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Polycystic Ovary Syndrome Treatment

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This is to certify that the doctoral study by

Moneka Patterson

has been found to be complete and satisfactory in all respects,
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Walden University
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Abstract

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MS, Walden University, 2014

BS, Lander University, 2008

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Polycystic ovary syndrome (PCOS) is an endocrine system disorder that affects women of reproductive age. If not treated properly, PCOS can lead to infertility. Lack of proper treatment of PCOS may also result in medical complications such as diabetes or heart disease. The rural clinic where this project took place did not have a mandatory guideline for treatment of PCOS; therefore, no standardized method of diagnosis or treatment of PCOS existed. The purpose of this project, guided by the IOWA evidence-based practice model, was to educate providers on the evidence-based guideline for diagnosis and treatment of PCOS outlined by the Endocrine Society Taskforce. The guideline was selected after a comprehensive literature review and was used to develop an educational program that was provided to 5 nurse practitioners, the medical director and staff. A pre-test post-test design was used to determine if the participants understood the content from the guideline that was presented. Results showed that the researcher-developed test administered to participants yielded scores of 74 on the pre-test and increased after the education program with all participants scoring 100 on the post-test. The guideline used for the education was then presented to the clinic for implementation with the assistance of the medical director's support. The project provided an evidence-based guideline for diagnosing and treating PCOS and raised awareness of PCOS among all staff in a rural clinic where many patients with PCOS are treated. Positive social change may result as providers are better prepared to deliver evidence-based care for PCOS and as infertility and complications of untreated PCOS are reduced.

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Table of Contents

Section 1: Nature of the Project

Introduction

Polycystic ovary syndrome (PCOS) is an endocrine disorder that can affect a woman's ovaries and reproductive system (Mayo Clinic, 2016). When a woman has PCOS and it is not managed appropriately, it can affect her ability to conceive. The exact cause of PCOS is unknown. Factors that play a role in the development of PCOS include excess insulin, low-grade inflammation, and hereditary (Mayo Clinic, 2016). Scholars have compared the recommendation of lifestyle changes (diet/exercise) as opposed to treatment with clomiphene and Metformin for infertility (Fica, Alba, Constantin, & Dobri, 2008). Metformin is a drug that is used to treat Type 2 diabetes by improving the way that the body handles insulin (Diabetes Self-Management, 2016). Clomiphene is a fertility medicine that affects the pituitary gland (Drugs.Com, 2016). Researchers have also examined menstrual patterns and body mass index (BMI) as they relate to increased fertility after starting Metformin versus lifestyle modifications only (Curi et al, 2012). Curi et al. (2012) showed that menstrual pattern improved in both groups: however, there was a significant decrease in BMI in the lifestyle change only group. The implementation of mandatory guidelines within a practice may result in improved care and increased fertility. Clinical practice guidelines can improve the quality of care and this has been demonstrated by rigorous evaluations. Clinical practice guidelines are designed as recommendations about the care of patients within conditions provided to clinicians (Up-To-Date, 2016). Their intent is to optimize patient care. Guidelines have changed focus from the effectiveness of interventions to the size of the effect and balance between

effects and cost (Up-To-Date, 2016). The Endocrine Society Task Force (2013) developed guidelines to treat PCOS. These guidelines are not always followed by obstetric and gynecology physicians and providers. The Endocrine Society Task Force guidelines first recommended using Rotterdam criteria for diagnosing PCOS (as cited in Legro, 2016). This includes the presence of two of the following criteria: ovulatory dysfunction, androgen excess, or polycystic ovaries (Legro, 2016). For women who are not trying to conceive, hormonal contraceptives are the first line of management for PCOS. Clomiphene, which is used to induce ovulation, is currently the first-line therapy for infertility (Legro, 2016). Metformin is beneficial, in conjunction to the clomiphene, for improving menstrual abnormalities (Legro, 2016). The recommendation of exercise therapy and dietary intention is also found within these guidelines. The specifics of certain diet modifications are addressed in the guidelines. After becoming pregnant Metformin is recommended as a first-line treatment for prevention of pregnancy complications (Legro, 2016).

Problem Statement

Infertility is a problem that many women face. Infertility is considered a disease of the reproductive system, and it is defined by failure to achieve clinical pregnancy within 12 months of unprotected sexual intercourse (World Health Organization, 2016). Women can have infertility problems that start years prior to the diagnosis. They are usually not recognized until the couple is trying to conceive. Infertility issues should be addressed, evaluating both the male and female for issues. PCOS is one of the causes of infertility. Most providers will not start evaluating the problem until the woman has been

trying to become pregnant for more than 12 months (Sherbahn, 2016). For women over the age of 35, earlier evaluation and treatment may be justified based on medical history and physical findings and is warranted after 6 months (Sherbahn, 2016). Not identifying the cause of the problem can delay treatment and the likelihood of becoming pregnant. At the age of 35, fertility declines, which makes it even more important for these patients to receive proper treatment. Some women may miss this window of opportunity to conceive if the PCOS is not managed properly from the start of diagnosis.

Purpose Statement

The purpose of this project was to educate providers with the proper guidelines for the treatment for PCOS. Identification of why it is important to implement these proper guidelines was established. I evaluated increased fertility, decreased BMI, and decreased insulin levels from an organizational standpoint; however, I also outlined a successful planning phase for this organizational. The Endocrine Task Force (2013) formulated practice guidelines for the treatment of PCOS; however, providers do not usually follow these recommendations.

Women with PCOS are at higher risk for many health problems. These health problems include pregnancy complications, endometrial cancer, obesity, depression, obstructive sleep apnea, fatty liver, Type 2 diabetes, and cardiovascular risk (Legro, 2016). Educating providers on the treatment of PCOS may make them more willing to follow guidelines when treating these patients. Providers require skills and knowledge in order to provide competent care to protect people using the health care system. Health

care education is one key to ensuring quality of life, improving patient outcomes, and protecting individuals from harm (Grimm, 2014).

Nature of Doctoral Project

The purpose of this doctoral project was to demonstrate advanced knowledge in the area of nursing, research, and evidence-based practice. This project has laid the foundation for future scholarship. This project allowed me to demonstrate my achievement of the 8 DNP essentials. I believe that this project is the beginning of many scholarly contributions in the future. The other goal of this project was to reiterate to providers the purpose of guidelines and their use. Guidelines are set in place to guide practice although each individual should be addressed as an individual. These guidelines are validated through evidence and should be used as much as possible.

Significance

Proper treatment for PCOS is a significant problem. PCOS is a prevalent disorder. PCOS affects 5-10% of women of childbearing age (20-40) and 30% of women have PCOS symptoms (Health Grades, 2014). This age range is a critical part in a woman's life to produce life and have a family. Proper treatment during this stage, or prior, in a women's life could be the difference between becoming pregnant and not becoming pregnant. Providers play a role in the decision-making process for treatment plans for these women. Providers need to make the appropriate recommendations for these women based on what evidence has shown. The infertility rate for women with PCOS is high and each additional year or time wasted on improper treatment or lack of diagnosis increases these rates. Proper education and proper guideline adherence will lead to proper

treatment and increased fertility. For this project, my focus was on the planning portion for provider education and algorithm/guideline use. As the organization continues to carry out the project with their patients, they should see an increase in fertility, decrease BMI, and decrease insulin levels. As the BMI and insulin levels decreases, so does the risk for the complications of PCOS.

Summary

PCOS is a common condition. It is associated with many complications. Scholars have identified different treatment modalities that can provide better outcomes. Having clinical guidelines in place can assist medical providers with caring for these patients. The problem addressed in this project was the complications that are seen when women do not receive proper treatment. The purpose of this project was to educate the providers on the use of the Endocrine Task Force guidelines. Statistical data were produced to show the significance of this disorder and it prevalence. Implementing the proper guidelines will ensure timely treatment as well as improve patient satisfaction.

Section 2: Background and Context

Introduction

Infertility related to PCOS continues to affect many women in the United States. The purpose of this evidence-based practice project was to improve health care delivery. In this study I sought to discover the effectiveness of the quality improvement planning regarding the adoption of the PCOS practice guidelines/algorithm and the educational program. Theories that were used as frameworks for this project were the Lewis Change theory as well as the IOWA model.

Concepts, Models, and Theories

The use of the IOWA model was beneficial for use in this quality improvement project. The focus of the IOWA model is on collaboration and organization incorporating conduct and the use of research along with other types of evidence (Doody & Doody, 2011). It was introduced in 1994 and is used in research programs and is in nursing journals (Doody & Doody, 2011). This model focuses on problem-focused triggers and knowledge that drives staff to begin to question if there is a better way of doing things (Doody & Doody, 2011). The IOWA model is composed of seven steps: selection of a topic, forming of a team, evidence retrieval, grading the evidence, developing an evidenced-based practice (EBP) standard, implementing the EBP, and evaluation (Doody & Doody, 2011). Each step was implemented during the project.

Another theory or model selected to drive this EBP quality improvement project of improving healthcare delivery was the Lewis change model. Lewis change theory includes an examination of change as a process with three distinct stages (Mindtools,

2017). The Lewis change model was developed in the 1940s by Lewis (Mindtools, 2017). The Lewis model has three stages: the unfreeze stage, the change stage, and the refreeze stage (Mindtools, 2017). The first stage is the unfreeze stage. During this stage, the organization is prepared to accept that a change is needed (Mindtools, 2017). During the unfreezing stage, the existing status quo is broken down in order to build up a new way of doing things (Mindtools, 2017). The next step of the Lewis change theory is the change. This stage is also called the movement. During the change stage, some of the persons involved may have an unsure feeling; however, that unsure feeling begins to resolve in the change stage. During the change stage, people begin to support the new direction (Mindtool, 2017). Although the transition is not easy, people start to believe and behave in ways that support the new direction (Mindtool, 2017). The last stage of Lewis change theory is the refreeze stage. During this stage, people embrace the new way of doing things (Mindtools, 2017). In completing this project, the goal was for the medical providers to embrace the new information acquired during education, as well as the adoption of the guideline/algorithms. For this project, the change that was needed was for women to obtain the proper diagnosis and treatment of PCOS. Proper treatment of PCOS can increase fertility rates, improve insulin levels, and lower BMIs. The goal was met with success with the implementation of the guidelines.

