3% to 97.0%; 14.9% increased in 35.6% care professional. <strong>Strengths:</strong> Used a patient education model combined with a tele-screening program to reach high-risk and noncompliant patients to successfully increased follow-up and demonstrated compliance to follow-up in a high-risk cohort increased significantly from 35.4% to 50.5% within one year after screening. This study successfully demonstrated that the visual-oral education presentation with pre- and post-education questions impacts patients’ knowledge about DR.</td>
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<td>screening examination.</td>
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<td>satisfaction</td>
<td>changes. A Likert scale assesses patients' satisfaction with TRSP and identifies patient-specific barriers to screening.</td>
<td>session; a dependent t-test to compare changes in HbA1c levels pre-to-post tele-retina screening.</td>
<td>attendance to follow-up exams from the 36.6% to 50.5% in a high-risk cohort. Determining factors for attendance were fear of losing vision (55.4%), the doctor’s recommendation (19.8%),</td>
<td>Weakness: The pre- &amp; post-questions were not validated, as no single published survey addressed the objectives highlighted in this study presentation. Feasibility: Education of an oral presentation with pamphlets, telephone counseling, text message, reminders for upcoming screening appointments from the referring clinics can be cost-effective tools to improve in compliance with follow-up DR screening. Conclusion: Patient screening compliance can be improved through ongoing education</td>
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helped to engage local physicians and nurses to advertise the program.

Obtained most recent pre-screening HbA1c levels from the Patient referring physician or nurse practitioner.

and education for DR eye care guidelines (14.7%). 28% of nonattendance to follow-up eye exams was due to negligence.

about diabetic eye diseases at screening and follow-up examination sites. All HCPs need continuing patient education on self-management and self-efficacy (Cavan et al., 2017).

**Recommendation:** Providing basic knowledge about diabetic eye diseases at screening and follow-up exam sites with resources can improve screening compliance. Referring patients for ongoing eye care follow-up with HCPs after the initial screening can be effective in increasing compliance, accountability.
Appendix D. Gap Analysis

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<th>Desired State</th>
<th>Current State</th>
<th>Action Steps</th>
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<tbody>
<tr>
<td>Increasing clinicians’ knowledge about diabetic eye complications and eye exam guidelines and their willingness to educate patients during visits will improve patients’ knowledge and diabetic retinopathy exams (DREs) attendance rate and reduce vision loss and healthcare spending.</td>
<td>Clinicians are not encouraged to educate diabetic patients about eye diseases and eye exam guidelines during visits. DR is the most common cause of diabetic eye complications and a leading cause of preventable vision loss in working American adults d/t a low DRE attendance rate. The healthcare cost of vision loss and eye problems in the U.S. in 2017 was $139 billion annually (Rein et al., 2021).</td>
<td>Develop and implement Diabetic Eye Care education sessions for clinicians that focuses on how and why diabetes damages the eye and the importance of following diabetic eye exams guidelines for early detection and timely treatment. Measure participants knowledge changes and willingness to educate patients after the education.</td>
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## Appendix E. Gantt Chart

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<tr>
<th>Gantt Chart Timeline</th>
<th>2022</th>
<th>2023</th>
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<tr>
<td>Dates</td>
<td>May</td>
<td>Jun</td>
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<tr>
<td>Literature Review</td>
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<tr>
<td>Identified Areas of Interest for Potential DNP Project</td>
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<tr>
<td>PICOT Statement for DNP Project</td>
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<tr>
<td>Meeting with Sponsor/ESO</td>
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<td>Develop Communication Plan</td>
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<td>Develop educational Material</td>
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<td>Develop Pre- &amp; Post Assessment Survey</td>
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<tr>
<td>Submit the DNP SOD to ESO</td>
<td></td>
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<tr>
<td>Email communication w/ESO, union, NM.</td>
<td></td>
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<tr>
<td>Pre- &amp; post assessment approval by the Hospital T</td>
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<tr>
<td>Need Analysis</td>
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<tr>
<td>Gap Analysis</td>
<td></td>
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<tr>
<td>SWOT Analysis</td>
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<tr>
<td>Create Project Budget</td>
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<tr>
<td>Developed Educational Module</td>
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<tr>
<td>Sponsor Approval</td>
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<tr>
<td>Create Flyers and Disseminated to Clinicians</td>
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<tr>
<td>Education Module, Pre- and Post-Assessment Online Implementation</td>
<td></td>
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<tr>
<td>Education session Presentation</td>
<td></td>
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<tr>
<td>Collect Data to Excel</td>
<td></td>
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<tr>
<td>Evaluate Data Outcomes and Analysis</td>
<td></td>
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<tr>
<td>Final Report to Stakeholders</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix F. Work Breakdown Structure

<table>
<thead>
<tr>
<th>1.1: Initiation</th>
<th>1.2: Planning</th>
<th>1.3: Execution</th>
<th>1.4: Control.</th>
<th>1.5: Closeout.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1: Reviewing the literature</td>
<td>1.2.1: Meeting with education service staff.</td>
<td>1.3.1: Send out the flyer with the scheduled date to clinical staff prior to the project presentation.</td>
<td>1.4.1: Review the outcome of the pre- and post-assessment.</td>
<td>1.5.1: Perform data analysis.</td>
</tr>
<tr>
<td>1.1.2: Perform a gap analysis</td>
<td>1.2.2: Submit the statement of non-research determination (SOD) to the education service. Department for agency approval.</td>
<td>1.3.2: Upload the education PowerPoint and pre-assessment questionnaire to the agency's online network.</td>
<td>1.4.2: Report the outcomes of the assessment to the key stakeholders.</td>
<td>1.5.2: Report. project results.</td>
</tr>
<tr>
<td>1.1.3: Develop the SOD.</td>
<td>1.2.3: Review Educational Materials for healthcare professionals (HCPs).</td>
<td>1.3.3: Present the educational session.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2.4: Develop education PowerPoint and questionnaires for HCPs.</td>
<td>1.3.4: Upload the post-assessment questionnaire. and collect both questionnaire responses.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Appendix G. Responsibility/Communication Matrix

<table>
<thead>
<tr>
<th>Communication Plan Matrix</th>
<th>Plan of Contact</th>
<th>Frequency</th>
<th>Purpose</th>
<th>Route</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>USF Academic Advice/Staff</td>
<td>Weekly</td>
<td>Advice and guidance</td>
<td>Email, Zoom, Phone calls, Text message</td>
<td>DNP student</td>
</tr>
<tr>
<td></td>
<td>Nurse Managers &amp; clinical staff</td>
<td>Weekly</td>
<td>Collaboration and Recruiting participants</td>
<td>Email, Zoom, Phone calls, Text message</td>
<td>DNP student</td>
</tr>
<tr>
<td></td>
<td>Pathway to Excellent Committee</td>
<td>Monthly</td>
<td>Guidance and support</td>
<td>Email, Zoom, Phone calls, Text message</td>
<td>DNP student</td>
</tr>
<tr>
<td></td>
<td>Education Service Office &amp; Research &amp; Innovation Dept &amp; Union</td>
<td>Weekly</td>
<td>Agency approval</td>
<td>Email, Zoom, Phone calls, Text message</td>
<td>DNP student</td>
</tr>
<tr>
<td></td>
<td>Public Affairs Office &amp; Library</td>
<td>Monthly</td>
<td>Presentation announcement and data search</td>
<td>Email, Zoom, Phone calls, Text message</td>
<td>DNP student</td>
</tr>
</tbody>
</table>
# Appendix H. SWOT Analysis

<table>
<thead>
<tr>
<th>Internal (attributes of the organization)</th>
<th>Favorable/Helpful</th>
<th>Unfavorable/Harmful</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Easier acceptance from the sponsor and target population to implement the project as a VA employee.</td>
<td></td>
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<tr>
<td>- The VA launched the Patient Aligned Care Teams (PACT) model in 2010 to transform primary care delivery, and the key change’s essential elements had been implemented in the PACT model.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- The VA then redesigned the VA the patient-centered medical home assessment (PCMH) chronic complex disease care model with QI project goals in 2018. One of the goals is to emphasize the role of nurses in educating patients (Bidassie, 2017).</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weaknesses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- The project anticipates time restrictions and work burden in recruiting adequate participants. In addition to those challenges, disseminating and receiving prompt email responses to the pre-assessment questionnaire before the presentation and the post-assessment questionnaire after the presentation must be overcome.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Potential difficulties or delays in getting approval and implementing the presentation within a large multilayered government institution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Opportunities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- The PACT practice still offers significant opportunities to further progress in evaluating more important aspects of the key change in the PCMH chronic complex disease care model to improve complex chronic disease care. This includes diabetes complications and cancers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- This change requires long-term seamless cooperation, effective coordination, training, and communication among multiple stakeholders.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Threats</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Lack of staff participation and response to pre- and post-assessment from shifting priorities both personally and institutionally.</td>
<td></td>
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</tr>
<tr>
<td>- Schedule competition with other Lunch and Learn presenters within a large government institution.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix I. Comprehensive Financial Analysis

<table>
<thead>
<tr>
<th>Implementing an Education session for Clinical Staff at Hospital T to Improve the Diabetic Retinopathy Screen Exam Attendance Rate by 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost avoidance, Return on Investment, and Expense Budget</strong></td>
</tr>
<tr>
<td>Prevalence of Diabetic Retinopathy: 26% among US population with DM (CDC, 2023)</td>
</tr>
<tr>
<td>Cost of Vision Loss Avoidance</td>
</tr>
<tr>
<td>Cost of Vision Loss for One &gt;18 yo (CDC, 2022) = $16,838</td>
</tr>
<tr>
<td>Current State</td>
</tr>
<tr>
<td>Veteran Population</td>
</tr>
<tr>
<td>Improved State</td>
</tr>
<tr>
<td>10% Increase in Diabetic Retinopathy Screening Exam Attendance Rate with Education</td>
</tr>
<tr>
<td><strong>Total Financial Benefit: Cost Avoidance</strong></td>
</tr>
<tr>
<td><strong>Implementing Expenses</strong></td>
</tr>
<tr>
<td>Education Session on 12/15/2023</td>
</tr>
<tr>
<td>Hourly Salary for Attending Education Session</td>
</tr>
<tr>
<td>RN Participants ($75/hr)</td>
</tr>
<tr>
<td>NP Project Manager ($90/hr) Time to develop the program</td>
</tr>
<tr>
<td>Microsoft Teams Plus Software Fee x 8 mos</td>
</tr>
<tr>
<td>Internet Access Service Fee x 8 mos</td>
</tr>
<tr>
<td><strong>Total Expenses</strong></td>
</tr>
<tr>
<td>Net of Cost Avoidance and ROI for Implementing a DRS Education to Clinical Staff at The Hospital T</td>
</tr>
</tbody>
</table>
Appendix J. CQI Method and/or Data Collection Tools

JA: Project Education PPT

Keeping Our Eyes Healthy

Educational Session on Preventing Eye Complications From Diabetes

Misun Moser RN, MSN, MPH, DNP-FNP candidate@ USF
Risk Factors for Developing Diabetes

- Family background
- High blood pressure
- Gestational diabetes
- Obesity, high cholesterol, and high triglycerides

If you have risk factors for diabetes, you should have your glucose levels checked.
Diabetes and Eye Complications

If you have diabetes, you must take care of your eyes.

- Diabetes is caused when the body cannot or does not control high levels of blood glucose.
- Diabetes can cause diabetic eye disease, which can lead to low vision or blindness.
# Background 1

Improving access, awareness, and affordability of eye care services can reduce unnecessary vision loss in the United States

<table>
<thead>
<tr>
<th>US ADULTS AT HIGH RISK FOR VISION LOSS</th>
<th>EYE EXAMS</th>
<th>EYEGlasses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INCREASED FROM</strong> 65 MILLION TO 93 MILLION (2002-2017)</td>
<td><strong>40% of adults at high risk</strong> for vision loss <strong>did not</strong> receive an eye exam in the past year.</td>
<td><strong>Over 8 million adults</strong> who know they <strong>need eyeglasses</strong> said they could <strong>not afford them.</strong></td>
</tr>
<tr>
<td><strong>4 IN 10 ADULTS</strong> are at high risk for vision loss</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


WWW.CDC.GOV/VISIONHEALTH
Background 2

Why is eye screening important?

