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The Difference in Compliance When Visual Education Is Present

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Walden University

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Walden University

College of Nursing

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Jamie Joseph

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Walden University
2022

Abstract

The Difference in Compliance When Visual Education Is Present

by

Jamie L. Joseph

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

May 2022

Abstract

Lack of patient compliance is a dangerous, widespread problem, often linked to a patient's misunderstanding of their diagnosis or treatment plan. This project's practice questions pertained to exploring the impact of a staff education update on visual presentation and patient evaluation with patients taking factor Xa inhibitors in oral anticoagulants and how the staff education increased patient compliance while taking these medications. A combination of the ADDIE model and Kirkpatrick model were used in the planning, development, and evaluation of this project. A pre and post evaluation survey was used to determine the efficacy of the changes made within the clinic where this project took place. Fourteen advanced practice registered (APRNs) within the clinic participated. Following the pretest survey, participants took part in an educational intervention geared toward proper patient evaluation and education. Upon completion of the posttest survey, data analysis showed that providers had increased their knowledge of proper patient education and various techniques that could be used to ensure patient understanding. The overall pretest/posttest scores were ranked using a Wilcoxon Signed-Rank Test, thus showing they had a mean of 1.08 and a standard deviation of 0.266, indicating that the APRN training on proper patient evaluation and education improved provider abilities to effectively educate patients. Implications for social change include potential to increase the likelihood of patients' compliance with their treatment plan while taking factor Xa inhibitors in oral anticoagulants due to their ability to understand the education being provided to them by their provider.

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Dedication

This project is dedicated to my husband Darrell, daughter Bethany LeeAnn, and in Memory of my daughter Keisha Lenee, who without their support and inspiration this would not have been executed.

Acknowledgements

I would like to thank my mother Tammy, my father Jimmy, sister Jenny, and my good friends Tracy and Kristen, who encouraged me throughout this journey. I would like to thank Dr. Robert McWhirt, who was my motivator to continue to apply myself to complete this task.

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Section 1: Nature of the Project

Project on Oral Anticoagulants

Patient compliance plays a significant role in the likelihood of successful treatment in any situation. “In its 2003 report on medication adherence, The World Health Organization (WHO) quoted the statement by Haynes et al. that increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments” (Brown & Bussell, 2021). It can be noted that among patient with chronic illnesses, approximately 50% do not take medications as prescribed (Brown & Bussell, 2021).

It has been demonstrated that patient education plays a significant role in patient compliance (Jimmy& Jose, 2011). When patients are educated on the correct way to follow the directions and taught the importance of the directions, they are more likely to comply. This project was an exploration of visual educational interventions used by providers to increase compliance among their geriatric population of patients, who are taking oral anticoagulants such as rivaroxaban (generic name for Xarelto) and apixaban (generic name for Eliquis). One of the biggest current problems for a nurse practitioner in the cardiac field is noncompliance amongst the geriatric population of patients when taking oral direct factor Xa inhibitors. Major adverse effects can occur due to non-compliance with these medications, such as thromboembolism, increasing patients’ risk for stroke.

The chronic routine by providers not ensuring that patients are properly educated, needs to be broken, and patients need to be educated on the risks and benefits of the medications they are being prescribed. When it comes to rivaroxaban, it is important that patients understand that the medication needs to be taken at the same time each day, preferably with the patients evening meal. Patients need to understand that if they miss their dose, they should take it as soon as they remember, but on the same day. They should not take an extra dose the following day. Patients need to understand that the benefits of taking medications such as rivaroxaban correctly are prevention of blood clots due to an irregular heartbeat, limited mobility, or after surgery. This prevention of blood clots, in turn, helps to prevent stroke. It is also used to treat blood clots in disorders such as deep vein thrombosis (DVT) or pulmonary embolus (PE) and help to prevent the recurrence of blood clots.

When oral anticoagulants are taken incorrectly, many life-threatening problems can occur. Patients need to understand that the risk of major issues when taking too much rivaroxaban or apixaban, taking it too often, or not taking enough or as prescribed, may include coughing up blood, vomiting blood, severe headaches, dizziness, fatigue, difficulty swallowing, prolonged bleeding, vision changes, confusion, slurred speech, weakness on one side of the body, trouble breathing, and in severe cases even hemorrhage, stroke, or death. It is essential that patients understand that rivaroxaban and apixaban, whichever is prescribed, needs to be taken correctly for them to benefit from its treatment and prevent major side effects or problems from noncompliance.

With the procedure/policy change of implementing additional training for new providers, such as newly graduated nurse practitioners, nurses, and other providers, we have seen an increase in patient understanding from education. We have also seen a rise in the compliance rates of the patients within our facility that are being prescribed oral anticoagulants. According to a study released in 2009 by the New England Healthcare Institute, “medication non-compliance, also known as non-adherence, costs the U.S. health care system an estimated \$290 billion every year in avoidable expenses. The impact on patient health is even more alarming” (Shelton, 2010).

Patients need to understand the reason for taking these medications and why following directions while taking them is so important. Simple things like the time of day that the medication is taken, how often it is taken, if it is taken with food or not at all play a major factor in how well the medication works or does not work. Patients need to understand that major problems and even factors such as hemorrhage, stroke, and death can occur if they are not compliant with their medication. It is important that patients realize that simple factors such as taking the medication at the same time each day or whether they take it in the evening or the morning or with food or without food can affect the efficacy of the medication. For example, rivaroxaban, when taken in higher doses such as 15mg or 20mg on an empty stomach, can reduce its efficacy, resulting in an increased risk of thromboembolic events occurring, whereas apixaban can be taken with or without food but is taken twice a day.

The problem at the practice site was the providers were not educating the patients on the importance of taking the anticoagulants, which was evident by patient's conditions worsening or not improving. It was assumed that providers and nurses are not educating patients on the action of the medication and why their treatment plan is important. This in turn created an increase in patient noncompliance when taking oral anticoagulants. Patients were returning for follow-up appointments with no improvements or worsening conditions. It was assumed that this was due to a lack of knowledge on what the medications do, why the treatment plan is important, the proper way to take the medication, the risks, and benefits of taking the medication correctly or incorrectly, and so forth. These areas were all covered in the patient education that was provided to patients at each visit. It was assumed that providers and nurses were not educating patients on the action of the medication and why their treatment plan was important. Hence, patients return to the clinic with worsening conditions or no improvement.

Providers need to be educated and trained properly in ways to educate patients and ensure their understanding of the prescribed medication and treatment plans. When taking medications that have serious side effects when not taken correctly, and with a diagnosis that can be life threatening when not treated properly, patients must understand their diagnosis and treatment plan exactly. This is even more important for the patients in the geriatric age range who are less likely able to utilize resources such as the internet to learn more about the medications they are taking.

Problem at the Practice Site

The problem identified in this evidence-based Doctor of Nursing Practice (DNP), educational project was the lack of knowledge on effective patient education, in turn creating noncompliance rates among patients who are taking oral anticoagulants such as rivaroxaban and apixaban. The noncompliance appeared to be a result of the providers not ensuring that patients are properly educated on their diagnosis, treatment plan, and the prescribed way to take their medication. One of the most common complaints seen on patient surveys is that the patients were leaving the office without understanding what the provider had told them. “Oral anti-coagulants are often prescribed to patients who are experiencing Atrial fibrillation, acute pulmonary embolism, deep vein thrombosis, major joint replacements, etc.” (Anticoagulants, 2020). “Non-compliance with an oral anticoagulant can put patients at risk for things such as major bleeding, ischemic stroke, venous thromboembolism, intracranial bleeding, hematuria, hemoptysis, gastrointestinal bleeding, and even mortality” (Vinogradova et al. 2018, p. 362). A major problem seen at the practice site was patients returning for follow ups with worsening symptoms or no improvement at all. The lack of communication by providers to patients, presenting the benefits and risk of anticoagulants, was one factor contributing to this noncompliance. It is essential that providers and nursing staff properly educate patients on all aspects of their visit from the diagnosis and treatment plan to the risks and benefits of the medications the patients are being prescribed. This patient understanding can be the

difference in a recurrence of the problems being treated or maintaining better health without that recurrence.

At the practice site, it was essential to do a project that could potentially improve the compliance rates among the geriatric patients who are taking factor Xa inhibitors such as rivaroxaban or apixaban, to see an increase in health improvements of the patients during follow-up visits, instead of worsening conditions or recurrence of issues that we are treating them for.

Any improvements made in the face of patient care in one facility can be shared amongst other facilities, thus improving nursing on a practice site level as well as a national level as nurses are able to establish enough improvement and spread the knowledge of the changes that were made to see the improvement.

Purpose Statement

The purpose of this project was to increase the knowledge of the staff on the beneficial effects of training and policy/procedure change on patient education with patients taking oral anti-coagulants regardless of age. The gap in practice this project addressed was a lack of proper patient education by the providers, resulting in noncompliance due to patient misunderstanding of diagnosis and/or treatment plans. Providers need to keep in mind that many patients in the geriatric age range are not as technologically inclined as the younger population and often struggle with the terminology they are presented with during their visit. Whereas patients who are of a younger generation may be more able to research the diagnosis and treatments, older

patients may not always understand what they are reading while doing this research. It is the providers responsibility to ensure that they know and understand all that is being said to them. Thus, being said, the gap that was being filled is changing the provider training on patient education to better equip the providers with the knowledge they need to ensure they are properly educating the patients they are seeing, in a push to decrease patient noncompliance.

The practice focused questions I addressed in this project were as follows: Will exploring the impact of a staff education that updates the staff on using visual patient education, which aims to improve patient compliance with the treatment plan of patient taking oral anticoagulants, increase provider knowledge as evidenced by a pre/post survey on increasing patient compliance with anticoagulant drug therapy? Does the literature support the educating of providers on patient visual education techniques for patients taking Factor Xa inhibitors in oral anticoagulants and its ability to increase patient knowledge?

