Background/Significance:
- Nurses and faculty need to be knowledgeable about pharmacogenomics because patient genetic/genomic profiles impact selection of drug therapy in clinical practice.
- Nurses comprise the largest portion of professional health care providers worldwide.
- Competence in basic genetic/genomic concepts is a requirement for all nurses.
- Accordingly, nursing faculty must be knowledgeable about these concepts to successfully transmit this information to students.
- Genetic/genomic concepts are foundational to pharmacogenomics.
- The number of pharmacogenomic biomarkers used in drug labeling nearly doubled from about 150 in 2015 to 283 in 2018.

Purpose:
The purpose of this study was to measure nursing faculty knowledge of genetics, genomics, and pharmacogenomics. An interval report is provided.

Methods:
- A cross-sectional, descriptive, survey study was conducted at a public university in the Midwest USA.
- The purposive sample of current and former nursing faculty was recruited at nursing faculty meetings. Anticipated final sample size is 25.
- Former faculty were employed in school of nursing leadership positions and were current doctoral students.
- Printed copies of the Genomics Nursing Concepts Inventory (GNCI) and survey on pharmacogenomics were administered in the presence of a proctor. Demographic information was collected on a printed survey without proctoring.
- The GNCI is a well-validated instrument containing 31 multiple-choice items falling into 1 of 4 domains (i.e., genomic basics, mutations, inheritance, genomic health care).
- Several validation studies were conducted among BSN students. The GNCI had a Cronbach’s alpha of .77 when administered to BSN students.
- Nevertheless; the GNCI was used in studies to measure nursing faculty knowledge of genetic/genomic concepts.
- The Survey on Pharmacogenomics was developed by Bannur, Bahaman, Sallot, and Teh (2014) at the Integrative Pharmacogenomics Institute (IPROMISE), Universiti Teknologi MARA in Malaysia.
- A literature review was conducted, and a draft questionnaire was created.
- The draft was reviewed by researchers and feedback incorporated in the second draft.
- The questionnaire was piloted among 10 pharmacists and physicians to identify ambiguous questions and improve the instructions.
- The final 38 item version of the Survey on Pharmacogenomics was written in English.
- The survey was deployed via email to 1500 physicians and pharmacists working in Malaysia. This survey instrument has not yet been validated against the results of Read and Ward (2016).

Results:
- To date, 15 nurse faculty completed all surveys.

- The percentage of correct answers by nursing faculty on the GNCI and its four domains were calculated and compared against the results of Read and Ward (2016) who also explored nursing faculty knowledge using the GNCI.
- The scores were as follows:
  - Total 41% (XXU) and 48% (Read & Ward).
  - Genomics basics domain 25% (XXU) and 33% (Read & Ward).
  - Mutations domain 47% (XXU) and 54% (Read & Ward).
  - Inheritance domain 50% (XXU) and 59% (Read & Ward).
  - Genomic health care domain 55% (XXU) and 58% (Read & Ward).

- Most participants were female (n = 87%), nonHispanic White (67%), ranged in age from 40-49 (33%) or 50-59 (33%) years, were assistant professors (40%), held an earned doctoral degree (60%) and at least one nursing certification (60%).

- The scores of correct responses to true items were as follows:
  - Question 1: “subtle differences in a person’s genome can have a major impact on how the person responds to medications” 100% (XXU), 95% (pharmacists), 73% (physicians).
  - Question 2: “genetic variants can account for as much as 95% of the variability in drug disposition and effects” 73% (XXU), 73% (pharmacists), 49% (physicians).
  - Question 3: “the pgk insert for warfarin includes a warning about altered metabolism in individuals who have specific gene variants” 53% (XXU), 44% (pharmacists), 71% (physicians).

- The scores of correct responses to false items were as follows:
  - Question 4: “genetic determinants of drugs response change over a person’s lifetime” 27% (XXU), 41% (pharmacists), 28% (physicians).
  - Question 5: “pharmacogenomic diagnostic testing is currently available for most medications” 80% (XXU), 85% (pharmacists), 78% (physicians).

Conclusion:
- The GNCI scores at the nursing school were a bit lower than those reported by Read and Ward (2016) but followed a similar trend.
- However, the nursing faculty were proctored during survey completion.
- Participants in Read and Ward’s study were not proctored.
- The results of both studies demonstrate a need for increased nursing faculty knowledge of genomic concepts.
- Similarly, participants in Bannur et al.’s study were not proctored during Survey on Pharmacogenomics completion but the participants at XXU were proctored.
- The results varied between each of the groups, without a consistent trend. The next phase of this study will include a course for faculty on genetic and genomics followed by repeat administration of the GNCI.
- The final phase of this study will include a course for faculty on pharmacogenomics followed by repeat administration of the Survey on Pharmacogenomics.

Clinical Relevance:
- Faculty knowledge of genetic, genomic, and pharmacogenomic is crucial to developing a nursing workforce adequately prepared to provide care in this genomics era.
- Genetic/genomic information should be provided in stand-alone courses and threaded throughout the nursing curriculum.
- Faculty must be ready to meet this need.

Limitations:
- Sample Size
- Demographics of Sample were skewed.
- Participants felt pressured during taking the exam due to the proctor being in the room. This may have attributed to some test anxiety.
- Faculty members were not actively looking to participate in this study.

References: