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## Clinical Decision Support System for Standardization of Disease-Specific Education

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**Clinical Decision Support System for Standardization of  
Disease-Specific Education**

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This Manuscript Partially Fulfills the Requirements for the

Doctor of Nursing Practice Program and is Approved by:

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### **Clinical Decision System for Standardization of Disease-specific Education**

The evidence-based, contextually relevant, disease-specific health education materials aim to provide strategies for improvement in health literacy, disease management comprehension, and medication adherence. The health education materials address difficulties many adults experience in understanding health information. The health education system must remain a contextually relevant, patient-specific reference for standardizing disease-specific education according to the patient's mental capability (Fereidouni et al., 2019). Nurse-driven education material system addresses equity, diversity, and inclusion, tailored for all literacy degrees.

Clinical decision-making is a complicated process influenced by a highly variable process that exponentially increases error rates, selection, or exclusion, unintended or not, by presenting more than one perspective (Czyż, 2021). Reducing variability by developing a clinical decision support system diminishes the risks of poor decision-making due to errors by omitting contextual reference material. The created clinical decision support system categorizes patient education resources based on the most common conditions experienced in the clinical location, reducing variability (see Table 1). A clinical decision support system also minimizes selection errors or errors of omission while simultaneously providing the content of the education materials due to increased uniformity of the reference documents (see Appendix D).

### **Significance of the Practice Problem**

Among adults, poor literacy is common in developed countries. Poor functional literacy skills in Organization for Economic Co-operation and Development (OECD) countries range from 7% to 47% (Nutbeam, 2008). However, in developing countries, these percentages are significantly higher. Functional literacy primarily focuses on their capability to read, write a simple statement, and comprehend simple text. Patients with a limited understanding of health literacy are often older adults with lower education levels. In many cases, the patients are migrants with other

than English languages of different cultures, ethnicity, and significant socioeconomic disadvantages (Nutbeam, 2008). Regardless of nationality or health literacy level, patients prefer receiving health information in plain, clear language for better understanding and application to their health condition (Gaglio et al., 2012).

Finding accurate and reliable healthcare information for patient education is challenging and may be influenced by variability. The suggested single data source with the best evidence-based documents significantly decreases the variability. Contextual reference material, in theory, indirectly improves patient outcomes by modifying the provider's behavior (Clarke et al., 2016). The clinical decision support system assists providers in obtaining relevant disease-specific translated into the most common languages of the clinic (English and Spanish) and contains standardized health education. The reference materials are presented in simple language, including images adapted to all literacy levels.

Reducing variability is crucial for optimal clinical decision support, especially at the clinical site. The clinical site is a not-for-profit organization providing medical services to over 100 patients per month with multiple diseases, nationalities, languages, and different literacy levels. Reducing variability decreases a distinct cause and effect due to poor decision-making secondary to the presence of numerous reference materials. The provided, updated, single contextual reference documents to all providers minimize omission errors, significantly improving patient outcomes. The provided single reference documents will also enhance the provider's behavior.

### **PICOT Question**

For the interdisciplinary hired and volunteer clinical providers at the community clinic site (P), how does the development of a clinical decision system for contextually relevant, patient-specific reference for standardization of patient disease-specific education (I) compared to provider-developed or standard education materials (C) improve the utilization of standardized

patient-specific disease education (O) in four weeks (T). The clinical decision system is a contextually relevant, patient-specific reference for standardizing disease-specific education. Provider's reference education material system addresses equity, diversity, and inclusion, tailored for all literacy degrees. The Clinical Decision Support System was developed in collaboration with volunteer clinical providers at the clinical site, providing strategies for enhancement in health literacy and medication adherence.

### **Population**

The population comprises an interdisciplinary group including physicians, nurse practitioners, nursing staff, and administrators.

### **Intervention**

The intervention was to create a clinical decision support system providing clinical contextual reference materials to reduce variability, reducing the effect of poor decision-making due to multiple clinical data sources.

### **Comparison**

There was no comparison data since the previous state was zero (0) or no previous state to compare.

### **Outcome**

The goal was to measure the opportunity for execution by observing how often the population obtains the reference material from the Clinical Decision Support System.

### **Timeframe**

The expected time frame was a period over four weeks

### **Evidence-Based Practice and Change Theory**

The Johns Hopkins Evidence-Based Practice (JHEBP) framework is a practical tool for nurses and healthcare professionals, offering problem-solving procedures for clinical decision-making. The JHEBP is the foundation of this DNP scholarly project and contains precise, easy-

to-use tools as guidance through the evidence-based practice process (Dang & Dearholt, 2018). The Practice question, Evidence, and Translation (PET) guide the project by allowing individuals to understand the problem, evaluate the evidence, and translate results into practice. In addition to PET, the diffusion of evidence-based innovation into practice requires a process of communication channels and social systems. Rogers' innovation and diffusion theory is ideal for this DNP scholarly project diffusion into practice.

Rogers' innovation diffusion theory explains the how, why, and at what rate different ideas were adopted by individuals (Rogers, 2003). Rogers' innovation diffusion theory applies to multiple healthcare practice settings and was the foundation for my implementation plan. According to Rogers' theory (Rogers, 2003), there are five steps in the innovation-decision process. The steps are the *knowledge* stage, where there is a lack of information regarding the innovation; *persuasion*, which includes actively searching for relevant information and details; *decision* stage evaluates the advantages versus disadvantages of implementing the innovation; *implementation* stage, executing the innovation and determining its usefulness and searching for further information *confirmation* stage, continuous use of the innovation after the finalizing decision (Udod & Wagner, 2018).

Reviewing research data on patient education, health literacy, patient compliance, patient adherence, and best standard practices was critical in developing a clinical decision system to standardize disease-specific education. Roger's innovation diffusion theory (Rogers, 2003) has been a helpful tool in the search process with a broad application in the research literature. Roger applies to this healthcare project in various ways and multiple concepts explored in my project, such as assessing, responding, and giving feedback on the stakeholder's interventions regarding patient education, health literacy, patient compliance, patient adherence, and best standard practices (Alligood, 2018). By analyzing research articles

and evidence-based literature, supportive data was obtained. This collective data fully supports the clinical decision system for standardizing disease-specific education (Alligood, 2018).

### **Evidence Search Strategy**

The evidence-search strategy to identify and evaluate relevant and clinically significant data for the DMP scholarly project was systematic and comprehensive. Multiple databases were rigorously searched, including MEDLINE, Ovid, the Cumulative Index to Nursing and Allied Health Literature (CINAHL) Complete, and PubMed.

Inclusion criteria were based on the PICOT question elements and used to develop essential search keywords. A search boolean was used, including the operators AND and OR with the key terms (health literacy OR patient education OR patient compliance) AND (patient adherence OR patient non-adherence) AND (medical reference material OR disease-specific literature). The criteria for searching relevant literature were the same for the four databases. Filters and limiters were used to narrow the search, like English language, peer-to-peer reviewed academic journals, publications within the last five years, and available abstracts. Medical Subject Headings (MeSH) were used for the PubMed database, including contextual reference materials, health literacy, and medical literature comprehension.

### **Evidence Search Results**

The John Hopkins Evidence-Based Practice (JHEBP) Model was used as the framework to obtain the highest-impact articles with reliable, generalizable results that include an adequate sample size for the study design. The articles selected also must have reasonable control, precise conclusions, and reliable recommendations based on a wide-ranging literature review and complete references to scientific evidence (Dang & Dearholt, 2018). The initial search return utilizing the defined search methods generated 1902 articles. By adding the specific indicator keywords, performance review, AND peer evaluation, peer evaluation yielded 13 articles that met the specified search criteria (see Figure 1). The inclusion criteria examined the

quality of the primary research evidence, including significant impact on the patient's care and a considerable improvement in patient health outcomes (see Appendix A ). Excluded articles were classified according to performance, study design, or committee reviews.

The Johns Hopkins quality rating and level of evidence were used to appraise all selected studies. Articles from Levels I, II, and III were included, and reports from Levels IV and V were excluded from the review (Dang & Dearholt, 2018). Articles Levels IV and V were excluded as the material examined resulted in opinion pieces and other narrative documents. Articles at JHNEBP Level III evidence were found to include well-designed nonexperimental studies containing quality data in sufficient detail, enhancing the quality of the study. Most peer-reviewed articles from recognized journals with good quality in reviewed content were accepted to use with evidence Levels between I and III. The designed search strategy included identifying topics with nursing-specific leadership roles for the evidence-based guidelines and the group target composition. There was a particular interest in avoiding conflicts in developing contextual reference material for clinical decision support (Eccles et al., 2012).

### **Themes with Practice Recommendations**

Following the analysis and careful selection of the literature, three critical terms emerged, including (a) peer evaluation informative gatherings, (b) contextual reference documents availability acknowledgment, and (c) opportunity to execution using the reference material.

#### **Purpose of peer evaluation**

The focus of peer evaluation is to assess the quality and quantity of nursing care, determine the strengths and weaknesses, provide evidence, and identify practice patterns when applying nursing practice standards. Peer review fosters the development stage and continuous learning to achieve the best patient safety practices, providing ongoing feedback. Nurse leaders are prepared to build their knowledge continuously and deliver optimal positive outcomes supporting organizational success towards accomplishing their goals (Foster, 2018).



**Contextual reference documents**

Efficient information management is required for optimal complex decision-making choices. Selecting the best possible documents primarily depends on the possible options for reference materials. Stakeholders play a leading role in reacting and proper decision-making. Individuals are exposed to multiple references and literature choices in medical practice. The variability in options affects the reaction time and decision-making process. Reducing variability is crucial for optimal clinical decision support, especially at the clinical site. The provided single contextual reference for clinically relevant and updated reference documents to all providers minimize errors of omission, improving patient experience and outcomes. Single contextual reference documents also enhance provider behavior (Czyż, 2021).

**Opportunity to execution using the reference material**

Opportunity to execution measures the number of times stakeholders proceed to the right place to obtain the documents. Providing clinical decision support at the clinical site, with updated single contextual reference documents, reduces the variability, reducing errors of omission. The team's education and service protocols also reduce the variability, increasing the patient's perception of value and satisfaction. Reference material provides the framework for improving positive relationships and patient satisfaction (Vredenburg & Bell, 2014). Using a single source of reference material reduces unwanted variations in evidence-based sensitive literature on healthcare. Reports or direct feedback allows for aligning the goals of providing the best quality of evidence-based healthcare (Nuti & Vainieri, 2014).

The evidence-based, contextually relevant, disease-specific health education materials provided a framework to guide and improve patients' clinical knowledge. A thorough literature review was essential to identify the studies regarding clinical knowledge improvements to help answer the PICOT question. Disease-specific health education materials are crucial in treating many disorders, especially chronic diseases (Tan et al., 2012). Contextual reference materials

also spare resources, avoid hospital readmission and decrease outpatient office visits. The disease-specific application of healthcare materials consists of the following: personalized disease-specific written information, smoking cessation encouragement, how to manage daily activities, and correct drug and devices use techniques (glucometer, inhalers, CPAP machine). Other recommendations include nutritional suggestions, guides to daily self-weight, blood pressure recording, hydration techniques, and medication compliance. (Tan et al., 2012).

### **Strategic plan to provide contextually relevant material in simple language**

The customized information was directed to all literacy degrees, with equity and diversity, and was adequate for all patients regardless of language, culture, ethnicity, and education. Disease-specific education was customized to improve high-prevalence conditions like diabetes mellitus, heart failure, hypertension, asthma, and chronic obstructive pulmonary disease, among other pathologies. Chronic disease optimization by self-management, following disease-specific information management, represents an essential advancement for most individuals (Hill et al., 2010). Earlier studies have demonstrated that clinical decision systems, and patient-specific references for patient-disease-specific education, improved health literacy in individuals. The contextual reference material, in collaboration with the stakeholders at the clinical site, provides strategies for enhancement in health literacy and medication adherence. In individuals with various literacy decreases, nurse-driven education material systems address equity, diversity, and inclusion (Hill et al., 2010).

### **Practice Recommendations**

After a systematic literature review, multiple studies support the practice recommendations to develop a clinical decision support system. The system contains contextually relevant education materials to improve the utilization of standardized patient-specific disease education. The clinical decision support system is aimed at individuals with various literacy decreases and addresses equity, diversity, and inclusion (Hill et al., 2010).

### **Setting, Stakeholders, and Systems Change**

The clinical decision support system to standardize patient disease-specific education was customized for a community clinic serving vulnerable patients in northeast Florida. The clinic provides volunteer-based comprehensive services, including healthcare and medication management, lab work services, and specialty care such as neurology, orthopedics, and dental services is provided at the clinic at least once a month (Saladino, 2020).

The community clinic's organizational structure includes a board of directors, hired medical, nursing, and administrative staff, complemented with volunteer medical staffing. The project manager completed a stakeholder analysis to have patients (clients), medical and nursing staff, volunteers, donors, board members, and community partners. Stakeholder engagement is imperative for the success of the project. A Strength, Weakness, Opportunities, and Treats (SWOT) analysis was also completed at this phase to ensure a clear understanding of the issues of concern and the need for change. The community clinic leadership supported the need for an improved clinical decision support system with contextually relevant education materials to reduce provider variability. This change will occur at the meso level affecting the identified clinic space (see Appendix B).

### **Implementation Plan with Timeline and Budget**

PICOT question: For the interdisciplinary hired and volunteer clinical providers at Mission House community clinic (P), how does the development of a clinical decision system for contextually relevant, patient-specific reference for standardization of patient disease-specific education (I) compared to provider-developed or directed education (C) improve the utilization of standardized patient-specific disease education (O) in four weeks (T). The clinical decision system to standardize patient disease-specific education was developed at the community clinic. The clinical decision system followed a SMART goals format. S (specific) includes in-house interdisciplinary hired and volunteer clinical providers. M (measurable) by obtaining

nominal data and comparing results with prior studies, A (achievable) by developing a detailed plan of action, R (relevant) by being a current healthcare literacy problem, and T (time-based) by completing the project in four weeks (Melnyk & Fineout-Overholt, 2015). The project was implemented on-site, and the team members assessed basic disease comprehension post-implementation (see Appendix C). The budget for resources required for the project includes but not be limited to stationery items, snacks for the meetings, and transportation to the Mission House. The suggested budget strategy is critical to obtaining the best results for the evidence-based scholarly project (see Table 2).