Pew Research Center reports that “41% of seniors do not use the internet at all, 53% of seniors do not have broadband access at home, and 23% of seniors do not use cell phones (Smith, 2014).” Health literacy is a big problem in this age range. According to Anderson (2021), “The National Assessment of Adult Literacy (NAAL) indicates the following about older adults’ health literacy skills: 71% of adults older than age 60 had difficulty in using print materials. Eighty percent had difficulty using documents such as forms or charts. Sixty-eight percent had difficulty with interpreting numbers and doing

calculations.” Pratt and Searless (2017) defined *health literacy* as “the comprehension required to make well-informed decisions regarding one’s health” (p. 497). These patients are often confused on what is going on with them, what the medications or treatment plans they have been given will do to help them, or the importance of following these treatment plans as they have been prescribed. “The consequences of noncompliance accounts for \$8.5 Billion in otherwise unnecessary spending on hospital stays, recurrent physician visits, etc. (Noncompliance With Medications, 1994).” Patients often misunderstand the dangers or risks associated with not following the proper medication administration that is prescribed. Pratt and Searles noted that “the result of poor literacy is a higher incidence of misunderstanding medication instructions” (p. 497). Providers need to ensure that they are providing all necessary information to all patients to ensure that they know and understand their diagnosis and treatment plan. The risks and benefits of the medications they are being prescribed and how to take it and why it must be addressed.

The use of visual aids for patient education is not the standard practice in most cases but it should be realized that “Using a variety of visual aids can transcend language and numeracy barriers and can therefore improve the effectiveness of communication and broaden the patients understanding of the information they are being presented with.” (Pratt M.S, 2017). This change in procedures had to be taught to the providers and implemented as a policy change to ensure that it was being followed in the manner intended for best results. This project aimed to educate providers to be better suited to

teach their patients the importance of compliance while taking their oral anticoagulants medication as prescribed, treatment plans, diagnosis, etc. It aimed to ensure that providers and nursing staff understand how to assess the patient's knowledge on each topic that was covered to determine the best way to teach them what they needed to understand.

Nature of the Doctoral Project

This educational project used an evidence-based approach concerned with establishing the evidence to support content for training staff about why patients taking oral anticoagulants are noncompliant with taking their medication and treatment plans and how noncompliance rates could be improved. This project employed information from primary and secondary data sources. I explored the data collected through medical journals and peer-reviewed articles, as well as a collection of primary data from the practice site. More information about the sources of evidence is explored in Section 3 of the paper. It is significant to note that this project focused on the exploration of benefits of this training on improving staff knowledge and skill to engage in patient education.

A change in the policy and procedures when it comes to educating patients on their conditions, treatments and medications significantly improved the outcome of the treatment plan for each individual patient. This is further supported by Paterick and colleagues' statement, "To improve health care outcomes, providers must spend more time with patients. The teaching provider's interaction with the patient must be enthusiastic, motivated, and responsive to the individual patient's needs" (Paterick et al., 2017). This patient-provider relationship improved self-care and led to improvements in

the self-efficacy of each patient as well. According to Paterick et al. (2017), “self-efficacy is defined as one’s belief in one’s ability to succeed in specific situations or accomplish certain tasks. One’s sense of self-efficacy plays a significant role in how one approaches goals, tasks, and challenges regarding one’s health” (p. 112). The findings of this project contributed to changes in policy and/or procedure in terms of the benefits of visual patient education that improved patient understanding and compliance. For this project, the clinic implemented a new training program for the providers to teach then new techniques in patient education using visual reinforcement.

Significance

Stakeholders included anyone involved with or affected by the project implementation or outcomes (White et al., 2016). Stakeholders for this project included patients, employees in each respective cardiology office that is participating, the management team, the employee training team, the content experts, and the practitioners and physicians. It was imperative that all organization goals and quality control guidelines were followed. It was essential that there were appropriate support operations set up to ensure proper implementation of the project/program.

The significance of this project was to identify and reveal the benefits of visual patient education with physician/practitioner trainings in the cardiology clinic. The project’s focus was on staff education and how it helped ensure patient compliance when taking oral anticoagulants. This helped to improve the quality of life of the individuals

and potentially increase their longevity when their health was managed accordingly, and they were compliant with the treatment plans provided by the clinic.

This training and management of proper patient education helped to ensure better physician practice, increase patient understanding of their conditions and treatment plans, reduce patient anxiety, build patient–physician trust, enhance motivation, and improve the healthcare system. This motivation and understanding helped to build confident staff and patients, and this translated into the definition of quality care. The addition of the patient education was shared with relatives of the patients as well, improving the lives of the coming generations.

This project offered a great contribution to nursing practice and helped to advance patient education and improve patient compliance in not only the cardiology clinic but in other clinics as well. These contributions aimed to fill the gaps in the patient understanding of medical terms, conditions, treatments, and other aspects of their health care knowledge. This better understanding led to increased patient compliance across the board.

The purpose of this project was to clearly identify the changes needed and explore ways to help nurse practitioners improve outcomes through staff education, increasing adherence when prescribing a factor Xa inhibitor, resulting in the improvement of the quality of life in these types of patients. Most frequently, adherence to therapy is limited by the complexity of the regimen (the number of medicines and the frequency of administration) and failure of a patient and/or his relatives to understand the importance

of compliance (Garkina et al., 2016, p. 810). Based on this literature and the significance of the problem, this project focused on the steps and needs, along with the associated factors with medication administration, such as lack of education being one reason for noncompliance. Educational and behavioral interventions may make an impact on the patients' ability to maintain their therapeutic levels (Clarke-Smith et al., 2013).

Incorporating the visual materials such as articles and data into the continuing education for nurse practitioners, helped to improve patient outcomes. Effective anticoagulation education involves face-to-face interaction with a trained professional who ensures that the patient understands the risks involved, the precautions that should be taken and the need for monitoring (Hawes, 2018). The education process should be individualized with written material and utilize the teach-back method (Hawes, 2018). As nurse practitioners educate patients who are prescribed factor Xa inhibitors, this education benefited patients by increasing adherence to guidelines and protocols in each patient. Following the education, such as through visual materials that are provided by the nurse practitioner, helped promote positive outcomes allowing for improved results and eliminating disparities among this select group of patients.

In today's aging population, identifying the appropriate treatment is crucial, which can help promote adherence to prevent unwanted consequences: predictors of lower adherence were higher number of the comorbidities and being a naïve anticoagulant user (no prior use). Therefore, identifying each patient's individualized style of learning and acting upon this is the preferential way to help them to comprehend the

information to help increase compliance. Much of the education provided by nursing focuses on specific communication skills and self-management activities where patients can contribute to their own care (Hendricks, 2015). The type of educational intervention provided can impact compliance. Providing these select patients the visual education impacted patient outcomes and quality of life. Although noncompliance can occur with any age, it affects the aging population more significantly. The results support the positive change among the community in all age ranges.

Therefore, this project bore a great nursing significance to the nursing practice field because the findings realized from it were employed in guiding the establishment of policies, measures, and evidence-based nursing approaches to address the issues associated with patient noncompliance due to lack of patient education and understanding. Using the resources available allowed the opportunity to make a positive social change within society, just as Walden's mission statement (Walden University Student handbook, 2017-2018).

Summary

This section has provided a brief background to reveal the effects of a visual educational intervention on oral anticoagulants such as factor Xa inhibitors in the geriatric population ages 60–79, while resulting in an increase in patient compliance through the education from nurse practitioners and providers. These updates in policy, management, procedure, and training held the difference in successful patient plans and compliance in the cardiology clinic and across the board.

In Section 2, I provide an in-depth background and context for the educational intervention discussed in Section 1. More information is given on the lack of knowledge on the effective patient education, in turn creating noncompliance rates among geriatric patients taking oral anticoagulants. I will further discuss the concepts, models, and theories used in the updated policies that were provided. Insight pertaining to why these kinds of drugs are prescribed and what they are treating is also discussed, further showing the importance of compliance when taking them.

Section 2: Background and Context

Introduction

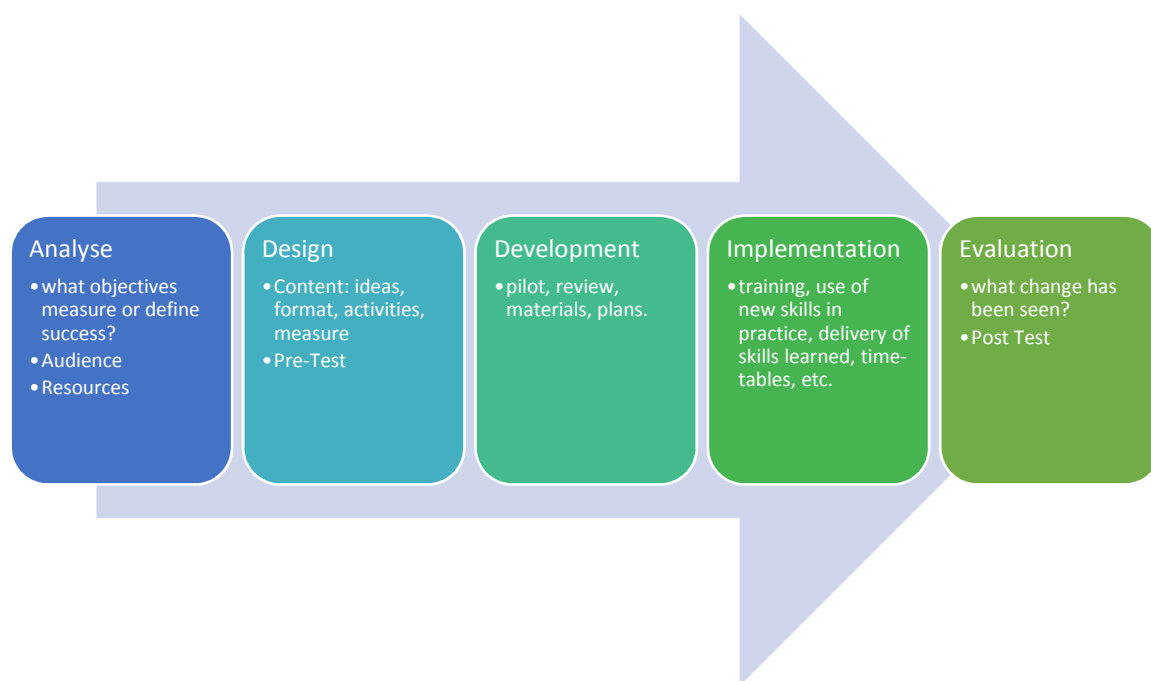
This project's primary practice question concerns explored the impact of a staff education that updates staff on using visual patient education that aims to improve patient compliance with the treatment plan of geriatric patients, taking oral anticoagulant. The problem addressed in this project was the lack of knowledge on effective patient education, in turn creating noncompliance rates among geriatric patients, ages 60–79, who are taking oral anticoagulants such as rivaroxaban and apixaban to rise. Will a staff education program on patient visual education techniques for geriatric patients taking factor Xa inhibitors in oral anticoagulants, increase staff knowledge towards the goal of increasing patient compliance? The proposal covers the effects of changing protocol and training exercises for the providers and nursing staff to ensure patients are receiving visual patient education that they can clearly understand and recite back to the provider. This minimized confusion with the prescribed medication and treatment plan and ensured the patient had a better understanding of what their condition was, why it required a certain treatment, how the treatment was going to help, risks and benefits, as well as understand the importance of following the prescribed plan as prescribed. Visual patient education improved patient compliance in the geriatric population, ages 60–79, which are taking factor Xa inhibitors, causing a social change that was implemented in other areas to improve compliance across the board.

