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Persistent Misconceptions About Mutations Among Graduate Nursing Students

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INTRODUCTION

- Genetic information is influencing health care.[1]
- Nurses need a foundation in the basics of genetics. [1]
- Genetic competencies for nurses are identified. [2-4]
- Leaders called for research on genetics in nursing education.[5]
- The purpose of this study was to determine the ongoing misconceptions among a group of graduate nursing students regarding genetic mutations.

METHODS

- Prospective cohort design
  - Public university students
  - Nursing anesthesia program
  - Fall 2014 to Fall 2016
- Program entry and exit testing knowledge of genetic mutations
  - Anonymous survey
  - 3 Items of basic knowledge regarding Mutations from the Genomic Nursing Concept Inventory - 2011 Beta Version (GNCI)[6]
- Limited genetic content in curriculum
- T-test for differences in entry and exit scores
- Examined items with > 30% incorrect on exit surveys
- Most frequent responses = misconceptions

RESULTS

- Participants
  - 28 students program entry
  - 26 students program exit
- All three of the items categorized as Mutations were missed by more than 30% of the students.
- Of the three items, exit scores improved on average for all three items; none were statistically significant.
- Overall, knowledge of Mutations increased from 46% to 58%, (t_{52} = 1.29, p = .20).

RESULTS

Table 1. Persistent Misconceptions vs Correct Response

Rank	Incorrect		Misconception	Correct Response
	Pre	Post		
1	68	54	A group of people with a named gene mutation, such as BRCA1, are likely to have identical mutations (23% chose this response) are likely to vary based on dominant or recessive form of the gene (23% chose this response)	A group of people with a named gene mutation such as BRCA1 are likely to have unique mutations
2	57	42	The most common way for a mutation to contribute to disease is by increasing the rate of DNA replication (39% chose this response)	The most common way for a mutation to contribute to disease is by directing the formation of altered proteins or unexpected amounts of proteins
3	36	31	In an individual with a named gene mutation, such as BRCA1, in which cells would the mutation be found? her breast cells (15% chose this response)	In an individual with a named gene mutation, such as BRCA1, in which cells would the mutation be found? all her cells that contain a nucleus

IMPLICATIONS

When addressing graduate nursing students, educators should not assume incoming students have a strong foundation regarding genetic mutations. Educators should examine the current curriculum for opportunities to begin with the basics and develop teaching strategies to address the common persistent misconceptions.

CONCLUSIONS

- Identified ongoing misconceptions among graduate nursing students regarding basic knowledge of genetic mutations for every GNCI mutations item.
- Given the lack of a statistically significant change in entry and exit scores and the high percentage of incorrect exit scores, the curriculum needs revision.

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