Before the scholarly project engagement, the nurse leader contacted the executive stakeholders, and the project manager met to develop the guidelines to develop the clinical decision support system. The project plan includes an approximately four-week development, implementation, and evaluation goal. The implementation plan will follow Rogers' five steps to innovation diffusion theory, which explains how, why, and at what rate different ideas were adopted by individuals (Rogers, 2003).

### **Knowledge**

The process of innovation-decision begins by engaging in gathering comprehensive information regarding innovation. During this stage, there is an absence of information regarding the innovation; persuasion, which includes actively searching for relevant detailed information. According to Rogers, questions establish three types of knowledge the what refers to awareness-knowledge, how to knowledge, and why referring to principles-knowledge (Rogers, 2003). Activities in this phase include

- Stakeholder engagement and gap assessment
- Development of a communication plan

- Initial discussion by the project manager for deliverables to bridge the gap

### **Persuasion**

The persuasion step refers to actively searching for relevant and detailed information.

During this step, a negative or positive attitude regarding innovation may not reflect in the adoption or rejection of innovation. This stage is more affective or feeling-centered.

Social reinforcement from colleagues, peers, and others influences the individual's beliefs and opinions about innovation. In this stage, friends and colleagues usually give their idea about the new innovation (Rogers, 2003). Activities in this phase include

- Identification of primary users of the proposed system to be changed
- Verbal survey of engagement, understanding of current state to future state
- Gathering of preliminary data from the end user to bridge the gap, specifically, identification of CDS contextually referenced educational materials that are in need, such as the top ten ICD-10 diagnosis codes

### **Decision**

In this stage, this subject adopts or rejects the innovation. The individual evaluates the innovation's advantages versus disadvantages. During this stage, Rogers suggests adopting or rejecting the innovation. He proposed two types of rejection if rejected. The two types of rejection were active rejection, where the individual initially adopts the innovation but later decides not to adopt it, or passive rejection, where the individual does not embrace the innovation at any point (Rogers, 2003). Activities in this phase include

- Identification of primary end users of new CDS.
- Finalization of training plan

- Launch communication plan
- Initiate training plan

### **Implementation**

During the implementation stage, that innovation is executed, determining its usefulness and searching for further information. There is an uncertainty concern at this stage about the outcomes. The innovation-decision process is completed at this stage, and there might be reinvention or innovation changes. Computer technologies may be involved in the process of reinvention (Rogers, 2003). Activities in this phase include:

- Finalize all training
- Launch the solution and begin monitoring usage.
- Conduct checkpoints 2x week with end users to ensure CDS functions as intended with on-the-spot correction as needed.

### **Confirmation**

At this stage, innovation is continuously used after the innovation decision has been made. The individual is exposed to conflicting messages regarding the decision. During this stage, discontinuance may occur due to poor support for adopting innovation and other factors like the individual's attitude. Rogers describes two steps of discontinuance: replacement discontinuance, in which the individual rejects the innovation to adopt a replacement innovation, or disenchantment discontinuance, in which the individual rejects the innovation due to its poor performance (Rogers, 2003). Activities in this phase include:

- Completion of data collection
- Analysis of data

- Dissemination of data
- Measures for sustainability determined

### **Evaluation Plan**

To support the mission of the community clinic as it addresses the social determinants of health in vulnerable populations, this project aimed to reduce variability in contextually relevant reference materials for patient education through the development of a simplistic design clinical decision support system. This project further supports the vulnerable population by identifying high-frequency diagnosis codes for prioritization of education and providing the standard tools for English and Spanish-speaking people. This evidence-based change occurs at the meso level utilizing technology at the point of service.

#### **Project Objectives**

This project seeks to improve the provider and patient experience through the development of standard work for interdisciplinary providers related to patient education materials. To achieve this goal, the following sub-measures were identified:

1. To compile a current list of the top ten ICD-10 diagnosis codes for the community clinic and develop contextually relevant reference materials for health education in English and Spanish by April 2023.
2. To install and support the CDS system via a shared file link for the community clinic by April 2023.
3. To measure adherence to the new process through the use of a time study data collection tool to measure the percentage of action/opportunity to a goal of 80% adherence by May 2023.

As a result of conducting the scholarly project, a meaningful change was developing the Clinical Decision Support for the providers to use. The evidence supports patients who receive tailored disease-specific education have improved outcomes, decreased hospital readmissions,

and fewer health provider office visits (Mahadevan, 2013). This improved access to specific, current education materials provides an opportunity for clinically significant change.

Data management for this project includes a project manager-developed time study tool that counts each opportunity for the use of the CDS and each successful opportunity. This tool was assessed for face validity and did measure data as intended. The measurement results will be reported by percentage with an expectation of  $\geq 80\%$  adherence to the new process by the end of the project timeline. Current state, the process does not exist, so the measure in a percentage indicates adherence to the new process. No patient demographic data will be collected, thus avoiding considerations for HIPAA with this project. Risks with this data collection effort include data omission as multiple data collectors will need to be engaged at the point of service, a high-volume activity time (see Appendix E).

### **Dissemination Plan**

Timely internal and external dissemination of the project findings is critical for sustainability through professional development and policy requirements. Internal dissemination of the project findings to stakeholders includes presenting the results to the medical and nursing staff and board members. The presentation with the clinical director and project mentor, followed by questions and answers, will occur virtually, with a possible recording session for other guests unable to attend.

Further dissemination will be at the community clinic site, highlighting employees, including community partners, donors, board members, and volunteers. Other audiences will consist of managers, supervisors, including leaders external to the facility. The project script document will be archived in the scholarship an Open Access Repository at the University of Saint Augustine for Health Sciences (SOAR@USA). Scholarly project dissemination will occur through an oral poster presentation at the DNP academic symposium. The target audience is to be provided



with some analysis to improve their readiness to change. Users are viewed as active in determining how project findings will be used or ignored (Scullion, 2002).

### **Conclusion**

The clinical decision support system is critical to every healthcare organization and requires competence and continuously evolving evidence-based knowledge. Contextual reference material is evidence-based and disease-specific health education materials, providing strategies for improvement in health literacy, disease management comprehension, and medication adherence. The clinical decision support system provides a framework where reference material and procedures reflect nurses' input. The ANCC Pathway to Excellence Program® delivers a framework to create opportunities through decision-making for direct care nurses to collaborate, network, and be involved in decision-making.

The culture of nursing excellence fosters the creation of strategic planning, effective management changes, and transformational leadership (Arthurs et al., 2017). Healthcare organizations' mission is based on the quality of service, promoting person and family-centered care, and evidence-based care with continuous improvement in the population's health. Clinical Decision Support Systems aims to present a synthesis of the latest clinically relevant reference materials. Nursing science fosters developing, applying, and using evidence-based clinical decision support systems. Nursing associations continuously promote evidence-based clinical practice among their members (Anderson & Willson, 2008). A clinical decision support system that categorizes patient education resources based on the most common conditions will minimize selection errors or errors of omission and provide the education materials' content due to increased uniformity of the reference documents.

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**Table 1**

Most common diseases at the clinical site

<b>Disease/Condition</b>	<b>ICD 10 Code</b>
Hypertension	I10
Coronary artery disease	I25.1
Hyperlipidemia	E78.2
Diabetes mellitus type 2	E11.9
Bronchial asthma	J45.909
Chronic Obstructive Pulmonary Disease	J44.9
Gastro Esophageal Reflux Disease	K21.9
Depression/anxiety disorder	F41.2
Hypothyroidism	E03.9
Upper respiratory infections	J06.9

