

Implementing Genomics in Clinical Care: A Personalized Medicine Educational Curriculum



for Graduate Medical Trainees & Practicing Clinicians

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Background

- An increasing number of clinicians are being asked to interpret and discuss genetic test results with their patients
- Providers have low levels of knowledge of genomics
- There are limited educational opportunities for clinicians to learn these skills

Objective

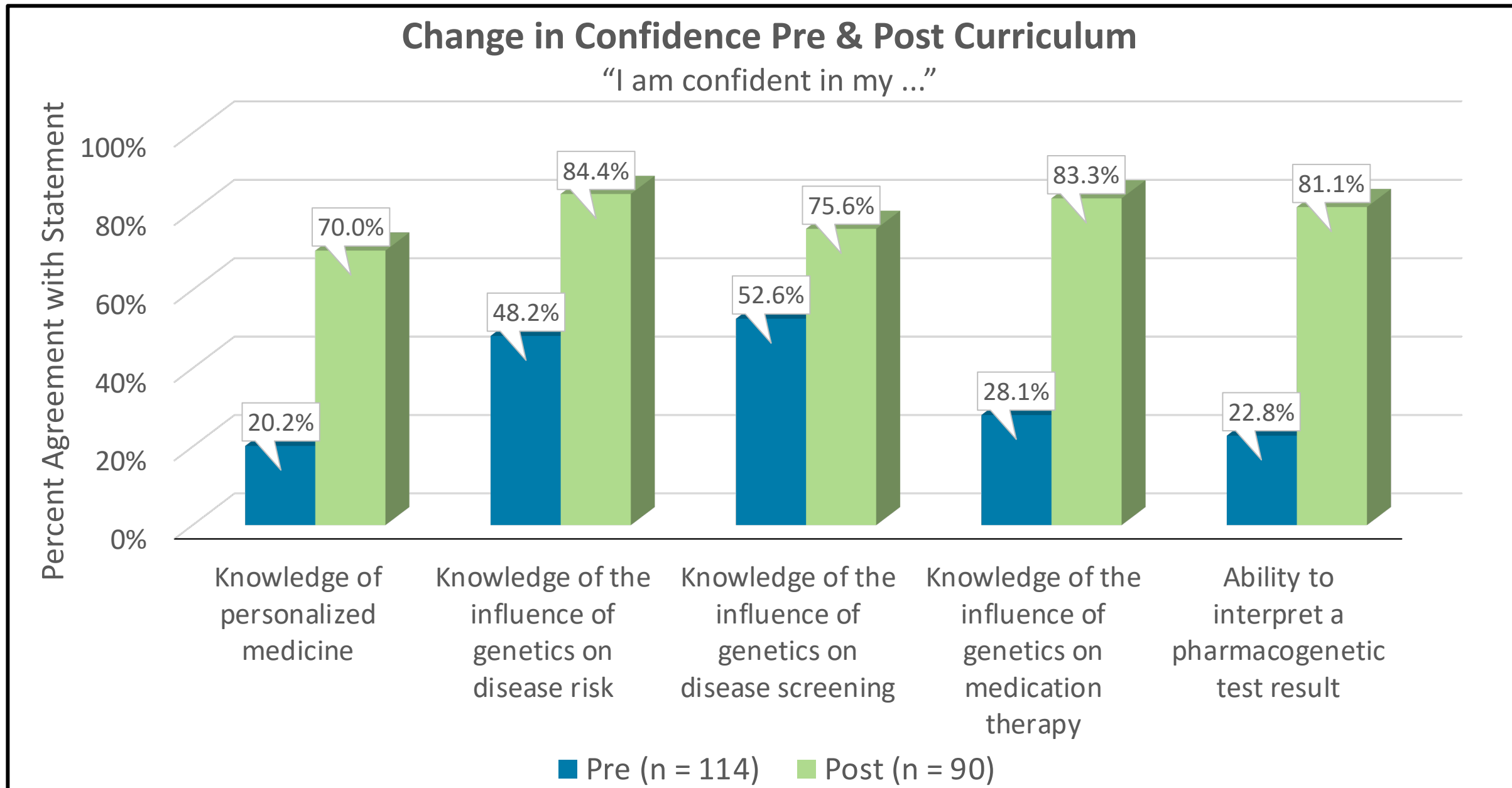
- To develop and test an online personalized medicine (PM) curriculum for graduate medical trainees & practicing clinicians

