

## INTRODUCTION

## RESULTS

With the rapid advances in the field of genetics and metabolism, pediatricians must have adequate knowledge of genetics and genomics to provide high quality care for children. Thus, educating both current and future physicians on the basics of genetic and metabolic conditions is becoming imperative. However, due to a set curriculum and limited lecture time throughout the year, pediatric residency programs tend to provide limited education in the field of medical genetics. A recent study showed that medical students felt the education they received in the field of genetics was inadequate for clinical practice. In addition, only 26% of respondents in the study received formal education in genetics in years 3 and 4 in medical school, indicating that this lack of education extends beyond residency programs (Plunkett-Roundeau et al). The purpose of our study was to use a weekly, web-based educational tool to teach pediatric residents about a variety of topics in genetics, metabolic diseases, and genome sciences.

## HYPOTHESIS

It is hypothesized that covering both common medical genetic and biochemical knowledge weekly will improve both resident comfort as well as knowledge regarding such topics.

## METHODS

### Participants:

- Categorical Pediatric, Internal Medicine/Pediatric, Pediatric/Neurology, and Pediatric/Medical Genetics residents at Rainbow Babies & Children's Hospital/University Hospital Cleveland Medical Center in Cleveland, Ohio.

### Methods:

- Pretest survey distributed
  - Survey included both comfort and knowledge questions regarding genetic and metabolic syndromes
- Every Friday two - three short questions were sent to the participating residents using a secure web application REDCap (Research Electronic Data Capture).
  - Topics included: Inheritance patterns, genetic testing, genetic syndromes, inborn errors of metabolism, newborn screening, and emergency therapies
- The answers and explanations were available after responses submitted
- Two months into the study a post-test was distributed to assess for improvement in genetic and metabolic syndrome knowledge

## REFERENCE

1. Plunkett-Roundeau J, Hyland K, Dasgupta S (2015) Training future physicians in the era of genomic trends in undergraduate medical genetics education. *Genetics in Medicine* 17, 927-934. Doi: 10.1038/gim.2014.208