Concepts, Models, and Theories

The ADDIE model was the concept that I used in this project. The ADDIE model is an instruction design framework used in training and development. The model represents a dynamic, flexible guideline for building effective training and performance support tools. Figure 1 shows the steps of the ADDIE Model that I used:

Figure 1

Steps of the ADDIE Model



With the use of the ADDIE model, the project helped to improve the current level of patient compliance through staff training on proper patient education. In the first phase was analysis. I identified the behavioral issue that was seen and developed a timeline for the project to determine how long it would take to evaluate results of the new training program that was implemented for the staff. I created story boards and used interface and

experience to apply a direct learning experience for the providers and staff so they could learn through experience, firsthand, how to help these patients become compliant through understanding and education. In the second step, the design phase, I brainstormed ideas and activities that I thought were necessary in reaching the goal. I developed lists of what measures I used and content that was necessary. This is where I developed the approach that I used when it comes to the provider education that is being put in place in the clinic. The development phase, the third step, the content used in the staff education was built and the pretests, posttest, and training schedules were made. During this phase, I started the PowerPoint presentation that educated the staff on the importance of patient understanding when it came to compliance, especially when taking risky medications such as oral factor Xa inhibitors to treat life threatening health conditions.

In the fourth phase, implementation, the staff was trained and educated on the new procedures and policies. They were taught how to assess the patients' understanding, how to evaluate what methods to use when educating them, and how to assess what knowledge they have collected through this new way to teach them. They learned how to manage this new knowledge for the improvements for which they were striving. The final phase, evaluation, involved the formative evaluation as well as the summative evaluation of the process. I utilized various models during this phase such as the Kirkpatrick model to measure training and development effectiveness. I also made any necessary changes to the training and implementation.

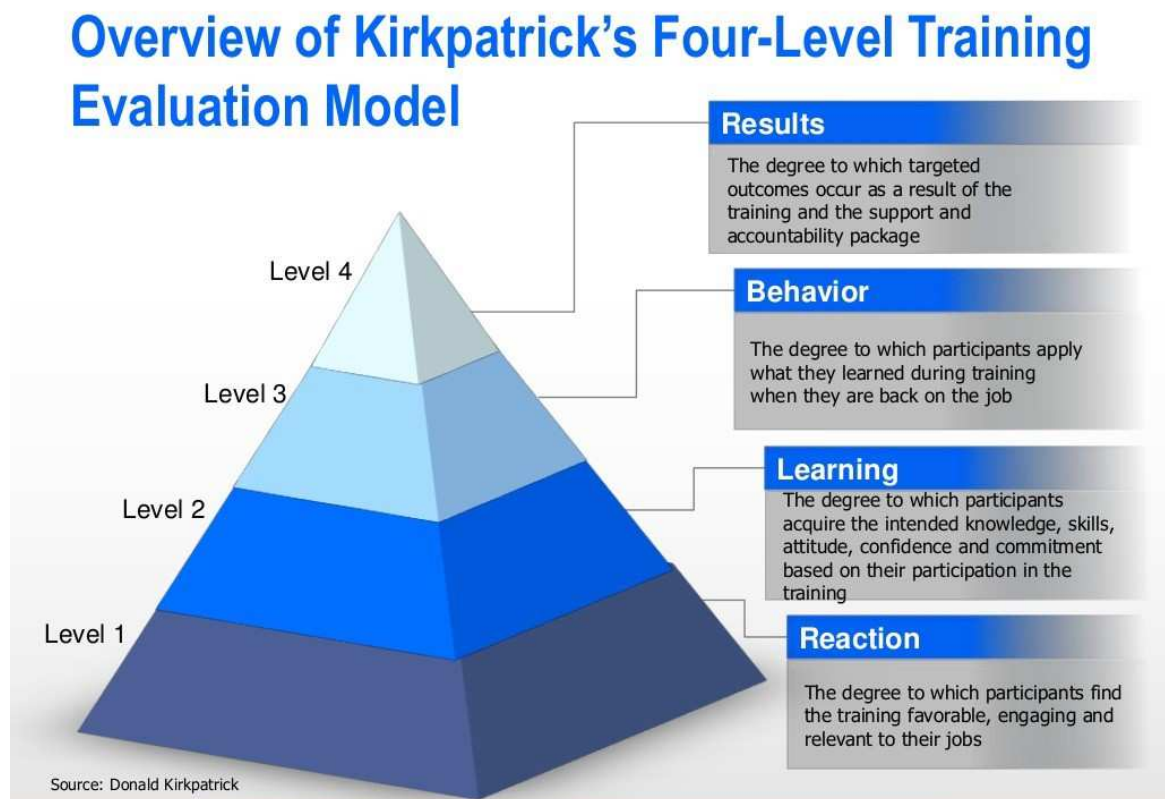
“The Kirkpatrick Model was created by Dr. Donald Kirkpatrick as a model for measuring training and development effectiveness. "Originally envisaged for corporate training, the model proposes a linear level of training effectiveness." (“Overview of the Kirkpatrick Model and foundational ...”) There are four levels in the Kirkpatrick model (see Figure 2) as follows:

- Level 1 “Reaction” was where questions were asked to determine if the staff feels like the training was effective, engaging, and what they learned. They were asked if they thought the presentation of training was effective, and I gathered feedback on ways I could improve the training program.
- Level 2 “Learning” was where I determined what degree participants acquired the intended knowledge, skills or attitudes based on their participation in the training. This was done with a pretest and a posttest.
- Level 3 “Behavior” was where participants applied what they learned during the training to their job. This phase included an assessment of the team members to see how much they applied and determine if there were organization structures, cultural issues, or policies that were prohibiting the staff from applying the new skills on the job. This feedback was essential in finding and making necessary organizational changes to ensure the intended outcome.
- Level 4 “Results” was the final phase and determined to what degree the targeted outcomes had been reached through the training and support. This

phase helped determine that the trainings were effective and necessary in obtaining the expected results.

Figure 2

Overview of the Four-Level Training Evaluation Model



(Overview of the Addie Model in Instructional Design, 2020)

Nursing theories promote the essentials to the professional evidence-based practice and determining the positive patient outcomes. The self-governing conceptual framework for nursing education and practice paired with the ADDIE Model and the Kirkpatrick Model provided for a solid foundation to continual analysis, evaluation, and improvement of the practices within our organization. This positively transformed our

organization to one with minimal patient noncompliance when dealing with an underlying condition that can be life threatening, and taking a risky medication to manage that condition, such as an oral factor Xa inhibitor. This also improved the patient satisfaction, improving the providers working experiences.

Relevance to Nursing Practice

Patient compliance is the degree to which a patient correctly follows medical advice such as treatment plan or taking their medication correctly. This can be related to an issue with proper patient education techniques. Poorchangizi et al. (2017) noted that, in the public's eye, nurses are expected to be abreast with the latest standards and delivery of care. This starts with the training that is provided for the nurses/providers. Empowering nurses/providers with educational enhancements of skillset to ensure each cardiac patient understands fully every aspect of their treatment plan and why it is imperative they follow it, in turn, delivered high quality care to their vulnerable population. This increased practice performance and patient satisfaction, while increasing patient compliance.

Successful in-service interventions based on facility policies and standards provided the continuum of proficient skills necessary for proper patient education within acceptable limits. These interventions allowed for nurses/providers to learn ways to ensure patients are learning necessary information to understand and utilize their treatment plans, eliminating confusion amongst the patients, thus increasing patient compliance. Kleinsinger (2018) noted that medication nonadherence for patients with

chronic diseases is extremely common, affecting as many as 40% to 50% of patients who are prescribed medications for management of chronic conditions such as diabetes or hypertension. This nonadherence to prescribed treatment is thought to cause at least 100,000 preventable deaths and \$100 billion in preventable medical costs per year.

This doctoral project filled an educational gap in practice by educating the nurses/providers on additional ways to educate patients. This reduced practice weakness through the engagement of in-service trainings tailored to the facilities policies and standards. Kiernan (2018) suggested that learning in a practicing clinical skill setting promotes self-reflection, improves motor skills, and provides an environment of direct observation with the ability to assess skill competency and highlight areas that need improvement. Assessing the nurses/providers knowledge on patient education based on these policies/standards helped to improve the educational gap and thus improve patient compliance within the facility, improving patient satisfaction.