Relevance to Nursing Practice

Awareness of PCOS has been an ongoing problem. Medical providers do not always order the necessary test that aid in making the appropriate diagnosis (Parker, 2015). Some medical providers are not aware of its potential consequences including

infertility. When women have PCOS that is undiagnosed or untreated, they may have anovulation (not releasing eggs or ovulating) and/or they could have ovaries that contain small cystic structures (Sherbahn, 2016). This is why it is important to diagnose and begin treatment with these women. The infertility rate of women with PCOS is high. Many will require treatment to aid with pregnancy (Sherbahn, 2016). Women with PCOS are also at higher risk for other medical problems. Some of the other complications associated with PCOS include hypertension, high cholesterol, anxiety, depression, sleep apnea, heart attack, diabetes, and breast cancer (Mayo Clinic, 2016). These potential complications make this diagnosis and need for change relevant to nursing practice.

Organizations that attempt to bring awareness to PCOS treatment are not widely supported. These organizations receive only less than 1% of funding (Parker, 2015). Limited funding can lead to the condition crossing disciples and falling through the cracks. Educating those providing the care may help them to combat some of these complications as well as decrease infertility.

Local Background and Context

The practice setting for this project was a rural outpatient clinic whose patient population varied. This office has patients with a wide range of ages as well as a variety of races. Patients are seen at the project site as gynecological patients and may receive the diagnosis of PCOS. Providers can implement the recommended treatment plan per the developed guidelines/algorithm. On a national level, many women are affected by PCOS. It is imperative to establish more of a mandatory guide as well as to educate providers caring for these patients. The Endocrine Society Task Force has established

diagnostic criteria, as well as treatment guidelines. Many studies have been performed on treatment of PCOS. According to Pamela Montplaisir (2011), the medication Metformin can be used in women with PCOS to help induce ovulation although its primary use is for the treatment of Type 2 diabetes. Metformin can increase the functionality of the ovaries as well as improve insulin sensitivity (Kurzthaler & Hadziomerovic-Pekic, 2015). Many women who would like to become pregnant, but have PCOS, are placed on Metformin to help with fertility; however, scholars also show that weight loss, even modest weight loss has proven to be an efficient method to improve reproductive parameters in PCOS patients (Fica, Albu, Constantin, & Dobri, 2008). Practitioners can use evidence-based guidelines to ameliorate the quality of care of patients by adhering to interventions of proven benefit, while discouraging interventions that are not effective (Limb et al, 2016).

Role of DNP Student

My role as a DNP student in this project was to first prove the need. Again, clinical practice guidelines should be followed when treating patients. This ensures that the patients are receiving optimum care. The nurse practitioners in this practice had the choice of using guidelines or their own treatment plan. I was able to prove the need for the use of the guidelines. I was also able to provide the educational materials. I developed all of the test and surveys as well as held the meetings with stakeholders. I was able to prove to the medical director that this need existed based on the evidence provided.

Role of Project Team

The project team for this EBP quality improvement project consisted of an educator, chief executive officer (CEO), office manager, and medical providers for the student portion. The project teams that will continue to carry out the project for the organization consist of consenting patients, medical providers, and nurses. Each person involved on the project team will play a role in this project. The medical providers will be treating the patients with PCOS and following the guideline/algorithm. I designed the guideline/algorithm based on EBP. The educator taught the class that discusses PCOS in detail to the providers who will be treating the patients. The educator also discussed the guideline/algorithm that will be used. The patients will be those who consent to be a part of this project. The nurses will be collecting the data needed for this project. The nurses will document all of the information gathered and continue for 1-year post implementation. The project will take place over the course of a year; however, my project extended only through the planning phase.

Summary

PCOS diagnosis and treatment is relevant in the medical community. In this project I used models and theories such as the IOWA model and Lewis change theory for its implementation. In order to improve outcomes for this condition, the project team was selected to carry out this project. After its completion in 1 year we should see an improvement in health as well as increased fertility in these women. After the completion of my portion it was determined that the project was a well-planned project on current healthcare practice within this organization. It included proper planning for the meetings,

synthesis of evidence, national guideline review, cost benefit investigation/analysis, and stakeholder satisfaction.

Section 3: Collection and Analysis of Evidence

Introduction

Undiagnosed PCOS and improper treatment continues to be an ongoing problem. Because PCOS can lead to infertility as well as other serious medical conditions, educating providers, as well as creating a policy for them to follow is important. Women with PCOS are at high risk of long-term complications (Terrie, 2004). In this project I sought to address this issue through education and guidelines. Tools from the literature were used as well as recommendations from the Endocrine Society Task Force to guide this project. The purpose of this section is to discuss the collection as well as the analysis of the evidence for this project. In this section, I will address the practice focused questions for this project. I will also explain the sources of evidence gathered from the literature. In the last section I will discuss the analysis and synthesis process in detail.

Practiced-Focused Questions

The purpose of this EBP project was to improve healthcare delivery. The overall quality improvement EBP project was multifaceted and complex, and it will continue to require a long-term commitment from the organization. The practice-focused questions were separated below to outline the umbrella plan for the organization and the portion of that plan that I addressed within the time-constraints of this doctoral program.

