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Barriers and Facilitators of Electronic Health Records in Rural Communities

Lisa D. Lowe

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Abstract

Electronic health records (EHRs) offer digitally stored healthcare information during an individual's lifetime with the purpose of evidence-based research, continuity of care, prior health care, and educational resources. EHR's contain diagnostic test, such as laboratory values and radiological images, treatments, therapies, medication administration, patient identifying information, and legal forms. The barriers and facilitators of electronic medical or health records (EMR or EHRs) are designated to offer data for providers and caregivers working in the local mobile health units in south Georgia. The project determined the readiness, barriers, needs assessment, and facilitators for electronic health records within the rural communities with the intent to obtain patient information, delivering quality care.

Keywords: Mobile health units, migrant farmworker, migrant populations, mobile units, technology

Barriers and Facilitators of Electronic Health Records in Rural Communities

Utilization of electronic medical records versus paper charting for providing more efficient and timely care to migrant farmworkers during mobile health unit visits will provide the services needed in the South Georgia region. Implementation of informatics in the rural areas will increase time, improve healthcare delivery methods, and improve accuracy in health records for nurses providing visits in the mobile health units among the migrant farmworker populations. Mobile health care services provided for the migrant farmworker populations are typically accessed by men unable to obtain healthcare because of the regimented working schedule in the farmworker fields. Migrant communities have limited access to healthcare due to the lack of transportation, time, funding, and a reduction in support systems as needs have changed over the years (Hill et al., 2014). The current era of mobile units does not have computers or the internet to access information on the mobile units that service these rural communities (Xie, Champion, Kwak, & Fleischmann, 2018). Professionals use technology with electronic medical records for record-keeping in urban communities with their clients. Ground theory and community network analysis are used to implement the information and resources as part of e-health (Goodall, Newman, & Ward, 2014).

Clinical Question/Problem Statement

What are the barriers and facilitators of electronic medical records (EMR's) expanding into the mobile health units in the rural communities of South Georgia? Determine the readiness for implementation of an information technology system facilitating health practitioners, electronic health records implementation on mobile health units, and needs assessment in the clinical setting to identify if electronic health records (EHRs) are beneficial.

Review of Literature

The barriers include limited use of electronic health records (EHRs) in mobile health units that are displaced in the rural areas of South Georgia, affecting the health information exchange in the migrant farmworker populations. During the past twenty years, the medical standard is to include electronic health records (EHR), but the lack of availability, funding, and insufficient technical knowledge and skill, along with resistance to change affect implementation of health information systems (Ajami, Ketabi, Saghaeiannejad, & Heidari, 2011).

Barriers to crossing over to practice from the research are challenging, hindering the effectiveness and outcomes of quality care in the health-care settings. Gradual changes must be applied in short increments to refrain from misunderstanding, providing clarity. Implementation change too quickly leads to mistakes and confusion (McCaffrey, 2012). Evaluation of evidence-based practice includes examining the best outcomes and what works well in nursing practice. Obstacles to change are favoring usual practice patterns, the inability of nurses to understand research and apply that knowledge, translation of research into practice, and evaluating research. Gradually embracing change involves the ability of nurses to provide analysis employing into opportunities to improve practice settings (McCaffrey, 2012).

Migrant populations that have “aged in place” are limited in health information due to the lack of digital technology or lack of cultural/linguistic diversity. Many migrant populations and older adults did not use computers, internet, or smart phones to access information. Professionals use technology to communicate with their clients about prevention, screening, and treatment. Ground theory and social network analysis are used to implement the information and resources as part of e-health (Goodall, Newman, & Ward, 2014).

The majority population affected in the rural communities of South Georgia includes Latino and Mexican male migrant workers with one in ten residents being immigrants in Georgia. Immigrant worker's occupation cover 26.3% in agriculture and fishing; 38.5% in farming and fishing (American Immigration Council, 2017). According to Peterson (2014) there are more than two million seasonal migrant farmworkers in the United States; over two-thirds are immigrants. Seventy percent are male with an average age of thirty-six (Farmworkers in the United States, 2016). Luque and Castañeda (2013) reports over two million seasonal migrant farmworkers are working in the United States, and two-thirds are immigrants originally from Mexico, with the other farmworkers from Central and South America. According to the Institute for Food and Development Policy, only fourteen percent have full-time work with an annual average income of ten thousand per family. Different socioeconomic, cultural, societal, and regulatory needs require care for the Latino migrant farmworkers. Migratory and seasonal agricultural workers' (MSAWs) reported diagnoses were hypertension, diabetes, and mental health conditions (Bogges & Bogue, 2016)

Technology can be a safety-net program that provides screenings, community-based prevention, and chronic disease management (Hill et al., 2014). The economic impact involving the implementation of electronic health records affects savings up to \$81 billion in health care annually (Ajami & Chadegani-Arab, 2013). One of the barriers to implementing electronic health records includes financial costs, slow return on financial gain, initial fees, and financing (Agency for Healthcare Research and Quality, n.d.). The Institute of Medicine (IOM) Meaningful use recommendations included incorporating occupation and industry into the health records to assist the Centers for Medicare and Medicaid Services (CMS) to improve healthcare delivery and participating in Health Information Exchange (HIE). The use of HIE secures and

ensures the exchange of patient health information in the sustenance of Meaningful Use quality measures (Socias et al., 2016).

The federal Health Resources and Services Administration (HRSA), through the Bureau of Primary Health Care (BPHC), administers approximately 5.1 billion in federal grant support to over 1,400 community health centers through 10,000 clinic sites in all 50 states and territories. A percentage of those centers and sites specialize in meeting the health needs of the migrant and seasonal agricultural workers (MSAW), estimating 4 to 4.5 million in the United States in 2015 (Farmworkers in the United States, 2016). One of the crucial questions regarding the population of the agricultural farmworker is how to track these patients due to the high mobility, varying levels of citizenship status, language, and cultural differences (National Center for Farmworker Health, Inc., 2018). The use of computerized-based systems to track past medical history improves physician delivery of preventative care. Technological innovations enhance patient care, faster response to adverse events, and supportive decision-making (Bardach, Ral, & Bardach, 2017). The barriers of sustaining “meaningful use” of health information technology in low-resource practices were managerial and organizational expertise, technology support including hardware selection, and EHR software, reporting features, and security maintenance (Green et al. 2015). Vendor relationships were of concern with inadequate vendor training and technical support. Underserved practices in rural areas faced a lack of financial resources, unreliable internet service leading to a greater need for hardware consultants, and rural practice services nonexistent in their regions.

Situational, cognitive, physical, liability, attitudinal, and knowledge barriers are critical components included in the implementation of health information technology. Time, financial means, insufficient access to the network connection, supportive software,

confidentiality, knowledge deficits, and technology opposition are essential barriers for providing technological advancements in rural healthcare settings (Agency for Healthcare Research and Quality (AHRQ) n.d.). Readiness assessment of electronic health records is vital before implementation to evaluate preparedness in the decision-making process (Ajami et al., 2011). Resistance to change may occur; listening to individual concerns and feedback should be assessed along with compatibilities that support organizations missions, goals, vision, and values (Davidson, Weberg, Porter-O'Grady & Malloch, 2017). Small practices and community health centers are part of low health information exchange (HIE) due to the financial barriers along with Federally Qualified Health Centers (FQHCs) in rural settings (McCullough, Zimmerman, Bell, & Roddriguez, 2014).

According to Bardach, Real, and Bardach (2017) many clinicians view technology as unimportant for practice and encumbering. Medical providers feel the quality of care or efficiency is delayed due to the use of electronic medical charting and clinician's express challenges implementing information technology. Focus groups were conducted with health care professionals with specific questions based on communication, work changes, initiation of inter-professional communication, and collaboration. The benefits of information technology were multiple health-care workers simultaneously have access to EMRs, computers more readily available than paper charts, easy to find information in a short amount of time, and useful in interdisciplinary communication. The barriers identified formatting of the electronic record can hinder finding essential information leading to delayed care, redundancy in charting, the speed of accessing the EMR or computer reduced speed time (Boonstra & Broekhuis, 2010).

“Ethical issues in electronic health records: A general overview” by Ozair, Jamshed, Sharma, and Aggarwal (2015) provided potential benefits such as a reduction in adverse drug

reactions when EHRs connected to pharmacies and drug banks, less storage space, and accessibility. EHRs help with research activities and provide backup records, improvement of patient compliance, quality assurance, and reduction in medical errors. The disadvantages of EHRs are security breaches related to inadequate data security. Password protection measures, encryption, and cloud storage are security measures taken by health care providers to make EHRs more protected.

Identification of barriers and acceptance of electronic medical records from physicians written by Boonstra and Broekhuis (2010) evaluated a systematic literature review using EBSCO, PubMed, and the Cochrane Library. The study found eight categories of barriers to implementing EHRs, financial, time, technical, social, psychological, legal, organizational, and change process. The survey of 1671 articles provided an overview of the barriers include more specific reasoning to adopting EHRs such as high start-up cost, ongoing cost, uncertainty over return on investment, and lack of financial resources in medical practice (Boonstra & Broekhuis, 2010). Technical issues involved physician and staff lack computer skills, professional training and support, EMR system complexity, limitations, lack of customizability, and failure to conform to specific needs of the user. The lack of reliability, interconnectivity problems, incompatibility with the existing practice system, and lack of computers or hardware lead to technical issues (Boonstra & Broekhuis, 2010).

The mixed-methodology approach evaluated the adoption of social determinants of health EHR tools and implemented a pilot study to assess the feasibility of EHR tools for collecting, reviewing, and acting on social determinants of health (SDH) data in community health centers (CHCs). A mixed-method approach to assess the social determinants on 1,130 patients identified clinics should provide adequate staff training on EHR tools, evaluate

methods to integrate tools into the workflow process, and incorporate assistance in timely data entry (Gold et al., 2018). Green et al. (2015) conducted cognitive task analysis (CTA) interviews, and direct observations of health information, technology implementation in federally qualified health centers FQHCs and priority practices. The results included ongoing technical support to address upgrades and security needs, maintenance of meaningful use for quality improvement, and rural priority practice access to technical expertise. Green et al. (2015) used a cognitive task analysis (CTA) to federally qualified health centers (FQHCs) in Michigan to assist with the implementation of Health Information Technology (HIT). Task diagram and team audit methods are used to understand three rural areas in the organization and implementation of the clinical quality management system (CQMS) along with interviews done. The themes presented in the article based on decision-making, change management, learning, problem detection, and monitoring. The results concluded that health care centers' ability to maintain and provide needed operational support is a factor and can be achieved at no cost to member practices through the primary care associations (Green et al., 2015).

Factors and effects on e-Health adoption in rural communities by Hage (2013) conducted a systematic literature review targeting underserved population groups identified geographical isolation and strategies based on project ownership with stakeholder support. The search strategy included databases such as EBSCO, CINAHL, MEDLINE, SocIndex, and pilot research in the Web of Science database. The theoretical framework was used the strategic management of change classic model based on Pettigrew and Whipp's. The model uses context, process, and content analyzing these three elements implementing e-Health in rural communities.

Heichert and Wise (2011) identify readiness to apply to EHR utilization considering technical readiness, training readiness, developmental readiness, and workflow readiness. The article assesses the readiness and path for practical implementation in the health system. Executive commitment, resource commitment, stakeholders, and vendor selection are factors to be fully identified and understood before the transition into an electronic health record program.

Health Information Technology for Economic and Clinical Health (HITECH) Act reports that the United States as of 2017 has accomplished 95% EHRs as a means of documentation in the healthcare system in acute care hospitals and 60% of U.S. office-based physician EHR implementation (McBride, Tietze, Robichaux, Stokes, Weber, 2018). A quantitative study determined ethical and moral issues with a conceptual model and thematic analysis based on patient safety and quality. McBride et al. (2018) provided a case scenario using the Four Component Model (FCM) and evaluated the nurse's experience with EMRs. Recommendations were made based on the nursing Code of Ethics, legal implications, and Nursing Scope and Standards in addition to the FCM.

Murphy (2016) evaluated the four barriers limiting EHR use, adoption, and exchange according to Office of the National Coordinator for Health Information Technology (ONC) after the Centers for Disease Control (CDC) released findings of certified EHR adoption and exchange of health information. The barriers were:

1. Lack of incentives for non-primary care providers
2. Lack of interoperability to progress in health IT adoption with standards, variation in how stakeholders interpret and implement policies and legal

requirements. Stakeholders are reluctant to support business practices that foster meaningful use

3. Health data security with changes in state and federal privacy laws
4. Health IT safety and usability to collaborate best practices to impact patient safety

“New partnership focuses on EHR implementation in rural communities and critical access hospitals” (2012), addresses hospitals and health care providers using certified EHR technology must show measurable and meaningful documentation to be rewarded financially through federal funds by the U.S. Department of Health and Human Services (HHS) and healthcare information and management system society (HIMSS) analytics. Meaningful use addresses core measures; 38% of 778 U.S. hospitals in the study conducted by HIMSS met ten or more of the core measures, and at least five of the menu items required. Ten percent of the hospitals have the capability to address all 14 of the core measures and at least five of the ten menu items. Many organizations find challenges qualifying for meaningful use that is cost-effective, especially in critical access hospitals or rural community hospitals due to financial, operational, and clinical difficulties. The article also addresses that rural hospitals provide nearly 54 million health care services according to the American Hospital Association (AHA). AHA identifies that rural hospitals have the lowest Medicare restrictions.

Ross, Stevenson, Lau, and Murray (2016) addressed a systematic review providing specific objectives to understand factors influential in implementing e-health and blockages to implementation. Out of forty-four reviews of EMRs in healthcare settings, including primary, intermediate, secondary, and home care. The synthesis of the literature acknowledged the

complexity of e-health implementation and a guide to planning implementation of EMRs by way of Consolidated Framework for Implementation Research (CFIR).

Howard et al. (2012) conducted field research in community-based primary care practices, interviewing informants, and documentation collection using a grounded theory approach; Primary Care Change Model and Technology Acceptance Model. The multi-method study analyzed EHR usage in small, self-regulating primary care practices. Work burden and time differed from physicians to nursing staff involving EHR use. Physicians interviewed identified a reduction in clinical work time when prescribing, lab-related tasks, and office communication, but increased time and work related to charting, chronic disease, and preventative care task.

Theoretical framework and theory

Evidence-based practice model and nursing theory

Afaf Ibrahim Meleis, the theorist on transitions theory, said it best “I believe very strongly that, while knowledge is universal....framed and driven by different disciplines about the health and well-being of individuals or populations” (Alligood, 2014, p. 368). The DNP project will affect the quality of health, migrant health care, and theoretical development as part of the change theory in nursing.

The mobile unit in Southwest Georgia has offered aid to underserved populations in the rural area, primarily focusing on the migrant workers throughout this area with a concentration on improving patient and health outcomes, expanded knowledge, clinical systems management, and leadership skills. The other following goals related to change theory to obtain are:

1. Research utilization
2. Parity with other disciplines
3. Expanded leadership, management roles, and healthcare knowledge

According to the American Association of Colleges of Nursing the “Essentials of Doctoral Education for Advanced Nursing Practice (AACN, 2016)” the goal is to increase knowledge in clinical scholarship, analytical methods for evidence-based practice, health care policy, improvement of clinical prevention and promotion of health in the DNP education program.

The theoretical framework founded on acculturation theory or assimilation theory and Leininger’s culture for the transitional project is essential for investigation on the barriers and facilitators of EMRs. Acculturation theory on migrant farmworkers guides adopting cultural practices in health care. Acculturation theory recognizes the diversity of current day migrant farmworker populations in southeast and southwest Georgia. Assimilation is the decline and disappearance of an ethnic/racial distinction with social and cultural variances and disparities. The effects of migrant-farmworkers, limited resources and economic requirements strain workers who are physically, emotionally, and mentally able to work to obtain a healthy work environment and healthy well-being (Schawartz, Unger, Zamboanga, & Szapocznik, 2010). Leininger’s culture care: Diversity and Universality theory identifies a lack of care and cultural knowledge required for patient care to support overall health and wellness along with compliance. Holistic concepts to nursing care are called the transcultural nursing process of concept explication, reformulation, and re-synthesis. The theory of cultural care is set forth as a guide for obtaining knowledge culture-specific nursing, cultural congruency, and universal practices in clients facing illness, human conditions, or death in cultural differences. Leininger cultural care is an area of nursing practice focusing on cultural comparisons related to caring

(Gonzalo, 2011). Costa dos Reis, & Mendes Costa (2014) describes the differences in cultural backgrounds from migrants and exposure to research. The migrant/immigrant populations represent diversity in social class, cultural origins, ethnicity, and race. Research procedures, such as access or achievement of trust with participants in the migrant farmworker areas and immigrant populations deemed difficult due to language barriers, informed consent, and unfamiliarity with research, which can be challenging for diverse cultural communities and the doctorate nursing project.

Methodology

The sampling method used was a convenience sample based on the number of staff within the clinic using the EMR system. Convenience sample method was done according to a survey based on a Likert scale strongly agree, agree, disagree, strongly disagree, and N/A (Appendix A).

Implementation/Evaluation: Participants

The eligibility requirements used to participate in the doctorate-nursing project are participants that interact with the electronic medical record system, who work in the facility the project coordinator will be reviewing, and willing to sign an informed consent (Appendix B), to participate in the project. Project participants inclusion criteria included English-speaking male and female recipients between the ages of 21-65, medical and non-medical office staff that included practitioners, nurses, medical assistants, office manager and non-medical staff. Key individuals involved in the analysis process included medical and non-medical staff to consist of persons that use the electronic medical record system in the facility. Target sample size is twelve health care workers in the clinic and requested to survey by the Institutional review board (IRB).

The rationale for the number of subjects chosen in the study is based on the number of employees in the facility with the age range of 21-65. The exclusion criteria are those not involved in the use of electronic medical records. Participation took 1 hour of time, during the work week for completing the survey. Participants are employees or subordinates, but they are not the employees or subordinates of anyone on the research team. The estimated reading level of each participant is at least 9th grade (8.1 Reading level) with a high school diploma and minimum education level of 12th grade or higher.

Implementation/Evaluation: Setting

The Georgia Farmworker Health Program (GFHP) was created in Georgia to provide services to improve the general health of migrant and seasonal farmworkers (MSFWs) and their families by providing cost-effective care, culturally appropriate primary care services and arranging for other levels of healthcare through advocacy and collaboration with other groups and local organizations, such as the Georgia Department of Community Health. The setting to obtain the sample located in a rural community in Colquitt County Georgia approximately 64.8% white, 19.6% Hispanic, 14.6% African American, 0.7% Asian alone, and 0.4% two or more races. According to the city-data, the average population in the rural community setting in 2014 is 280 (0% urban, 100% rural). The median resident age is 64.9 years, with the median household income in 2016: \$21,176 (Citi-Data, 2019). The farmworker health clinic, federally funded through the Department of Community Health (DCH) and the Boards of Health in counties is contracted by DCH to provide primary health care to local farmworkers and their families (Georgia Department of Public Health [DPH]). The total family annual income of 51% must come from agriculture to qualify for the program with proof of income. Clients are charged on a sliding scale basis according to income. Services offered are clinical and mobile medical,

women's health, pediatric services to other surrounding counties such as Brooks, Colquitt, Cook, and Tift counties.

The rural community clinic is an appropriate facility to obtain data from because of the rural area and limited internet services. The Internet Choice Website reported residents to have the worst internet speed in Georgia with a score of 2, calculated by factoring inadequate internet coverage, slower internet speeds, unfavorable user reviews, and pricing (Internet Choice, 2019). The community is limited in resources. The Department Community Health (DCH) is part of the Southwest Georgia Public Health that serves fourteen counties in the district. The clinic has three exam rooms with two nurse practitioners that work under one physician and two health techs. The system the clinic uses is eClinicalWorks EMR system.

Recruitment

The process of accruing participants involved providing food for their willingness to participate in the project. The project coordinator reached out to the office manager and nurse practitioner in charge of the facility to receive permission for conducting the survey along with the permission of the Georgia department of public health district health director. The recruitment plan involved an announcement by email and letter to potential participants, staff, and healthcare providers in the clinic. Confidentiality of survey results contained within the informed consent form and read to each participant. A total number of participants included eight employees ranging from nurses, staff, office manager, and clerks in the participating facility.

Implementation/Evaluation: Instrument/Tools

The instrument/tools that were used to evaluate the phenomenon of interest was a questionnaire given to participants to measure the variables of EMRs and a readiness tool for

implementation in the farmworker mobile unit (Appendix A). The instrument measured consistent and stable results using the same questionnaire to the group. The questionnaire tool included questions with strongly agree or not, related to business goals, commitment/sponsorship, communication/perception, patient orientation, workflow and process, technology evaluation, data management, measurement, and training/support. Thirty-three total number of closed ended questions consist of:

- Four questions based on the business goals
- Four questions based on commitment/sponsorship
- Five questions on communication/perception
- Four questions on patient orientation
- Three questions on workflow process
- Four questions on technology evaluation
- Two questions on data management
- Two questions based on measurement
- Five questions on training/support

A reliability analysis were run on the Texas Medical Association readiness tool developed for this project to look at the reliability performed with this sample. Reliability of this developed tool is unknown to date.

Intervention & Data Collection

The clinical question based on the barriers and facilitators in the rural setting were answered by using the facility participant responses to the questionnaire and evaluated to determine what interventions need to be implemented in the facility. The purpose or goal of this quality improvement project is to determine the barriers and facilitators of electronic medical records (EMR's) expanding into the mobile health units in the rural communities of South Georgia. The student investigator approached project participants in the clinical area during non-patient care hours. The student investigator ensured the welfare and rights are protected. There may be no benefit to the participant, but this may help add to data or understanding about the use of electronic medical records. Project participants are no more at risks than ordinarily encountered in daily life. The informed consent had the participants name on the form, but the collecting information of the participant was only described gender, age, and role in the clinic. The information was destroyed after the data collection is complete. Consent forms are stored separately from the data in the student's personal office, which has limited access with a locked door and locked file cabinet. Potential participants were provided with a copy of the consent form. The student investigator provided the potential participant with adequate time to review the consent form. The student investigator reviewed the consent form with the participants. Student investigator asked the participants if he/she has any questions about the study. If the participant said yes, the student investigator answered them. If the participant said no, then the form was signed in blue or black ink pen. A copy was made of the signed consent form and provided to the participant. The original questionnaire was stored by the student investigator in a locked cabinet.

Components of Analysis Plan

Raymond et al. (2015) identifies areas to review, such as clinical, communication, and administrative EMR functionalities. The Texas Medical Association Readiness Assessment based on a Likert scale with the highest number of strongly agree and agree selections (20+), meaning the facility is well suited to implement an EMR system. If the responses fall into the Agree-Disagree range (25-20), the facility needs to develop further current practices, attitude, and strategic plans before proceeding. If the majority of responses include Disagree and Strongly Disagree (15+), the EMR is likely a failure or needs total restructuring. The questionnaire or assessment was evaluated based on improvements that need changes.

Results

The results determined from eight participants in the clinic:

	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
Business Goals: Four Questions based on the business goals	7	8	2	0	14
Commitment/Sponsorship: Four questions based on commitment/sponsorship	4	9	1	0	17
Communication/Perception: Five questions based on communication/perception	4	20	2	1	13
Patient Orientation: Four questions based on patient orientation	8	14	7	1	2
Workflow Processes: Three questions based on workflow processes	5	17	0	0	2
Technology Evaluation: Four questions based on technology	2	6	0	0	0
Data Management: Two questions based on data management	1	5	5	0	4

Measurement: Two questions based on measurement	1	7	1	1	4
Training/Support: Five questions based on training/support	2	14	9	6	9

The results concluded that in some areas the organization required further development on the current process and clearer strategic plans prior to pursuing any further EMR initiative. Regardless of the results, improvement methods and statements made from staff addressed insufficient training, need for IT support, and back-up methods in the event of computer shut down. The total number participating in the survey was eight participants with an ethnic background of Caucasian females and Hispanic males. See Appendix B, C, and D for chart information and data analysis on the results based on the questionnaire.

Discussion

What are the barriers and facilitators of electronic medical records (EMR's) expanding into the mobile health units in the rural communities of South Georgia? Determine the readiness for implementation of an information technology system facilitating health practitioners, electronic health records implementation on mobile health units, and needs assessment in the clinical setting to identify if electronic health records (EHRs) are beneficial. The clinical question based on the barriers and facilitators of electronic medical records (EMRs) was clearly answered based the results. The findings identify barriers and facilitators in the rural clinic.

There were several barriers identified in this project. Key findings to include barriers are training, funding, internet connection, full-time information technology assistance, and ease of use with the program impacting practice and patient outcomes.

There were several facilitators identified in this project. The facilitators for utilizing the EMR system is training the staff, availability of coordination support services or operational program facilities, and the commitment of staff to use the program.

The patterns in the literature review identified the same barriers and facilitators as the data showed in the survey provided by the employees of the clinic. Comparing and contrasting from the literature review, common themes for barriers were funding, training, and internet service in rural areas. Similar themes in the survey and the literature review continually emerged from the data collection. Therefore, the clinical question was answered by determining the barriers and facilitators listed above.

Practice Implications

This project determined the prominent barriers to include training, funding, internet connection, full-time information technology assistance, and ease of use with the program impacting practice and patient outcomes. The facilitators for utilizing the EMR system is comprised of provision of training to the staff, availability of coordination support services or operational program facilities, and the commitment of staff to use the program. Further investigation can be done to aid in the facilitation of better connectivity programs or automatic data and power backups. Provision of adequate on-call or 24-hour service representatives could benefit employees with technological difficulties needing assistance. Practice implications and project findings demonstrate changes in the healthcare system that are required for these rural areas for an EMR system that does not have the barriers stated above. Scholarship opportunities may include the potential to develop implantation of an EMR system in the mobile units and some of the migrant farmworker clinics. For example, the current mobile units do not have the use of EMR systems in the farmworker fields, they

are using paper charting as a method of documentation. As a change agent in the rural area, the goal is to investigate grant funding or sources of funding for an EMR system in these rural communities. This project used qualitative design method to understand the experience of a rural migrant farmworker clinic and their employees experience with the EMR system assigned in the facility.

Limitations

Limited amount of participants hindered the data of this DNP project. Participants did not have any input in the business section of the questionnaire, due to lack of knowledge based on what they knew about the business goals. The participants had difficulty answering the questionnaire regarding the business goals to include:

1. The EMR system is mentioned in the organization's strategic plan and is linked to achieving specific future organizational goals.
2. Physician leadership views EMR as key to meeting future organizational goals.
3. There is a clear and defined set of EMR goals and measurable objectives.
4. Physician leadership understands EMR and the business benefits it can bring.

Summary

The overall review of the literature suggests evidence-based on interrelated challenges in EMR implementation. A relationship between the studies identified many of the same themes across studies that agreed to factors influencing barriers and facilitators of EMRs. No single element was determined as a critical barrier or facilitator to e-health implementation. The synthesis showed findings consistent with primary care settings. Ethical and legal implications were in every literature review regarding the implementation of EMRs. To meet the demands of the vulnerable population in rural South Georgia clinical scholarship, analytical

methods for evidence-based practice and application of change theory integration will be necessary. Delivery of research and the involvement of different disciplines through scientific underpinnings will be essential for incorporating new knowledge providing care to the migrant populations. The process based on evidence-based practice requires a change to improve health care, outcomes, participation, and evaluation. Results of this project indicate limitations in using the EMR system, especially in the mobile units in the migrant farmworker clinics and the role as the student investigator to implement a system-wide initiative to assist these rural areas.

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Appendix A

EMR Assessment Questionnaire

This worksheet will provide you with an overview of your organization's ability to successfully use an electronic medical record (EMR) solution. Respond to each of the statements by placing a checkmark in the column that most closely aligns with your situation.

