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Strategic Plan for Genomic Competencies into Undergraduate Nursing Curriculum

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STRATEGIC PLAN FOR GENOMIC COMPETENCIES INTO UNDERGRADUATE NURSING CURRICULUM

By

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Abstract

Problem: As genomics research continues to grow in medicine and in popular culture, an educational gap in nursing is inevitable. Nurses must have a strong understanding of genetics and genomics to effectively integrate them into current practice.

Objectives: The objective is to identify gaps in the current undergraduate curriculum and build threads that may be incorporated into the current curriculum to fill the identified gaps.

Methods: The foundation of this project was the *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition* (Consensus Panel on Genetic/Genomic Nursing Competencies, 2008). A strategic plan was created to increase the genomics and genetics competencies in the current undergraduate nursing curriculum at the School of Nursing in the University of Nevada, Las Vegas to meet the nine essentials of Baccalaureate education set forth by the AACN (2008). A strengths, weakness, opportunities, and threats (SWOT) analysis was included to identify and analyze the strengths and weaknesses of the project and be given the opportunity to address and eliminate any threats. The syllabi of the undergraduate nursing core courses were analyzed course by course for baseline genetics and genomics content. The content was found in five out of 16 core courses. Utilizing the gap analysis tool based on *Essentials of Genetic and Genomic Nursing,* 23 possible curricular thread ideas for genetics and genomics content were identified.

Implications: This project demonstrated that the development of a strategic plan utilizing the *Essentials of Genetic and Genomic Nursing* can be used to identify gaps in the undergraduate nursing curriculum and build genetics and genomics competencies to incorporate into the curriculum. This allows for the opportunity for nursing faculty to improve the current undergraduate nursing curriculum to meet the essentials set forth by the AACN.

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Dedication

This project is dedicated to my mom, Felma Mangalino. When you were diagnosed with breast cancer in December of 2019, I thought our whole world just shattered. You are the light of our family. The strength, perseverance, and hope that you exuded throughout your treatment and recovery has been nothing short of amazing. You kicked cancer's butt! There is nothing that I can do in this lifetime that will ever compare to your strength and perseverance. Family is everything to me and you are the glue that holds our family together. You worked two jobs to help me attain my Associate's Degree in Nursing, which was the start I needed. You are the reason that I am here today! I could have never done this without you! I love you, Mom!

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Chapter I

Introduction

The study of genetics has come a long way since the Human Genome Project (HGP) was first introduced in October 1990 (National Human Genome Research Institute [NHGRI], 2020). The HGP was finally completed in April 2003 and enabled researchers to understand and map the genes of a human being (NHGRI, 2020). Genes are segments of deoxyribonucleic acid (DNA) that instruct the cell on how to make specific proteins that will carry out functions in the human body (NHGRI, 2019). Understanding genomics and how DNA is analyzed offer health care providers new options to treat, cure, and prevent diseases that an individual may be predisposed or exposed to.

Applying and using the science of genomics gives an individual the opportunity to obtain tests to predict, diagnose, treat, procreate, investigate, and learn about one's body and predispositions (NHGRI, 2019). The study of genetics has reconceptualized the understanding of personal health and illness. Advances in genomics are used for prenatal screening with the DNA of a fetus found in maternal blood and for the screening of newborns for genetic disorders (Cunnif & Bassetti, 2019). Additionally, advances in genomics also led to the analysis of genes in tumor tissue which allows the identification of abnormal genetic structure to effectively design cancer treatment drugs to effectively treat cancer. Genomics advancements have also paved the way in identifying and manipulating genes that predispose an individual to certain diseases (Cunnif & Bassetti, 2019).

In popular culture, the utilization of genomic technology is evident through easily accessible ancestry testing or nutritional testing (Roberts et al., 2019). Having access to this information allows an individual to have enhanced understanding of his or her ancestry including

variants found in DNA. Many times, health care providers are the patients' only resource for healthcare concerns including an understanding of the variants that surface in consumer home DNA test kits that are marketed towards recreational consumers. The increased prevalence of genomics in medicine, crime prevention, and health screenings drive increased consumer curiosity regarding genetic information (Roberts et al., 2019). The current pandemic has increased the public's interest in understanding the coronavirus disease (COVID-19). This interest has created curiosity on how the use of genomics relates to the spread of the virus and the creation of the vaccine (Uddin et al., 2020). As genomics research continues to grow in medicine and popular culture, public curiosity and interest also increases; therefore, an educational gap in nursing will inevitably occur and must be addressed (Aiello, 2017).

The Consensus Panel on Genetic/Genomic Competencies developed the *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition* in 2005 with the goal of providing guidance on core competencies for genomics and genetics to nurse educators to incorporate in their curriculum (Thompson & Brooks, 2011). To meet the nine essentials of Baccalaureate education, the American Association of Colleges of Nursing (AACN) recommends that the curriculum must include the incorporation of the current and growing genetic or genomic evidence that nurses may need to provide quality healthcare to patients (2008). Professional nurses must have the knowledge and ability to translate and integrate the advancements in genetic and genomic research into practice.

Purpose

The aim and purpose of this study is to develop a strategic plan guided by and utilizing the *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition Degrees* to aid in building the appropriate curriculum and

content threads, which are based on the established competencies needed to address genomics and genetics in an undergraduate nursing program. This will be done by conducting a gap analysis focused on examining the current undergraduate curriculum and comparing it to the competencies recommended in *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition* and determining where nursing instructors have the opportunity to include applicable content to bridge identified gaps in the existing curriculum. Furthermore, this gap analysis will be provided to the undergraduate faculty director, as the undergraduate faculty are the primary stakeholders who will benefit from incorporating the identified needed competencies in genetics and genomics. Using the identified needs and gaps will enable them to identify and create content and course-based strategies to embed threads across the undergraduate program.

Problem Statement

Because of the advancement of genetic research, it is vital that nursing professionals receive the proper education and training needed to translate and understand genomics. A question that includes population, intervention, comparison, outcome, and time (PICOT) will aid a researcher in creating a question that will guide in finding the best evidence that is available (Fineout-Overholt & Stillwell, 2016). The PICOT question is: In a western region undergraduate nursing program, will a strategic plan to identify gaps in current undergraduate nursing curriculum utilizing the *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition* aid in building genetics and genomics competencies?

Chapter II

Synthesizing Evidence

Ten studies were critically appraised to synthesize published data in genomics in undergraduate nursing curriculum. All the 10 studies included had approval from the institutional review board or research ethics committee. All subjects in these studies were 18 years old or older. Different statistical methods were utilized in each study in the validation and analysis of the data findings.

Six of the ten studies were quantitative, cross-sectional studies focusing on the understanding of genomics by professional nurses, nursing society members, medical students, faculty members, and nursing conference attendees (De Sevo, 2013; Fee-Schroeder & Nelson, 2019; Hickey et al., 2018; Kawasaki et al., 2021; Read & Ward, 2016; Thompson & Brooks, 2011). Two studies were systematic reviews, with one article concentrating on personal genomics education in academic, professional, and public settings and the other attended to genomics competencies in selected programs in the United States (U.S.) and United Kingdom (Whitley et al., 2020; Williams et al., 2011). One quantitative longitudinal study centered on a unique laboratory course introduced to medical students at the Icahn School of Medicine at Mount Sinai in 2012. The study analyzed questionnaires given to students enrolled in the course in 2013, 2014, and 2015 (Linderman et al., 2018). The last article was a meta-analysis study of a literature review of genetics and genomics using CINAHL, PubMed, ProQuest, and Google Scholar (Aiello, 2017).

Aiello (2017) performed a literature review to determine the knowledge of genomics education by nurses across the profession and how it is integrated into practice. Aiello (2017) emphasized the importance of nurses being able to demonstrate competence in conducting a

comprehensive family history to identify family members who may be at risk for developing genetic conditions. Demonstrating a strong understanding of genomics will also aid nurses in understanding how a patient's genetic structure may influence drug reactions. This knowledge may decrease incidences of missed adverse effects after the administration of a drug. Despite the growth of genomics and genetics and the introduction of curricular standards and genomics competencies, undergraduate nursing students are found to have decreased knowledge of genomics and genetics and on how to apply them into clinical practice (Aiello, 2017).