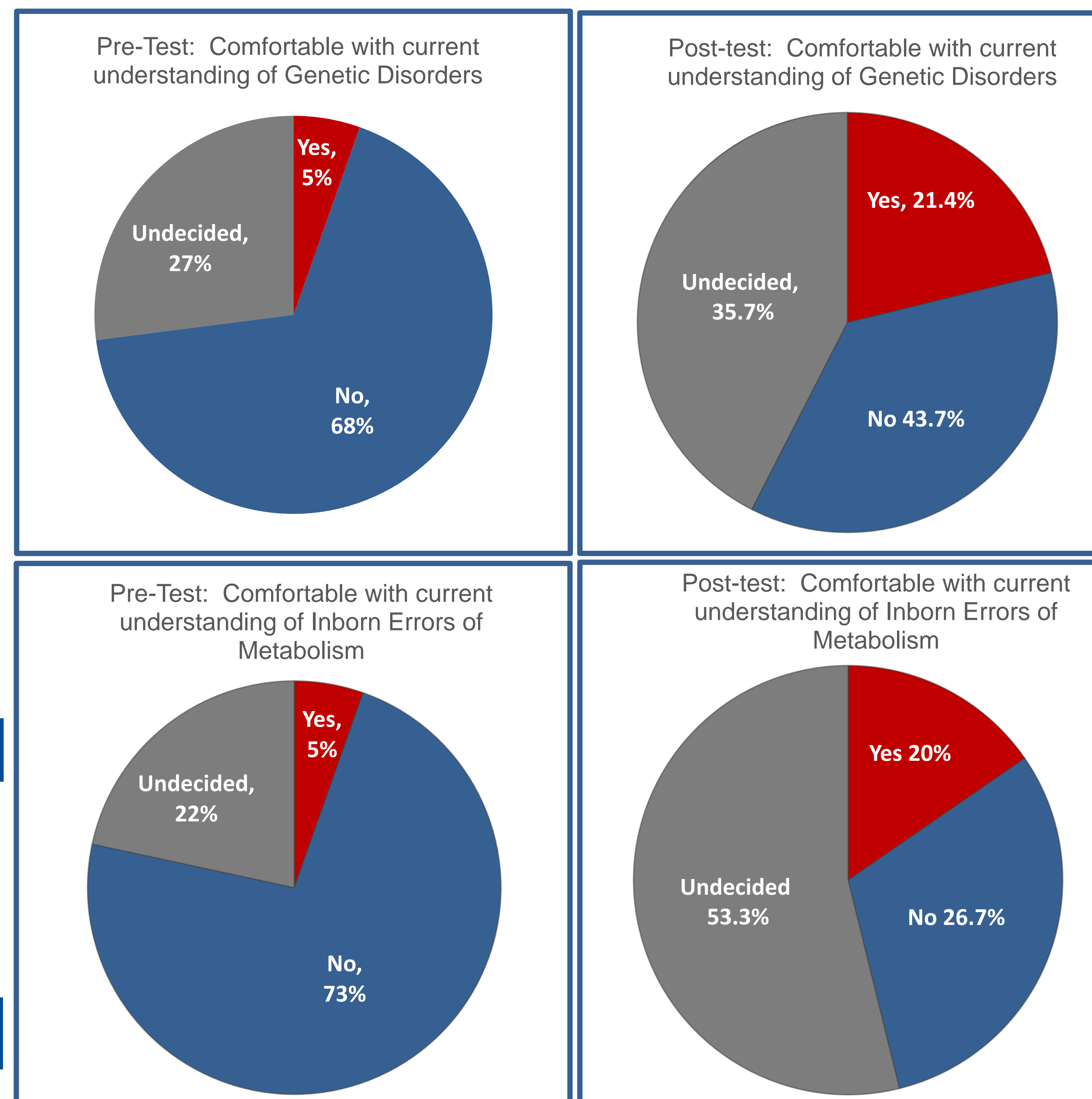


Figure 1. Pie Charts showing participant comfort levels with their current understanding of genetic and metabolic conditions before and after 6 weeks of participation in "GeneFix Friday" Resident Education.