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
Business Goals					
The EMR system is mentioned in the organization's strategic plan and is linked to achieving specific future organizational					
Physician leadership views EMR as key to meeting future organizational goals.					
There is a clear and defined set of EMR goals and measurable objectives.					
Physician leadership understands EMR and the business benefits it can bring.					
Commitment/Sponsorship					
The physician leadership understands the financial and time commitments that the initiative requires, and is willing to make these					
Physician/Organization leadership is committed to supporting and improving the EMR consistent with success.					
The organization is prepared to reinvent, re-engineer, and improve its patient-oriented					
A physician representative is available to take leadership roles in EMR improvements by taking responsibility for key objectives, guiding the team, and helping to promote the system to the physician community.					
Communication/Perception					
All participants potentially affected by EMR system have been identified.					
The staff has had an opportunity to ask questions regarding the EMR system.					
Staff members understand the benefits of an EMR and are enthusiastic about using the current					
Participants have been/will be included as part of the project team from the start of the project.					
All participants understand their role in making the EMR system a success.					

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
Patient Orientation					
A strong patient focus permeates every department in the organization.					
Business decisions are driven by patient needs.					
Methods for capturing and enhancing patient care have been identified and documented.					
EMR design will be driven by what is important to patient care and patient satisfaction.					
Workflow and Processes					
Current workflow and processes have been identified and documented.					
The organization has identified and prioritized areas where EMR could be best applied.					
Ways in which EMR will improve current workflow and processes have been identified.					
Technology Evaluation					
A list of evaluation criteria was/will be used in the EMR vendor selection process.					
A clinician-defined user interface was/will be a primary consideration in EMR software					
An IT set-up is either in place or under development that will support the processes of the EMR with minimal downtime.					
The organization has established service levels that must be met by the EMR system used to deliver patient care.					
Data Management					
The importance of integrating databases containing patient information has been recognized.					
Data accuracy and integrity procedures are available and clear.					
Measurement					
The EMR is justified on a return on investment (ROI) basis.					
Ongoing measurement systems have been/will be developed to validate that the EMR system has met project goals.					
Training/Support					
A budget is/will be in place to provide end-user					
Training for all user groups has been offered.					

Training includes reference materials that can be used before, during, and after training.					
A budget is/will be in place to provide reasonable coverage for EMR support					
Staff is/will be in place to implement, provide support for, and maintain the new EMR system.					
Totals					

Outcome Interpretation

Enter the totals for each column below:

_____ Strongly Agree

_____ Agree

_____ Disagree

_____ Strongly Disagree

_____ N/A

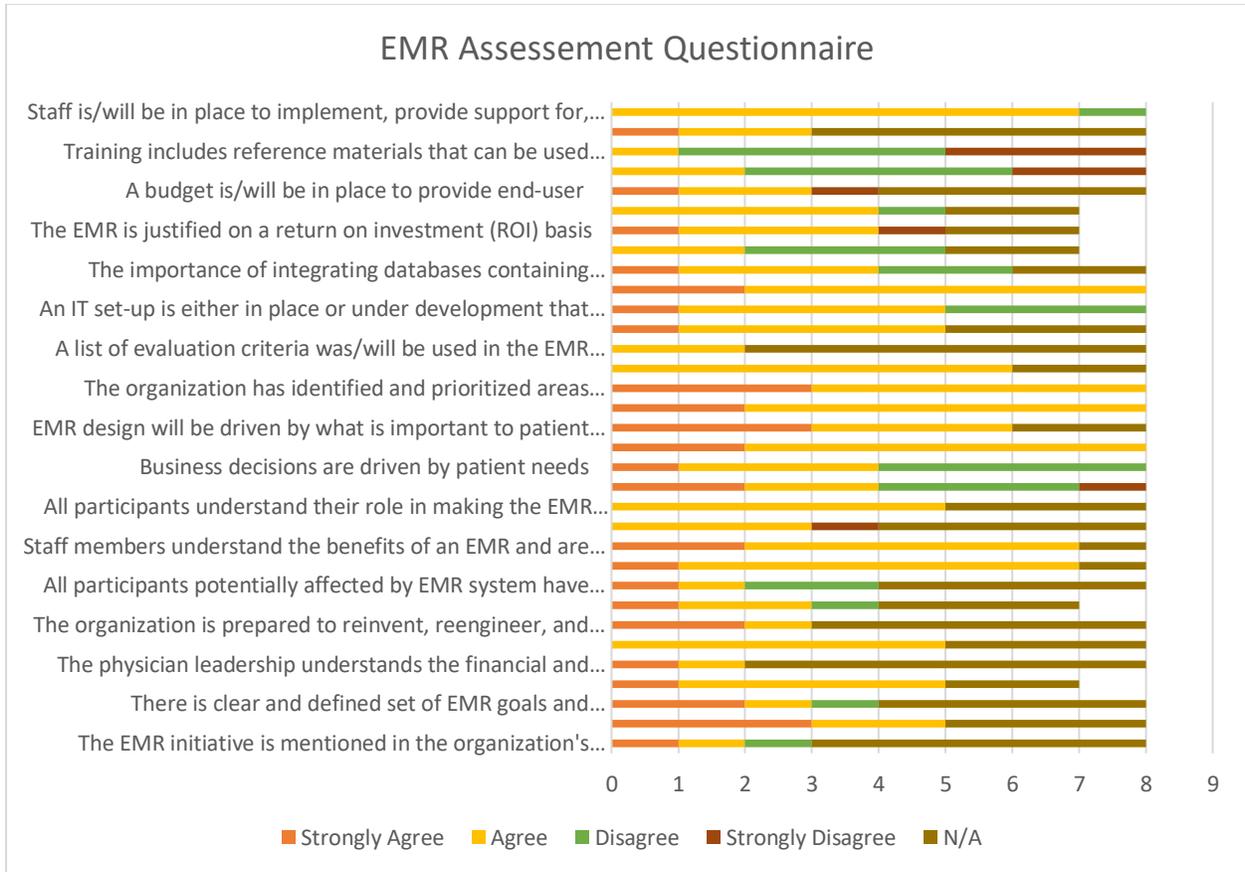
A high number of Strongly Agree and Agree selections (20+) mean that you are well positioned to implement an EMR initiative.