Organizational Standpoint: Longview

This practice question is at the organizational level, is comprehensive, and shows the larger picture of this project that went beyond the scope of my work.

Among females aged 18-45 years old with BMIs >30, an infertility diagnosis, and

seeking care in a rural area clinic in Eastern United States, how does the adoption of a Polycystic Ovary Syndrome (POS) practice guideline/algorithm and an educational program for providers, per the POS Diagnosis and Treatment Guidelines (per the Endocrine Society Task Force http://press.endocrine.org/doi/abs/10.1210/jc.2013-2350) including medication and/or lifestyle change interventions, impact fertility rates, BMI levels, and insulin levels as measured 1 year post implementation compared to current practice of providers choosing their own treatment plan.

My Standpoint: Short view

The DNP practice question is specific to the planning phase for the aforementioned broad, organization-wide project.

Among females aged 18-45 years old with BMIs >30, an infertility diagnosis, and seeking care in a rural area clinic in Eastern United States, how effective was the quality improvement planning regarding the adoption of the POS practice guideline/algorithm and an educational program for providers, per the POS Diagnosis and Treatment Guidelines (per the Endocrine Society Task Force http://press.endocrine.org/doi/abs/10.1210/jc.2013-2350) as measured by the end of the DNP program based on the following

> **Formative outcomes achievements** (e.g. evaluation of current healthcare practice within the organization, initiation of stakeholder meetings, synthesis and leveling of evidence, national clinical guideline reviews (Endocrine Society Task Force), agency policy analysis, development of draft agency-specific evidence-based guidelines, stakeholder content validity index evaluations of policy/practice

change recommendations, expert content review of education materials created, secondary analysis of existing agency data on the problem, cost-benefit investigation)

Summative outcomes achievements (e.g., final cost-benefit analysis, recommended solutions including final agency policy revision proposal, final health care professional education module, pre-post implementation outcome measurement strategy, stakeholder satisfaction with DNP project leadership)

Sources of Evidence

Clinical practice guidelines are used to improved quality care while reducing healthcare cost (Keffer, 2001). There are over 800 publications of guidelines for medical providers (Keffer, 2001). Although it may be difficult to keep up with the number of guidelines that are in place, they still play a role in the guidance of patient care. In contrast to guidelines, algorithms help to simplify things. Guidelines are set in place to help guide the medical provider in their decision making for treatment plans; however, they are not in place to take away the need to individualize the care of patients. This is often seen with other chronic diseases such as diabetes and hypertension. The Eighth Joint National Committee (JNC 8) guidelines are in place to help the provider in the management of hypertension; most health care providers follow it. The American Association of Clinical Endocrinologist (AACE) guidelines are in place for diabetes management. Most medical providers also follow it.

The problem with PCOS treatment is that many medical providers are not familiar with the proper diagnosis criteria or the treatment (Parker, 2015). Some medical

providers are not aware that there are also guidelines in place for the diagnosing, management, and treatment of PCOS. The Endocrine Society Task Force has produced guidelines to help providers treat women with this diagnosis. However, guidelines are inconsistently implemented and used (American College of Surgeons, 2006). For women with PCOs this is a problem. The time between a woman being diagnosed and treated can be the difference between if the women will be able to conceive or not. Medical providers can use of a guideline/algorithms and measure key markers such as BMI, insulin levels, and number of positive pregnancies when diagnosing and treating PCOS.

Participates

The evidence generated for this project was done so strategically. The participants have to meet several qualifying criteria. They must be female. They must be between the ages of 18-45. They must have the diagnosis of PCOS as well as a diagnosis of infertility. Their BMI must be greater than 30. These criteria will make this selection of participates relevant to the practice-focused questions for the organizational long view. The selection process for participates will be carried out by the organization and are beyond my duties. I focused on the persons involved in the planning for this project. This included stakeholders such as the CEO, medical director, and office manager of the practice. I looked to obtain buy-in for the project and the willingness for them to carry it out to completion after the planning phase.

Procedures

I met with the CEO, medical director, and office manager to discuss this project. I discussed the need for the project and explained the algorithm/guideline. Statistics were

shared regarding PCOS, complications, its relation to infertility, and the need to follow these guidelines. After establishing the need as well as the stakeholders being in agreement with the project, I presented the algorithm and educational material. I also discussed the costs associated with the project as well as the role that the organization will play in carrying out the project once my planning portion was complete. The medical providers, who will care for the patients, participated in a 30-minute educational session. During this session the providers were educated/reviewed the diagnosis and treatment of PCOS. The recommend guidelines per the Endocrine Society Task Force as well as the algorithm that will be followed were also discussed. The organization will carry out the rest of the steps that will include the selection of participates. They will be selected based on the criteria previously discussed as well as them giving informed consents. Participates will have baseline laboratory blood work collected and measured prior to the initiation of any treatment. During the visits, the medical provider will initiate the treatment as recommended per the guidelines/algorithm while taking each individual patient into consideration. The women will come in monthly over the next year to have key indicators measured. During these visits, modifications to therapy can also be made and documented. Also, participates will have a pregnancy test done monthly. The treatment for each patient will be documented.