Local Background and Context

Direct factor Xa inhibitors such as rivaroxaban and apixaban are prescribed for various medical reasons including atrial fibrillation, which is one of the most seen arrhythmias in clinical practice today (Ray, 2003). Past medical journals have promoted efficacy when guidelines are followed. These types of medications are given today for acute therapy as well as extended therapy to prevent unwanted consequences related to the cardiac disease process. These medications are the corner stone of therapy, when taken as prescribed on a daily regime (Cabral, 2015). It is of immense importance due to

the prevalence of arrhythmia which increases with age and can affect almost 1% of the total population today (Waktare, 2002). With much of the population living to surpass 80 years old, this number increases to 6% (Ray, 2003). Arrhythmias are a major problem throughout society today. According to data collected, atrial fibrillation prevalence is age-related and is expected to rise drastically as our population ages (Hendricks, 2015).

Atrial Fibrillation is a cardiac arrhythmia with the potential to cause thromboembolism. Studies suggest that AF increases the risk of stroke five-fold (Ajam, 2017). Tests such as the CHADS2 and CHA2DS2-VASc have been developed to score for stroke risk in atrial fibrillation patients. These tests help providers to determine which atrial fibrillation patients would benefit from oral anticoagulant drugs to reduce their risk of stroke. These two tests score a patient based on factors that they present. Table 1 shows the CHADS2 stroke risk assessment in atrial fibrillation, and Table 2, presents the score and corresponding annual stroke risk. Table 3 shows the CHA2DS2-VASc Score and risk criteria. Table 4 displays the CHA2DS2-VASc score and corresponding annual stroke risk. In Table 5, treatment recommendations based on the CHA2DS2-VASc Score are presented (Ajam, 2017.)

Table 1*CHADS2 Risk Criteria*

Score (Points)	CHADS2 risk criteria
1	Congestive heart failure
1	Hypertension
1	Age \geq 75 years
1	Diabetes mellitus
2	Stroke/transient ischemic attack

Note. (Ajam, 2017)

Table 2*CHAD2 Risk Scoring System*

CHADS2 score	Adjusted stroke risk (%)
0	1.9
1	2.8
2	4
3	5.9
4	8.5
5	12.5
6	18.2

Note. (Ajam, 2017)

Table 3*CHA2DS2-VASc*

Score	CHA2DS2-VASc criteria
1	Congestive heart failure
1	Hypertension
2	Age \geq 75 years
1	Diabetes mellitus
2	Stroke/Transient ischemic attack/thromboembolic event
1	Vascular disease (prior MI, PAD, aortic plaque)
1	Ages 65–74
1	Sex category (i.e., female sex)

Note. (Ajam, 2017)

Table 4*CHA2DS2-VASc Scoring System*

CHA2DS2-VASc score	Adjusted stroke risk (%)
0	0
1	1.3
2	2.2
3	3.2
4	4.0
5	6.7
6	9.8
7	9.6
8	6.7
9	15.2

Note. (Ajam, 2017)

Table 5*CHA2DS2-VASc Recommendations*

CHA2DS2-VASc score	Recommendation
0	No treatment
1	No treatment, aspirin, or oral anticoagulant
2 or more	Oral anticoagulant

Note. (Ajam, 2017)

First published in 2001, the CHADS2 score was developed to predict the risk of stroke more accurately in patients with nonrheumatic atrial fibrillation. Valvular AF, which is not represented by this project, includes the presence of moderate to severe mitral stenosis or the presence of mechanical prosthetic valve (Ajam, 2017). The CHA₂DS₂-VASc score was an expansion of the CHADS2 to include three additional independent risk factors. In 2014, the American Heart Association/American College of Cardiology/Heart Rhythm Society (AHA/ACC/HRS) guidelines recommended the CHA₂DS₂-VASc score for the assessment of stroke risk in patients with nonvalvular AF. In 2016, the European Society of Cardiology (ESC) guidelines recommend using the CHA₂DS₂-VASc score to estimate stroke risk in AF patients and to start OACs in men with a score of 1 or higher and women with a score of 2 or higher (Ajam, 2017). The use of scoring systems such as the CHA₂DS₂-VASc can help to indicate that thromboembolic complications can occur and when proper drug treatment is warranted using a factor Xa Inhibitor.

Another test that is immensely helpful in determining a patient different risk factors is the HAS-BLED score. “This test estimates risk of major bleeding for patients on anticoagulation to assess risk-benefit in atrial fibrillation care (HAS-BLED Score for Major Bleeding Risk, 2018).” This score can be used alone or in conjunction with other bleeding risk scores such as HEMORR2HAGES and ATRIA. These tests use multiple guidelines to determine whether the benefit of anticoagulation outweighs the risk.

These scoring systems are a great tool when determining the need of a factor Xa inhibitor, but they only aid in the therapeutic response when the patient is compliant with the medications that are prescribed, in response to the score they received with the system. To improve this compliance, educating the patient on the test and what their test results mean is a huge factor. Also, educating the patient on the importance of taking the medication, how to take the medication, when to take the medication and what the medication will do is a fantastic way to reinforce compliance. The patient must understand what the medication is and why they need it to understand the importance of taking it. They must also understand how and when to take the medication to fully understand what needs to happen for them to get the best therapeutic response from the medication.

This level of patient education is not obtained from giving the patient a sheet of paper that explains it. They need to have the provider explain this information face-to-face and while being presented with visual aids to help the patient understand. Not all patients will learn and understand the same way, so this one-on-one interaction, paired with the explanation and visual representation and information covers a wide array of learning styles that will help the patient to understand and remember the importance of safely using and taking their oral anticoagulants to aid in the prevention of additional problems such as stroke. An additional reason that more than just an informational page is needed is due to the geriatric age of these patients, a large majority of them do not know how to use current computer technology, they are not “tech savvy,” as some would

say. This means that they need this one-on-one with visual tools to understand why their medication is so important and the proper way to use it. A problem that has been identified in patient drug noncompliance can be related to such factors as patient administration times causing a decreased therapeutic response due to improper administration. In addressing this problem and providing education, there is an increased therapeutic response among these types of patients. Therefore, to combat the problem of noncompliance amongst this age group, providing the patients with visual education about the importance of drug compliance could be a viable solution.

Patients evaluated on risk stratification for ischemic stroke, still today remains a major concern for those that are diagnosed with related illness' such as atrial fibrillation. By guidelines, it is recommended that patients scoring moderately to high, need a factor Xa inhibitor medication or Coumadin added to their medical regimen. This correlates with the criteria covered on test such as the CHA2DS2-VASc, HAS-BLED, ATRIA, and HEMORR2HAGES tests. We as providers have these test to help aid us in the determination of a care plan for our patients, but they only work if the education is spread to the patients who need the medication. Patients need to understand what the test scores are used for to better understand why it is so important that they take their medication at the correct times, in the correct doses and in the correct manner.

There are many factors that the population remains unclear of regarding factor Xa inhibitor drugs. First, knowledge of purpose is one factor and the reasoning behind the medication. Many patients are completely unaware of their illness, and it is the job of the

medical professional that they are well educated and understand the rationale behind the recommendations. Some of these patients are asymptomatic which can make the educational process more difficult. It is believed that patients prescribed certain direct factor Xa inhibitors lack the knowledge of proper administration of the medication. Disease management type programs have potential benefits in improving outcomes, greater patient satisfaction, better quality of life, and reduced healthcare costs (Hendricks, 2015).

Role of the DNP Student

The doctoral program provides a path for learning that is life long and allow for the creation of contributions in providing practical solutions in real life settings. This project provided awareness of the effects of visual educational interventions among this select group of individuals. The intention was to provide treatment and knowledge awareness to patients that would allow them to have exceptional outcomes. While collaborating with many patients who have been diagnosed with atrial fibrillation, it is a passion to improve compliance and quality of life for my patients. My experience as a Nurse Practitioner within this clinic, provided strong background knowledge and allowed exploration of more information and could potentially combat noncompliance among these patients. These patients enter the clinic as new and inpatient follow-ups. Educating the nurse practitioners and patients through visual education, helped improve education understood by patients. This further increased compliance in patients diagnosed with atrial fibrillation that are prescribed factor Xa inhibitors. The intended setting was

specifically within the cardiology clinic and cardio diagnostics unit within the selected facility.

Working in many different facilities, I have found a few large reasons patients fail to comply with their treatment plan are, they have trouble paying for the medication, they do not understand why they are taking the medication, they think that if they feel better or worse, they can stop the medication, or they have no understanding of their medical problem or treatment plan. I have worked as a Registered Nurse as well as an APRN within the clinic setting and encountered these patients often. I have seen that patients often do not understand what is going on in their body nor do they understand how to follow the treatment plans they are given. I have witnessed a lack of patient education within clinics, where clinics will only give a handout to educate the patients and often this just confuses the patients more. Our diagnostics and treatment plan are only a small part of the patient's potentiality to get better. It is imperative that we dig deeper into the relationship we have with the patients to ensure we are doing everything we can to help them get better. We need to understand their barriers and how to help them through these barriers as best we can, and patient educations paired with better patient/provider relationships opened this door.

My professional context lies within the cardiac nursing. Cardiac nurses oversee planning and offering support, as well as nursing and medical care to individuals within hospitals, clinics, and other settings, who suffer from a cardiac condition or illness. As a cardiology clinic practitioner, my task majorly focuses on assisting the patient through

the diagnosis, treatment, cure, or management of the condition they are facing. It is vital to note that a cardiology practitioner works in conjunction with the cardiologists, surgeons, and family providers to ensure care for the whole patient and care that is coordinated to fit that specific patients' needs. As such, there is a great responsibility between my professional context and this doctoral project in that this project aimed to ensure my patients were safeguarded against threats that may arise due to misinformation, misunderstanding or lack of coordination with the required medical teams. The focus of this project was on training and intervention programs as measures aimed at addressing the compliance issues noted for geriatric patients, ages 60–79, which are taking oral anticoagulants and ensuring their understanding through visual patient education.

