

2023

The Influence of Religious Affiliation and Attitudes of Clinical Genetic Testing Among Medical Students in the West Texas Region

Jonathan Kopel

School of Medicine, Texas Tech University Health Sciences Center, Lubbock, TX,
jonathan.kopel@ttuhsc.edu

Follow this and additional works at: <https://scholarlycommons.gbmc.org/jchimp>

Recommended Citation

Kopel, Jonathan (2023) "The Influence of Religious Affiliation and Attitudes of Clinical Genetic Testing Among Medical Students in the West Texas Region," *Journal of Community Hospital Internal Medicine Perspectives*: Vol. 13: Iss. 4, Article 25.

DOI: 10.55729/2000-9666.1212

Available at: <https://scholarlycommons.gbmc.org/jchimp/vol13/iss4/25>

This Letter to the Editor is brought to you for free and open access by the Journal at GBMC Healthcare Scholarly Commons. It has been accepted for inclusion in Journal of Community Hospital Internal Medicine Perspectives by an authorized editor of GBMC Healthcare Scholarly Commons. For more information, please contact GBMCcommons@gbmc.org.

The Influence of Religious Affiliation and Attitudes of Clinical Genetic Testing Among Medical Students in the West Texas Region

Jonathan Kopel*

School of Medicine, Texas Tech University Health Sciences Center, Lubbock, TX, USA

Abstract

Background: Genetic counseling is an essential and pertinent field in any society to lower the prevalence of hereditary disorders. However, the desire to undergo counseling and genetic testing varies widely depending on the cultural background and level of scientific literacy of the individual. In this survey, we examine the perspectives of medical students on clinical genetic testing based upon their religious tradition.

Methods: The total number of participants in the study was 257 (122 male and 135 female) second year medical students at Texas Tech University Health Sciences Center (TTUHSC). The distribution of religious identification (Atheist, Christian, Hindu, Jewish, Muslim, Spiritual/not Affiliated, and Other) among the second-year medical students. The survey was available to students through TTUHSC's Omnibus survey program for a period of two weeks.

Results: Most of the second-year medical students interviewed identified as being Christian (67%) with the next highest religious identification being Spiritual/not Affiliated (9%), Atheist (8%), and Muslim (6%). With regards to genetic tests, most of the students (95%), regardless of religious identification, have not used any commercial genetic testing services. Most second year medical students regardless of religious affiliation had similar agreement with questions regarding clinical genetic testing. However, there was a similar drop in agreement when it came on where students would want genetic screening to be performed regularly in clinics/hospitals.

Conclusion: Given the numerous factors that must be considered, such as the patient's attitudes, knowledge, and beliefs towards the counseling process and genetic testing, genetic counseling is a challenging problem. Each target population's history, relevant exposure to, and domain expertise must be considered while promoting decision-making in genetic testing.

Keywords: Religious affiliation, Genetics, Genetic testing, Medical students, Physicians

1. Introduction

In our previous paper, we showed that most medical students and residents lack the requisite knowledge to interpret and manage patient-provided individualized genetic testing.¹ In this study, I examine the perceptions of medical students in West Texas with regard to clinical genetic testing. Given the rise in the number of patients asking their doctor to interpret consumer oriented genetic tests and the scarcity of formally trained genetic counselors, there is a growing need to train medical

students and clinicians in assessing their own perspective and biases towards clinical genetic testing.¹ Most medical students and residents lack the necessary expertise to manage and interpret patient-provided customized genetic testing. Preliminary evaluations of these curricula show that in several trials, improvements in physician understanding of genetic data were associated with an increase in patient-physician connection and communication.¹ Therefore, understanding the behaviors and perspectives of medical students and physicians on genetic testing can provide insights

Received 16 March 2023; revised 14 April 2023; accepted 14 April 2023.
Available online 29 June 2023

* Texas Tech University Health Sciences Center, 3601 4th Street STOP 7260 Lubbock, TX 79430, USA.
E-mail address: jonathan.kopel@ttuhsc.edu (J. Kopel).