Thompson and Brooks (2011) evaluated the implementation of the *Essential Nursing Competencies and Curricula Guidelines in Genetics and Genomics* through surveys at a national nursing conference in 2008. Thompson and Brooks (2011) explore how genetics education in nursing began in 1962 when an article was written by Virginia M. Brantl and Phyllis N. Esslinger called *Genetics Implications for the Nursing Curriculum.* Even with genetics education starting in 1962, the incorporation of genomics and genetics in the nursing curriculum continues to be inconsistent globally. This further explains the need for consistency and a guide on an effective way to incorporate genomics and genetics into the nursing curriculum. As discussed earlier, the *Essential Nursing Competencies and Curricula Guidelines in Genetics and Genomics* was developed by the Consensus Panel on Genetic/Genomic Competencies in 2006 with the goal of providing guidance on core competencies for genomics and genetics to nurse educators to incorporate in their curriculum (Thompson & Brooks, 2011).

A survey was sent to 200 attendees of the Genetics and Genomics in Nursing State of the Science Conference in 2008 to determine adherence to essential knowledge elements in the *Essential Nursing Competencies and Curricula Guidelines,* but only 47 surveys (23.5%) were returned and used in the study (Thompson & Brooks, 2011). The results showed that 45.7% of

the participants were nursing faculty members and only 36% reported they read *Essential Nursing Competencies and Curricula Guidelines* (Thompson & Brooks, 2011). Many of the participants reported that their nursing school did not fully meet the competencies recommended for genomics and genetics education in either their graduate or undergraduate programs and reported their lack of confidence in their own knowledge of genetics and genomics (Thompson & Brooks, 2011).

Read and Ward (2016) used the Genomic Nursing Concept Inventory (GNCI) to evaluate 495 nursing faculty members' understanding of genomics foundational concepts. The mean age for the sample was 53 years old, which further explains that these instructors received their education prior to the introduction of the Human Genome Project in 1990 (Read & Ward, 2016). The mean total score of the GNCI was 14.93 out of 31 total possible points. The scores ranged from 4 to 31 (Read & Ward, 2016). Results showed that 70% of the nursing faculty rated their proficiency with genetics or genomics as fair or poor (Read & Ward, 2016). Another finding was nursing faculty members with higher GNCI scores had previously taken genetics courses for academic credit or continuing education. Furthermore, the nursing faculty who taught genetics or genomics had a mean GNCI score of 17 out of 31. This score suggests that these faculty members teaching nursing students may not have a good understanding of the basic concepts of genetics. This study validated the need for continuing education programs to prepare faculty of nursing schools to include genomics and genetics content into their curriculum.

Hickey et al. (2018) conducted an anonymous cross-sectional study with 350 nursing professionals in the International Society of Nursing in Genetics (ISONG) to assess training, knowledge, and practice of genomics. The survey results included the recommendation of continuing education of genomics and genetics for all professional nurses and a full semester

course for nursing students on genomics that included laboratory and data analytics (Hickey et al., 2018). Another pertinent finding was that undergraduate and graduate nursing school curriculums still lack sufficient integration of genomics (Hickey et al., 2018). Over 96% of participants strongly believed that genomics will be relevant in nursing research, education, and practice in the next 5 years (Hickey et al., 2018).

Fee-Schroeder and Nelson (2019) evaluated the effectiveness of a program focused on genomics education with 165 inpatient and ambulatory oncology nurses working at the Mayo Clinic in Rochester, Minnesota campus from 2015 to 2016. Studying this educational program on adult learners gives good insight into the effectiveness of genetics education. The program focused on giving learners prework assignments such as videos, readings, and other forms of education prior to the in-class training to provide participants with a review of the concepts prior to and after the class (Fee-Schroeder & Nelson, 2019). Participants were given the GNCI survey to measure their understanding of genomics before and then after the program is completed. The mean GNCI scores from 45 participants showed an improvement of 30% in genomics knowledge in comparison to baseline scores (Fee-Schroeder & Nelson, 2019). Additional findings were that 85% of the participants reported that prior to the program, they lacked confidence in genomics knowledge (Fee-Schroeder & Nelson, 2019). 81% of the participants agreed that it is important for nurses to understand genomics and genetics (Fee-Schroeder & Nelson, 2019).

A training program that used case studies to create simulation scenarios was introduced in Kagoshima, Japan to public health nurses (PHN). Out of the 26 nurses who participated in this training, 23 answered surveys to determine the effectiveness of the training program (Kawasaki et al., 2021). After completing the training program, the scores of all three domains increased in the post-test (Kawasaki et al., 2021). The program helped the PHN to gain basic knowledge and

develop deeper interest in human genomics and genetic disorders and to integrate these into their practice (Kawasaki et al., 2021). The quantitative longitudinal study conducted at the Icahn School of Medicine at Mount Sinai reported that personal genomic testing enhanced students' learning and improved their understanding of genetic testing as well as the experience of the patient (Linderman et al., 2018).

A study conducted by De Sevo (2013) consisted of sending surveys testing genomics knowledge to faculty members of 20% of 558 accredited baccalaureate nursing programs randomly chosen by a random numbers table. De Sevo (2013) sent 715 emails to the undergraduate nursing faculty members with a link to an anonymous questionnaire. 650 emails were successfully sent, but only 117 faculty members who taught baccalaureate nursing students completed the questionnaire (De Sevo, 2013). Twenty-six participants stated they obtained genetics and genomics education after graduating from college and 91 stated that their genetics and genomics education was solely from college-level general biology classes (De Sevo, 2013). Only four out of the fifteen questions were answered correctly by more than 75% of the participants. The results of the surveys exhibited a marked scarcity of knowledge of genetics and genomics (De Sevo, 2013). The findings from this study further demonstrate the importance of faculty knowledge of genomics and genetics and the positive influence of taking additional genetics and genomics course to enhance one's knowledge.

An inability to interpret genomic test results reflects the lack of knowledge and understanding the importance of genomics in health care (Whitley et al., 2020). This magnifies the importance of genomic education and the urgency to integrate competencies into graduate and undergraduate nursing curriculums. Aiello (2017) states that when nurses have a great understanding of genomics and genetics, they will be able to incorporate it into their practice

which may result in better patient care, satisfaction, and outcomes. Every patient deserves to receive the best care possible from trained health care providers. One way to integrate competencies into undergraduate nursing curriculums is to examine *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition* and compare it to the current curriculum (Thompson & Brooks, 2011). Then, through the use of a strategic plan, work with current faculty to identify the competencies needed to incorporate into the existing curriculum. Strategic planning consists of a process that is disciplined, thoughtful, and links a set of logical strategies and tasks with a school or program's values, missions, and goals to achieve set goals (Reeves, 2007).

Population Identification

The identified population who will benefit most from this intervention are the undergraduate nursing faculty members at the School of Nursing in University of Nevada, Las Vegas (UNLV). Having identified the gaps in their current curriculum, the faculty will have the opportunity to obtain the proper continuing education needed to effectively incorporate and teach undergraduate nursing students about genomics and genetics. The sample identified are the undergraduate nursing core course syllabi created by the faculty, which comprises of 16 courses.

Key Stakeholders

Key stakeholders who will benefit from the outcome of this project will ultimately be the patients receiving care from nurse leaders who graduate from this program. Patients and undergraduate nursing students are the identified external stakeholders in this project and undergraduate nursing faculty are the main stakeholders. Benefits of receiving efficient genomic education include the ability to have confidence in communicating genomics especially in applying it to clinical practice (Whitley et al., 2020).

Organizational Assessment

UNLV is one of eight public colleges and universities in Nevada. UNLV offers more than 240 undergraduate and graduate major degree and certificate programs (UNLV, 2020). The university's mission is "to promote community well-being and individual achievement through education, research, scholarship, creative activities, and clinical services" (UNLV, 2020). The vision of UNLV is the be recognized as a top-tier public university that focuses on research, education, and impact on the community by 2025 (UNLV, 2020). UNLV is a top-tier R1 university and has achieved this recognition six years ahead of time.

Assessment of Available Resources

After an analysis of available resources during the initial planning phases of this project, the resources required for this project include obtaining current syllabi for the undergraduate nursing program core classes, which will be obtained from the undergraduate nursing director. Since the participants in this project are faculty members, the author does not foresee any costs to conduct this project.

Scope of Project

The author anticipates that the completion of this project will increase genomics and genetics competencies in the undergraduate nursing curriculum at UNLV. A similar project was conducted by Dr. Holly Mathis at the University of Missouri – St. Louis, where undergraduate nursing faculty were able to identify 18 threads to incorporate into their curriculum. To meet objectives of this project, the author must be able to effectively analyze and identify the knowledge gap in genomics and genetics through the creation of a modified gap analysis tool comparing the competencies listed in the *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition* with the current

undergraduate nursing curriculum. This tool will aid in creating a strategic plan to implement these competencies into the curriculum.

Project Goals

By meeting the competency guidelines listed in *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition,* the undergraduate nursing program will meet the essential requirements listed by AACN. The project goal is to determine the gap in genetics and genomics education in the current undergraduate nursing curriculum and provide the information to the undergraduate nursing director to aid in building threads to add into the curriculum. Ultimately, this information will help the undergraduate nursing faculty members identify gaps and possible threads to incorporate into the courses that they teach.

Chapter III

Theoretical Framework

To implement change, one must be able to create a vision, specific goals, build a dedicated evidence-based practice team, eliminate barriers through the promotion of engagement, prioritize clinical issues, and be able to effectively evaluate the infrastructure such as a school curriculum (Rodgers et al., 2019). The theory used to guide the development and implementation of this project is Rodger's Diffusion of Innovation Theory (Scott & McGuire, 2017). Rodger's theory focuses on how an individual takes the knowledge of innovation and decides whether the idea should be adopted or rejected (Udod & Wagner, 2018). The key stakeholders in this study, as identified in Chapter II of this project, are the undergraduate nursing faculty. Using Roger's theory as a guide, Udod and Wagner (2018) explain that for innovation to occur, these stakeholders must understand the innovation, have an interest in the growth of the innovation, identify the strengths of the group, and manage any factors that may hinder the process.

Innovation

The first component of Rodger's theory is innovation (Scott & McGuire, 2017). Rodger defines innovation as "an idea, practice, or object that is perceived as new" (Rogers, 2003, p. 12). Scott and McGuire (2017) explain that innovation is more likely to be adopted when there is perception of its advantage on current practice. When applying this theory to the undergraduate nursing faculty at UNLV, Scott and McGuire (2017) suggest that this innovation must also meet the values and needs of the individuals and has results and outcomes that are observable. Therefore, undergraduate nursing faculty must first be informed of the gap in genomics and genetics education. It is important to allow the individual to have the opportunity to modify or

make the innovation adapt to fit the individual's needs in order to increase the likelihood of adopting the innovation (Scott & McGuire, 2017). This can be applied to this project through the introduction of more learning opportunities about genetics in the undergraduate nursing program to meet the essential requirements set by AACN.

Communication Channels

The second component of Roger's theory focuses on the social and dynamic process in this theory. Communication channels are important in spreading information about the innovation to nursing faculty (Scott & McGuire, 2017). The communication channels that are most effective in the promotion of innovation are the channels that include individuals who have the same goal, such as undergraduate nursing instructors teaching courses in the same program (Scott & McGuire, 2017). The internet has made communication much more accessible to individuals, but often, face-to-face communication is more effective in persuading individuals to adopt the innovation (Scott & McGuire, 2017).

Although face-to-face interactions may be more effective, the use of platforms such as Zoom or Google Classroom allow for modified face-to-face interactions. To be able to communicate the importance of this project to the undergraduate nursing faculty, the author will use Zoom as a means of a communication channel. This will allow the author to spread information about genetics through meetings to collaborate with program directors and faculty members.

Time

The third component of Roger's theory focuses on the time it takes to adopt the innovation (Scott & McGuire, 2017). It follows five stages: knowledge, persuasion, decision, implementation, and confirmation (Udod & Wagner, 2018). It begins with exposing the

individuals to the innovation, then effectively persuading the individual to actively seek information about the innovation (Udod & Wagner, 2018). It continues with the individual considering what the advantages and disadvantages of this change are, then implementing the innovation and determining the usefulness of this innovation (Udod & Wagner, 2018). The last stage is confirming the decision to continue to utilize the innovation (Udod & Wagner, 2018).

The theory will be applied through the analysis of gaps in genetics and genomics education in the current undergraduate curriculum using *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition*, and bringing the findings to the undergraduate nursing director. The director will then have the knowledge of the gaps and have the opportunity to share these gaps with the nursing faculty members. This will enable and promote the faculty to determine how this innovation can be useful to their students and their own practice.

The readiness to learn must also be taken into account when it comes to time because each individual adopts ideas differently (Scott & McGuire, 2017). The individuals who quickly adopt new innovations can be identified as innovators, whereas those who do not adopt an innovation or are slow to adopt, are identified as laggards (Scott & McGuire, 2017). Time also depends on the rate of adoption of the innovation (Scott & McGuire, 2017). The rate of adoption is measured by how quickly innovators adopt the innovation and leveled off when the remaining laggards finally adopt the innovation (Scott & McGuire, 2017).

Social Systems

For the diffusion of innovation to be successful, it must be implemented within a social system that includes individuals who share a common goal (Scott & McGuire, 2017). Communication is more effective when individuals share common interests or objectives (Scott

& McGuire, 2017). Therefore, communicating the importance of genetics in the undergraduate curriculum to the undergraduate nursing faculty will be effective because they share the common goal of providing the best education to their students. As stated by Scott and McGuire (2017), when applying this to higher education, identifiable social systems include senior administration and academic and student affairs. With common objectives, the social system, which in this case is the undergraduate nursing faculty, can function in ways that are predictable and measurable (Scott & McGuire, 2017). Scott and McGuire (2017) further explain that social systems often comprise opinion leaders who influence the promotion of adopting the innovation within the system and change agents who work on promoting the innovation through the capitalization of the influence of the opinion leader such as the director of an undergraduate nursing program.

Chapter IV

Project Plan

This project was planned and designed in consideration of setting, resources available, the population of interest, measurements of the outcome, and a reasonable timeline to achieve the set goals.

Project Setting and Resources

The project will be implemented at the School of Nursing in University of Nevada, Las Vegas. The university offers more than 240 undergraduate and graduate major degree and certificate programs. Each fall semester, the School of Nursing accepts 45 Master of Science in Nursing (MSN) students, 35 Doctor of Nursing Practice (DNP) students, and 10 Doctor of Philosophy in Nursing (Ph.D.) students. The undergraduate programs in nursing accept 72 students every cohort with a total of 216 students each year. As mentioned in Chapter II, very few resources were needed such as current undergraduate nursing course syllabi, which were readily available. Permission and collaboration were obtained from the current undergraduate nursing program director, Dr. Angela Silvestri-Elmore. Authorization to conduct this research project was sought from the UNLV Institutional Review Board (IRB) and they determined that the project is exempt from the IRB review process.

Project Population of Interest

This project focused on the undergraduate nursing faculty at the School of Nursing in UNLV. The School of Nursing faculty consists of 37 full-time and part-time faculty members. The project will focus on the sample of the 16 undergraduate nursing core course syllabi created by the faculty.

Instruments for Measurement

The primary tool used in this project to implement a strategic plan was a modified gap analysis tool that was created by Dr. Holly Mathis and was based on the Agency for Healthcare Research and Quality (AHRQ) Gap Analysis Tool (AHRQ, 2016). Consent was obtained from Dr. Holly Mathis to utilize this tool for this project. This tool can be found in Appendix A. This tool compares the competencies listed in *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition* with the current undergraduate nursing curriculum at UNLV. It will identify any barriers to knowledge, skill, and attitudes in relation to the recommended competencies. The strategic plan, which can be found in Appendix B, will be implemented based on the identified curricular threads added to the outcome and identify which classes to implement these threads in.

