

Eye Examination

Satisfying A Quality Care Measure in Diabetes

Doctor of Nursing Practice Project Presented to the
Faculty of Graduate Studies
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by

MEERA SHEKAR, BSN, RN

DNP Committee Chair: Laura Kuensting, DNP, APRN, PCNS-BC, CPNP-PC, CPEN

DNP Committee Member: Carla Beckerle, DNP, APRN, ANP-BC

DNP Committee Member: Natalie Murphy, PhD, APRN, FNP-BC

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Committee Members:

Dr. Laura Kuensting
Dr. Natalie Murphy
Dr. Carla Beckerle

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Eye Exam in Diabetes

Diabetic retinopathy (DR) is a leading cause of blindness worldwide
Projection for the future:

-200 million people by the year 2030 will have DR

(National Academies of Sciences, Engineering, and Medicine, 2017)

Impact on the quality of life (Hendrick, Gibson, & Kulshreshtha, 2015)

- impaired mobility
- risk of falls
- affects mental health and cognition,
- weakens employment and educational achievements



Eye Exam as a Quality Care Measure in DM

Importance of eye exam in diabetes mellitus (DM)

- for the provider: allows a way to better manage patients with DM
- lowers visual impairment in patients

Visual impairment due to DR:

- occurs with higher glycosylated hemoglobin (HbA1c)
- a HbA1c value below 7.0% is optimal for good eyesight
[American Diabetes Association, (ADA) 2018]



Approval Process

Site for study

CITI training certificate for research

DNP Committee approval

IRB approval-Exempt

UMSL Graduate School

Purpose of the Study

AIM:

- To meet the Quality Care Measure (QCM) of an annual eye exam criteria in DM management (ADA, 2018)

Outcome Measures:

- A documented annual eye examination for every patient with DM.
- Level of HbA1c levels in each patient with DM.



SETTING

A private family practice in St. Louis

- over 200 patients with DM seen annually
- evidence based practice guidelines incorporated in disease management
- participates in QI for improvement in patient outcome



Evidence Based Guidelines

All patients with DM are recommended:

- HbA1c biannually to meet QCM (ADA, 2018)
- An annual eye examination to meet the QCM



PICOT

In a private family practice, among adults aged 18-90 years with DM,

- what was the range of HbA1c level from June 1, 2017-March 31, 2018?
- what was the rate of documented eye examinations from June 1, 2017-March 31, 2018?
- what was the difference in the HbA1c values between the ages, races, and genders in the available data?
- what was there a difference in the rate of completion of eye exams between the ages, races and genders in the available data?

Review of the Literature

Search Engines used: Medline, EBSCO, CINAHL, PubMed, Google Scholar

31 articles were chosen for content with inclusion criteria:

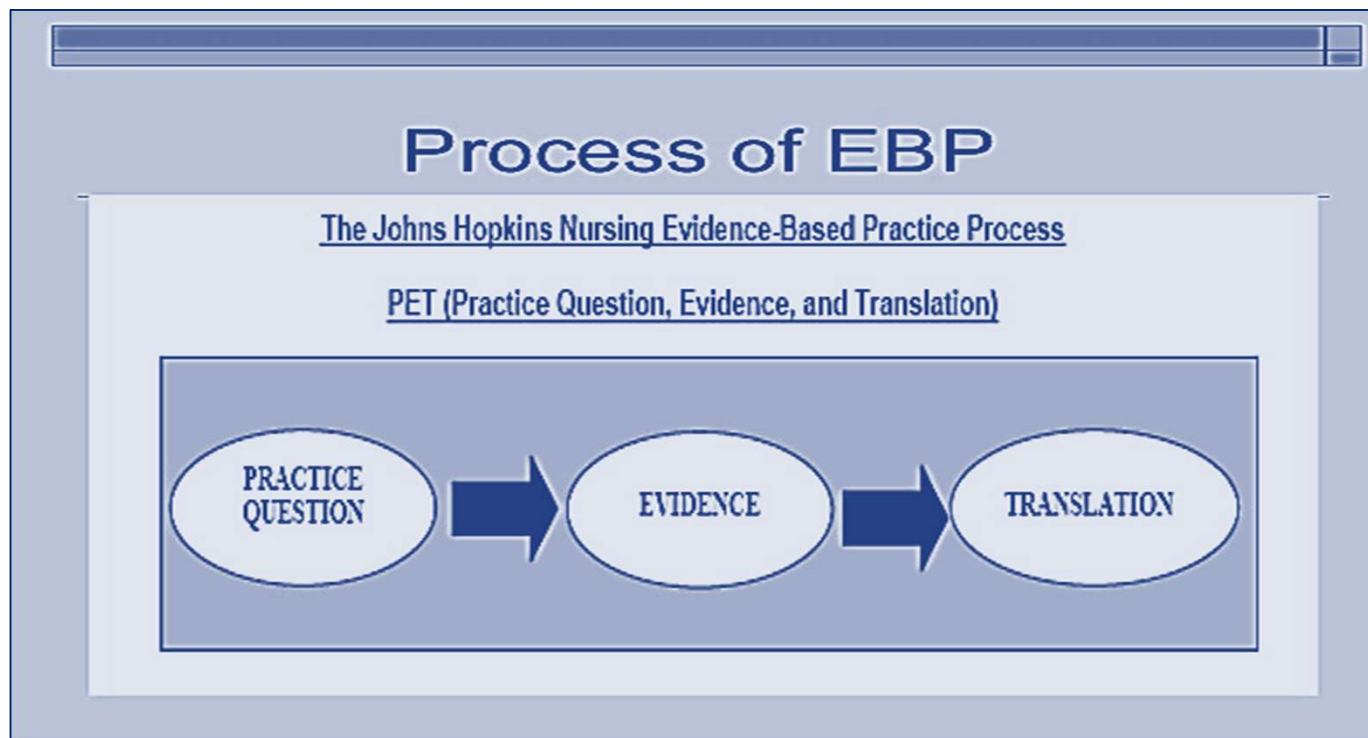
- patients with DM, ages 18-90
- Ophthalmic manifestations
- Studies in glucose control