<https://doi.org/10.55729/2000-9666.1212>

2000-9666/© 2023 Greater Baltimore Medical Center. This is an open access article under the CC BY-NC license (<http://creativecommons.org/licenses/by-nc/4.0/>).

into how these factors influence patient care and a physician's utilization of genetic testing.²

Furthermore, genetic mutations can now be identified before or during pregnancy thanks to recent advances in genetic testing. Genetic counseling is an essential and pertinent field in any society to lower the prevalence of hereditary disorders. However, the desire to undergo counseling and genetic testing varies widely depending on the cultural background and level of scientific literacy of the individual.^{3,4} Genetic counselors must assist people to make informed decisions that represent their unique cultural and personal ideas, attitudes, and values because our society is culturally varied. According to this notion, cultural considerations have a significant impact on decision-making, particularly when it comes to matters like genetic testing.⁵ As a result, it follows that, in addition to scientific understanding, cultural background, religiosity plays a critical role in influencing both medical students' and physicians' moral decision-making. In this survey, we examine the perspectives of medical students on clinical genetic testing based upon their religious tradition.

2. Methods

The total number of participants in the study was 257 (122 male and 135 female) second year medical students at Texas Tech University Health Sciences Center (TTUHSC). The distribution of religious identification (19 Atheist, 170 Christian, 10 Hindu, 2 Jewish, 16 Muslim, 22 Spiritual/not Affiliated, and 14 Other) among the second-year medical students. The survey was available to students through TTUHSC's Omnibus survey program for a period of two weeks. For the survey, a scale between 1 and 5 was used to assess the level of agreement for each question with "1" being strongly disagree and "5" being strongly agree. The identities of the participants were kept confidential during the analysis of the data.

The questions asked in the survey were:

1. Have you had your personal genetic testing done (such as 23andMe or Ancestry DNA)?
2. Would you consider doing a personal genetic test on your health and/or ancestry?
3. Would you want to know the results of my genetic test even if it showed a disposition to lethal medical conditions (Alzheimer's, Huntington's Disease, Multiple Sclerosis, ect)?
4. Would you want your genetic screening information to be used for clinical and/or basic science research?

5. Would you want genetic screening to be performed regularly in clinics/hospitals?

3. Results

Most of the second-year medical students interviewed identified as being Christian (170; 67%) with the next highest religious identification being Spiritual/not Affiliated (22; 9%), Atheist (19; 8%), and Muslim (16; 6%). In addition, medical students also identified with the Hindu (10; 4%), Jewish (2; 1%), or Other (14; 5%) spiritual traditions. With regards to genetic tests, most of the students (95%), regardless of religious identification, have not used any commercial genetic testing services. Medical students who identified as Jewish strongly agreed to most questions except question 5. However, there were only two students in our sample that identified as Jewish. In addition, second year medical students from the other religious identifications (Atheist, Christian, Hindu, Muslim, Spiritual/not Affiliated, and Other) had similar agreement with questions 2–4 (Table 1). However, there was a similar drop in agreement when it came to question 5 on where students would want genetic screening to be performed regularly in clinics/hospitals (Table 1).

4. Discussion

Despite most second-year medical students having not used clinical genetic tests, there were few differences in the perceptions of clinical genetic tests based on their religious affiliation. However, most second year medical students, regardless of religious affiliation, had less certainty whether clinical genetic testing should be regular performed in the clinical setting. This may be due to the lack of clinical genetics exposure during medical school.¹ The fact that most medical students are not exposed to clinical genetic testing departments during their clerkship rotations is demonstrated by the absence of knowledge on issues relating to recommendations and the referral of patients for genetic screening tests. Additionally,

Table 1. Survey response to questions 2-5.

Religious Affiliation	Question 2	Question 3	Question 4	Question 5
Atheist	4.1	4.2	4.4	3.9
Christian	3.8	3.7	3.7	3.3
Hindu	3.8	4.1	4	3.8
Jewish	5	5	5	3.5
Muslim	4.2	4.1	3.7	3.5
Other	3.9	3.7	3.9	3.4
Spiritual, Not Affiliated	3.8	3.8	3.9	3.3

most students are unaware of the specifics of the genetic testing services provided by their university or the location where the samples were submitted for examination.¹ However, considering the extensive range of genetic studies available for detecting and studying the genetic alterations unique to a particular patient, this ignorance among medical students is to be expected.¹