The purpose of a gap analysis tool is to be able to compare the processes that are currently being implemented in an organization with best practices and determine the gaps between the two (AHRQ, 2016). After the analysis, an individual can select the best practices to implement within the organization (AHRQ, 2016).

Timeline

The timeline for this project from the initial proposal to the completion is as follows:

- January 2022 – Project Proposal Defense
- February 2022 – IRB Approval
- January to March 2022 – Project Implementation - Analysis of gaps in the current undergraduate nursing curriculum
- March 2022 to April 2022 – Project evaluation and dissemination of results
- May 2022 – DNP Project Defense

- June 2022 - Final dissertation to be submitted to UNLV graduate college

Threats

An identified primary threat to this project is having enough faculty willing to incorporate identified threads based on the gaps found in the data analysis. There is a possibility that faculty are not familiar, well-educated, or comfortable with the incorporation of new genetics and genomics threads. To address this threat, the author will provide genetics and genomics resources to the undergraduate nursing director that may be utilized in enhancing faculty knowledge of genetics and genomics. To sustain the project, the author will provide a copy of the modified gap analysis tool utilized in this project, as well as the agenda and plans for a continuing education class to the undergraduate nursing director, so the faculty members may continue to seek out opportunities to enhance the genetics curriculum for their undergraduate program.

Evaluation Plan

The evaluation of this project will involve analyzing the implementation of the project with data measurement and analysis. The project will be evaluated by examining how many gaps in genetics and genomic education is found in the current undergraduate nursing core courses. Utilizing the modified gap analysis tool, the author will evaluate curriculum threads that may be suggested to add into the current curriculum. A thorough discussion of the results of the project will be discussed in Chapter Five.

Chapter V

Methods

Design

This project was developed through the creation of a strategic plan utilizing a modified gap analysis instrument to identify genetics and genomics competency gaps in an undergraduate nursing curriculum. A strengths, weakness, opportunities, and threats (SWOT) analysis was included to identify and analyze the strengths and weaknesses of the project and be given the opportunity to address and eliminate any threats. The goal of the strategic plan is to identify genetics and genomics competency gaps in the current undergraduate nursing curriculum and providing possible threads that may be incorporated into the curriculum to meet the essentials of Baccalaureate education as set forth by the AACN.

The project was conducted at the School of Nursing in UNLV, which employs 37 full-time and part-time faculty members. UNLV has an institute that focuses on the adoption of advanced genomics to help move the state to medical decision-making that is driven by the data obtained from decoding genomes to predict a person's disease susceptibility to tailor treatment options and drug dosages so that state residents may lead lives that are longer and healthier.

Approval Process

Approval and collaboration were obtained from the undergraduate nursing program director prior to starting the project. Because the project did not involve any human subjects or data collection from participants, the project was exempt from the UNLV IRB review process.

Data Collection/Analysis

The data collected from the gap analysis of the undergraduate nursing curriculum, the possible competency thread ideas, and SWOT analysis data were analyzed using descriptive statistics. All collected data were maintained on password-protected devices.

Procedures

After obtaining consent to conduct the study, a strategic plan was developed. The syllabi for the 16 undergraduate nursing core courses were obtained from the undergraduate nursing director. Utilizing the modified gap analysis tool, the syllabi were then analyzed for baseline genetics and genomics content. The strengths and weaknesses related to the implementation of this project were discussed with school leadership, committee members, and a genetic nurse expert through a SWOT analysis of the project, which can be found incorporated into the strategic plan.

The syllabi were analyzed course by course for baseline genetics and genomics content. For organizational purposes, a table was created listing the 16 core courses with course descriptions and identified baseline genetics and genomics content, which can be found in Appendix C. Utilizing the modified gap analysis tool and the *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition*, possible curricular thread ideas for genetics and genomics content were incorporated to meet each competency found with no current state of practice, including possible class placement for the thread ideas.

Results

The analysis of the provided syllabi of undergraduate nursing core course requirements revealed that the current undergraduate nursing curriculum lacked learning outcomes outlined in

Essentials of Genetic and Genomic Nursing. Out of the 16 core courses required for the undergraduate nursing program, only five courses (31.25%) were found to have genetics and genomics content. The content found in the five courses was found to be basic genetics and genomics education related to disease processes.

The results of the SWOT Analysis to identify strengths and weaknesses related to the implementation of this project identified potential faculty limitations, but the school leadership strongly support and agree with the need for the incorporation of genetics and genomics content in current curriculum, including the need for genetics and genomics continuing education or refresher courses for faculty. A potential weakness found was that staff was not familiar with genetics and genomics content, which confirms Fee-Schroeder & Nelson's (2019) findings. To address this weakness, the suggestion of developing a continuing education class for faculty was voiced to faculty leadership. Read & Ward's (2016) study validated the need for continuing education programs to prepare faculty of nursing schools to include genomics and genetics content into their curriculum.

Other weaknesses identified were high staff turnover, change fatigue, educational inertia, and unrecognized skill gaps. Concern was voiced by some faculty members of possible decreased interest in learning about genetics and genomics, which is confirmed by Aiello's (2017) findings that nurses found that current genetics and genomics research has no relevance in their current practice. Strengths that were identified in the SWOT analysis included leadership that value and understand the impact of genetics and genomics education and the success of a similar project by Dr. Holly Mathis that was conducted in 2020.

There were five identified domains listed by *Essentials of Genetic and Genomic Nursing.* Domain I had a total of six competencies, Domain II had eight, Domain III had four, Domain IV

had one, and Domain V had 8 competencies. Seven competencies listed in Domain II were found in the current undergraduate nursing curriculum core courses. Five competencies in both Domain III and V were also found in current practice. None of the competencies in Domains I and IV were found in current state of practice. A total of 23 possible content threads that may be incorporated into the current curriculum to adhere to the recommended genetics and genomics competencies were identified. Domain I yielded 12 threads, Domain II identified six threads, Domain III identified three threads, and Domains IV and V yielded one thread each. The highest number of possible content threads was found in Domain I. A table of these findings can be found in Appendix D.

Discussion

Aiello (2017) emphasizes that undergraduate and graduate nursing students graduates continue to exhibit decreased knowledge of the genetic and genomic practice. Multiple attempts have been made to ensure the incorporation of genetics and genomics education into nursing curricula; however, barriers such as decreased faculty knowledge of genetics and genomics and decreased knowledge of methods on how to apply genetics into current nursing practice were found (Aiello, 2017). Creating a strategic plan is vital in achieving the goals of this project. It begins with a vision, then the development of a strategy that turns into a strategic plan and leads to the execution of the plan (Nedrelid, 2016).

Prior to developing the strategic plan, it was important to discuss the vision of the project with faculty leadership such as the directors of the undergraduate and graduate programs. Collaboration and involvement of the faculty leadership in the strategic plan and SWOT analysis demonstrated that they were interested in increasing genetic and genomic competencies in the

undergraduate curriculum and the graduate curriculum in the future. Having the support of the leadership will demonstrate the importance of the project to the current faculty.

DeSevo's (2013) study found that faculty teaching undergraduate nursing had scarce knowledge of genetics and genomics. This was an identified threat in the SWOT analysis that was performed. To overcome this barrier, the modified gap analysis based on the *Essentials of Genetic and Genomic Nursing* will be introduced to the undergraduate nursing faculty. The guidelines in genetics and genomics were developed by the Consensus Panel on Genetic/Genomic Competencies to provide guidance to nurse educators on core competencies for genetics and genomics (Thompson & Brooks, 2011).

Along with the tools used in this project, the recommendation of continuing education classes will be proposed to the undergraduate nursing director. A study conducted by Fee-Schroeder & Nelson (2019) showed that participants' knowledge of genetics and genomics increased by 30% after participating in a genetics and genomics educational program. Continuing education classes and educational programs focused on genetics and genomics will be instrumental in easing the faculty's lack of knowledge of genetics and genomics. One educational class will not make a person an expert in genetics or genomics, but it is a step in the right direction and will help meet the long-term goals of the strategic plan.

Plans for a continuing education class to be conducted with the undergraduate nursing faculty was drafted prior to the implementation of this project. Due to unforeseen circumstances and limitations due to high staff turnover, the continuing education class was not able to be implemented as planned. The continuing education class was planned to include a pre-class link to the GNCI to assess faculty knowledge prior to the class, a nurse genetics expert guest speaker, an overview of the *Essentials of Genetic and Genomic Nursing* guidelines, classwork including

the creation and interpretation of pedigree charts, and breakout faculty groups to work together to incorporate genetics and genomics thread ideas into current undergraduate nursing curriculum. The class would have concluded with a post-class link to the GNCI to assess faculty knowledge improvement after the class. The proposed agenda can be found in Appendix E. Although this continuing education class was unable to be implemented, this proposed agenda may be utilized in the continuation of the dissemination of this project.

Conclusion

This project supports that developing a strategic plan utilizing the *Essentials of Genetic and Genomic Nursing* can identify gaps in a current undergraduate nursing curriculum and build genetics and genomics competencies to incorporate into the curriculum. A gap of 68.25% was found in the current undergraduate nursing curriculum. It is important to note that each core course is designed to teach students skills, theory, or clinical experience and do not necessarily meet the need for genetics and genomics content. However, for the purpose of this study, each core course was analyzed for genetics or genomics content. Even though some core courses do not meet the need for genetics or genomics content, identified threads based on the competencies listed in the *Essentials of Genetic and Genomic Nursing* were found to be able to incorporate into each course. To address the gap in genomic and genetics competencies, 23 possible threads based on the competencies listed in *Essentials of Genetic and Genomic Nursing* were identified. The success of this project, as well as the success of the initial project conducted by Dr. Holly Mathis, demonstrates the ability to provide tools to nursing faculty to use to incorporate genetics and genomics competencies into undergraduate nursing curricula, as well as the possibility to utilize these tools to improve graduate curricula in the future.

Appendix A

Modified Gap Analysis Tool - *Analysis of practice gap, suggested curricular threads with possible class placement.*

Desired Practice	**Current Practice**	**Barriers to desired practice, if identified**	**Outcome**	**Possible class placement**
Describe the desired "Best Practice" state	*Describe the current state of practice*	*Check which type of gap has been identified.* □ ***Knowledge*** □ ***Skills*** □ ***Attitudes***	*List identified curricular thread in terms of Essentials of Genetics and Genomics Competencies Domains*	
Domain 1: Professional Responsibilities				
1a. Recognize when one's own attitudes and values related to genetic and genomic science may affect care provided to clients.	No evidence found.	A	1. Examine beliefs and attitudes about genetic and genomic services such as BRCA gene testing, etc…) 2. Discussion Post Assignment about own attitudes and values concerning genetic and genomic services.	NURS 307, NURS 419
1b. Advocate for clients' access to desired genetic/genomic services and/or resources including support groups.	No evidence found.	S	1. Introduce a list of resources for students to find genetic/genomic information: disease susceptibility, conditions, treatment, prognosis. 2. Research availability of resources for various genetic disorders and estimated costs and compare.	NURS 307, NURS 350, NURS 313R, NURS 401, NURS 405, NURS 406
1c. Examine competency of practice on a regular basis, identifying areas of strength, as	No evidence found.	K	1. Incorporate genetics and genomics topics	NURS 306, NURS 307, NURS 329,

well as areas in which professional development related to genetics and genomics would be beneficial.			into exam to evaluate student's knowledge of genetics/genomics in nursing. 2. Assign students to create one care plan tailored for genetic-related conditions for each semester clinical rotation.	NURS 313R, NURS 401, NURS 405, NURS 406, NURS 419
1d. Incorporate genetic and genomic technologies and information into registered nurse practice.	No evidence found.	K, S	1. Evaluate student's ability to navigate through patient's EHR during clinical rotation. 2. Have student determine how clinics or hospitals screen for genetic disorders.	NURS 305, NUR 313R, NURS 401, NURS 405, NURS 406, NURS 419
1e. Demonstrate in practice the importance of tailoring genetic and genomic information and services to clients based on their culture, religion, knowledge level, literacy, and preferred language.	No evidence found.	K, S	1. Educate students on how to obtain a thorough health assessment and history. 2. Scenario group assignments involving genetic conditions.	NURS 307, NURS 329, NURS 342, NURS 419, NURS 405
1f. Advocate for the rights of all clients for autonomous, informed genetic- and genomic- related decision-making and voluntary action.	No evidence found.	S	1. Discussion Board Assignment about ethical, legal, and social issues regarding access to and using genetic and genomic information. 2. Evaluate student's ability to obtain an informed consent from a patient during clinicals.	NUR 305, NUR 307, NURS 313R, NURS 401, NURS 405, NURS 406, NURS 419, NURS 325
Domain 2: Professional Practice Essential Competency: Nursing Assessment: Applying/Integrating Genetic and Genomic Knowledge				
2a. Demonstrates an understanding of the relationship of genetics and	NURS 313R, NURS 320,	K		NURS 419, NURS 405, NURS 427

genomics to health, prevention, screening, diagnostics, prognostics, selection of treatment, and monitoring of treatment effectiveness.	NURS 401, NURS 406, NURS 425			
2b. Demonstrates ability to elicit a minimum of three-generation family health history information.	No evidence found.	S	1. Create own genogram or family history pedigree chart and interpret	NURS 307, NURS 329, NUR 313R, NURS 401, NURS 405, NURS 406
2c. Constructs a pedigree from collected family history information using standardized symbols and terminology.	No evidence found.	S	1. Create genogram or family history pedigree chart of classmate and interpret. 2. Create genogram or family history pedigree chart of patient and interpret.	NURS 307, NURS 329, NUR 313R, NURS 401, NURS 405, NURS 406
2d. Collects personal, health, and developmental histories that consider genetic, environmental, and genomic influences and risks.	No evidence found.	S		NURS 307, NURS 329, NUR 313R, NURS 401, NURS 405, NURS 406
2e. Conducts comprehensive health and physical assessments which incorporate knowledge about genetic, environmental, and genomic influences and risk factors.	No evidence found.	S		NURS 307, NURS 329, NUR 313R, NURS 401, NURS 405, NURS 406
2f. Critically analyzes the history and physical assessment findings for genetic, environmental, and genomic influences and risk factors.	No evidence found.	S	1. Group Assignment: Interpretation of a completed family history pedigree chart – identifying genetic and genomic factors and components that may contribute to disease or health risks. 2. Create a care plan for patient found to have genetic predisposition to disease or health risks.	NUR 313R, NURS 401, NURS 405, NURS 406
2g. Assesses clients' knowledge, perceptions, and responses to genetic and genomic information.	NURS 313R	S	1. Discussion Post Assignment: Example of when own beliefs and values have	NURS 307, NURS 401, NURS 405, NURS 406, NURS 419

			potential to influence the genetic and genomic care given to patients.	
2h. Develops a plan of care that incorporates genetic and genomic assessment information.	NURS 313R	S		NURS 305, NURS 401, NURS 405, NURS 406
Domain 3 Professional Practice Essential Competency: Identification				
3a. Identifies clients who may benefit from specific genetic and genomic information and/or services based on assessment data.	NURS 313R, NURS 320, NURS 401, NURS 406, NURS 425			
3b. Identifies credible, accurate, appropriate, and current genetic and genomic information, resources, services, and/or technologies specific to given clients.	No evidence found.		1. Assignment: Create a list of resources available for patients seeking genetic and genomic information and list of available services.	NUR 313R, NURS 401, NURS 405, NURS 406, NURS 419, NURS 420
3c. Identifies ethical, ethnic/ancestral, cultural, religious, legal, fiscal, and societal issues related to genetic and genomic information and technologies.	No evidence found.		1. Class Discussion: Ethical issues related to genetic/genomic information and technology including HIPAA, disclosure, and duty to warn.	NURS 313R, NURS 320, NURS 401, NURS 406, NURS 425
3d. Defines issues that undermine the rights of all clients for autonomous, informed genetic- and genomic-related decision-making and voluntary action.	No evidence found.		1. Assignment: Obtain information on your state's policies that impact genetic privacy, health, life, long term care, disability insurance, employment, or other genetic discrimination and compare to the federal level.	NURS 350, NURS 427
Domain 4: Professional Practice Essential Competency: Referral Activities				