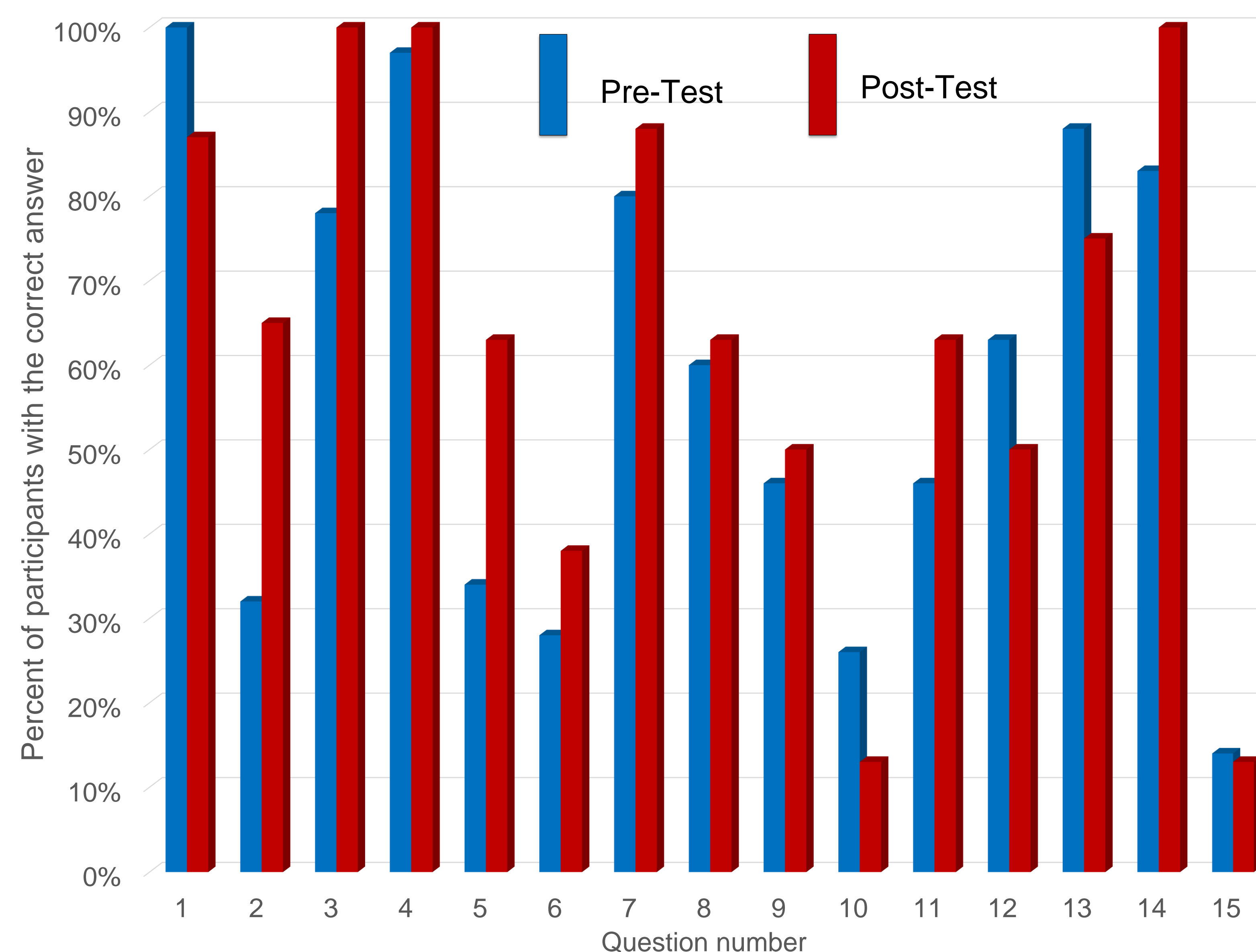


Figure 2. Graph showing percent of participants who answered each question correctly on the pre-test vs. post-test.

	Pre-Test (n=38)		Post-test (n=15)	
<b>Year of Training</b>				
PGY-1	15	39.5%	1	6.7%
PGY-2	15	39.5%	12	80.0%
PGY-3	6	15.8%	1	6.7%
PGY-4	1	2.6%	0	0.0%
PGY5	0	0.0%	0	0.0%
Other	1	2.6%	1	6.7%
<b>Specialty</b>				
Categorical Pediatrics	33	86.8%	14	93.3%
Combined Pediatrics/Internal Medicine	3	7.9%	1	6.7%
Combined Pediatrics/Neurology	2	5.3%	0	0.0%
<b>Participated in Previous Genetics Rotation?</b>				
Yes	8	21.1%	5	33.3%
No	30	78.9%	10	66.7%
<b>Participated in Genetic Education in Medical School? (n=15)</b>				
Yes	12	80.0%		
No	3	20.0%		
<b>Participated in Previous Genetic Education in Residency? (n=15)</b>				
Yes	10	66.7%		
No	5	33.4%		
<b>Found GeneFix Useful/Educational? (n=12)</b>				
Yes	14	93.3%		
No	1	6.7%		
<b>Will continue participating in GeneFix? (n=12)</b>				
Yes	14	93.3%		
No	1	6.7%		

Table 1. "GeneFix" Participant Demographics

	Pre test	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Post test
Participants	38	44	29	29	22	20	18	15

Table 2. "GeneFix" Weekly Participation

## CONCLUSION

Based on this pilot study, it is clear that even those with prior genetics experience feel uncomfortably with both clinical genetics and inborn errors or metabolism. Almost all participants were interested in continuing this project and found that it was a useful learning tool.

This study is important not only for the pediatric and combined pediatric/subspecialty residents at Rainbow Babies and Children's Hospital, but to a wide range of physicians. Due to the growth in the field of genetics and genomics, it is essential that physicians gain a better understanding of these topics throughout their training, to better provide for patients in the future.

A similar but broader version of this pilot study is underway.