**Table 2**

*Implementation EBP Project Budget*

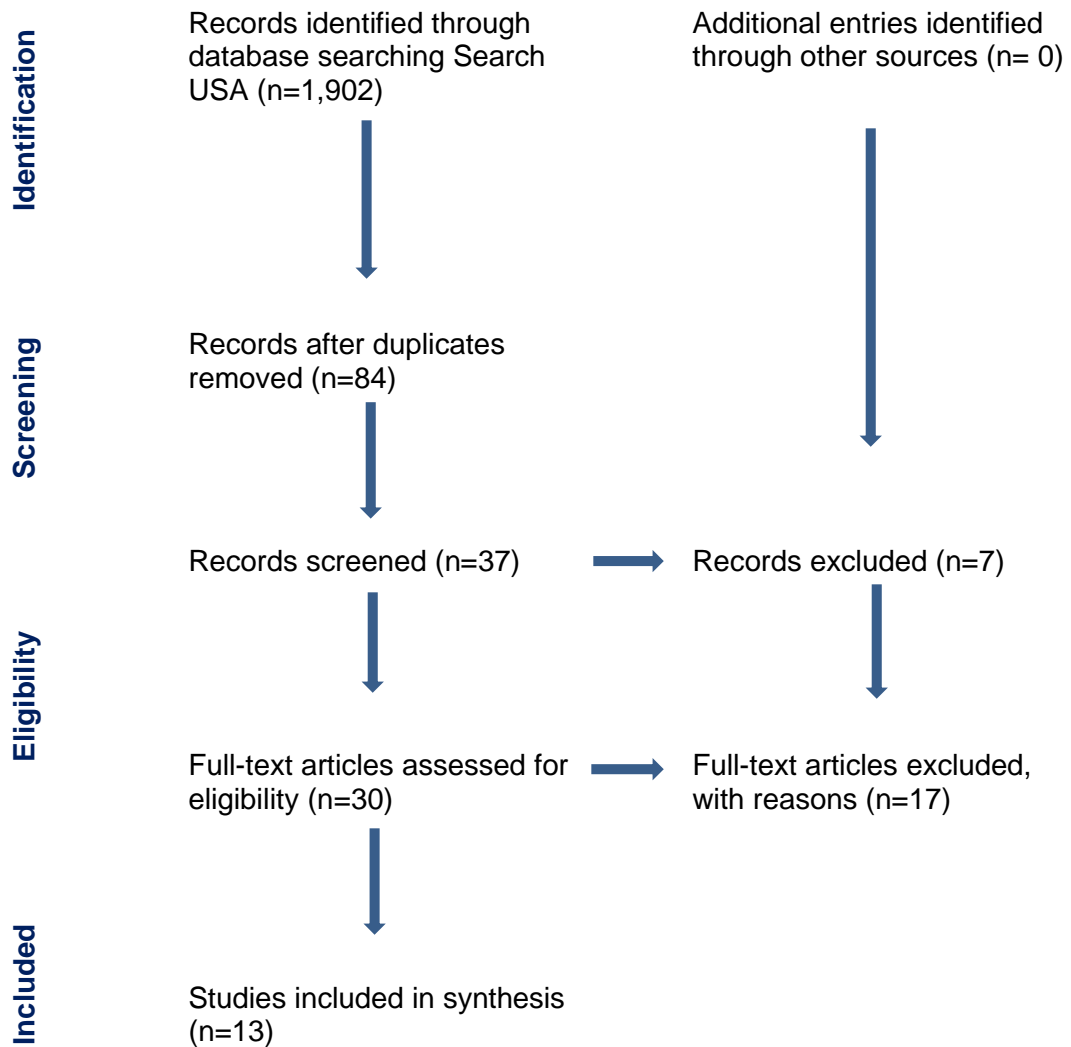
Expenses		Revenue	
Indirect- Included in regular operating costs	est. \$300.00	Billing	\$0.00
Salary and benefits x 1 hour for training, variable staff.	\$/hr 0.00	Supplies/ patient	\$0.00
Supplies x 1 patient/ day, variable patient count	\$ x 5.00 patients/ 14 days	Grants	0
Overhead	\$10.00		
Supplies – office	\$<100		
Estimate Total Expenses	\$380.00	Estimate Total Revenue	0
Net Balance			\$ 0.00

*Note:* All budget entries are estimates. Expenses are based on means. Revenue estimates do not include potential cost avoidance due to realized outcomes. All costs associated with salary and benefits, patient care supplies, and overhead are fixed indirect expenses unrelated to this project. Project costs are nominal for printing and laminating, under \$100.



Figure 1

PRISMA Flowchart



*Note.* Prisma flow chart diagram from "Preferred Reporting Items for Systematic Reviews and Meta-analyses: The PRISMA Statement," by D. Moher, A. Liberati, J. Tetzlaff, & D.G. Altman, 2009, *Annals of Internal Medicine*, 151(4), p.267 (<http://dx.doi.org/10.7326/0003-4819-151-4-200908180-00135>). Copyright 2009 by The American College of Physicians.

Appendix A

Summary of Primary Research Evidence

Citation	Design, Level Quality Grade	Sample Sample size	Intervention Comparison	Theoretical Foundation	Outcome Definition	Usefulness Results Key Findings
De Oliveira et al., 2015	Qualitative Level I Quality Grade A	N= 1147	Evaluate patients' health literacy preoperatively and in the postoperative period	Role of health literacy in the peri-operative setting	Health literacy has a significant impact on the care of surgical patients	Poor health literacy is associated with an inadequate understanding of procedure and discharge instructions
Carrara & Schulz, 2018	Quantitative Level II Quality Grade B	N= 35	Evaluate dietary adherence based on health literacy	Dietary adherence unaffected by health literacy	Relationship between health literacy and nutrition	Health literacy may not play a relevant role in influencing dietary adherence