As the project leader, I played a significant role in this project in terms of being responsible for the types of training that were set up for the providers to ensure they knew how to properly educate their patients. I oversaw primary and secondary data collection, reviewing existing literature on the subject and determine what routes to take to get the best outcome for my patients' sake. I conducted interviews with the participants after informing them of the benefits of the project and issue consent forms to them. I will analyze the data collected and generate findings, which were provided in sections three and four of this paper.

My motivations for this doctoral project were that I desire my patients to have a clear understanding of what they are going through, how we can help, and the importance

of the medications they are being prescribed as well as how to correctly follow the treatment) plan we develop, to ensure their safety while under our care. By focusing on the benefits of trainings, introduction of new education tools, and policy updates, my aspirations were accomplished. In the execution of this project, I was presented with potential bias in the idea that I am relying on participants honesty during their interviews and medical examination to determine if they were following or complying with the treatment plan that was developed for them. Diverging from the topic of investigation was potentially another source of error in this project. I used a set of predetermined questions for the interviews conducted.

Summary

Proper patient education is an essential factor in the understanding of a diagnosis and treatment plan. Understanding your patients' specific educational needs is a skill set that is often missed because it is individualized to each patient that is seen. In today's times, we see an increase of geriatric-patient (ages 60–79) noncompliance in treatment, especially in specialized fields such as cardiology, because of a lack of knowledge or understanding. It is imperative that providers and staff alike be taught the skill set necessary to assess patients and their level of understanding to the information that they are being presented with, as well as the patients' ability to research and understand the needed information. This is a skill set that needs to be not only taught but refreshed based on the era of geriatric patients who are being treated. Ensuring that staff and providers are trained to not only assess these patients' level of need in education but the proper way to

educate each individual patient was necessary to increase the patient compliance rate not only in the cardiology clinic but across the board.

To ensure that the training provided for the staff was appropriate and taught them the skill set necessary to properly educate the patients, a combination of theories, concepts and models was used to create a training program that was appropriate for our needs. We taught educational practices such as PICOT and ensured that staff understood the concept of Evidence based practice.

In Section 3, I discussed how this training program for the staff and providers was aimed at exploring the impact of individualized patient education, with the use of visual aids, based on patient educational needs, and the impact that it had on patient compliance. I explored the possibility of increased patient compliance among geriatric patients taking factor Xa inhibitors when they fully understand their diagnosis and prescribed treatment plans. I also discuss the significance of understanding not only when it comes to the patients and their treatment but the significance of staff understanding on how to determine the patient's educational needs and meeting those needs.

Section 3: Collection and Analysis of Evidence

Introduction

Many treatment plans fail because of lack of understanding by the patients of the treatment plan, the importance of the treatment plan, what the condition is or how it will affect their lives, and so forth. This can be exceptionally dangerous to geriatric cardiac patients taking oral anticoagulants. This project aimed to improve trainings on visual patient education for nurses/providers within the facility per suggested policies/procedures, with the goal of increasing patient compliance rates. The focus of the project was to ensure that providers understand each technique presented and how to determine which technique would be best to use based on individual patients' preferences with the goal of improving patient compliance. This project offered great relevance to the nursing practice when it came to the improvement of patient care and success of treatment plans. The areas addressed in this section are the practice-focused questions, sources of evidence, and analysis and synthesis.

Practice-Focused Question(s)

Patient compliance is a major factor in the success of treatment plans that providers create for each patient. If the patient does not understand the diagnosis, treatment plan, medication, or importance of any single part of the information they are being presented with, they are more likely to be noncompliant with the treatment plan that is created. They are more likely to take their medication incorrectly or not follow directions that were given on changes that need to be made, symptoms that need to be

recorded, and so forth. This noncompliance stems from patients not being adequately educated by their providers when they start taking anticoagulant therapy. Patients in the geriatric age range are often not as technologically inclined and often have a harder time understanding the medical information they are being given, whereas younger populations can use technology to research the information but may not understand what they are reading or seeing in this information. By changing the way, we are educating patients, we increased compliance as well as patient satisfaction and success with the care that they received. As such, this project aimed to address the following practice-focused questions:

- Will exploring the impact of a staff education that updates the staff on using visual patient education, which aims to improve patient compliance with the treatment plan of patient taking oral anticoagulants, increase provider knowledge as evidenced by a pre/post survey on increasing patient compliance with anticoagulant drug therapy?
- Does the literature support the educating of providers on patient visual education techniques for patients taking factor Xa inhibitors in oral anticoagulants and its ability to increase patient knowledge?

This project aimed to identify the necessary changes to trainings on visual patient education for nurses/providers within the facility per suggested policies/procedures, with the goal of guiding the establishment of new policies, measures, and evidence-based nursing approaches to address the issues associated with patient noncompliance due to

lack of appropriate patient education and understanding. The training provided to the providers ensured they knew how to assess the patient's knowledge. It taught the providers how to determine the best route to take for each individual patients' education, as well as ways for the provider to ensure the patient fully understood the information they were being presented with at each visit.

Sources of Evidence

It is significant to note that in the process of gathering data for this project, caution and privacy were considered when discussing participants, procedures, and protections. To address the practice-focused questions, I conducted electronic searches to identify literature and studies relevant to the provider education program. Databases that I used for the literature searches were Cochrane Library, EBSCO, ProQuest, CINAHL, and the Walden University Library. The search terms that I used to access the articles were *provider education, education, compliance, visual education aides, and proper training*. Command terms such as “and” and “or” were used to broaden the searches. Articles used were primary and peer-reviewed sources and were selected based on the successful application of provider education to increase patient knowledge and compliance. Other sources of information that I used were content experts such as the vice president of employee education in my facility, the lead physician of the cardiology and cardio-rehabilitation clinics within my facility, Walden university professors, clinic managers, and facility directors.

Although there are numerous indications for the use of these types of medications, many patients diagnosed with atrial fibrillation benefited from the outcomes of this project. This was a complicated topic for many patients due to the terminology, long-term adherence, symptom monitoring, referral to specialty care, and the potential interventions and adversity (Edgar, 2017). Many patients lack the knowledge and understanding needed to properly identify the importance of the topic.

The DNP project allowed for the exploration and impact of these staff training changes and the effects they have had, such as a change to policy, measure, and procedure, and the way they positively affected visual educational interventions on oral anticoagulants, such as factor Xa inhibitors such as rivaroxaban and apixaban, leading to an increase in patient compliance. There is much evidence and numerous guidelines on the treatment for preventing ischemic stroke in patients diagnosed with atrial fibrillation that support the appropriateness of this topic. Proper education in this area remains a crucial part of healthcare today. Without proper education, many patients may become noncompliant without even knowing the importance of their given treatment plan or the dangers of not following it.

The current practice guidelines in our clinic (see appendix A) now include visual patient education as a requirement. Visual patient education is now provided to all patients who are currently taking a factor Xa inhibitor in our practice, regardless of what provider they see. Providers were taught to directly ask if the patient understands the diagnosis and treatment plan and if they have any questions. The answer that the provider

receives from the individual patient, determines which route the provider takes in educating the patient on the necessary information for their understanding.

The DNP staff education project was designed to educate and provide continuing education to staff regarding their perceptions of patient knowledge, how to assess this knowledge level and how to respond to it. This skill of assessing knowledge, developing a plan to educate the patient based on the assorted designs of education they have learned, implementing this education and being able to evaluate the improvement or decline in patient compliance as a direct result, helped to improve patient satisfaction while changing the culture of the organization to a more patient focused culture as it should be.

This project addressed the problem of staff knowledge on the proper way to analyze patients' understanding of diagnosis and treatment and educate them accordingly. The project assessed whether a change in staff education would increase patient knowledge enough to increase patient compliance and satisfaction while taking a factor Xa inhibitor such as rivaroxaban or apixaban.

The typical method of providing patient education is giving the patient a handout on the diagnoses and the use of the new medications and their side effects. The new procedure is to professionally train the providers on how to use the pamphlets, models, and other visual tools (see Appendix B for a list of visual education that will be used) in a way that benefits the individual patient and allows them to fully understand their diagnosis, the treatment plan, and the importance of compliance.

The providers within the clinic, learned to educate the patients using visual and handheld educational materials to explain the tests they will be/have been given, the diagnoses, what the diagnoses mean, and information on the medications they will be prescribed. Specific factors were taken into consideration, such as inability to visualize material due to other co-morbidities such as glaucoma, macular degenerative disease, and cataracts. Providers now explain the importance of the proper use of the medication and how compliance with the directions of the medication can help to improve their quality of life. I went one step further by documenting if this improved education is raising the compliance rate of the patients in the cardiac offices.

This summarizes the evidence and effectiveness of these interventions in clinical staff training practices. The biggest strategies were to help educate the staff that were prescribing factor Xa inhibitors using the data collected and most appropriate outcomes. This improved health care outcomes by improving quality and longevity of life. This project compared the existing quality improvement guidelines to the new guidelines of visual education. Anticoagulant therapy is the cornerstone of venous thromboembolism treatment and offers several advantages over traditional therapy (Cabral, 2015). I used the *Walden University Manual for Quality Improvement* to ensure all principles of quality improvement were met.

I obtained Walden University Institutional Review Board (IRB) approval (number 02-22-22-0384774) to ensure the protection of the participants. All information was entered into the IRB system and the Walden University's informed consent page was

signed for approval to implement the project by the host site. The Walden Education manual was utilized to always provide an explanation regarding the protection of patients and staff.