4a. Facilitates referrals for specialized genetic and genomic services for clients as needed.	No evidence found.	S	1. Group Assignment: Create a pamphlet with two local genetic and genomic resource center and one national resource center – describing types of services, costs, and accessibility.	NURS 313R, NURS 320, NURS 401, NURS 406, NURS 425, NURS 419
Domain 5: Professional Practice **Essential Competency: Provision of Education, Care and Support**				
5a. Provides clients with interpretation of selective genetic and genomic information or services.	No evidence found.	K, S	See Domain 2: 2f	NURS 313R, NURS 320, NURS 401, NURS 406, NURS 425, NURS 419
5b. Provides clients with credible, accurate, appropriate, and current genetic and genomic information, resources, services, and/or technologies that facilitate decision-making.	No evidence found.	K, S	See Domain 4: 4a	NURS 313R, NURS 320, NURS 401, NURS 406, NURS 425, NURS 419
5c. Uses health promotion/disease prevention practices that: Consider genetic and genomic influences on personal and environmental risk factors. Incorporate knowledge of genetic and/or genomic risk factors (e.g., a client with a genetic predisposition for high cholesterol who can benefit from a change in lifestyle that will decrease the likelihood that the genetic risk will be expressed)	NUR 313R	K, S		
5d. Uses genetic- and genomic-based interventions and information to improve clients' outcomes.	NURS 313R	K, S		
5e. Collaborates with healthcare providers in providing genetic and genomic health care.	NURS 313R	K, S		

5f. Collaborates with insurance providers/payers to facilitate reimbursement for genetic and genomic healthcare services.	No evidence found.	K, S	1. Assignment: Create a list of genetic/genomic tests thar are covered by insurance.	NURS 313R, NURS 320, NURS 401, NURS 406, NURS 425, NURS 405
5g. Performs interventions/treatments appropriate to clients' genetic and genomic healthcare needs.	NURS 313R	K, S		
5h. Evaluates impact and effectiveness of genetic and genomic technology, information, interventions, and treatments on clients' outcome.	NURS 313R	K, S		

Appendix B

<table>
<tr><th colspan="2">Strategic Plan</th></tr>
<tr><th>ABOUT US</th><th>SWOT Analysis</th></tr>
<tr><td>Today:
Out of 16 core nursing courses in the BSN program, only 6 courses were found to have genetics/genomics content.

Vision:
To educate undergraduate nursing students about genomics and genetics, so that they may deliver quality health care and provide evidence-based care while meeting the nine essentials of Baccalaureate education as set by the American Association of Colleges of Nursing (AACN).

Mission:
“Nurse Leaders Begin Here. Our mission is to educate nurses at the undergraduate and graduate levels to meet health care needs in Nevada and beyond. The School of Nursing promotes, improves, and sustains human health through evidence-based education and advances in research and practice.”

Core Themes:
• Advance Student Achievement
• Promote Research, Scholarship, Creative Activity
• Create an Academic Health Center
• Foster Community Partnerships</td><td>Strengths:
Leadership (directors) who value the impact of genomics and genetic education.
School of Nursing was featured in Newsweek’s USA’s Leading Nursing Programs 2021.
School of Nursing is in the Top 50 Best Undergraduate Nursing Programs according to U.S. News & World Report’s 2022 Report
A pilot of this study was conducted by Dr. Holly Mathis in 2020 – a total of 18 curricular threads were identified.

Weaknesses:
Faculty not familiar with content
Change fatigue
Unrecognized skills gaps
Educational inertia
High staff turnover

Opportunities:
Evidenced based: AACN/BSN, ANA, CCNE
UNLV has a Genomics Core Facility with a full range of structural and functional services.
Hire a genomics/genetics expert to focus on genomics/genetics competencies for curriculum
Increase student awareness of genetics and genomics.
Increase faculty genomics and genetics knowledge and confidence
Meeting CCNE accreditation standards – Accreditation term expires on June 30, 2024. Next on-site evaluation is in Fall 2023.

Threats:
Lack of genomics and genetics content in current required textbooks for core nursing classes
Will interest and identified threads continue to be implemented after project completion?</td></tr>
</table>

GOALS	**OBSTACLES**
To improve outcomes by addressing identified issues and gaps within healthcare and building evidence-based practice skills to create a strong foundation for future practice.	Staff and faculty turnover, unpredictable leadership changes, education platform changes due to current pandemic, faculty feeling inadequate to teach new complex concepts, improvement of faculty development and education
SHORT-TERM GOALS	**LONG-TERM GOALS**
• Perform gap analysis to assess needs • Perform a SWOT analysis to determine potential strengths and weaknesses • Create interest in adapting genomics/genetics into curriculum • Disseminate thread ideas developed into current curriculum	• Develop a continuing education class to educate faculty about genomics/genetics and promote genomics/genetics content in curriculum using *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators, 2nd Edition* • Discuss genomics/genetics competencies and education with other program directors to incorporate genomics/genetics in all curriculums. • Create a continuing education program available to other faculty members as a refresher for genomic/genetic education.
	MEASUREMENTS OF SUCCESS
	• Identified gaps in current curriculum • Incorporated curriculum threads will be maintained in identified courses and will continue to grow • Genomics and genetics education development in faculty

Appendix C

BSN Core Course Requirement Tool

BSN Core Requirement	Course Description	Genetics Education	Genetics Education Recommendations
NURS 305: Patient-Centered Care: Basic Principles Theory: 4 credits Clinical: 2 credits	Introduction to nursing practice emphasizing application of the nursing process, critical thinking, psychomotor skills, communication skills, and documentation. Provides content on selected common disorders. Explores historical and theoretical perspectives of nursing as a profession, with introduction of ethical-legal decision-making. Emphasizes need for evidence-based practice and use of informatics in nursing.	None found.	3. Examine beliefs and attitudes about genetic and genomic services such as BRCA gene testing, etc…) 4. Discussion Board Assignment about own attitudes and values concerning genetic and genomic services. 5. Discussion Board Assignment about ethical, legal, and social issues regarding access to and using genetic and genomic information.
NURS 306: Pathophysiology and Pharmacology for Nursing I Theory: 3 credits	Introduces the student to basic pharmacokinetics, pharmacodynamics, pharmacoeconomics, and the relationship between pathophysiology and pharmacologic management. Emphasis on introductory principles and nursing management of drug therapy. Examines pathologies and associated pharmacological approaches from selected body systems across the lifespan.	None found.	3. Incorporate genetics and genomics topics into exam to evaluate student's knowledge of genetics/genomics in nursing.
NURS 307: Health Assessment of Diverse Populations Theory: 3 credits	Acquisition of skills to perform a holistic patient assessment - including sociocultural, spiritual, family, and complete physical assessment. Normal assessment findings emphasized;	None found.	3. Introduce a list of resources for students to find genetic/genomic information: disease susceptibility, conditions, treatment, prognosis.

	however, health risk factors and common abnormalities discussed.		4. Assignment: Research availability of resources for various genetic disorders and estimated costs and compare.
NURS 329: Physical Assessment Skills Skills: 1 credit	Acquisition of skills (inspection, palpation, percussion, and auscultation) needed to perform a comprehensive physical assessment. Interviewing techniques and documentation skills will be developed. Normal assessment findings emphasized; however, health risk factors and common abnormalities discussed.	None found.	3. Educate students on how to obtain a thorough health assessment and history. 4. Create own genogram or family history pedigree chart and interpret 5. Create genogram or family history pedigree chart of classmate and interpret.
NURS 342: Fundamentals of Nursing – Lab Skills: 1 credit	Learner directed skills course where students come prepared to practice and perform designated nursing skills in a safe environment. Students apply collaboration, critical thinking, problem solving, peer and self-evaluation, and documentation as they practice the designated nursing skills.	None found.	1. Scenario group assignments involving genetic conditions.
NURS 313R: Nursing Care of the Adult Med Surg Patient Theory: 4 credits Clinical: 3 credits	Focus on development of professional, patient-centered care for acutely ill patients. Emphasis is placed on applying sound clinical judgment in the planning, provision, and evaluation of evidence-based nursing care. Clinical experience will occur in acute settings with acutely ill adults.	"Oncology" and "Hematologic" Lecture, Small group discussion about genetic influence in nursing care and ethical considerations in clinical judgment while utilizing the nursing process.	3. Evaluate student's ability to navigate through patient's EHR during clinical rotation. 4. Have student determine how clinics or hospitals screen for genetic disorders.
NURS 320: Pathophysiology and Pharmacology for Nursing II	Examines pathologies and associated pharmacological approaches from selected body systems across the	Introduction to Cell Physiology; Immune and Chemotherapeutic Agents	1. Group Assignment: Create a pamphlet with two local genetic and genomic resource center and one