- Conditions such as diabetic retinopathy, macular degeneration, and glaucoma can cause permanent vision loss.
- Many patients are unaware they are at risk, or that they already have early signs of these conditions.
- Many patients do not seek care until after they have already lost vision.
- The basic purpose of Eye Screening is to detect these conditions EARLY and PREVENT VISION LOSS.
Anatomy of the Eye and Its Function

The main parts of the eye

- Vitreous gel
- Optic nerve
- Macula
- Retina
- Iris
- Cornea
- Pupil
- Lens
- Iris
Dilated Eye Exam

A dilated eye exam allows an eye care professional to see more of the inside of your eyes to check for signs of disease.

Have a dilated eye exam at least once a year.

Don’t wait for symptoms to see an eye care professional.
Retinal Blood Vessels & Diabetic Retinopathy

With diabetes, prolonged levels of high blood sugar can cause these blood vessel walls to break down.

Diabetic retinopathy occurs when the inner wall of blood vessels break, allowing leakage.

Image source: Joslin Diabetes Center Diabetic eye care website.
Diabetic retinopathy is the most frequent cause of blindness in the United States.

This picture shows an eye with tiny blood vessels in the retina.

Normal vision.

Same scene viewed by a person with advanced diabetic retinopathy.
Regular eye exams are important for early detection and timely treatment.

American Diabetes Association (ADA) recommends people with Type 2 diabetes (T2DM) are screened first at the time of diagnosis and at least annually; people with Type 1 diabetes (T1DM) are screened within five years after the onset of diabetes and at least annually after preventing diabetic eye complications.
Cataract is common all over the world and affects people with diabetes.

A cataract is a **clouding of the lens**. People with cataracts see through a haze.

Normal vision

Same scene viewed by a person with advanced cataract.
Diabetes and Glaucoma

At first, glaucoma has no symptoms and, if left untreated, vision loss or blindness can occur.

Glaucoma is a group of diseases that can damage the optic nerve and result in vision loss and blindness.

Normal vision.

Same scene viewed by a person with advanced glaucoma.
Optic Nerve & Glaucoma

- The optic nerve is where we look for signs of glaucoma.
- Glaucoma can often cause damage to the optic nerve and worsen to tunnel vision.
- This is often due to pressure in the eye being too high.

Image source: VHA Office of Connected Care National Telehealth Training Team
• This area is the macula.
• It is responsible for our **central vision**, needed for seeing fine details (reading), and our best **color vision**.

Image source: VHA Office of Connected Care National Training Team
Eye Health Team

People with diabetes can protect their vision

Health professionals who are part of an eye health team include—
- Certified diabetes educator
- Health promoter
- Nurse
- Ophthalmologist
- Optometrist
- Pharmacist
- Primary care provider
- Social worker

Remember—
- Visit an eye care professional and take care of your eyes.
- Ask for a dilated eye exam.
- Have a dilated eye exam at least once a year.
• Be aware of the important role of health professionals in educating your patients.

• Be aware of educational programs at your facility (ex. diabetes management; smoking cessation).

• Know whom you can direct your patients to for individualized education (ex. Nutrition).
Questions?

Submit a post-assessment.

Thank you for attending!
https://www.cdc.gov/visionhealth/resources/infographics/index.html

10.1016/j.ophtha.2019.09.025


National Eye Institute (NEI). Diabetic Eye Disease Resources. *Diabetes and Healthy Eyes Toolkit.*


VA TELEHEALTH. Telehealth Eye Screening. *TeleEye Screening Brochure.*
https://yaww.telehealth.va.gov/clinic/teye/screening.asp
Pretest for participants

1. Glaucoma is a diabetes-related eye disease
   - A) True
   - B) False
   - C) I am not sure

2. The lens is found inside the eye, and when it becomes unclear, it causes cataract
   - A) True
   - B) False
   - C) I am not sure

3. The diabetes-related complication that can cause blindness is
   - A) Nearsightedness
   - B) Astigmatism (blurred vision)
   - C) Diabetic retinopathy
   - D) I am not sure
4. The most frequent eye diseases in people with diabetes are

- A) Diabetic retinopathy, cataract, astigmatism
- B) Diabetic retinopathy, cataract, glaucoma
- C) Glaucoma, nearsightedness, astigmatism
- D) I am not sure

5. In the United States, the main cause of blindness in adults is

- A) Nearsightedness appearing in childhood
- B) Diabetic retinopathy
- C) Presbyopia appearing after age 40
- D) I am not sure

6. A dilated eye exam allows an eye care professional to see more of the inside of your eyes to check for signs of disease

- A) True
- B) False
- C) I am not sure
7. Early detection and timely treatment can help reduce the risk of blindness
   ○ A) True
   ○ B) False
   ○ C) I am not sure

8. Diabetic eye disease usually has early warning signs
   ○ A) True
   ○ B) False
   ○ C) I am not sure

9. A person with diabetes who has no eye problems should schedule a dilated eye exam at least once a year
   ○ A) True
   ○ B) False
   ○ C) I am not sure
10. Often, diabetic retinopathy, cataract, and glaucoma are eye diseases or conditions without symptoms. Therefore, a dilated eye exam at least once a year is required to detect them

- A) True
- B) False
- C) I am not sure

11. Write the street number of your home address for the pretest (ex. 0000)
Posttest for participants

1. Glaucoma is a diabetes-related eye disease:
   - A) True
   - B) False
   - C) I am not sure

2. The lens is found inside the eye, and when it becomes unclear, it causes cataracts
   - A) True
   - B) False
   - C) I am not sure

3. The diabetes-related complication that can cause blindness is
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   - C) Diabetic retinopathy
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- A) True
- B) False
- C) I am not sure
10. Often, diabetic retinopathy, cataract, and glaucoma are eye diseases or conditions without symptoms. Therefore, a dilated eye exam at least once a year is required to detect them

- A) True
- B) False
- C) I am not sure

11. Write the street number of your home address for the posttest (ex. 0000)

12. Will you change your practice to provide patient education after this presentation?

- A) Yes
- B) No
- C) I am not sure

---

This content is neither created nor endorsed by Microsoft. The data you submit will be sent to the form owner.

Microsoft Forms
**Answer key for the pretest and posttest for participants**

<p>| | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>1.</td>
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<td>2.</td>
<td>A</td>
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<td>3.</td>
<td>C</td>
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<tr>
<td>4.</td>
<td>B</td>
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<td>5.</td>
<td>B</td>
</tr>
<tr>
<td>6.</td>
<td>A</td>
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<tr>
<td>7.</td>
<td>A</td>
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<td>8.</td>
<td>B</td>
</tr>
<tr>
<td>9.</td>
<td>A</td>
</tr>
<tr>
<td>10.</td>
<td>A</td>
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</tbody>
</table>
PREVENTING EYE COMPLICATIONS FROM DIABETES

Come learn about the Evidence-Based Lunch & Learn Educational Session

Presenter:
Misun Moser RN, MSN, MPH, DNP-FNP candidate@ USF

January 12, 2023, 12:00 to 1:00 PM
Location: MS TEAMS
What are the Symptoms of Diabetes-related Retinopathy?

Early detection and treatment can reduce your risk of diabetes-related retinopathy. You will usually not experience symptoms in the early stages, which is why it is important for you to have an eye exam annually, or as directed by your doctor. Eye exams can be done either through a dilated eye exam with an eye doctor (preferred method) or through photos of the retina in each eye, which may not require dilation of the eyes.

Vision changes due to diabetes-related eye disease usually affects both eyes. Here are some symptoms you can look for:

- Sudden increase in eye floaters (spots and/or dark cobweb-like strands)
- Blurred vision
- Sudden loss of vision in one eye
- Halos around lights
- Flashing lights
- Poor night and color vision

Contact your eye doctor right away if you experience any of these symptoms.

Why is a Dilated Eye Exam Important?

Dilation of the eyes is done using eye drops to widen the opening on the front of your eye, called the pupil. This allows the eye doctor to see into the back of the eye. This is an important step to take when getting an eye exam for people living with diabetes. The temporary side effects of dilation eye drops are blurring of vision, especially up close, and sensitivity to light. The side effects only last a few hours or less, but the benefit from the eye exam can be enormous!

**UNDILATED PUPIL**

- Pupil
- Ray of Light
- Optic Nerve
- Retina
- Portion of retina that can be seen through undilated pupil

**DILATED PUPIL**

- Pupil
- Ray of Light
- Optic Nerve
- Retina
- Portion of retina that can be seen through dilated pupil.

Different words, same meaning.

The words below refer to the same condition and can be used interchangeably.

- Diabetes-related eye disease = diabetic eye disease
- Diabetes-related retinopathy = diabetic retinopathy
- Diabetes-related macular edema = diabetic macular edema
Diabetes + Your Eyes

Diabetes-related Retinopathy – Symptoms + Risks

What are the Symptoms of Diabetes-related Retinopathy?
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**UNDILATED PUPIL**

**DILATED PUPIL**

Different words, same meaning.
The words below refer to the same condition and can be used interchangeably.

- Diabetes-related eye disease = diabetic eye disease
- Diabetes-related retinopathy = diabetic retinopathy
- Diabetes-related macular edema = diabetic macular edema
What Decreases and Increases Your Risk for Diabetes-related Retinopathy?

If you have diabetes, there are different factors that can decrease and increase your risk for developing diabetes-related retinopathy. Your risk depends on:

**Duration of the Disease:** The longer you have diabetes, the greater your risk for developing diabetes-related retinopathy.

**Blood glucose management:** Blood glucose management will decrease your risk for diabetes-related retinopathy and vision loss. Work with your healthcare provider to be sure your glucose level is in your recommended target range.

**Race:** Some racial and ethnic groups are at higher risk: If you are African American, Hispanic, American Indian, Asian American, or Pacific Islander, you are at increased risk for developing diabetes-related retinopathy.

**Smoking:** Smoking increases your risk. If you don’t smoke, be sure you do not start. If you do smoke, ask your doctor how to help you quit.

**Blood pressure and cholesterol:** By managing your blood pressure and cholesterol you will decrease your risk of eye disease. You will also protect your heart, kidneys, feet, ears, and eyes. Eat a healthy diet, get regular exercise and/or take medication as prescribed by your doctor to manage your blood pressure and cholesterol levels. These steps will help you reduce your risk of diabetes-related retinopathy.

**Pregnancy:** If you have diabetes prior to getting pregnant, see your eye doctor regularly to prevent risks of developing diabetes-related retinopathy. If you develop gestational diabetes during pregnancy, your risks are much lower and you are not required to get an eye examination.

**Kidney Disease:** There is a close relationship between kidney disease and diabetes-related retinopathy. Preventing complication with your kidneys will also help prevent diabetes-related retinopathy.

---

**For More Information:**

Visit the following webpage for more information about diabetes-related eye disease, insurance information, financial assistance information, and healthy living choices to reduce your risk for eye disease:

**Diabetes & Your Eyes Resources**

[www.preventblindness.org/diabetes](http://www.preventblindness.org/diabetes)

---

**Prevent Blindness**

*Bringing Americans to Eye Care*

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**The Allergan Foundation**

Made possible by funding from the Allergan Foundation

DED FS2 52019
Reducing risks means doing behaviors that minimize or prevent complications and negative outcomes of prediabetes and diabetes.

Examples of these behaviors are making positive lifestyle changes, participating in a type 2 diabetes prevention or diabetes self-management education and support program, getting adequate sleep, and getting the recommended vaccines and health screenings. Reducing risks means you need to acknowledge that preventive actions you do now will benefit you years from now and that you have the power to change your health outcomes.

**LEARN ABOUT YOUR RISKS**

Talk to your diabetes care and education specialist and healthcare provider about health risks such as kidney damage, nerve damage and vision loss. They can explain why complications happen and how they can be avoided. You can develop the self-management skills needed to support and maintain a healthy lifestyle by meeting with your diabetes care and education specialist.

<table>
<thead>
<tr>
<th>THE FOUR CRITICAL TIMES TO SEE A DIABETES CARE AND EDUCATION SPECIALIST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>When you are first diagnosed with diabetes</strong></td>
</tr>
<tr>
<td><strong>When you experience changes that affect your self-management such as financial or emotional distress</strong></td>
</tr>
</tbody>
</table>

**CHECKLIST**

- Glucose
- Cholesterol
- Eyes
- Kidneys
- Blood Pressure
- Oral Health
- Feet

**Question:** What kinds of health checks give you the best chance of keeping your heart healthy and avoiding short and long-term complications?

**Answer:** Research has shown that managing your glucose (sugar), blood pressure and cholesterol levels, getting regular oral health checks, eye checks, kidney checks and taking care of your feet all lead to less chance of developing complications or of existing complications getting worse.
**REReduce Your Risk of Complications**

Schedule regular medical checkups.

Get screened for sleep apnea.

Get screened for hearing loss.

Follow your healthy eating plan.

Commit to moving more and sitting less.

Take medications as prescribed.

Monitor your glucose using CGM or blood glucose meters.

Don’t smoke or vape.

Brush and floss your teeth daily.

Get a flu shot.

Get pneumonia and hepatitis B vaccinations.

Discuss any sadness or distress with your provider.

Check your feet daily for redness, sores, open wounds.

**Get Help When You Need It**

Do you find prediabetes or diabetes too hard to handle? Do you often feel overwhelmed or sad?

Your diabetes care and education specialist or mental health expert can help. Tell them about your feelings, especially if you:

- Struggle to manage your diabetes.
- Have negative thoughts.
- Avoid seeing your healthcare providers.
- Have little interest or don’t find pleasure in your activities.
- Sleep most of the day or are not able to sleep.
- Have lost your appetite or are overeating.
- Feel others in your family don’t care.

**Word Wall**

**Short-term complications**

These are when you experience high or low glucose (sugar) levels that put you at risk of passing out or being hospitalized.

**Long-term complications**

These can happen after many years and include heart attacks, strokes, decreased vision or blindness, decreased kidney function, numbness or tingling in your hands or feet, slowing down of stomach emptying, foot deformities, sexual problems and skin problems.
<table>
<thead>
<tr>
<th>TYPE OF HEALTH CHECK</th>
<th>FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1C (a blood test that measures your average blood glucose level during the past 3 months)</td>
<td>Every 3 to 6 months</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>Every visit</td>
</tr>
<tr>
<td>Lipids (blood fats)</td>
<td>At least every year</td>
</tr>
<tr>
<td>HDL (good cholesterol)</td>
<td></td>
</tr>
<tr>
<td>LDL (bad cholesterol)</td>
<td></td>
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<tr>
<td>Triglycerides (blood fats that come from food and are made by the body)</td>
<td></td>
</tr>
<tr>
<td>Eye checkup</td>
<td>Every year</td>
</tr>
<tr>
<td>Kidney function tests</td>
<td>Every year</td>
</tr>
<tr>
<td>Dental checkup</td>
<td>At least every year</td>
</tr>
<tr>
<td>Foot checkup (for nerve function and blood flow)</td>
<td>At least every year</td>
</tr>
</tbody>
</table>

**BREAK TASKS INTO SMALLER PARTS**

Your diabetes care and education specialist can help you with planning and scheduling recommended health checks. This task can be less overwhelming when you divide them up into smaller, doable tasks. Make a list of tasks and decisions, then work on them one at a time until you have completed the list. Here is a sample task list for getting an annual eye exam:

- Find out insurance coverage and cost for the eye exam.
- Identify eye providers in your network and select one.
- Call and schedule the appointment.
- Make arrangements to allow time for the appointment.
- Actively participate in the appointment.

Making sure you get recommended health checks and sticking to your treatment plan are positive steps you can take to reduce your risk of complications. Taking an active role in keeping your heart, kidneys and eyes as healthy as possible helps you achieve your desired quality of life. Act early so you can stay healthy in the long run! A diabetes care and education specialist can be a great resource for helping you understand how to reduce your risks. Ask you provider to refer you. You deserve it!
People With Diabetes Can Prevent Vision Loss

You can’t feel it. You can’t see it—until it’s too late. Diabetic retinopathy, the most common form of diabetic eye disease, is the leading cause of blindness in adults age 20–74. It occurs when diabetes damages blood vessels in the retina.

Diabetic retinopathy affects 7.7 million Americans, and that number is projected to increase to more than 14.6 million people by 2030.