The staff that took part in this data collection, change of education procedures, and policies were mentioned only anonymously in the information presented in the report to ensure privacy and protection of rights and inability to identify patients through the provider/staff information given.

The purpose of this DNP staff education project was to increase patient knowledge through an increase of provider knowledge with staff education. The pre-evaluation and post-evaluations were given in a Likert-scale format to allow for question–item analysis and de-identification to protect staff participants from actual or perceived retribution for answers that were given.

Evidence Generated by the Doctoral Project

Following Walden IRB approval, I completed the DNP project using the literature as a guide, the outline of the DNP project, the training intervention, and surveys completed by staff at the clinic itself. All educational and/or training intervention were developed using various literature on the effects of visual aids and what visual aids were proven to be most beneficial. My team for this project was my mentor and myself. The participants were the providers who were within the clinic and the clinic’s management team. Tools that were used for the project were pre and post surveys, and an educational program for providers and staff.

Analysis and Synthesis

During the process of implementation, the data were compiled into an education presentation, using Microsoft PowerPoint, for the leadership, staff, and providers to review. Potential problems noted during this process were assessed and adjusted during the development and implementation phases of the project.

The education and training were offered to all nursing staff, providers, and support staff and remained available for everyone to complete for a period of 3 weeks to account for staff members that may have been out for assorted reasons. The education programs that were presented included a cognitive rehearsal dialogue to allow for the staff to have a better understanding of how to assess a patient level of knowledge, assess what resources to use to ensure they learn the necessary points of information for their success and how to evaluate how well they were able to educate the patient with which they were working. The summative evaluations in the final phases helped to determine if the staff education project should continue within the organization as a routine education program for staff.

The education project included a pretest and posttest, summative evaluation, and analysis. The overall score of the posttest compared to the pretests determined whether the education program being implemented was effective, through higher posttest score than pretest scores. According to Hunt (2011), the use of this process of restructuring the questions will help to ensure the consistency in the responses provided.

Upon the conclusion of data collection, a thorough analysis of the information was conducted. Descriptive statistics were used to describe the data collected. The descriptive statistics that were seen entail tables, charts, graphs, percentages, exedra (Section 4 conveys the details of the data collected).

Summary

The first step in this project was to develop an informative PowerPoint to education the staff of the potential training/education changes that may take place and get feedback on their thoughts of issues they think could arise. The next step was to evaluate clinic data to determine a baseline of expected noncompliance. Following the evaluation, the new education program was developed and implemented for a period of 3 weeks. Upon the end of this period, a post evaluation was given and analyzed with all collected data, to determine the effectiveness of this unfamiliar staff education program when it comes to patient compliance in treatment plan for the geriatric age range of 60–79, while taking oral factor Xa inhibitors.

A summative evaluation was completed and is discussed in Section 4 of this paper. This summative evaluation provides the detailed observation and implication of the project implementation. It provides the concluded recommendations relating to the gap in practice regarding patient compliance and provider knowledge. It also gives detail into the project's strengths and weaknesses for use in future projects.

Section 4: Findings and Recommendations

Introduction

The local problem identified in this educational DNP project was the lack of knowledge on effective patient education, which created noncompliance rates among patients who are taking oral anticoagulants such as rivaroxaban and apixaban. This evidence-based project involved providing tools and knowledge needed for providers to optimize their patient education techniques to ensure they are using the appropriate technique with each individual patient. This in turn ensured that patients had a complete understanding of their diagnosis, treatment plan, risks, and so forth. This resulted in an opportunity for the site organization to adopt a new provider education program that focused on factors that lead to a patient's ability to understand the information they are being given. The two practice-focused questions were the following: Will exploring the impact of a staff education that updates the staff on using visual patient education, which aims to improve patient compliance with the treatment plan of patient taking oral anticoagulants, increase provider knowledge as evidenced by a pre/post survey on increasing patient compliance with anticoagulant drug therapy? Does the literature support the educating of providers on patient visual education techniques for patients taking Factor Xa inhibitors in oral anticoagulants and its ability to increase patient knowledge? Content experts were interviewed to review the project plan, education, method, and sources of evidence. Providers were assigned trainings on ways to determine appropriate educational avenues for each patient and how to implement the chosen forms

of patient education to ensure a whole understanding of the diagnosis and treatment plans they were giving. Participation in the study was optional. Study participants anonymously completed an online demographic, pre assessment, and post assessment survey. Data that were collected were sorted and analyzed. This section includes findings, limitations, and implications.

Findings and Implications

Two content experts, the vice president of employee education and the lead physician of the cardiology, completed a validity assessment (see Appendix C) evaluating the curriculum plan and content to determine whether learning objectives were met or not met. Pre and post assessment questions were evaluated and scored by the content experts for relevance in relation to program outcomes. The assessment was distributed in electronic format and accompanied by the curriculum outline and all gathered materials (see Appendix D). Table 6 includes evaluations of curriculum objectives. Each curriculum objective was identified as being met by both experts, thus indicating a result frequency of 2, mean of 1, and mode of 1. where *met* = 1 and *not met* = 2.

Table 6*Content Expert Evaluation of Curriculum Objectives*

Objective	Content expert 1	Content expert 2
Participant will be able to discuss the importance of individualized education in optimizing patient understanding to encourage compliance.	Met	Met
Participants will be able to demonstrate competency in the use of the training they are provided.	Met	Met
Participants will be able to provide instruction based on individual needs of patients	Met	Met
Participants will be able to apply the new techniques of patient education without interference in current clinic operations	Met	Met
The information presented is applicable to outpatient cardiology patients being prescribed Factor Xa inhibitors in oral anticoagulants	Met	Met
The program presentation is engaging for the learner	Met	Met
The presentation style contributes to the learning experience	Met	Met

Both content experts agreed that all pre-assessment and post-assessment questions were truly relevant to the program outcomes as demonstrated in Table 7. The validation assessment was scored using the following scale: 1 = *not relevant*, 2 = *somewhat relevant*, 3 = *relevant*, and 4 = *very relevant*. The content validity index for each of these questions was a 1, demonstrating each pre assessment and post assessment item as valid in terms of curriculum and learning objectives. With full agreement for each of the scored items, every assessment question had a frequency of 2 with a mode and mean of 4,

further demonstrating the validity of assessment to the curriculum and learning objectives.

Table 7

Content Expert Validity Assessment

Statement/Question	Content expert 1	Content expert 2
Do you have all the medication you were prescribed?	4- Very relevant	4- Very relevant
Do you need help paying for medications?	4- Very relevant	4- Very relevant
Do you understand why you are taking these medications?	4- Very relevant	4- Very relevant
Do you understand your diagnosis?	4- Very relevant	4- Very relevant
Do any of these medications make you sick?	4- Very relevant	4- Very relevant
If you feel different (better or worse) when taking your medication, do you stop taking it?	4- Very relevant	4- Very relevant
How often do you forget to take your medication?	4- Very relevant	4- Very relevant
Do you understand the risks of not taking your medication correctly?	4- Very relevant	4- Very relevant
Do you have trouble taking your medication?	4- Very relevant	4- Very relevant

Twenty-five outpatient nurses from cardiology and cardio-rehab were assigned the education titled *The Difference in Compliance When Visual Education is Present*. Sixteen nurses completed the assigned education over a 3-week period; no nurses left the organization during this time, and nine were left incomplete. Fourteen nurses participated in some portion of the survey, completing at least one of the two assessments. Of those 14 nurses who participated in some way, 11 completed both the pre and post assessment survey for comparative data.

Demographic information was collected in conjunction with the pre and post assessment surveys and included information from all 14 partially participating nurses. This led to a generalized demographic response that is not solely representative of the 11 nurses who completed both surveys. The demographic data are displayed in Figures 3-7: When it comes to participant age (see Figure 3), the majority of participants are in the 41–50 age range at 37%, followed by the 31–40 age range at 21%. The other three age ranges 20–30, 51–60, and 61 and older, tied at 14%. When comparing gender of participants (see Figure 4), 43% were male, and 57% were female. When comparing ethnicity (see Figure 5), the majority were White/Caucasian at 79%, followed by Black/African at 14%, and 7% Hispanic/Latino. As for years of experience (see Figure 6), it was a tie between 6–10 years and 21 or more years at 29% each. This was followed with a tie in the other options of 0–5 years, 11–15 years and 16–20 years all coming in at 14%. Finally, looking at the highest level of education of the participants (see Figure 7), 50% had a bachelor's degree, while 29% has a master's degree and 21% with an associate degree. None of the participants had higher than a master's degree.

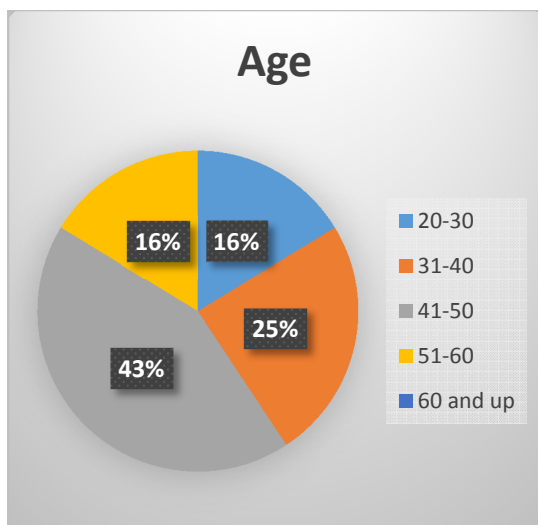
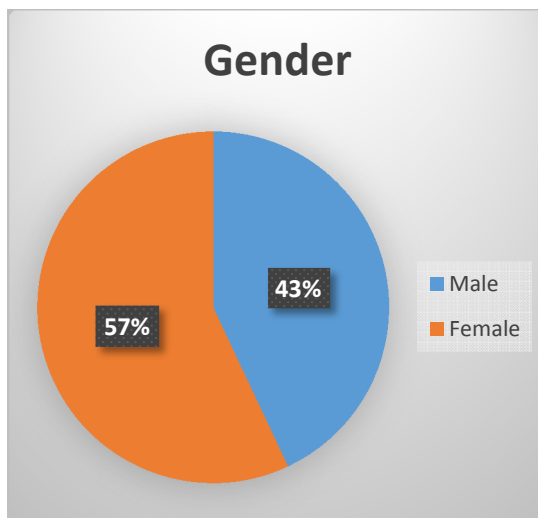
Figure 3*Participant Age***Figure 4***Participant Identified Gender*

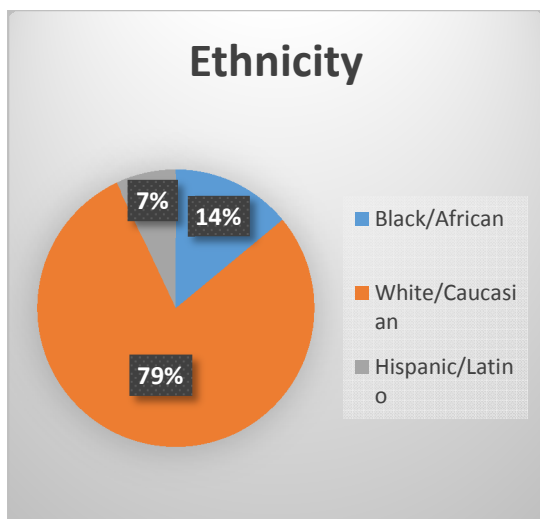
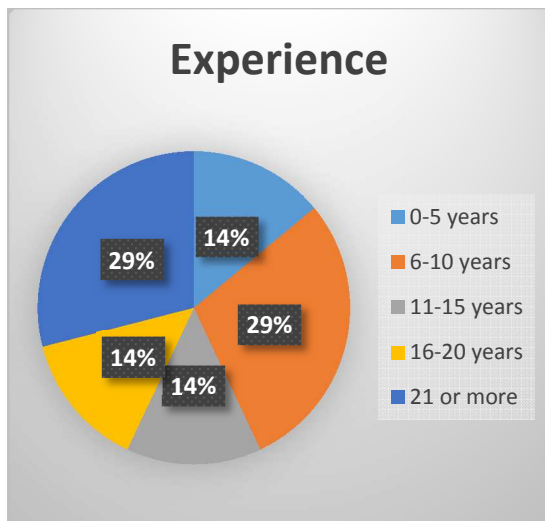
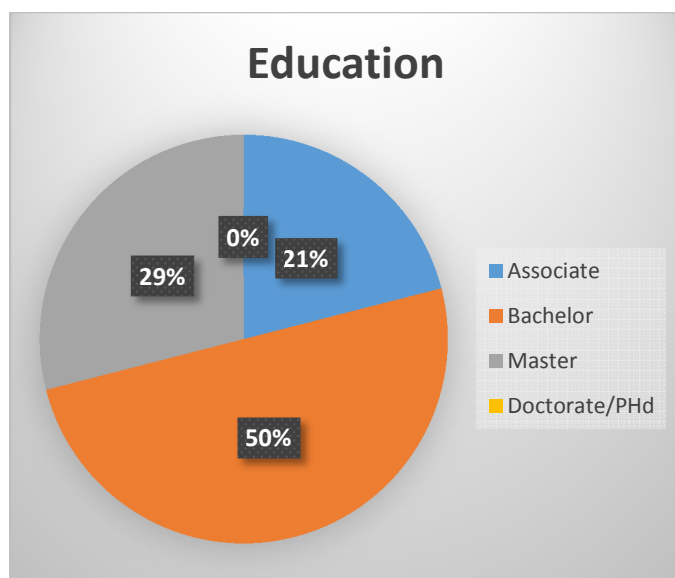
Figure 5*Participant Ethnicity***Figure 6***Participant Years of Experience*

Figure 7*Participants' Highest Level of Education*

The greatest focus of the study results was on the impact of the education in the meeting the identified learning objectives. Nurses/providers completing the education identified an improved level of knowledge in how to accurately assess a patient and then educate a patient base on that patient individual needs. Table 8 represents the nurses' response to the pre and post survey assessment comparison. Participants were asked to rate each question on the following scale: 1 = *strongly agree*, 2 = *agree*, 3 = *neutral*, 4 = *disagree*, or 5 = *strongly disagree*. The reduced standard deviation with the post assessment results demonstrates a lesser variance in the answers, indicating a better knowledge base and higher level of confidence in educating patient that are taking factor Xa inhibitors in an oral anticoagulant following the education completion.

Table 8*Pre and Post Assessment Comparison*

Question/Statement	Pre- assessment	<i>SD</i>	Post- assessment	<i>SD</i>
I have a strong knowledge of how to educate a patient being prescribed Factor Xa inhibitors in oral anticoagulants	1.79	0.56	1.21	0.41
I have the tools and resources needed to provide optimal patient education to ensure patient understanding when diagnosing and informing patients of the patient care plan.	1.71	0.45	1.07	0.26
I have a high level of confidence in the ability to educate patients on vital information and relay importance of correctly following a patient care plan when taking Factor Xa inhibitors in oral anticoagulants	1.79	0.56	1	0.00
I have knowledge of all available resources to help me educate patients in my clinic	2.57	0.73	1	0.00
I understand that patients may not voice their misunderstanding of the information being provided and I can determine when a patient is confused or does not understand the information that they are being given	2.42	0.62	1.14	0.35
I understand the risks of taking an oral anticoagulant incorrectly	2.21	0.77	1.0	0.00

Additional information was collected from the participants as an evaluation of the training effectiveness and impact. As stated in the plan, the Kirkpatrick model was used for this purpose. Table 4 represents the mean results of each evaluation question utilizing the same assessment scale as before of *1 = Strongly agree, 2 = agree, 3 = neutral, 4 = disagree, or 5 = strongly disagree*. All participants responded with strongly agree or agree to applicability to work, engagement while learning and presentation style.

Table 9

Pre and Post Assessment Comparison

Statement	<i>M</i>	<i>SD</i>
The information being presented in this education is applicable to my work	1.08	0.266
The program helped me to stay engaged while learning	1.08	0.266
The presentation style contributed to my learning experience	1.08	0.266

The findings of this evidence-based project demonstrate an improved perception of knowledge, recognition of resources, and improved confidence through a formalized education program. The ability to electronically deliver the assigned education allowed for flexibility of completion of the educational materials. Various aspects of cardiac nursing were examined, and different perspectives were brought about to ensure a broad understanding of the issue and how to address it. Multiple examples of visual educational aides were given to demonstrate ways that a patient can be educated at their level to ensure their understanding of the materials they are being presented with. A list of required questions was developed for staff to ask each patient to identify if they have an

understanding or not, even if they do not want verbally to acknowledge their level of understanding.

The results of this study imply that the perception of improved knowledge and resources can be obtained through an engaging electronic education delivery modality. These tools have the potential to influence patient care and outcomes for the cariology clinic in a positive manner. Ongoing assessments and provider education can ensure that these positive results are seen in the clinic and remain seen in the clinic with the patients who are brought in. The purpose of this project was to positively influence the clinic and patient care through provider education, thus improving the patient treatment plan compliance rates. This was achieved through application of evidence-based practice into clinic nursing, improving the providers understanding of proper patient education and assessment of patient education. Additional and ongoing data will be collected to further support this clinic change through monitoring of patient outcomes.

Recommendations

This evidence based educational project led to additional opportunities to impact the outcomes of patients taking medications other than factor Xa inhibitors in oral anticoagulants. Upon seeing the improvement in patient outcomes with the implementation of this staff education, it was realized that by adapting this education guide for all aspects of our practice, we can positively influence the clinic and patient outcomes across the board. It was determined that this standardized provider education needed to be finalized and put into the practice as a protocol for ensuring proper patient

education in the overall care plan. This ongoing nurse/provider education is necessary to ensure we are doing all we can to improve standardized care and outcomes of our patients regardless of the medication they are taking or their diagnosis.

Contribution of the Doctoral Content Experts

The content experts were used throughout the course of this doctoral project. Collaboration with the lead physician of the cardiology ensured accurate interpretation of the evidence. This provider also assisted in the proper way to deliver and set up this educational program so that it was beneficial to the providers, patient, and clinic alike. They provided resources, suggestions, and ongoing support in the development and implementation of the project. The second content expert, the Vice President of Employee Education, specializes in staff education for all members of the clinics and hospitals staff. They have a knowledge base in professional development, nursing, and a background in what delivery of staff education has the best results in their experience. They helped to ensure visual aide, links, etc., would work in the system in the electronic delivery of the educational program. Both content experts evaluated the curriculum and provided validation of the pre/post assessment questions and edutain evaluation using the Content Experts Validity Evaluation (Appendix D). The extension of this project will include ongoing data collection and analysis of patient outcomes with this new method of provider education and patient education. Collaboration with these same content experts will occur for ongoing data analysis and evaluation.

Strengths and Limitations of the Project

Strengths of this doctoral project include the clinic providers, administrations, and all staff support received throughout the planning and implementation of the project, the clinics flexibility in adapting to the notable needs of the organization, and the collaboration with various stakeholders. The need from proper patient education in the cardiology clinic is very prominent. While providers are telling the patients their diagnosis and treatment plans, they must also ensure that the patient is understanding what they are being told. Flexibility in adapting to organizational needs was influence by pandemic related restrictions. This resulted in altering the time allotted for the education an assessment and reconsideration for delivery methods. Key stakeholders and content experts were used due to the pandemic in place of developing a team. A larger sample size would have been an improvement on data quality.