<p>Billany et al., 2023</p>	<p>Level II Quality A</p>	<p>N= 25671</p>	<p>Relationship between Health literacy and self- management behaviors and/or health outcomes in patients with kidney disease</p>	<p>Low health literacy associated with reduced disease self-management</p>	<p>Improved Health literacy related to optimal self- management behaviors and health outcomes in patients with kidney disease</p>	<p>Self-management behaviors support the development of patient education aimed at improving health literacy.</p>
<p>Cajita et al., 2016</p>	<p>Level II Quality A</p>	<p>N= 174</p>	<p>Relationship between health literacy, self-care activation, and adherence</p>	<p>Cross-sectional, correlational design evaluates health literacy and self-care activation</p>	<p>Better health literate improves medication adherence and overall self-care</p>	<p>Better medication adherence and overall self- care if sufficiently resilient, health literate</p>
<p>Diviani et al., 2016</p>	<p>Level III Quality B</p>	<p>N= 44</p>	<p>Association between health literacy and evaluation of online health information.</p>	<p>A mixed- qualitative and quantitative approach</p>	<p>Raise awareness about health information utility</p>	<p>Individuals with low health literacy appear to use less established evaluation criteria.</p>

Lai et al., 2013	Leve III Quality A	N= 63	HL and self-management and summary of diabetes Self-Care Activities	Questionnaires measuring health literacy and self-management with Diabetes Self-Care Activities,	Improve self-management in ESRD patients	Communicative and critical health literacy skills are associated with self-management in ESRD patients.
Sentell et al., 2017	Level III Quality A	N= 1052	Measurement of health literacy and measurement of social context intersected	Association between individual health literacy and individual social capital, and social support	Health literacy included in the social context	No clear correlation between health literacy and social context.

Mancuso, 2010	Level II Quality B	N= 102	Health Literacy and patient trust as Predictors of glycemic control	Cross-sectional, predictive design	Exploration of new strategies for diabetes education	There was a significant positive relationship between socioeconomic status and health literacy
Peltzer et al., 2020	Level II Quality B	N= 41	Health literacy plays a critical role in the maintenance and improvement of individual health.	Review systematically the current evidence on health literacy and its important influencing factors,	Patients with lower health literacy are less capable of performing lifestyle changes.	There is a relation between a person's health literacy level and clinical outcomes.
Onna et al., 2015	Class III Quality B	N= 14	Patients with Gout often recognize knowledge gaps	Patients dealing with Gout: a qualitative study	Improving knowledge contribute to adherence and better outcomes	Treatment goals and long-term consequences affected by the health literacy of patients
Shieh et al., 2013	Class II Quality B	N= 59	Health literacy is the capacity to process,	A qualitative analysis	Nursing students in taking care of	Nursing students could identify behavioral signs

			obtain, and understand health information in order to take health actions		patients with behaviors suggestive of low health literacy	suggestive of low health literacy and provide solutions.
Gaglio et al., 2012	Class II Quality A	N= 150	Obtaining health information and preferences for health information	Orally administered survey	Patient involvement and autonomy in the care process have evolved and increased.	Patients to be adequately informed about their condition and their care options.
Jordan et al., 2010	Level III Quality A	N= 48	Health literacy from the patient's perspective.	Comprehensive qualitative methods	Abilities patients identified as critical to seek, understand and utilize information in the healthcare setting.	Health literacy could consider incorporating abilities identified in this study and may guide in developing health interventions.

Appendix B

SWOT Analysis

<p><b>Strengths:</b></p> <ul style="list-style-type: none"> <li>• Provider-developed evidence-based, contextually relevant, disease-specific health education materials</li> <li>• Increased patient engagement</li> <li>• Collaborative interdisciplinary team</li> </ul>	<p><b>Opportunities:</b></p> <ul style="list-style-type: none"> <li>• Engaging other stakeholders in the patient's care</li> <li>• Improve the plan of care</li> <li>• Fewer healthcare visits</li> </ul>
<p><b>Weakness:</b></p> <ul style="list-style-type: none"> <li>• Possible financial restraint due to the need for commercially manufactured writing materials and office supplies</li> <li>• Limited available healthcare educational material translators</li> </ul>	<p><b>Threats:</b></p> <ul style="list-style-type: none"> <li>• Concealed factors like legal or policies influencing the E.B. scholarly project</li> <li>• Possible view as extra work by healthcare personnel.</li> </ul>

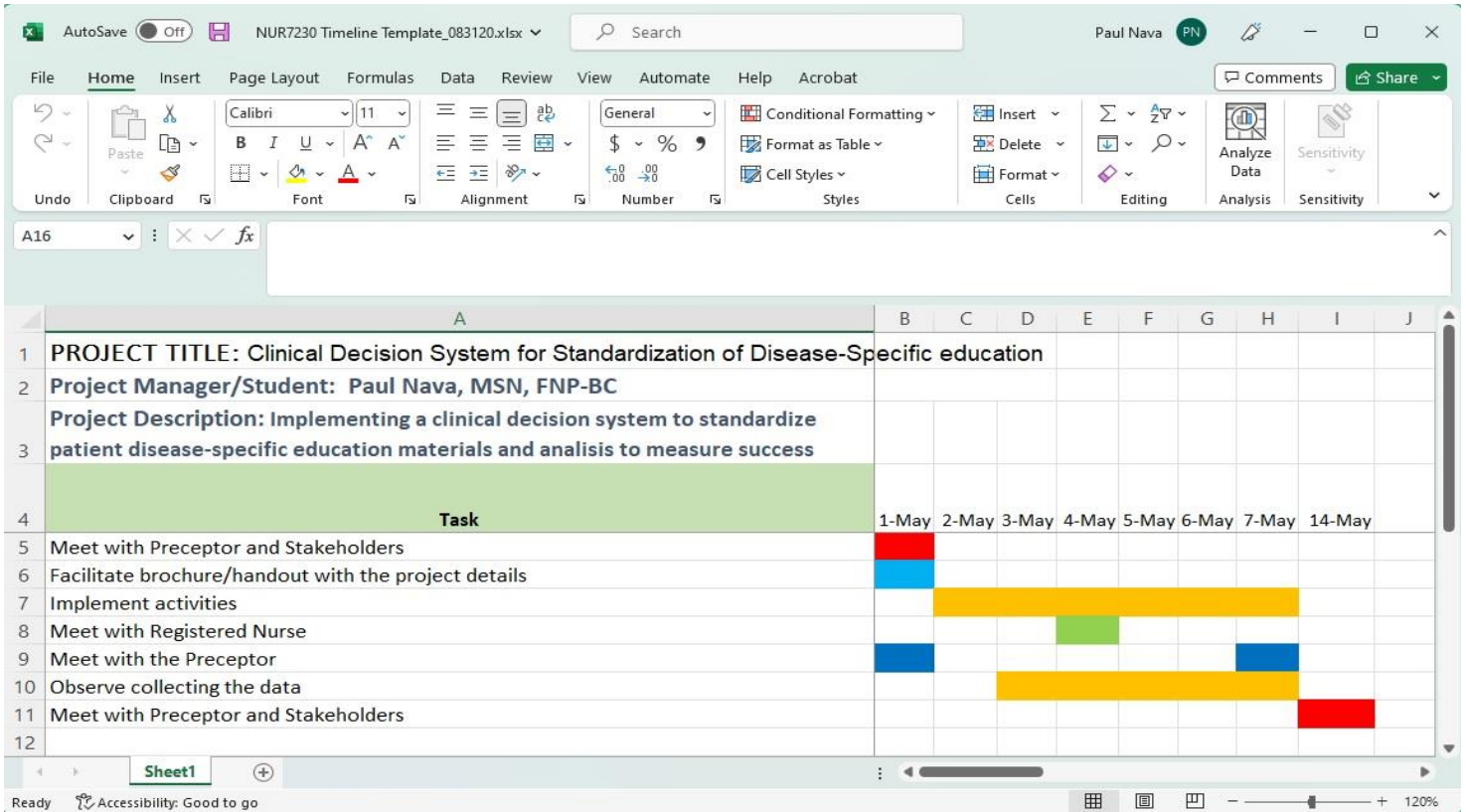








Appendix D



## Appendix E

## Data Collection Tool

Patient Identifier	Education Needed	Education from CDS	Education ad hoc
1	Y	Y	
2	N		
3	Y	N	Y



Doctor of Nursing Practice Program  
Evidence-Based Practice Review Council  
1 University Blvd.  
St. Augustine, FL 32086

April 3, 2023

Dear Paul Nava,

Your proposal titled "Clinical Decision Support System for Standardization of Disease-Specific Education" has been reviewed by the University of St. Augustine for Health Sciences Doctor of Nursing Practice Evidence-Based Practice Review Council (EPRC). The project was determined to not meet the requirements for research as defined in the Federal Register.

Your proposal reflects an evidence-based practice change project and is approved. The proposal must be implemented as submitted (changes are not permitted). You may proceed to obtain approvals from the facility where the project will be implemented as soon as the primary course faculty member has reviewed and approved all facility application materials. Implementation may not begin until you have submitted the EPRC approval letter and the facility approval letter to NUR7802 and are notified in writing by practicum course faculty that you may implement the project.

Questions regarding the USAHS approval process should be addressed to Dr. Sarah Cartwright at [scartwright@usa.edu](mailto:scartwright@usa.edu). Questions regarding the facility approval process should be addressed to course faculty.

Sincerely,



Sarah M. I. Cartwright, DNP, MSN-PH, BAM, RN-BC, CAPA, FASPAN  
Evidence-based Practice Review Council Chair  
Interim Assistant Program Director- Nursing Operations  
DNP Program Coordinator  
School of Nursing at University of St. Augustine for Health Sciences