The longer a person has diabetes, the greater the risk for diabetic eye disease. Once vision is lost, it often cannot be restored.

People with diabetes should have a comprehensive dilated eye exam at least once a year to help protect their sight.

Keeping diabetes in control is key to slowing the progression of vision complications like diabetic retinopathy. There are important steps people with diabetes can take to keep their health on TRACK:

- Take your medications as prescribed by your doctor.
- Reach and maintain a healthy weight.
- Add physical activity to your daily routine.
- Control your ABC’s—A1C, blood pressure, and cholesterol levels.
- Kick the smoking habit.

Did You Know?

- Everyone with diabetes is at risk for diabetic retinopathy.
- There are no early symptoms.
- A dilated eye exam can detect eye disease before vision loss occurs.
- Don’t wait until you notice an eye problem to have an exam.

Early detection, timely treatment, and appropriate follow-up care can reduce a person’s risk for severe vision loss from diabetic eye disease by 95 percent.

Dr. Paul Sieving, director of the National Eye Institute (NEI), says, “Only about half of all people with diabetes get an annual comprehensive dilated eye exam, which is essential for detecting diabetic eye disease early, when it is most treatable. Newer and better treatments are available for the first time in decades, making early detection even more important.”
With no early symptoms, diabetic eye disease—a group of conditions including cataract, glaucoma, and diabetic retinopathy—can affect anyone with type 1 or type 2 diabetes. African Americans, American Indians/Alaska Natives, and Hispanics/Latinos are at higher risk for losing vision or going blind from diabetes.

“More than ever, it’s important for people with diabetes to have a comprehensive dilated eye exam at least once a year. New treatments are being developed all the time, and we are learning that different treatments may work best for different patients. What hasn’t changed is that early treatment is always better,” says Dr. Suber Huang, chair of the Diabetic Eye Disease Subcommittee for NEI’s National Eye Health Education Program (NEHEP) and member of the NEI-funded Diabetic Retinopathy Clinical Research Network (DRCR.net). “There has never been a more hopeful time in the treatment of diabetic retinopathy,” he adds.

Remember, if you have diabetes, make annual comprehensive dilated eye exams part of your self-management routine. Living with diabetes can be challenging, but you don’t have to lose your vision or go blind because of it. To help friends and loved ones reduce their risk, please share this article.

For more information on diabetic eye disease, tips on finding an eye care professional, or information on financial assistance, visit https://www.nei.nih.gov/diabetes or call NEI at 301–496–5248.

NEI leads the federal government’s research on the visual system and eye diseases. NEI supports basic and clinical science programs to develop sight-saving treatments and address special needs of people with vision loss. For more information, visit https://www.nei.nih.gov/

NIH, the Nation’s medical research agency, includes 27 Institutes and Centers and is a component of the U.S. Department of Health and Human Services. NIH is the primary federal agency conducting and supporting basic, clinical, and translational medical research, and investigating the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit https://www.nih.gov.
Appendix K. Extended Health Belief Model

The Health Belief Model

- Modifying Variables
  - Perceived Seriousness
  - Perceived Susceptibility

- Perceived Benefits vs. Perceived Barriers

- Likelihood of Engaging in Health-Promoting Behavior
  - Perceived Threat
  - Self-Efficacy
  - Cues to Action

- Likelihood of Engagement in Health-Promoting Behavior
Appendix L. Bar Graph Analysis for No of Participants in Pre- & Post-Assessment
Appendix M. Bar Graph Analysis for Pre- & Post-Assessment Scores
Appendix O. Bar Graph Analysis for Willingness to Change the Current Practice

Will you change your practice to provide patient education after this presentation?

Yes

No
Appendix P. Power/Interest Grid for Stakeholder Prioritization

- Research & Innovation Office
- Union AFGE
- Office of Nursing Services

- Dept. Education Service Office
- Pathway to Excellence Committee
- All Clinicians in the Agency
- Academic Advisor and Staff in the USF

- Patients

- Public Affairs Office
- Library Staff

High

Power

Low

Low (Minimum Effort)

Monitor

Keep Informed

Keep Satisfied

Manage Closely

Interest

High