

Assessing the Health Literacy Levels of Diabetic Patients Located in Rural Southeast Kansas

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Introduction

Health literacy, as outlined by the Centers for Disease Control and Prevention (CDC) (2021), is an individual's multifaceted ability to utilize health information in order to best care for themselves, their family, and their community. According to the National Library of Medicine [NLOM] (2015) health literacy is considered a "robust demographic predictor of health outcomes" which echoes the positive correlation found between low health literacy and poor health outcomes (para 1). Therefore, the awareness of an individual's health literacy level is "integral to patient care, safety, education and counseling" (Dickens et al., 2013, p. 62). Data shows that limited health literacy is highly prevalent throughout the United States. This data has also found a correlative relationship between limited health literacy and poor health outcomes. An individual's health literacy level affects many areas of their health, including their ability to effectively manage chronic diseases, such as diabetes mellitus. Awareness of an individual's health literacy level allows for targeted interventions and a potential improvement for a patient's health outcomes. The Newest Vital Sign (NVS) is a validated screening tool that allows for the identification of a patient's likely health literacy level. A complete understanding of health literacy, the prevalence of diabetes mellitus, and the need for health literacy level assessment in diabetic patients is essential to improving health literacy in the rural SEK diabetic population.

The purpose of the project was to assess the health literacy levels of prediabetic, type one diabetic or type two diabetic patients participating in Diabetes Self-Management Education (DSME) classes led by the certified diabetic educator (CDE) of the Community Health Center of Southeast Kansas (CHCSEK) through the utilization of the Newest Vital Sign (NVS) screening tool.

Secondary goals included establishing the demographics of each participant and determining if there was a continued need for health literacy level assessment and diabetic education within the rural SEK diabetic community, as well as whether or not the addition of the NVS to the DSME classes would be beneficial.

The project questions that were evaluated include the following:

1. Utilizing the Newest Vital Sign (NVS), what are the estimated health literacy levels of diabetic patients attending Diabetes Self-Management Education (DSME) classes at the Community Health Center of Southeast Kansas (CHCSEK) clinic locations?
2. What are the demographics regarding age, gender, race/ethnicity, diabetes mellitus type (prediabetic, type one diabetic, type two diabetic), education and insurance status of the diabetic patients attending DSME classes at the CHCSEK clinic locations?
3. Do the identified health literacy levels of diabetic patients attending DSME classes at the CHCSEK clinic locations suggest support for the need of continued diabetic education, as a whole, moving forward?
4. Will adding the NVS to the DSME classes at the CHCSEK clinic locations increase the awareness and knowledge regarding the health literacy levels and the educational needs of the diabetic patients in attendance?

Methodology

A mixed method study design was utilized for the project, coupled with a purposive sampling technique that allowed for data collection from prediabetic, type one or type two diabetic patients who attended DSME classes offered by the CHCSEK. The focus of the project was health literacy level assessment utilizing the validated NVS screening tool, as well as the collection of self-reported demographic data. A structured questionnaire given to the CDE following completion of the project was also performed. Data analysis was conducted using relative frequency statistical analysis through the use of IBM SPSS software. Qualitative responses from the CDE questionnaire were presented using a narrative format. Following project approval from Pittsburg State University School of Nursing, Pittsburg State University Institutional Review Board and the CHCSEK data was collected in December, 2020.

Each participant's health literacy level was collected using the NVS screening tool. Demographic data for each participant was divided into age, gender, race/ethnicity, diabetes diagnosis, education and health insurance status. After the survey was completed, the data was aggregated and reflected a total sample population of six participants. The CDE employed by the CHCSEK, whose role coupled as the DSME class instructor, also completed an open-ended questionnaire for the project.

Results

A total of 6 participants verbally consented to participate in the project. Descriptive analysis of the health literacy levels and the demographic data were computed using each participant's scored NVS response and their self-reported demographics. The CDE's questionnaire responses were utilized in a narrative format to provide further evidence.

Half of the participants (50%) were identified as having a "high likelihood (50% or more) of limited health literacy" while the other half of the participants (50%) were identified as "almost always indicates adequate health literacy".

The largest group of participants were those who identified as being White or Caucasian (83.3%) and being between the ages of 40-49 (66.7%). There were more female participants (66.7%) than male (33.3%). Over half of the participants (83.3%) identified as being a type two diabetic with one participant being unsure of their diabetic diagnosis type (16.7%). The highest level of education was evenly distributed between high school graduate (33.3%), vocational training/technical school (33.3%) and some college (33.3%). Half of the participants (50%) reported receiving public health insurance. Private insurance was the second highest reported health insurance (33.3%) while one participant reported being uninsured (16.7%).

Support for the continued need for diabetic education in the rural SEK community was indicated through half (n=3) of the total participants (n=6) scores indicating limited health literacy. Additional evidence was provided through narrative support from the CDE that reiterated the increased number of diabetic and prediabetic individuals in the SEK area, as well as the need for education that adapts to each patient's specific educational needs.

The addition of the NVS to the DSME classes offered at the CHCSEK, in order to increase health literacy level awareness and patient educational needs, was not supported. This was evidenced by the narrative responses received from the CDE. It was indicated that the NVS may be too difficult for a majority of the patients, which could cause patient frustration. The CDE was also unsure of the adequacy of the tool to determine health literacy deficiencies. Key points were reiterated by the CDE, including the importance of instead tailoring needs based on continuous patient assessment and determining if each patient understands information being taught through facial expressions and body language, versus through the utilization of a screening tool, such as the NVS.