Protections

Procedures that will be used to ensure the ethical protection of the participates include the Health Insurance Portability and Accountability Act (HIPPA) standards. These standards are followed daily in this doctor's office and will remain in place for this

project. All participates will have to fill out a consent from to participate in this project. One strategy for recruiting participates would be to offer free treatment as well as laboratory testing during the course of the project. This was discussed with the stakeholders and will be carried out by them. I am not responsible for engaging in any patient care/data collection nor am I responsible for that portion of the project. I was only involved in meeting with the stakeholders and the planning portion of the project. The organization will carry out the project and collect the data. The Institutional Review Board (IRB) played a role in ensuring that the projects remained ethical. The IRB is responsible for making sure that research from Walden University complies with U.S. federal regulations as well as the university's ethical standards (Walden University Centers for Research Quality, 2017).

Analysis and Synthesis

The systems used for recording the data will include the electronic medical systems known as Success and another named Orchard. Success has the capability to store the participates monthly visits. The visit documentation will include the vital signs with the BMI, the medication list, and any symptoms reported by the patient. The Orchard system contains all of the laboratory data. It has the capability of displaying individual data as well as trends. These data will be analyzed in order to show an improvement in PCOS when clinical guidelines are followed. For my portion of the project, the pre and posttest results were used for analysis.

Summary

Addressing the practice-focused questions and implementing the planning portion for this project was not easy, but having a plan in place helped with the process. Prior to implementing the project, the literature was reviewed on the benefits of using clinical practice guidelines and algorithms. This information was presented to the stakeholders. The method used ensured the validity of the results that were produced. The selection process for participates was selective in order to meet the criteria needed for the practice - focused questions. The participates will have to give consent to be apart of the study with free treatment offered in returned from their participation. They are protected by HIPPA as well as the IRB. The selected tools used such as the Success and Orchard systems have been evaluated and proven to be effective for collecting and reporting data. I will only be involved in the planning stage of this project.

Section 4: Findings and Recommendations

Introduction

The improper diagnosis and treatment of PCOS can lead to many complications. One of these complications includes infertility. According to statistics, 50% of women with PCOS go undiagnosed (Health Grades, 2014). Health Grades (2014) also showed that 50% of women with PCOS will develop pre diabetes by the age of 44. This quality improvement EBP was multifaceted and complex and it continues to require a long-term commitment from the organization. I explored the effect of the adaption of a PCOS practice guideline/algorithm and education program. I was focused on the planning phase of the project. The purpose of this project was to educate providers with the proper guidelines for treatment of PCOS, identify why it is important to implement these guidelines, and increase patient fertility while decreasing complications. Clinical guidelines aim to achieve improved quality care while reducing healthcare cost (Keffer, 2001). These guidelines play a role in the guidance of patient care. Using a simple questionnaire form of analysis, it was determined that more education was needed on PCOS diagnosis and treatment. This further supported the need for the algorithm/guideline use.

Findings and Implications

The pre education questionnaire consisted of questions taken from the Endocrine Society Task Force Guidelines. These guidelines are the gold standard for diagnosing and treating PCOS. The make-up of the questions was focused on proper diagnosis and treatment of PCOS. The questionnaire consisted of 10 questions. These questions ranged

from multiple choice, fill in the blank, and true/false type questions. I created and administered the pre education questionnaire to five nurse practitioners in the practice prior to the education sessions. The average score on the questionnaires came back at 74%. The lowest score on the pre questionnaire was a 60% and the highest score was a 90% (Appendix D). These findings further supported the need for education and guidelines when diagnosing and treating PCOS. The medical director then led an education session, which I developed. Persons present at the education session included the nurse practitioners, as well as the other medical staff. The session included a discussion of diagnosis and treatment of PCOS, as well as the guidelines/algorithm that should be followed when a patient is diagnosed with PCOS per the Endocrine Society Task Force. Nurses, certified nursing assistances, and medical assistants also took part in the education session. After the nurse practitioners attended the education session, they were retested. All of the nurse practitioners scored a perfect score (100%) and agreed that the use of the guideline/algorithm would provide better outcomes for the patients (Appendix D).

The nurse practitioners also agreed that its use would make them feel more comfortable when diagnosing and treating these patients. The medical director of this facility agreed to carry out the remainder of the project in his organization with policy change at its completion. The remainder of the project will include implementing the guidelines as discussed previously. The patients will come in monthly for testing and the trends will be recorded. This will then support the need for the policy change.

Based on discussion with the medical director, office manager, and other stakeholders, I gained buy-in on the need for the policy change. The field of nursing has many different levels. I focused more on the nurse practitioner level and advancing nursing as a whole through education and use of the clinical guidelines. Guidelines are readily available for nurses to use; however they are not always followed. When it comes to topics such as PCOS, due to the lack of knowledge, nurse practitioners and other providers need policies that mandate their use.

One limitation that could have impacted the findings was the years of experience of the nurse practitioners. Three out of five nurse practitioners had less than 3 years of practice experience. This could have decreased the scores due to the lack of experience. Although this may have been a limitation, this could confirm that the need here is even greater. Implications resulting from these findings include individual and organizational use of the guidelines, nurse practitioner growth and improvement in confidence when treating PCOS, and educational growth for ancillary staff. This will benefit the patients and the community. The continuation of this study could provide more data to support the need for a change and the initiation of a policy. It could help to display concrete evidence that shows a decrease in BMI, decrease in insulin levels, and increases in fertility. These positive implications can be a great change in the rural area.

Recommendations

A recommended solution to the lack of knowledge of diagnosis and treatment of PCOS would be the use of the guidelines/algorithm developed from the Endocrine Society Task Force (Appendix C). Healthcare education is one key to ensuring quality of

life, improving patient outcomes, and protecting individuals from harm (Grimm, 2014). Clinical practice guidelines aim to achieve improved quality care, while reducing healthcare (Keffer, 2001). Following the guidelines provided and implementing this as a policy, after the completion of the study, would ensure that providers are ordering the necessary test. This would aid in them in making the appropriate diagnosis and treatment plans. As providers implement the use of the guidelines, if anything falls outside of the guidelines, the provider will still have the option of referring directly to the Endocrine Society Task Force recommendations

Strengths and Limitations of the Project

Strengths

One of the strengths of this project was that the topic gained the interest of the doctor, nurse practitioners, and other nursing staff. They were all willing to participate in the questionnaires and education session. Another strength of this project was the accessibility of the CEO, medical director, and staff. This allowed the project to flow smoothly due to their accessibility and ease to work with. Comments from the nurse practitioners and medical director indicated the need for this project due to the statistics surrounding the diagnosis.

Limitations

One limitation of this project was the small sample size of doctors and nurse practitioners who participated. This practice only has one doctor, five nurse practitioners, one nurse, one certified nursing assistant, and two medical assistances. Another limitation of this project was that some of the nurse practitioners had less than 3 years of

experience. Not having as much experience with patients with PCOS could have been reflected in the pre education questionnaire scores.

Future Recommendations

There are some recommendations that could be made for future projects addressing similar topics and using similar methods. One recommendation would be to implement this project at a larger practice. I would also recommend limiting the questionnaires to the providers including doctors and nurse practitioners with at least 5 years of experience.

Section 5: Dissemination Plan

Dissemination is an important part of this entire project. It must be performed in a proper manner. Two of the key reasons for disseminating are to share the information with others in the community and to present the information to stakeholders and the academic community (Zaccagnini & White, 2011). The method of dissemination will be a presentation by using Power Point software and talking through the presentation or a poster board presentation. I will be present the reason for the study, the data collected from the nurse practitioners and the scores from the questionnaires. The guidelines taken from the recommendations of the Endocrine Society Task Force will be reiterated. Due to the nature of the product, the audience who would be appropriate for dissemination would be nurse practitioners and nurses who diagnose and treat patients with PCOS. Nurse practitioners who work in obstetrics, gynecology, and family medicine would benefit the most from this dissemination. To help broaden the nursing profession, vendors could include continuing education conferences and even visits to offices that could provide a conference room.

Another idea for dissemination includes writing an article for publication in a nursing journal. This would allow for more nurses and nurse practitioners to have access to the information. Publication could be a useful and effective way of disseminating information to audiences who match the needs (Zaccagnini & White, 2011).

Analysis of Self

Over the course of this project I had the sole responsibility of ensuring that the project first identified a problem, displayed a gap in practice, gathered data on the topic,

and implemented a project, which supported the idea that this problem must be addressed. The development, implementation, and analysis provided me a learning opportunity. I have had leadership roles and opportunities in my health career; however this project supported my growth towards thinking as a scholar. The American Association of Colleges of Nursing (AACN) Essentials discusses the DNP- prepared nurses role in the scientific underpinnings of nursing practice. It discusses the wide array of knowledge that the DNP prepared nurse has and the ability to translate that knowledge quickly and effectively (AANP, 2006). AANP also addresses research and EBP (AANP, 2006).

This project encouraged me to become a better nurse practitioner, scholar, and project manager. As a nurse practitioner I was made more aware of the importance of following guidelines when appropriate. Each clinical experience allowed me to gain insight from other leaders and scholars. This not only allowed me to see how things were done, but also increased my confidence in myself. I started to gain the confidence and belief in myself that I could actually complete this challenging project. As I progressed, I gained enough confidence to speak with those in prestigious positions. I was able to speak with the CEO, medical director, office manager, and providers at a facility. I had support from my clinical preceptor, chair, and committee members, which helped strengthen this project. One of my professional goals is to also become an instructor in a DNP program. I can only hope to be as supportive and encouraging to upcoming doctoral of nursing students as everyone has been to me.

Challenges

Challenges were present during the course of this project. This is usually the case with any large project. One thing that I found challenging was locating a facility that would allow me to implement my project. Many facilities did not want to take on the additional responsibility of having a student come in and implement a project. Another challenge that I encountered was trying to find the time to work on my project simultaneously with other didactic assignments. It became necessary to schedule time specifically for my project. Despite the challenges that presented, I was able to overcome them.

Solutions

The challenge of locating a facility was a difficult one; however, I was able to overcome this challenge by meeting with the CEO of a facility. After hearing my plans he approved. He as well as his office manager was both impressed and were immediately ready to move forward. As mentioned previously, to solve my time management problem, I found that I had to schedule time just to work on my project with no distractions.

