GENETIC LITERACY AND AWARENESS OF PERSONALIZED MEDICINE AMONG UNDERGRADUATES IN HONG KONG

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Background and methods

Personalized medicine describes the use of an individual's genetic profile to diagnose diseases as well as guide treatments. In a common core undergraduate course with 129 teaching hours at HKU (The World Changed by DNA, https://commoncore.hku.hk/ccst9064/), students were taught on topics surrounding genomics through interaction with patients and guided discussions.

Aims and purpose

To explore university student perspectives on genetic testing

Methods

During the course students took part in pre- and post-teaching online questionnaires on perceptions of personalized medicine and pharmacogenomics, adopted from Mahmutovic et al.¹, covering ethical, legal and social aspects of genetic testing (Figure 1).

Pre-teaching, 37% of individuals indicated that they have not heard of personal genome testing before, and 52% reported that they would

feel "helpless" or "pessimistic" in case of an unfavorable genetic test result, which reduced to 47% after teaching on the basic concepts of genetics (Figure 7). Overall, 78% would consider having a genetic test done for potential illness that may manifest at a later age, and 78% of the students were aware of the related ethical issues, such as patient privacy and racial issues (Figure. 8).





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Lecturers

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Guest Speaker Terry Lai



Figure 1. CCST 9064 and Questionnaire

Results

A total of 118 students were enrolled, and the response rate was 70% (n=83). As a reference, the teaching evaluation for the course reported an above average course effectiveness rating of 78% (mean for the Area of Inquiry: Scientific & Technological Literacy = 70.7%) (Figure 5).



Figure 8. Ethical issues with concerns

Conclusions

Over one-third (37%) of undergraduates have not heard of genetic tests prior to the course. Despite that fact that the course had an above average effectiveness rating, negative perceptions were only reduced by 5%. Almost half (47%) of the students still indicated that they would feel helpless when faced with an unfavorable result which reflects the need for further input in a real scenario of genetic testing.

Impact

These findings only represent university students, and the impact on the general population is likely to be more exaggerated. Our results emphasize the need to build an educational framework early in nursing or medical schools extending to the wider community (Figure 9).

Figure 3. Sex and undergraduate faculty distribution (above)





A life time of learning in the circle of knowledge

Circle of Knowledge

What's missing?

Kindergarter

Tertiary Institution

Higher Education

Adult Learnin

Primary School

Secondary School

Figure 4. Teaching in the university context

Individual's access to DNA sequencing

 Steve Jobs's legacy in personalized medicine
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 Antonio Regalado | MIT Technology Review | October 3, 2013
 Image: Comparison of the second se



Social issues
Genetic discrimination

or \$100K to fight cance

Employers and health insurance companies treat people differently due to their gene mutation might causes inherited disorders.

teve Jobs had his DNA sequenced

Genetic information nondiscrimination act (GINA) was launched in order to protect people against the discrimination.



"Enhanced capability to understand scientific aspects of contemporary issues related to personalized medicine"

Figure 5. Course effectiveness



Figure 6. Student interactive and self-directed learning



PAST

NOW

Figure 9. Reaching beyond the confines of higher education to educate the wider community

References

1. Mahmutovic, L. et al. Human genomics, 2018, 12.1: 50.

Acknowledgements and Contact

Common Core Teaching Development Grant (Project no. 705)



