

Genomics essay examples

[Science](#), [Genetics](#)



Introduction

Genetics is basically a term referring to the study of genes and their individual role in inheritance. In simpler terms, it is the manner in which certain conditions and traits are passed down from a single generation to the other. Genetics therefore is an aspect involving the study of genes and their effects. As a unit of heredity, genes are responsible for carrying instructions for making proteins that articulate the functions of the body and activities of cells as well. To give an example of that, inherited or genetic disorders include fibrosis.

Genomics on the other hand is seemingly a recent term that illustrates and describes the study of the genome (a person's genes). It includes the scientific study of certain complex diseases including asthma, cancer, heart disease and diabetes because each of these diseases cause more by a combination of environmental and genetic factors than by individual genes. Today genomics are contributing to new responsibilities for treatments and therapies for new diagnostic methods and a number of complex diseases (Hartl, 2013, p. 14).

The main difference between genetics and genomics is that genomics basically addresses all types of genes and their inter relationships while genetics examines the composition and functioning of the single gene. Genetics and genomics are important in a number of ways; they help individuals and families learn how conditions like cystic fibrosis and sickle cell anemia are inherited in families and what treatments are available. They also help researchers discover reasons why people get sick over and over again from certain behaviors, environmental factors and from certain

infections.

Arguably, nurses are in a good position to incorporate genomic and genetic information across all aspects of the health care system. As the most trusted licensed health professionals, they have and are continuing to make unique contributions in the field of human genomics and genetics and are also complementing the work of other bodies in health care to improve the public health.

- Essential Genomics and Genetics Competencies for Professional Nurses

Health care is greatly benefiting from the ongoing and unprecedented work expounding the genomic and genetic basis of illness, health and treatment response and disease risk. Genomic and genetics progress is applicable to all professionals and the entire spectrum of health care to the nursing profession at large. Most of the health conditions, disease risk and therapies used to treat various conditions with genomic/genetic element influenced by lifestyle and environmental factors have a great impact on the nursing profession at large. Ostensibly, nurses have an understanding and long experience with genomic and genetic information and technologies as they are well equipped with relevant skills and public trust to tackle this issue accordingly. This awareness of the skills and strengths of nurses along with the realization of prevention is a big stride on genomic and genetic healthcare (Detrich, 2011, p. 78).

In order for the public to entirely benefit from the widespread of genomic and genetic discoveries, competence, alertness and expertise is expected from nurses to help make good informed decisions and understand the actual results of their genomic and genetic therapies and tests (Hartl, 2012,

p. 112). Subsequently, nurses who are pretty much informed and knowledgeable about genomics and genetics are cable and have the potential to help individuals prevent consequential mobility.

- Professional Responsibility of Professional Nurses Regarding Genomics and Genetics

Arguably, genomic and genetic research is crafting new the involvement of nursing precisely in the informed decision-making process. Increasing innovations and availability of technology and genetic information depicts that families and patients will now be introduced to advanced learning in genetic beliefs and identity. Nurses who are the players in this field have implied that they will be involved alongside patients in every aspect and area of health in the obtaining process concept.

- Informed Consent and Genetic Testing

Genetic testing is now widely used in the life continuum for diagnosis, screening and also in determining the best cure for illnesses and best treatment for diseases. For instance, pediatric and obstetric nurses have entirely been involved in the process of genetic testing for various conditions such as Down syndrome and spina bifida. Notably, the involvement of nursing particularly in the genetic testing process, has been increasingly used is now expanded to various specialists including oncology. Availability of genetic testing for conditions such as ovarian, hereditary breast, among other cancers has been triggered by the involvement of nursing in genetic testing. To add on to that, nurses in major practices are increasingly involved in helping patients comprehend all benefits and risks and the purpose of using genetic testing as unit of consent and decision making process.

- Newborn Screening and Genetic Testing

Newborn screening is increasingly stretching its wings by expanding the use of genetic testing. Tandem Mass Spectrometry which is a new technology is currently being used screening programs in many states. This technology however, is allows screening for over twenty four genetic disorders using a single test. As an expanding trend in screening newborns, a lot of issues have been raised involving informed decision making. Newborn screening for instance can identify infants that predominantly carriers of a certain identified condition such as the sickle celled anemia (Weissman, 2010, p. 221).

- Proteomics

Proteomics is actually an analysis of all tissue types, cells and proteins in organisms on large scale analysis. It is a method that can be used to reveal abnormal and specific proteins cause certain diseases and various forms of cancer.

- Clinical Applications

Genomics and Genetics offer a unique opportunity to include protective factors and additional risk factors in the relevant risk assessments. Family history is arguably the most powerful genomic tool available to any nurse or clinician. For instance, collecting family history is a vital intervention in nursing that promotes risk assessment comprehensively. Care of individuals with genetic complex illnesses or disorders requires the nurse to fully understand the type of the disorder, how the order causes pathology, its pattern of inheritance and appropriate treatments.

- Interventions

Nursing interventions that are related to genomics and genetics include a number of actions in addition to teaching and assessment such as recognizing the basic need for necessary genetics services, assessment and making referrals to community genetics recourses or services. Ostensibly, genomic and genetic competencies for nurses are specially designed to that all nurses that are registered under various bodies are able to assess, advocate and intervene for patients when genomics and genetics issues are involved fully or partially.

- Integration and Application of Genomics and Genetics to Health History and Assessment including Family History and Environmental Assessments

Environmental and Genetic factors which include lifestyle, family and medical history, need to be taken into consideration for a clear and complete picture of risk assessment. These types of risk factors have both advantages and disadvantages in informing risk. For instance, family medical history can confine general risk information for various genetic factors that are inherited someone's parents. However, this can be incomplete recalled inaccurate or unknown. To back this up, it is coherent to note that family medical history is an outline of both environmental and genetic factors that make it sometimes hard to taunt those factors apart.

Diversity Concept

Genetics and genomics focus on a particular gene while Genomics involves various genes and other factors for instance environment that can contribute to the triggering of groups or individuals of genes. Arguably, cultural backgrounds of certain populations have influences that are seemingly significant to their particular perspective on genomics. Beliefs and Ethno-

culture values greatly influence participation psychological reactions and genomic testing to receive the willingness to use genomic services.

Understanding the genetic admixture or variability in marginal communities is a factor to consider in providing appropriate genomic and genetic services to patients and their families too (Hartl, 2012, p. 111). Seemingly, racial stereotyping could occur if the involved healthcare provider has the assumption that all patients from a particular community conform with a proposed treatment better than other patients from other populations.

Conclusion

Providing genetic and genomic information ought to be an essential component of daily nursing care and all healthcare. Ideally, the general knowledge of the basic ethno-culture values of families and patients can act as a guiding tool of the healthcare provider in delivering relevant genomic understanding and ethno-culture component that meets all the needs of diverse population that is rapidly growing. This article has fully described the concepts of genetics and genomics, culture and ethno-culture.

References

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