Insight

There was much insight gained throughout this entire process. One insight that I gained was the ability to carry out a quality improvement project from start to finish. I also gained insight on data collection and analysis. I gained a large amount of patience during this process. I also learned how to manage disappointment by using it as fuel to work harder.

Summary

PCOS is a disorder affecting many women of reproductive age (Health Grades, 2014). When left untreated women are at high risk for complications, which includes infertility (Health Grades, 2014). Clinical practice guidelines are in place to optimize patient care; however they are not always followed (Up-To-Date, 2016). Some providers are not aware that recommended guidelines exist as they apply to the diagnosis and treatment of PCOS. When it comes to the prevention of the complications and increasing fertility in these women, the use of these guidelines could be what makes the biggest difference in their outcome.

A group of providers were evaluated, educated, and then reevaluated on their knowledge of PCOS diagnosis and treatment. They were then given an education session on the topics. The providers were given education material as well as the guidelines. They were then reevaluated on the diagnosis and treatment of PCOS with the same tool used prior. I found that providers did not know as much as they originally thought regarding the topic, which confirmed the need to implement these guidelines into policy after the facility carries out the remainder of their portion of the project. This includes the selection of patients, implementation of the guidelines, and collecting patient trends on identified values over the course of a year. The providers as well as the CEO, medical director, and office manager were provided a satisfaction survey. It was used to determine if I developed effective quality improvement planning regarding the adaption of the PCOS guidelines and an educational program for the providers. The selected persons completing the survey were to take things such as the synthesis and leveling of

evidence into consideration. This EBP quality improvement project has the potential to positively influence nursing practice and improve overall outcomes for patients with PCOS.

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Appendix A: Pre and Post Test Given

TEST

Polycystic Ovary Syndrome (Take the same test after reading material)

1) **What is the name of the criteria used to diagnose PCOS?**
   A. DSM-5
   B. SAS
   C. PHQ-9
   D. Rotterdam

2) **Name one clinical manifestation used for the diagnosis of PCOS in adolescent girls.**
   _____

3) **What are some possible complications of PCOS?**
   A. Increased fertility, hyperlipidemia, hypertension, insulin resistance
   B. decreased fertility, obesity, obstructive sleep apnea, endometrial cancer
   C. weightloss, flushing, abnormal uterine bleeding, insulin resistance
   D. obesity, abnormal uterine bleeding, increased fertility, insulin resistance

4) **Women with PCOS do NOT have a higher cardiovascular risk than women without PCOS?**
   A. True
   B. False

5) **Which symptoms are clinical manifestations of hyperandrogenism? Mark all that apply**
   A. Alopecia
   B. Acne
   C. Heat intolerance
   D. Hirsutism
   E. Weightloss
   F. Flushing

6) **What is the first line treatment therapy for management of PCOS in women with out acne, not trying to conceive?**
   A. Metformin

B. Clomid
C. Lifestyle modifications (diet/exercise)
D. Letrozole

7) What is the first line treatment therapy for management of PCOS in women with menstrual abnormalities and hirsutism/acne, who are not trying to conceive?
A. Metformin
B. Hormonal Contraceptives
C. Lifestyle modifications (diet/exercise)
D. Clomid

8) What should be the next treatment therapy ordered for management of PCOS in women with T2DM or IGT who fail lifestyle modifications?
A. Fasting
B. Insulin
C. Metformin
D. Low carbohydrate diet

9) What combination therapy can be used to in women with PCOS to increase fertility and prevent ovarian hyperstimulation syndrome?
A. Metformin and Clomid
B. Metformin and Insulin
C. Metformin and rosiglitazone
D. Insulin and pioglitazone

10) PCOS is estimated to be the most common cause of anovulatory dysfunction.
A. True
B. False

Appendix B: Satisfaction Survey

Satisfaction Survey

Please answer yes or no to each question.

1.) The student DID display effective quality improvement planning regarding the need for the adoption of the PCOS practice guideline/algorithm? Yes or No

2.) The student provided expert educational material that was clear and concise? Yes or No

3.) The student was professional and displayed adequate organizational and leadership skills. Yes or No

Appendix C: Guidelines

Educational Material and Guidelines

What are common signs and symptoms of polycystic ovary syndrome (PCOS)?

Common PCOS signs and symptoms include the following:

- Irregular menstrual periods
- Infertility—PCOS is one of the most common causes of female infertility.
- Obesity—Up to 80% of women with PCOS are obese.
- Excess hair growth on the face, chest, abdomen, or upper thighs—This condition, called hirsutism, affects more than 70% of women with PCOS.
- Severe acne or acne that occurs after adolescence and does not respond to usual treatments
- Oily skin
- Patches of thickened, velvety, darkened skin called acanthosis nigricans
- Multiple small cysts on the ovaries

What causes PCOS?

Although the cause of PCOS is not known, it appears that PCOS may be related to many different factors working together. These factors include insulin resistance, increased levels of hormones called androgens, and an irregular menstrual cycle.