Methods

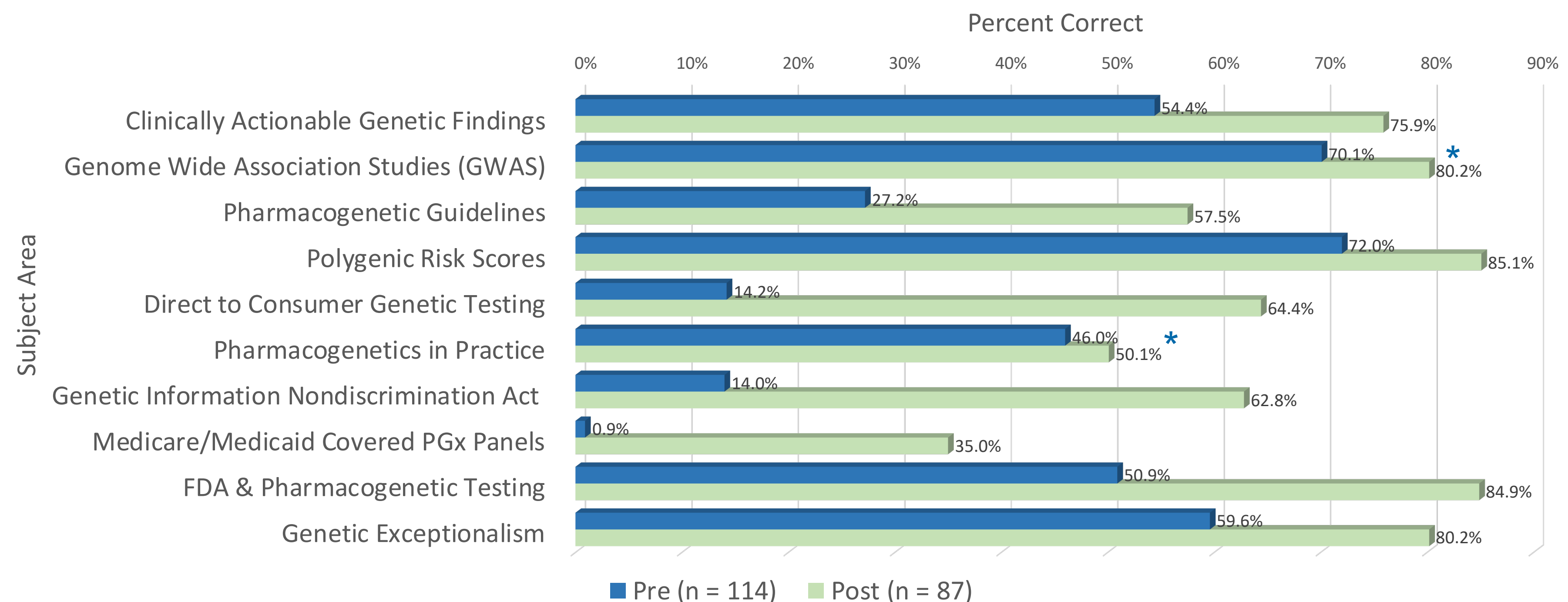
- Curriculum consisting of six 20-40 minute modules was developed & piloted with second and third year internal medicine residents in Spring & Fall 2020
- Curriculum was evaluated through voluntary participation in questionnaires offered pre and post curriculum
- Topics covered: Provider ordered genetic testing; direct-to-consumer genetic testing; biobanking at CU; pharmacogenetics (PGx); ethical and legal concerns around genomics
- Associations between categorical variables were tested using the Fisher exact test; $p < 0.05$ was considered significant

- Of 120 residents who completed the curriculum, 114 (95.0%) completed the pre-curriculum questionnaire and 90 (75.0%) completed the post-curriculum questionnaire
- 38.6% (n=44) of participants reported receiving PM education in the year prior to engagement with curriculum
- 77.2% (n=88) of participants reported an understanding of personalized medicine was moderately or very important
- 85.5% (n=77) of participants rated the curriculum moderately or very useful
- * denotes pre- and post- changes that did not reach statistical significance

Results



Change in Knowledge of Key Subject Areas Pre & Post Curriculum



Discussion

- Participant confidence in their knowledge of and ability to apply personalized medicine significantly increased pre and post curriculum ($p < 0.0001$)
- Participant knowledge increased significantly pre and post curriculum in all areas except GWAS and PGx in practice ($p = 0.03$ to $p < 0.0001$)
- Although participants reported increased confidence in the ability to interpret a PGx test result, demonstrated knowledge of this skill did not improve pre and post curriculum

Conclusions

- Educational modules developed around clinical scenarios familiar to clinicians can significantly improve participant confidence in their knowledge of and ability to apply personalized medicine
- Further curriculum refinement is needed to emphasize and improve knowledge in key subject areas
- Future research should focus on knowledge retention and changes made in clinical practice post curriculum

References

- Hamilton JG, et al. Primary Care provider's cancer genetic testing-related knowledge, attitudes and communication behaviors: A systematic review and research agenda. *J Gen Intern Med.* 2017 Mar; 32(3):315-24.
- Mikat-Stevens NA, Larson IA, Tarini BA. Primary-care providers' perceived barriers to integration of genetic services: a systematic review of the literature. *Genet Med.* 2015 Mar; 17(3):169-76.