Table 1.
Frequency and Percent of Participant Health Literacy Level Scores

Health Literacy Level Score	Frequency (n=6)	Percent (%)
0-1	3	50%
2-3	0	0%
4-6	3	50%
Total	6	100%

Table 3.
Frequency and Percent of Participant Age

Age	Frequency (n=6)	Percent (%)
40-49	4	66.7%
50-59	1	16.7%
60-69	0	0%
70-79	1	16.7%
Total	6	100%

Table 5.
Frequency and Percent of Participant Gender

Gender	Frequency (n=6)	Percent (%)
Female	4	66.7%
Male	2	33.3%
Nonbinary	0	0%

Table 4.
Frequency and Percent of Participant Race/Ethnicity

Race/Ethnicity	Frequency (n=6)	Percent (%)
African American or Black	0	0%
American Indian or Alaskan Native	0	0%
Asian or Pacific Islander	0	0%
Hispanic or Latino	0	0%
White or Caucasian	5	83.3%
Other	1	16.7%

Table 5.
Frequency and Percent of Participant Diabetes Diagnosis

Diabetes Diagnosis	Frequency (n=6)	Percent (%)
Prediabetic	2	33.3%
Type One Diabetes	0	0%
Type Two Diabetes	3	50.0%
Unsure	1	16.7%

Table 6.
Frequency and Percent of Participant Education

Highest Level of Education	Frequency (n=6)	Percent (%)
Less than High School	0	0%
High School Graduate	2	33.3%
Vocational/Technical School	2	33.3%
Some College	2	33.3%
Bachelor's Degree	0	0%
Advanced Degree	0	0%

Table 7.
Frequency and Percent of Participant Health Insurance Status

Health Insurance Status	Frequency (n=6)	Percent (%)
Public Insurance (Medicaid, Medicare, other public)	2	33%
Private Insurance (Employer sponsored, Individual Plan, Exchange)	2	33.3%
Uninsured	1	16.7%
Other	1	16.7%

Conclusion

Due to small sample size, there was no statistical significance to the number of participants who scores reflected limited health literacy, however; any percentage of patients with limited health literacy places that individual, their family and their community at risk for issues in regard to managing their chronic diseases, difficulty navigating the healthcare system, increasing their risk for hospital admission and readmission, higher mortality rates, and more (Fernandez et al., 2016). Furthermore, diabetic education in rural communities has been addressed in the literature, which reports that diabetes is 17% more prevalent in rural areas versus central cities (Maez et al., 2014). Best practice guidelines include the importance of continuing to provide such diabetic education, as well as encouraging local primary care providers and community health centers to offer and promote diabetic education in a culturally competent way (Maez et al., 2014). It was concluded that the DSME classes offered by the CHCSEK are a tremendous resource for the diabetic patients of rural SEK and should remain in place to educate the numerous diabetic patients within its region.

Research also shows that assessing health literacy levels, using statistically validated screening tools, is important in order to fully understand the needs of the patient being screened (Centers for Disease Control & Prevention [CDC], 2019c). Although the NVS may not be a great fit for the DSME classes at the CHCSEK, there is likely a more suitable screening tool that would still add value to the DSME sessions and to the CDE's educational strategy.

Recommendations

Although the NVS had been previously validated, it was noted that this may not be the best screening tool to use for health literacy level assessment in patients attending the DSME classes specifically. It was considered that a health literacy screening tool, specific to the diabetic population, might be more insightful and useful to the CDE.

Even further, changing the timing of the health literacy screening tool administration, by requiring the primary care provider referring the patient to diabetic education to administer the tool at their appointment with the patient. This would allow the CDE to have a better understanding of the patient's starting point when it comes to their journey with diabetic education. It would also be a valuable tool for the primary care provider, in regard to continuity of care and providing them increased knowledge surrounding the health literacy levels of their diabetic patients. The diabetic health literacy tool could also, instead, be administered by the CDE during their first one-on-one session after the group DSME class. Regardless of administration time or specific facilitator, the ability to collect statistical data for diabetic patients would give the CHCSEK a valid way to apply for future funding and assistance in continuing, increasing frequency, and/or improving the DSME classes they provide.

The results of the project indicated the need for health literacy level assessment and continued diabetic education in the rural SEK community. Although the project data was insignificant to support the use of the NVS screening tool, the use of a diabetes-specific health literacy screening tool may provide more information and useable data. Additionally, changes to nursing practice may include the use of the diabetes-specific health literacy screening tool by the patient's primary care provider prior to their referral to diabetes education. Even further, it may be beneficial to screen all the diabetic patients of the CHCSEK with the diabetes-specific health literacy screening tool at their primary care provider's office to ensure the provider is aware of the potential deficits the patient may have, which could in turn systematically trigger or indicate the need for a diabetes education referral. The ability of providing cohesive and continued care from the primary care provider to the diabetic educator allows for a streamlined approach to health literacy level deficit identification and improvement within the diabetic population. The assessment of all diabetic patients after their diagnosis or initial primary care provider appointment would ensure those who scores indicated limited health literacy are readily referred to diabetes education. This may show data that supports the need for DSME classes that are offered more frequently and may potentially employ more than one CDE for the rural SEK area allowing for a greater outreach.

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