Theory: 3 credits	lifespan. Content will expand upon knowledge learned from NURS 306		national resource center – describing types of services, costs, and accessibility.
NURS 325: Professional Communication in Diverse Health Care settings Theory: 2 credits	Explores issues related to professional communication within diverse health care settings. Considers innovative and evidence-based strategies that enhance communication and relationship building skills for nurses. Develops abilities to effectively communicate with patients and other health care professionals	None found.	1. Evaluate student's ability to obtain an informed consent from a patient during clinicals.
NURS 350 Population Focused Nursing in the Community Theory: 2 credits Clinical: 2 credits	Concepts of population-focused health care used to promote health across diverse groups of persons defined by socio-demographic and geographic boundaries. Content is focused on partnering with communities to assess health data within a community health model of care. Clinical experience occurs in laboratory and community settings with culturally diverse populations.	None found.	1. Assignment: Obtain information on your state's policies that impact genetic privacy, health, life, long term care, disability insurance, employment, or other genetic discrimination and compare to the federal level.
NURS 401: Nursing Care of Older Adults Theory: 2 credits Clinical: 3 credits	Apply theories, concepts, and evidence-based practices in care for older adults. Recognize personal and societal attitudes regarding aging and their impact on delivery and quality of health care and the impact of age-related changes and morbidity on illness, treatment, and rehabilitation.	Common female concerns (menopause, breast cancer), Common male concerns (andropause, prostatitis, BPH, prostate cancer)	1. Incorporate genetics and genomics topics into exam to evaluate student's knowledge of genetics/genomics in nursing. 2. Assign students to create one care plan tailored for genetic-related conditions for each semester clinical rotation.
NURS 405: Nursing Care of Women and Childbearing Families	The examination and application of the theories of maternal-	None found.	1. Discussion Post Assignment: Example of when own beliefs

Theory: 1.5 credits Clinical: 1.5 credits	child centered nursing care from pregnancy to labor and delivery, postpartum and newborn nursery. Emphasis is on acute care and health promotion in the maternal-child clinical setting. Clinical experience will be primarily in the acute care inpatient setting.		and values have potential to influence the genetic and genomic care given to patients. 2. Assignment: Create a list of genetic/genomic tests thar are covered by insurance. 3. Assignment: Create a list of resources available for patients seeking genetic and genomic information and list of available services.
NURS 406: Nursing Care of Childrearing Families Theory: 2 credits Clinical: 2 credits	This course focuses on the examination and application of the theories of family centered nursing care from infancy through adolescence. Emphasis is on health promotion. Clinical experience will be primarily in the acute care inpatient setting and community.	"Hematological" and "Psychosocial, Developmental, Disability, Cancer" lectures	1. Class Discussion: Ethical issues related to genetic/genomic information and technology including HIPAA, disclosure, and duty to warn.
NURS 420: Evidence Based Practice and Research in Nursing Theory: 3 credits	Evidence-based Practice and Research is the study of the foundations upon which scientific investigations of health are based. Emphasis is on evidence-based practice, including research methodologies, processes, and critical appraisal of the health care literature.	None found.	1. Assignment: Create a list of resources available for patients seeking genetic and genomic information and list of available services – including services based on evidence-based practice and research.
NURS 419: Care of Individuals and Their Family Experiencing Emotional or Mental Health Disruptions Theory: 2 credits Clinical: 2 credits	Implement holistic, patient centered care based on an understanding of human growth and development, pathophysiology, behavioral health regimens, pharmacology, communication skills and nursing interventions with children, adolescents and adults experiencing major	Class discussions, small group work, Simulation scenarios, Role Playing, Small group discussion about genetic influence in nursing care and ethical considerations in clinical judgment while utilizing the nursing process.	1. Examine beliefs and attitudes about genetic and genomic services such as BRCA gene testing, etc.…) 2. Discussion Post Assignment about own attitudes and values concerning genetic and genomic services.

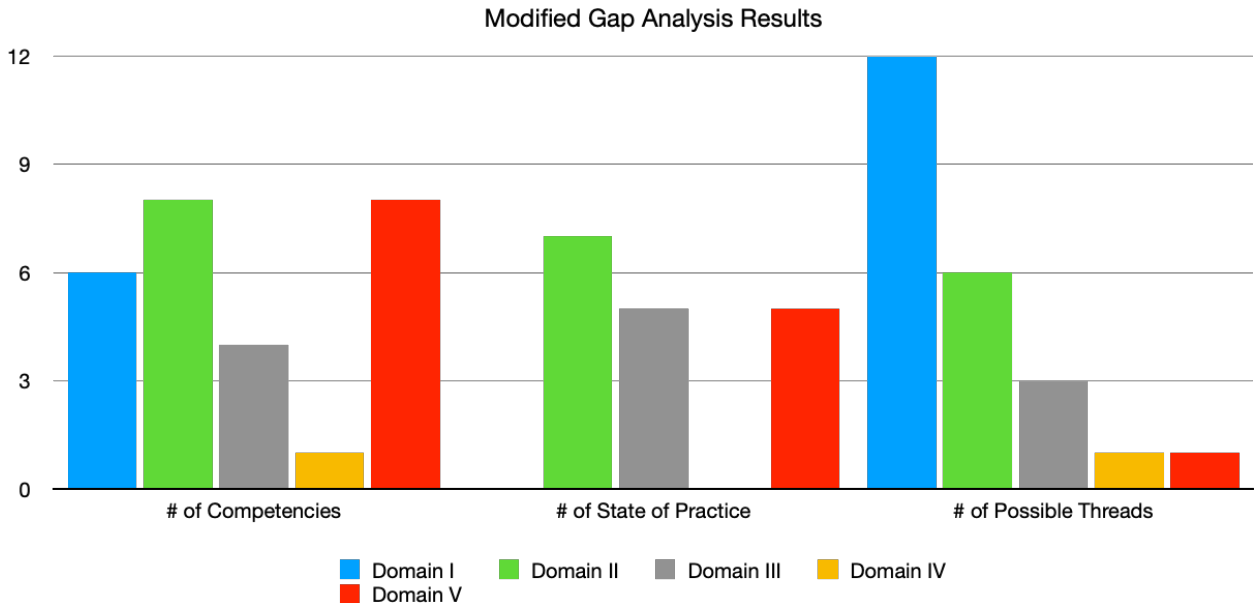
	emotional or mental health disruptions.		
NURS 425: Managing Complex Nursing Care in Diverse Populations Theory: 3 credits Clinical: 4 credits	This course focuses on the provision of professional nursing care to patients with complex health problems. Emphasis is placed on use of the nursing process with individuals and families in primary, secondary and/or tertiary settings.	Nursing Care of the Patient with AIDS, Nursing Care of the Patient with Oncologic Emergencies, Nursing Care of the Patient with Stem Cell Transplant, Nursing Care of the Patient with Systemic Lupus Erythematosus	1. Group Assignment: Create a pamphlet with two local genetic and genomic resource center and one national resource center – describing types of services, costs, and accessibility.
NURS 427: Nursing Leadership and Transition into Practice Theory: 3 credits Clinical: 1 credit	Apply leadership concepts, skills, and decision making in implementing high quality nursing care, healthcare team coordination, and the oversight and accountability for care delivery in a variety of settings. Explore the pathway to licensure, job preparation and succeeding in practice settings.	None found.	1. Assignment: Obtain information on your state's policies that impact genetic privacy, health, life, long term care, disability insurance, employment, or other genetic discrimination and compare to the federal level.