Exclusion criteria: articles greater than seven years old

Facts from Current Literature

- Routine eye examination detect microvascular deterioration in patients with DM (ADA, 2018)
- Referrals for eye examination are encouraged in DM to avoid progressive vision loss (ADA, 2018).
- The presence of DR in individuals with poor glycemic control was evident with 11-15 years of DM. In patients with DM greater than 15 years, the OR increased to 9.01 (95% CI, 3.58–22.66). In patients diagnosed with diabetic nephropathy, the chance for DR was highest (OR 3.32 and a 95 % CI 1.62–6.79) (Lima, Cavalieri, Lima, Nazario, & Lima, 2016).
- Ophthalmology referrals at the onset of DM is preferred to allow early detection and treatment with laser photocoagulation to retain optical capability (Evans, Michelessi, & Virgili, 2014).

Framework Used for Optimum Patient Outcome



Design

An observational and a descriptive study design

Data collection: Within a retrospective medical record review

- This was the first cycle of the Plan Do Study Act for QI
Plan a change or test of how something works.
Do: Carry out the plan.
Study: Look at the results.
Act: decide what actions to take to improve (Mayer, Oliphant, & Atanelov, 2013)

Observation of the range of HbA1c levels of all patients with DM

- Occurrences of eye examinations were verified

Sample: Patients with DM seen during the study period

- Inclusion criteria were patients aged 18 years-90 years with DM within the practice
- Exclusion criteria were patients who were pregnant



Data Collection

- Retrospective medical record review: period June 01, 2017 through March 31, 2018
- Patients with a diagnosis of DM seen during the period
- Demographics included: age, gender, race, date of HbA1c, results HbA1c levels
- Documentation of eye examination (available/not available)
- Date of eye examination completed

Process

- Descriptive and inferential statistics used for results
- Software: Microsoft Excel 2016 and Intellectus Statistics.
- Data analysis included:
 - Descriptive statistics
 - control chart
 - *t*-test for a single sample mean between the mean HbA1c and the recommended HbA1c <7%,
 - *t*-test between male and female HbA1c values
 - Chi-square for comparison of eye exam completion

Results

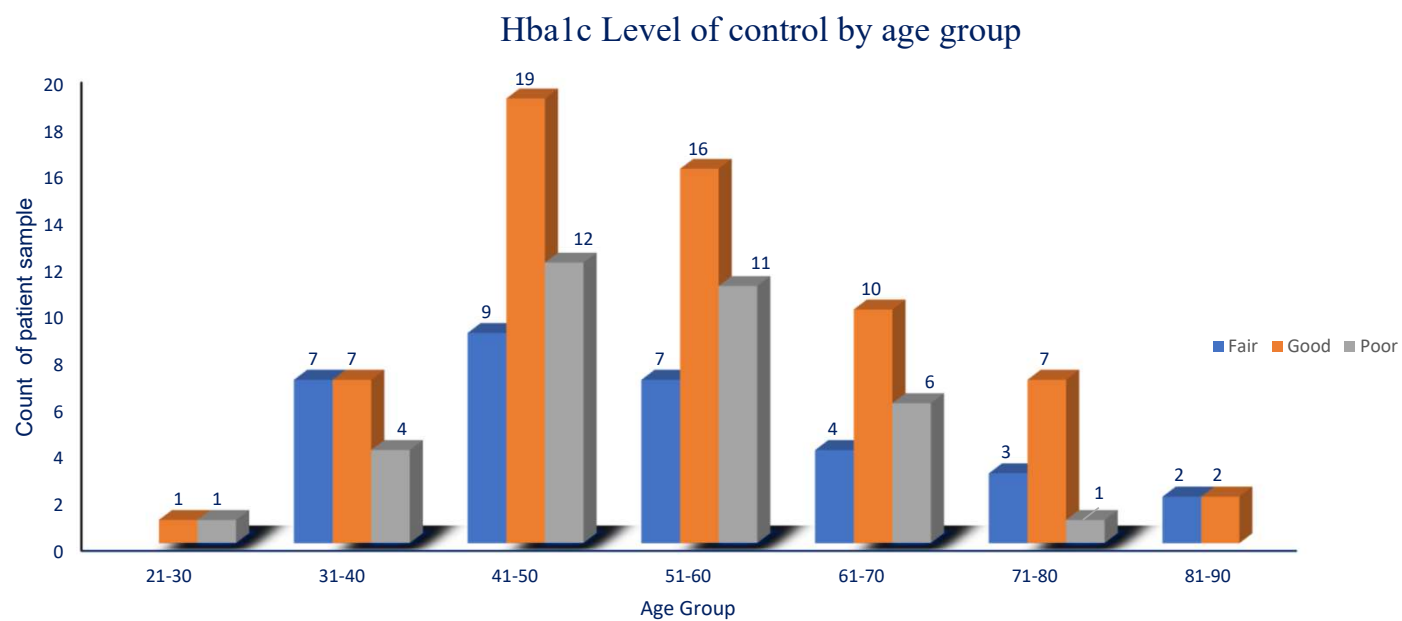


Figure 1. HbA1C level of control by age group
HbA1c levels of control ADA (2018) in percentage Good (<6.5) Fair (6.5-8) Poor (>8)

Results

Level of control by Race/Ethnicity

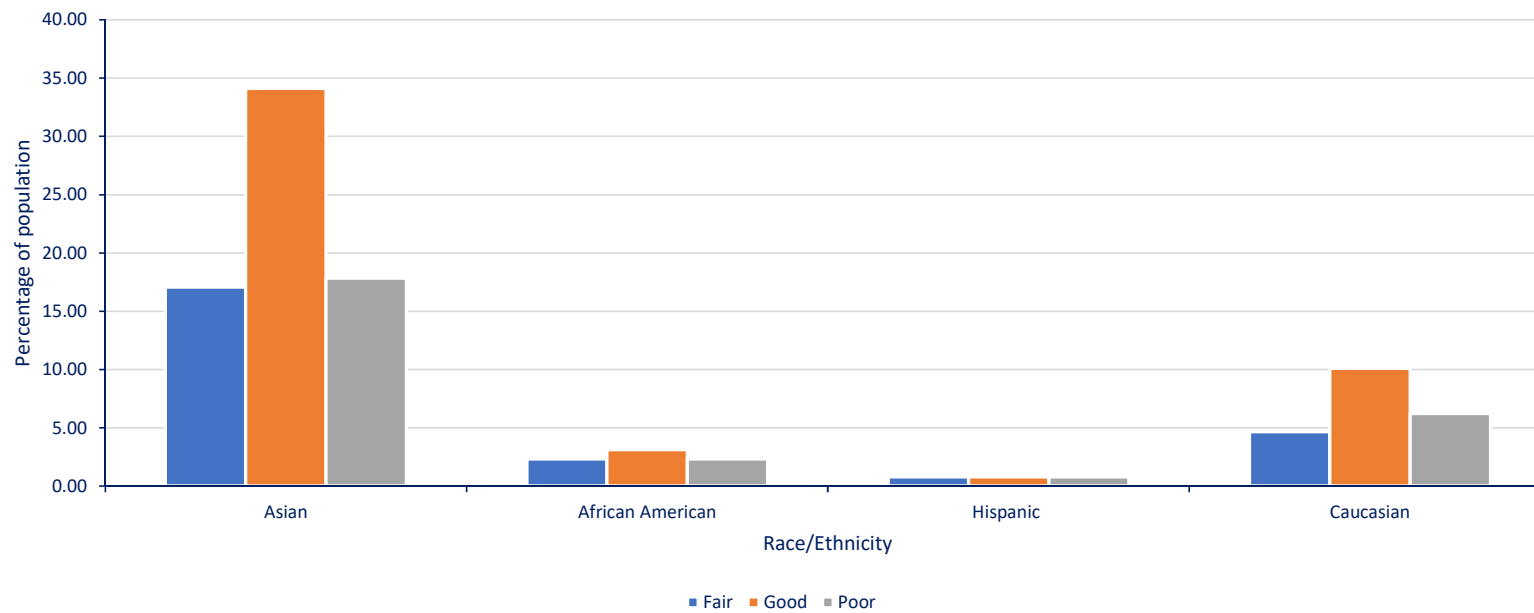


Figure 2. HbA1C level of control by race/ethnicity
Classified Level of Control per ADA (2018) in percentage Good (<6.5) Fair (6.5-8) Poor (>8)

Results

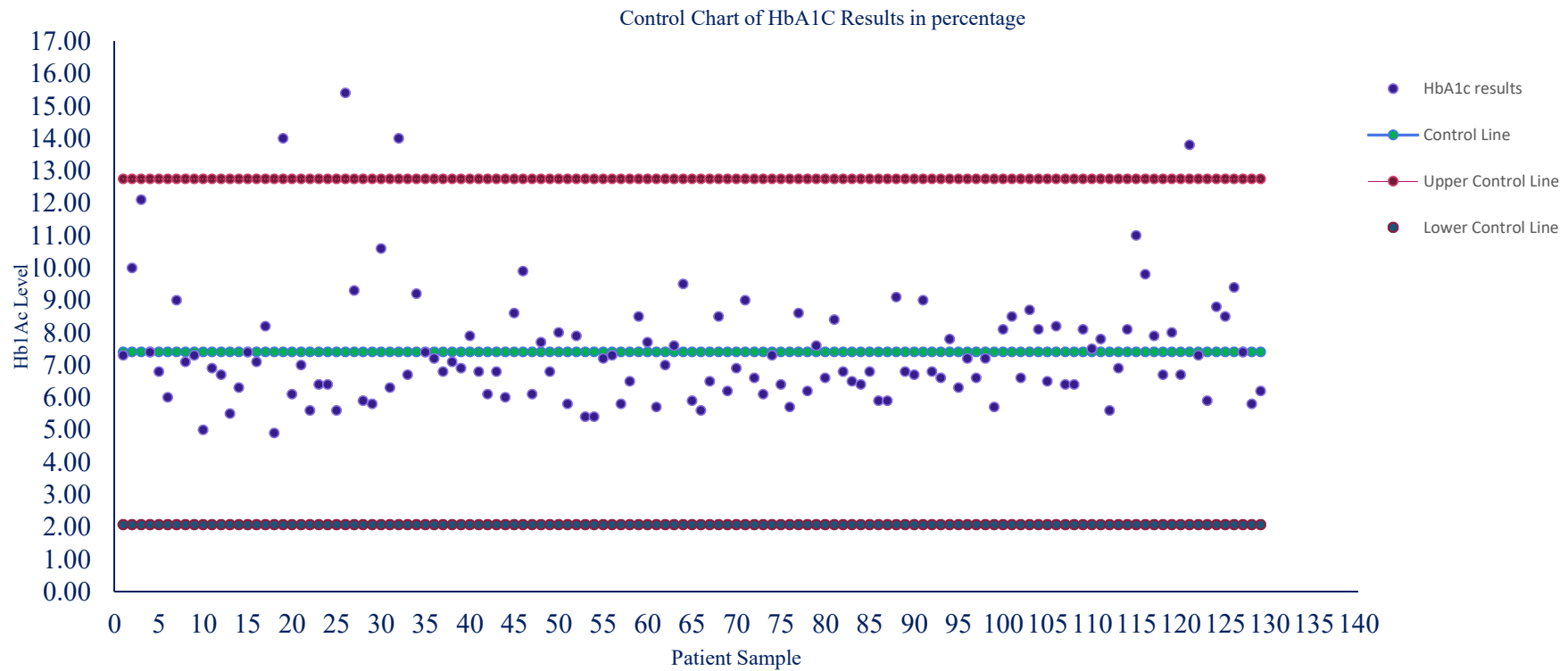


Figure 3. HbA1C level with upper limit and lower limit, mean HbA1c 7.41%

Analysis of Eye Examination Data

Table 1

Count of eye exams by race/ethnicity

Race/Ethnicity	N	Y	Total
Asian	65	24	89
African American	6	4	10
Hispanic	3	0	3
Caucasian	16	11	27
Total	90	39	129

Summary and Discussion

$N=129$ male ($n=93$) female ($n=36$)

Results:

- 100% adherence in documentation of HbA1c results
- overall HbA1c mean of 7.41%
- HbA1c < 7.0% (51%, $n=66$)
- HbA1c > 7.0% (49%, $n=63$)
- Only 30% ($n=39$) patients had documented eye examination

Implications for Practice

Discussed Questions

Why is there a delay in getting eye examination done?

- Missing documentation
- Patients not getting examination done

Additional problems identified

- Need reduction in HbA1c values for 49% of patients (desired value <7.0%)
- No established flow sheet
 - for HbA1c
 - for eye exam completion

Conclusion

Next PDSA cycle:

Implement an eye exam referral form or a consult template

Patient reminders for eye exams by phone, text, or email

Documentation form for tracking HbA1c levels

Education for lowering HbA1c levels for patients



Questions

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