The Genogram: Enhancing Student Appreciation of Family Genetics

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ABSTRACT
This study used the health histories of nursing students' families to facilitate students' understanding of the role genetics plays in reproductive health. An ethnographic genetic interview and data collection assignment were created and implemented. Participants included 107 nursing students enrolled in reproductive health nursing who collected ethnographic genetic information by interviewing their own families. The results showed that this exercise helps students gain insight, not only into their own family history but also into the importance of inherited causes of illness and disease. The genogram assignment provides a creative experience in integrating theoretical concepts and augments students' understanding of genetics in health care.

Because recent advances in genetics have revolutionized health care and the role of nurses, gaining knowledge on the relevance of genetics in reproduction is an important part of the reproductive health nursing curriculum. New and expanded roles for nurses occur with every scientific advance, and those nurses with genetics expertise in preconception and preimplantation counseling will be better prepared for the developments occurring in this field (Jones & Fallon, 2002). Nursing has entered a new phase, one in which the reality of genetic advances will affect the practice of every nurse. Nurses need to be knowledgeable in genetics and genetic advances to provide patients and their families with information that will help those families make informed decisions about their health and their personal lives (Ricci, 2007). Therefore, the role of nurses is revolutionized because of advances in the knowledge of genetics. According to Ricci (2007):

The future of genetic technology is here with genetic testing, gene therapy, pharmacogenetics, genetic selection, and other challenges to nursing practice. Nurses need to be ready by educating themselves about conception, fetal development, and genetics to assist their patients in their decision making process for their health and welfare. (p. 230)

Television talk show hosts, such as Maury Povich and Oprah Winfrey, have exposed the general population to the role that genetics play in the general health of human beings. Consequently, individuals have become more concerned about possible or real genetic diseases in their pregnancies and children, as well as the effects on their own health. In 1982, Childs predicted that “to fail to take a good family history is bad medicine and will someday be criminal negligence” (p. 321).

Genetic diseases affect all body systems; by collecting health history data from clients, it is possible to identify individuals who are at risk for genetic disorders. Nurses in most settings obtain an initial health history to gather individual and family information that may indicate a client's genetic traits, inherited conditions, or inherited predispositions (Lea, 2002). Even at the most basic level of nursing, nurses should be able to collect a family health history, which would make it possible to explore collaboratively those clients’ risks for inherited conditions and to make a referral for genetic counseling or to a genetic specialist, if necessary (Ricci, 2007). The goal of the genogram assignment is to provide students with the opportunity to consider their own family's genetic history and to give them the capacity not only to examine their own health history and the relationship of genetics in reproduction, but also to apply the nursing expertise they will have gained to future client care.

Although not a family tree, the record of a family genetic history, or pedigree, is a graphic representation of a family's medical history using symbols to aid in the visual identification of a familial trait. Bennett (1999) stated, “A concise pedigree provides both critical medical data and biological relationship information at a glance” (p. 2). The genogram symbols used for this assignment incorporated the pedigree's systemization and allowed the creation of a uniform set of symbols, including a key, to ensure understanding of the data presented in the genogram (Figure), thus providing critical health information at a
A qualitative ethnographic approach allows students to collect and document their data relative to demonstrating their understanding of the relationship of inherited illness and genetic diseases, and the impact they can or will have on extended family members of clients and themselves. Because faculty believed understanding the role of genetics in reproduction to be a precursor of fetal development, the discussion of genetics occurs early in the reproductive health nursing course. This belief led to the inspiration for creating this qualitative interview assignment through which students can become knowledgeable health care advocates by appropriating their communication skills, cultivating their sense of discovery, and learning about ethnographic qualitative research. This exercise helps nursing students become capable in identifying health care priorities and in selecting appropriate interventions (Beauchesne, Kelley, & Gauthier, 1997, p. 16). In addition, the exercise may help the nursing students' families become aware of their own need for intervention. However, the activity is designed to allow students to transfer the exercise to the nursing process. Early identification of a finding by nurses provides families in any setting with an opportunity for a health care referral and more comprehensive health care.

The Genogram Assignment

Nursing students in their junior year complete the genogram project as a part of their reproductive health nursing theory course. Preparing students to construct their own genogram requires that they read the chapter on genetics in their textbook and also attend and participate in a 3-hour genetics class. The genetics class consists of a lecture, a short film on trait inheritance, and small group work in which students construct Punnett squares to determine inheritance possibilities. Finally, instructions for building the genogram are explained and clarified to ensure students understand the material and the assignment.

The assignment is graded based on four criteria outlined in the grading rubric developed for this assignment. Students have 5 weeks to complete their research and submit the completed project. In explaining the assignment to students, a genogram is described as being analogous to a family tree. Similar to a family tree, a genogram contains some basic information about families (i.e., number of children in each family, birth order, and deaths). A genogram focuses on the health history of a family and includes further information of patterns of disorders in the family such as alcoholism, depression, diseases, phenotypes (e.g., big ears or height), alliances, and living situations.