Key: 1st semester, 2nd semester, 3rd semester, 4th semester

Appendix D

Modified Gap Analysis Tool Results

	Domain 1:	Domain 2:	Domain 3:	Domain 4:	Domain 5:
# of Competencies	6	8	4	1	8
# of State of Practice	0	7	5	0	5
# of Possible threads	12	6	3	1	1



Appendix E

Genomic Competencies for Undergraduate Curriculum

Agenda

Email Invitations — Invitation to Continuing Education Class
Pre-class Genomic Nursing Concept Inventory (GNCI) link

1500-1530 — Introduction, objectives for the meeting
Discussion of the implementation of genetics and genomics into the undergraduate nursing curriculum

1530-1630 — **Guest Speaker: Dr. Linda D. Ward, PhD, CNE, FNP-C**
(1 CE hour)

1630-1730 — Overview of the Outcome Indicators of *Essential Genetic and Genomic Nursing" Competencies, Curricular Guidelines and Outcome Indicators (by Domain)*
Speaker: Myerann Royce Mangalino, MSN, APRN, FNP-C
(1 CE hour)
Discussion

1. **Professional Responsibilities – The influence of culture, attitudes, and beliefs in genetics.** Recognizing when one's own attitudes and values may affect patient care
2. **Professional Practice – Applying & Integrating Genetic/Genomic Knowledge**
3. **Professional Practice – Identification of Current Sources of Genetic/Genomic information.** Ethical considerations, GINA
4. **Professional Practice – Referrals and Resources**
5. **Professional Practice – Health Promotion/Disease Prevention**

1730-1800 — Putting into practice: Create family history pedigree charts and interpretation

1800-1845 — Break out into groups and work together to incorporate genetics and genomics thread ideas into current UNLV undergraduate nursing curriculum

1845-1900 — Summary and post-class GNCI link

Class Objectives:

1. Ability to identify and define basic genomics and genetics terms.
2. Identify at least one way genetics and genomics may be used in current practice to improve patient outcomes.
3. Ability to perform and interpret a thorough family pedigree/health history
4. Identify at least one genetic red flag based on a family pedigree/health history.
5. Incorporate *Essential Genetic and Genomic Nursing" Competencies, Curricular Guidelines and Outcome Indicators* domains into current curriculum that may be implemented at UNLV's undergraduate nursing program

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Curriculum Vitae

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OBJECTIVE

To achieve a professional position with responsibilities that will enhance my skills and allow achievement and growth within my profession.

EDUCATION

August 2020 – August 2022	*Doctor of Nursing Practice* *University of Nevada Las Vegas, Las Vegas, NV*
August 2018 – December 2019	*Master of Science in Nursing – Family Nurse Practitioner,* *Union University, Jackson, TN*
March 2014 – April 2015	*Bachelor of Science in Nursing,* *Grand Canyon University, Phoenix, AZ*
August 2009 – May 2011	*Associate Degree in Nursing,* *College of Southern Nevada, Las Vegas, NV*
January 2007 – March 2007	*Certified Nursing Assistant,* *College of Southern Nevada, Las Vegas, NV*

PROFESSIONAL LICENSURE & CERTIFICATIONS

- Advanced Practice Registered Nurse in Nevada, License #: 828092
- AANPCB Family Nurse Practitioner, Certification #: F12190854
- NPI #: 1487283834
- CAQH Provider ID: 14651410
- Nevada BOP Prescribing License #: PR15201
- Nevada DEA Registration #: MM5860780
- Nevada BOP CS License #: CS30204
- Nevada BOP Practitioner Dispensing License #: PD27625
- Registered Nurse in Tennessee, License #: 234253
- Registered Nurse in Nevada, License #: RN69148
- Basic Life Support (BLS), Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS), Trauma Nursing Core Course (TNCC), Advanced Burn Life Support (ABLS)

PROFESSIONAL EXPERIENCE

August 2021 – Present	*Unicorn Medical Weight Loss and Medical Spa, Las Vegas, NV* Nurse Practitioner. Responsible for examining, evaluating, counseling, and treating patients for medical weight loss and performing aesthetic procedures such as injectables – Botox, Dysport, and Restylane.
April 2020 – July 2022	*Dispatch Health, Las Vegas, NV* Nurse Practitioner. Responsible for providing comprehensive acute health assessments in the diagnosis treatment and outcome management of emergent/urgent care patient population to include laboratory studies, minor procedures, splinting, wound care, suturing, IV fluid and medication administration, facilitate specialist referral and/or PCP follow-up.
August 2018 – July 2022	*University Medical Center Trauma Resuscitation, Las Vegas, NV* Registered Nurse. Responsible for providing emergent patient care to patients with traumatic injuries utilizing critical thinking skills, teamwork, and trauma training.
February 2020 – May 2022	*I.V. Vitamin Therapy Clinic, Las Vegas, NV* Nurse Practitioner. Responsible for making care decisions based on best medical practices in the clinic and on dispatches, administered intravenous vitamin therapy, ordering IV vitamins, IV fluids, and any other medical supplies used for administering intravenous medications, supervising registered nurses, and telehealth appointments with patients if not present in the office.
August 2013 – May 2021	*Spring Valley Hospital Emergency Department, Las Vegas, NV* Registered Nurse/Relief Clinical Supervisor. Responsible for providing patient care based upon the nursing process; being effectively involved with maintaining the standard of care for assigned patients through assessment, planning, implementation, and evaluation, utilizing critical thinking skills to provide the best possible critical care nursing possible. Oversees and guides employees that are under RN supervision. Occasionally floating to emergency room psychiatric holding area to provide mental health care to patients.
September 2012 – December 2017	*Opportunity Village, Las Vegas, NV* Registered Nurse/On-Call, providing care to adults with severe mental disabilities with duties such as providing gastric tube feedings, skin assessments, Foley catheterization, tracheostomy care and medication administration. Our main goal and purpose were to provide respite care to clients' families and providing a place where mentally disabled adults may have a sense of self-worth by participating in a day program.

May 2013 – October 2014	*NaphCare, Las Vegas, NV* Charge Nurse/Psychiatric Nurse, providing care to inmates, administering medication by mouth, intravenously and nasogastric tubes. Responding to all medical emergencies involving inmates and/or officers. Providing mental health care to inmates with mental health needs.
December 2011 – August 2014	*Montevista Hospital, Las Vegas, NV* House Supervisor/Electroconvulsive Therapy Nurse, overseeing the patient care for each unit of the hospital. Providing leadership, guidance, and support to all nursing staff. Implementing new policies and educating staff. Supporting Director of Nursing in leading nursing department. Responding to all medical emergencies and utilizing critical thinking skills for the safety of each patient. Ability to perform the initial assessments on newly admitted patients, discharging patients, and evaluating the effectiveness of care, creating treatment plans to provide the utmost quality of care during each patient's hospitalization, applying the nursing process in each patient's care plan and utilizing therapeutic communication in a hospital setting.
July 2011 – October 2012	*Life Care Center of Paradise Valley, Las Vegas, NV* Registered Nurse, providing and overseeing the care of 28-30 patients, applying the nursing process by assessing each patient, making a proper nursing diagnosis, setting goals, implementing interventions, and evaluating the effectiveness of interventions and if goals have been met.

AWARDS RECEIVED

- College of Southern Nevada, Highest Honor, 2007
- College of Southern Nevada, Graduated with Honors, 2011
- College of Southern Nevada, Nursing Student Peer Award Nominee, 2011
- Grand Canyon University, Graduated with Honors, 2015

MEMBERSHIPS/ACCOMPLISHMENTS

- Honor Society of Phi Kappa Phi, Chapter 100
- Phi Theta Kappa Honor Society
- Nevada Student Nurses Association
- Church of Christ Choir Member
- Church of Christ Kadiwa (Youth) Member