Despite the minor influence of religious affiliation, other studies have shown a greater influence of religion with regards to clinical genetic testing. The religious convictions are a central part of most people's cultural heritage that directly or indirectly influences different communities' perceptions of both science and genetics. For instance, prenatal diagnosis and selective termination are supported in secular Israeli culture regardless of the rabbinical viewpoint, yet women in the ultra-religious Jewish community refrain from having an amniocentesis due to religious prohibitions.⁶ Many religious groups that have been studied hold the view that only God is ultimately responsible for why certain events take place. Therefore, they do not want to get involved before or during pregnancy.⁷⁻⁹ However, research has also demonstrated that there is an unclear link between beliefs and actions. Even though religious law prohibits abortion, some religious individuals nonetheless opt to have their pregnancy terminated if it is unwell, even though they normally prefer to depend on God.⁶

Overall, healthcare professionals must be conscious of the norms and values when dealing with patient's moral reasoning on genetic health concerns. For example, prenatal diagnostics and pre-symptomatic genetic testing provide people with challenging decisions.¹⁰ Patients frequently base their decisions on moral considerations rather than necessarily on scientific understanding since test results are vague and other people, such as family members, are also involved.¹⁰ This has been observed with the perception of different religious groups on gene editing in humans whereby higher levels of religiosity is inversely related to a lower level of acceptance of gene editing and genetic testing.¹¹ Therefore, it remains important to understand a patient's values and worldview when discussing deeply intimate and personal topics, such as clinical genetic testing.

5. Conclusion

Given the numerous factors that must be considered, such as the patient's attitudes, knowledge, and beliefs towards the counseling process and genetic

testing, genetic counseling is a challenging problem. Consideration must also be given to the patient's prior exposure to, experiences with, or biases towards genetic counseling and genetic illnesses. Each target population's history, relevant exposure to, and domain expertise must be considered while promoting decision-making in genetic testing.

Conflicts of interest

None.

Funding

None.

Availability of data and material

Data is available on request.

Code availability

None.

Ethics approval

None.

Consent to participate

None.

Consent for publication

We consent for this manuscript to be published and reviewed.

Authors' contributions

All authors contributed equally to the manuscript.

Acknowledgements

We appreciate Dr Sarangi and Dr Wail for their contributions reviewing and providing advice for the manuscript.

References

1. Kopel J, Brower GL. Perspectives on consumer and clinical genetic testing education among medical students in West Texas. *J Community Hosp Intern Med Perspect.* 2022;12(3):28–32.
2. Siani M, Ben-Zvi Assaraf O. The moral reasoning of genetic dilemmas amongst Jewish Israeli undergraduate students with different religious affiliations and scientific backgrounds. *J Genet Counsel.* 2016;25(3):596–609.
3. Lewis LJ. Models of genetic counseling and their effects on multicultural genetic counseling. *J Genet Counsel.* 2002;11(3):193–212.

4. Shaw A. Risk and reproductive decisions: British Pakistani couples' responses to genetic counselling. *Soc Sci Med.* 2011; 73(1):111–120.
5. Awwad R, Veach PM, Bartels DM, et al. Culture and acculturation influences on Palestinian perceptions of prenatal genetic counseling. *J Genet Counsel.* 2007;17(1):101–116.
6. Raz AE. *Community genetics and genetic alliances: eugenics, carrier testing, and networks of risk.* 1st ed. London, England: Routledge; 2009.
7. Ngim CF, Lai NM, Ibrahim H, et al. Attitudes towards prenatal diagnosis and abortion in a multi-ethnic country: a survey among parents of children with thalassaemia major in Malaysia. *J Community Genet.* 2013;4(2):215–221.
8. Pivetti M, Melotti G. Prenatal genetic testing: an investigation of determining factors affecting the decision-making process. *J Genet Counsel.* 2012;22(1):76–89.
9. Shaw A, Hurst JA. What is this genetics, anyway?" Understandings of genetics, illness causality and inheritance among British Pakistani users of genetic services. *J Genet Counsel.* 2008;17(4):373–383.
10. Van der Zande P, Akkerman SF, Brekelmans M, et al. Expertise for teaching biology situated in the context of genetic testing. *Int J Sci Educ.* 2012;34(11):1741–1767.
11. Funk C, Tyson A, Kennedy B, et al. *Biotechnology research viewed with caution globally, but most support gene editing for babies to treat Disease.* Pew Research Center; 2020.