If your responses fall mostly into the Agree-Disagree range (25-20), then your organization needs to further develop its current processes, attitude, and strategic plans before pursuing an EMR initiative.

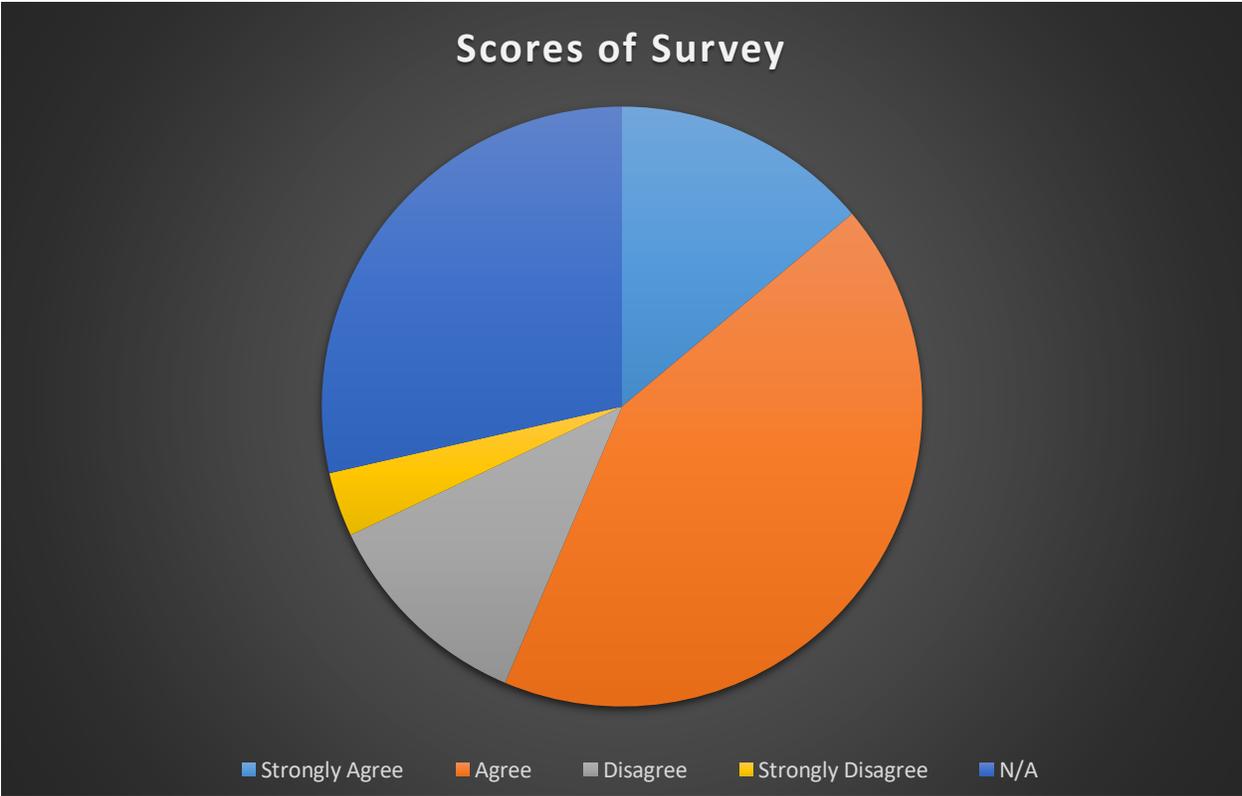
If the majority of your responses include Disagree and Strongly Disagree (15+), implementing an EMR initiative at this time would likely result in failure.

Regardless of your results, take a good look at those statements with which you did not Strongly Agree. These areas are candidates for improvement, and by pursuing this path you will further the chances of success for your EMR solution. Any statements with which you Disagree or Strongly Disagree are red flags that should be addressed and rectified before your organization moves any closer to EMR implementat

Appendix B



Appendix C



Appendix D