A side benefit of the assignment is that the family's perception of family strengths is gratified. Students have listed positive family characteristics such as a family penchant for slapstick humor, a crooked smile, dimples, the similarities of tongue curling, and earlobe characteristics. Students have indicated that the identification of these shared humble genetic characteristics fosters family unity. However, the main focus of the assignment is the identification of a potentially life-changing inheritable trait that can be managed if interventions are adopted. Identifying additional features such as social class, occupation, place of residence, religion, and ethnicity may provide insight into a patient's probable health (Ball & Bindler, 2006). Genograms can vary significantly, and information gathered is limited only by each student's imag-
Students are directed to construct a genogram on their own family that identifies at least one health risk. Students are instructed to interview family members, examining at least three generations regarding a traceable family trait. The information is placed on an 8.5×11-inch sheet of paper, poster board, or any other medium the students choose to display the information. One student’s genogram was sewn into a quilt; another student’s genogram was made out of buttons. Students use the same selected pedigree symbols for creating their genograms (Figure).

Students submit a synopsis of the trait they have identified including identified risks, health care promotion, and prevention using evidence-based practice research. A plan of care is developed addressing the risks, and lifestyle and behavior changes that minimize the risks are identified. It is important for students to recognize relationships between behaviors and eventual outcomes if changes are not implemented.

Caveats

After this assignment was completed by the first class of students, three important caveats were identified. First, learning about certain family situations, such as a history of drug abuse or mental health disorders, may render the genogram assignment an unsettling experience for students. In this situation, the faculty encouraged students to focus their data collection on an “acceptable” family trait or phenotype, such as tall stature, ears that stick out, or twin births. Some students shared that discovering the “family curse” was a revelation of their own possible future health care dilemmas. Family curse was a label humorously used by a number of students to describe various family traits, such as red curly hair, a long second toe, or double-jointed fingers. One student whose relatives remembered a grandmother and an uncle as being “a little off” realized the two relatives probably were bipolar. The student’s brother recently had been diagnosed with bipolar disorder, and the student reported that her finding helped her to better understand and connect with her brother and to view the insight as cathartic.

Faculty also must be prepared to understand the importance of modifying the assignment for students who are unable to collect a family health history and to assign another activity instead of the genogram. One option is for students to research a genetically transmitted phenotype trait in which they are interested and write a paper describing the trait, including a description of the trait, how they would educate a patient on that inherited trait, and what relevant treatment and referrals are associated with that specific characteristic. Although this assignment is different from the goal of interview and discovery for the students, it is important to adapt to unique individual student needs.

The second caveat was the challenge students met when family members recalled a trait using unfamiliar terminology. For example, students reported family members used the word harelip and students actually wrote “hair-lip.” Students also related that they felt some of the conditions their family reported as being caused by one condition were most likely associated with other causes, such as curvature of the spine rather than one shortened leg. Instructor feedback to correct terminology or misconceptions is prescribed through the grading rubric under the heading Miscellaneous.

The third caveat was the stated need for reassurance that student information was confidential and seen only by faculty. Students were assured their genograms were for their own learning and for insight into their family’s health history. There are several implications associated with this caveat. Family members, knowing that information will be kept confidential, are more willing to share information. That assurance, along with the idea that the family is helping the student become a nurse, has given family members the opportunity and permission to share family secrets, and many students have reported this exercise served to incorporate them more fully into their family. In addition, the sharing of this personal and sensitive material with the faculty provides a connection of trust and confidence between students and faculty that has future positive communication opportunities.

### Grading

A grading rubric was developed for the genogram assignment based on the following four criteria:

- Familial trait was identified clearly and traced through at least three generations (30 points).
- Organization of the genogram was clear, and it was easy to follow the identified trait using common genogram symbols (20 points).
- Synopsis and plan of care summarized the identified trait and outlined the identified risks, health care promotion, and prevention using evidence-based practice research article(s). Professional grammar and appropriate writing style were used (35 points).
- Quality of work on the genogram was upperclassmen level (15 points).

Students commented that using the grading rubric clarified the requirements for the assignment. Many students also believed the rubric allowed the assignment to be graded fairly on the basis of completion of the assignment rather than on the artistic or unique style of individual genograms.

### Evaluation

Formal feedback for evaluating the genogram assignment was solicited in a survey of 107 students during a 4-year period. The evaluation tool used was based on a 5-point Likert scale with 1 as the lowest score and 5 as the highest score. Students rated the genogram assignment overall on the basis of its value as a worthwhile assignment. The average rating for the genogram was 4.04, with
the majority of students identifying the genogram as a novel learning approach. Selected comments included the following:

- I really enjoyed the genogram because I gained important information about myself and my family I didn't even know.
- I really enjoyed the project; I learned a lot about my family.
- I had never really talked to my family about it before so it gave me lots of information.
- The genogram was fun.

Two students viewed the assignment as “busy work” but stated they had learned a great deal about their family’s health history. Another student who originally stated the assignment was going to be impossible to complete because her family was never sick learned that her “family was bigger and sicker than [she] ever knew.”

Conclusion

Formal evaluation through student surveys validates the use of the genogram as a relevant learning tool in the reproductive health nursing curriculum. Most students viewed the genogram as a positive experience in which they gained valuable information about their family’s genetic health. The genogram assignment provides a creative experience in integrating theoretical concepts and augmenting students’ understanding of genetics in health care.

References