PCOS Complications Include

- Infertility
- Obesity
- Obstructive sleep apnea
- Hypertension
- Diabetes
- Endometrial hyperplasia/cancer
- Fatty Liver Disease
- Mood disturbances and depression
- Hyperlipidemia

Diagnosis Criteria

The most common diagnostic criteria used are Rotterdam criteria. Patient needs 2 out of 3

- Oligo or anovulation

- Clinical and/or biochemical signs of hyperandrogenism (hirsutism, acne, alopecia).
- Transvaginal ultrasonographic polycystic ovaries and exclusion of other etiologies.

Work-Up

Screening workup should include hcg, TSH, prolactin, FSH, DHEAS, 17-OH progesterone, and testosterone level. LH determination may be ordered but is not necessary. Keep in mind that drugs that can alter results include (oral contraceptives, Steroids, and antidepressants). Consider fasting serum glucose, insulin level, and plasminogen activator inhibitor-1 determinations to establish presence of insulin resistance and glucose intolerance.

Treatment of PCOS

Lifestyle modifications such as weight loss and increased exercise in conjunction with a change in diet consistently reduce the risk of diabetes. This approach has been found to be comparable to or better than treatment with medication and should therefore be considered first-line treatment in managing women with polycystic ovarian syndrome (PCOS).

The Endocrine Society Task Force recommends HCs (i.e., oral contraceptives, patch, or vaginal ring) as first-line management for the menstrual abnormalities and hirsutism/acne of PCOS, which treat these two problems concurrently.

The Endocrine Society Task Force suggest against the use of metformin as a first-line treatment of cutaneous manifestations, for prevention of pregnancy complications, or for the treatment of obesity; however, they do recommend metformin as in women with PCOS who have T2DM or IGT who fail lifestyle modification. For women with PCOS with menstrual irregularity who cannot take or do not tolerate HCs, we suggest metformin as second-line therapy.

The Endocrine Society Task Force recommends clomiphene citrate (or comparable estrogen modulators such as letrozole) as the first-line treatment of anovulatory infertility in women with PCOS.

We suggest the use of metformin as an adjuvant therapy for infertility to prevent ovarian hyperstimulation syndrome (OHSS) in women with PCOS undergoing in vitro fertilization.

Use of other drugs

We recommend against the use of insulin sensitizers, such as inositols (due to lack

of benefit) or thiazolidinediones (given safety concerns), for the treatment of PCOS.

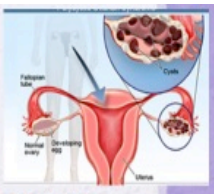
Appendix D: Test Results

Pre and Post Test Scores

	Nurse 1	Nurse 2	Nurse 3	Nurse 4	Nurse 5	Average
Pre	80%	70%	90%	70%	60%	74%
# Missed	2	3	1	3	4	
Post	100%	100%	100%	100%	100%	100%
# Missed	0	0	0	0	0	

This data displays the test scores achieved by each of the 5 nurse practitioners. Scores ranged from 60% to 90% prior to the education session. The post scores display a perfect score of (100%) for all of the nurse practitioners.

Appendix E: Dissemination Poster



A Quality Improvement Project on the Diagnosis and Treatment of Polycystic Ovary Syndrome

Moneka Patterson, MSN, APRN, FNP-C

Introduction

Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder (Mayo Clinic, 2016). If not treated properly, PCOS can lead to many complications. Currently, it is not mandatory that clinics follow any particular guidelines. With nurse practitioners filling more provider roles, it is imperative that guidelines/recommendations from the Endocrine Society Task Force are put to use. This project demonstrated the lack of knowledge on this subject matter, as well as the difference that the use of guidelines can make.

Results

Pre and Post Test Scores

	Nurse 1	Nurse 2	Nurse 3	Nurse 4	Nurse 5	Average
Pre	80%	70%	90%	70%	60%	74%
# Missed	2	3	1	3	4	
Post	100%	100%	100%	100%	100%	100%
# Missed	0	0	0	0	0	

This data displays the test scores achieved by each of the 5 nurse practitioners. Scores ranged from 60% to 90% prior to the education session. The post scores display a perfect score of (100%) for all of the nurse practitioners.

Conclusion

Lack of knowledge of PCOS diagnosis and treatment can affect patient outcomes. This project demonstrates the need for the use of guidelines by nurse practitioners and other medical providers. The use of clinical guidelines can enable nurse practitioners to ensure that their treatment plans stay within the realms of the recommendations. It can also provide a level of comfort and confidence in their diagnosing and treatment of PCOS.

Methodology

-Study was implemented in a rural clinic
-Five nurse practitioners with varying experience, the medical director, office manager, and support staff, participated in the study.
-The questionnaires and educational material were developed from the Endocrine Society Task Force guidelines.
-The average scores were used to demonstrate the knowledge base.

Study Implementation

The five nurse practitioners were given the pre-education questionnaire. An education session conducted by the medical director was given to the nurse practitioners and medical staff. The nurse practitioners were given a post questionnaire. The scores were collected from both questionnaires and the average scores were used as data. The project will continue past the planning portion into the initiation of the policy, and the documentation of patient specific data. Some of this data will include BMI, insulin levels, and pregnancy status. The continuation portion is carried out by the organization.

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