Summary

The gap in practice identified in this project was a lack of provider education on the proper ways to assess a patient's knowledge and understanding, and the proper ways to educate said patients to ensure they have a direct understanding of the information they are being given. This gap of practice was addressed through planning, content expert involvement and support from the clinic, using an evidence-based practice approach. Nurses that took part in the education all reported feeling more confident in their understanding and ability to properly educate their cardiac patients taking oral anticoagulants on the importance of compliance with the treatment plan. The electronic

delivery of the education was found to be efficient and effective in promoting learning. This project is ongoing and allows for the opportunity to continue collecting data to evaluate patient outcomes. Section five will describe my dissemination plan and how I would like to publish the findings as well as share them at a nursing conference for heart health in the future.

Section 5: Dissemination Plan

The process used to implement, measure, and evaluate this educational DNP project will be shared throughout the organization and altered to be useful in more areas than just cardiology. The first opportunity that occurred was during our annual colon health awareness week in November 2021, where a virtual education was presented on a loop in the atrium of our hospital for public viewing. This virtual education presented the project background, processes, and results. Following the positive feedback that was given to the viewing in the atrium, the education department asked if they could utilize the virtual loop in their ongoing display for staff education in their education department. Due to the success that was seen with this project, the vice president of employee education stated that they would like to use this project as a basis and example for future education-based practice projects. This project will also be featured in future Heart Health Awareness Rallies later this year.

Analysis of Self

My intent throughout this program was to improve my knowledge to better handle to continually changing health care field. With recent outbreaks of things like Covid and how it has changed cardiovascular health and treatment, I wanted to make sure that I was equipped to offer my patients the best care possible. I have taken a long time to complete the program, but the ability to complete the program at a slower pace has allowed me to maintain a good work, school, and life balance and allowed me the opportunity to apply what I have learned and spread this knowledge to my coworkers. This journey has been

an incredibly stressful but fulfilling journey. The project choice was based on a need that I have noticed in my clinic as well as other areas. It was first very prominent to me in the geriatric population because of their lack of technological understanding, and I wanted to do something that would give them better quality of life and ensure they did not feel like they were clueless to what was going on in their health. I have learned that extensive planning is something that is necessary not just in school but in work and with my patient care plans as well. I have learned that taking the extra few minutes to ensure that plan that I am prescribing to my patient is one that they are able to follow, not just one that will treat their diagnosis. I have noticed substantial professional growth and understanding of all aspects of the inner working of my clinic and not just my role as a nurse or practitioner.

Summary

This doctoral project was a way for me to apply knowledge that I had gained throughout the program in real time with my patients in the clinic. This educational doctoral project encouraged change within my clinic that has seen a positive influence for not only the nurses and providers but the patients as well. The change in ways that we are not educating and assessing the knowledge of our patients has made an enormous difference in patient compliance because of their ability to understand the care plans that we are prescribing. This project will provide the positive basis needed for more social improvements in the quality of care we are providing to our patients through the education of the providers and our providers abilities to ensure the patients fully

understand what they are being told. I would like to share the information collected via publishing as well as at a nursing conference to help educate other providers.

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Appendix A: Practice Guidelines for Clinics

Within the practice clinics, there are practice guidelines that are intended to increase patient understanding and in turn increase patient compliance. These guidelines include the following:

- All patients should be educated by the provider about all test, procedures, medications, etc.
- Patients are called in to do random pill counts to ensure medication is being taken properly.
- Patients are required to bring medication with them to ALL appointments so that a pill count can be done to ensure patient compliance with medication.
- If the patients have financial difficulty paying for the medication, we complete Prior Authorizations to try to get the insurance to pay for them. We offer discount cards if this does not work. If we have the medication in samples on hand, we let the patients have the samples to cover their medication until we can get the medications approved.
- We have a list of questions that we require providers to ask each patient to improve communication and try to reduce barriers:
 - Do you have all the medications you were prescribed?
 - Do you need help paying for medications?
 - Do you understand why you are taking these medications?
 - Do any of the medications make you sick?
 - If you feel worse, do you stop taking them?

- If you feel better, do you stop taking them?

Appendix B: Additional Visual Education Used in this Trial

Additional patient education will be used in this trial to determine if its improved patient compliance. This additional patient education will be:

- Trifold displays showing what each medication does and showing each diagnosis.
- Pamphlets containing pictures to show what each procedure, test, diagnosis, etc. is.
- Handheld models of the cardiovascular system and what the diagnosis means and how the medication is supposed to help that diagnosis.

These new forms of visual patient education will be used to better educate the patients

Met	Unmet	Objective
		Participant will be able to discuss the importance of individualized education in optimizing patient understanding to encourage compliance.
		Participants will be able to demonstrate competency in the use of the training they are provided.
		Participants will be able to provide instruction based on individual needs of patients
		Participants will be able to apply the new techniques of patient education without interference in current clinic operations
		The information presented is applicable to outpatient cardiology patients being prescribed Factor Xa inhibitors in oral anticoagulants
		The program presentation is engaging for the learner
		The presentation style contributes to the learning experience

on their diagnosis, medication, testing, etc.

Appendix C: Content Expert Validity Evaluation

The difference in Compliance When Visual Education is Present – Pre/Post Assessment Validity Evaluation by Content Experts

Thank you for taking the time to function as a content expert for this project. This survey will serve as the validity evaluation of the curriculum and assessment questions.

ADDIE: Will exploring the impact of a staff education that updates the staff on using visual patient education, which aims to improve patient compliance with the treatment plan of patient taking oral anticoagulants, increase provider knowledge as evidenced by a pre/post survey on increasing patient compliance with anticoagulant drug therapy? Does the literature support the educating of providers on patient visual education techniques for patients taking Factor Xa inhibitors in oral anticoagulants and its ability to increase patient knowledge?

Curriculum Plan Evaluation

Please select if each of the following curriculum objectives were met or not met in the presented curriculum.

Pretest/Posttest Relevance

For the subjective statements, participants will be asked to rate what extent they agree with the statement using the following scale of strongly agree, agree, neutral, disagree, or strongly disagree.

Participants	Question/Statement
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Answer	
	I have a strong knowledge of how to educate a patient being prescribed Factor Xa inhibitors in oral anticoagulants
	I have the tools and resources needed to provide optimal patient education to ensure patient understanding when diagnosing and informing patients of the patient care plan.
	I have a high level of confidence in the ability to educate patients on vital information and relay importance of correctly following a patient care plan when taking Factor Xa inhibitors in oral anticoagulants
	I have knowledge of all available resources to help me educate patients in my clinic
	I understand that patients may not voice their misunderstanding of the information being provided and I can determine when a patient is confused or does not understand the information that they are being given
	I understand the risks of taking an oral anticoagulant incorrectly

Please rate each of the following question/statements in terms of how important it is to the program outcomes.

1 = not relevant

2 = somewhat relevant

3 = relevant

4 = very relevant

Relevance	Question
	Do you have all the medication you were prescribed?
	Do you need help paying for medications?
	Do you understand why you are taking these medications?
	Do you understand your diagnosis?
	Do any of these medications make you sick?
	If you feel different (better or worse) when taking your medication, do you stop taking it?
	How often do you forget to take your medication?
	Do you understand the risks of not taking your medication correctly?
	Do you have trouble taking your medication?

Appendix D: Pre-Assessment and Post-Assessment Survey

Pre-Assessment***Demographics***

1. What is your current age?
 - a. 20-30 years old
 - b. 31-40 years old
 - c. 41-50 years old
 - d. 51-60 years old
 - e. 61 years old or older
 - f. Prefer not to answer

2. What gender do you identify with?
 - a. Male
 - b. Female
 - c. Other
 - d. Prefer not to answer

3. What ethnicity do you identify with (select all that apply)?
 - a. Black/African
 - b. White/Caucasian
 - c. Hispanic/Latino
 - d. Other
 - e. Prefer not to answer

4. How many total years of experience do you have as a nurse and/or provider?
 - a. 0-5 years
 - b. 6-10 years
 - c. 11-15 years
 - d. 16-20 years
 - e. 21 years or more

5. What is your highest level of completed education in nursing?
 - a. Associates Degree
 - b. Bachelor's Degree
 - c. Master's degree
 - d. Doctorate/PhD

Degree of knowledge and resources (subjective)

For the following statements, you will rate to what extent you agree/disagree with the statement using the following scale:

- a. Strongly Agree
- b. Agree
- c. Neutral
- d. Disagree
- e. Strongly disagree

6. I have a strong knowledge of how to educate a patient being prescribed Factor Xa inhibitors in oral anticoagulants.
7. I have the tools and resources needed to provide optimal patient education to ensure patient understanding when diagnosing and informing patient of the patient care plan.
8. I have a high level of confidence in the ability to educate patients on vital information and relay importance of correctly following a patient care plan when taking factor Xa inhibitors in oral anticoagulants.
9. I have knowledge of ALL available resources to help me educate patients in my clinic.
10. I understand that patients may not voice their misunderstanding of the information being provided and I can determine when a patient is confused or does not understand the information that they are being given.
11. I understand the risks of taking an oral anticoagulant incorrectly.

Post-Education Training Evaluation

For the following statements, you will rate to what extent you agree/disagree with the statement using the following scale:

- a. Strongly Agree
- b. Agree
- c. Neutral

- d. Disagree
- e. Strongly disagree

1. The information being presented in this education is applicable to my work
2. The program helped me to stay engaged while learning
3. The presentation style contributed to my learning experience.
4. I have a strong knowledge of how to educate a patient being prescribed factor Xa inhibitors in oral anticoagulants.
5. I have the tools and resources needed to provide optimal patient education to ensure patient understanding when diagnosing and informing patient of the patient care plan.
6. I have a high level of confidence in the ability to educate patients on vital information and relay importance of correctly following a patient care plan when taking factor Xa inhibitors in oral anticoagulants.
7. I have knowledge of ALL available resources to help me educate patients in my clinic.
8. I understand that patients may not voice their misunderstanding of the information being provided and I can determine when a patient is confused or does not understand the information that they are being given.
9. I understand the risks of taking an oral anticoagulant incorrectly.