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Positive and Negative Professionalism Experiences of Genetic Counseling Students in the United States and Canada

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Abstract

Many aspects of genetic counseling training programs have been examined over the years. However, no study has explored professional or unprofessional behaviors genetic counseling graduate students experience during their training, and how these behaviors influence satisfaction with their training. This exploratory study examined students' experiences with program leaders, instructors, supervisors, and other trainees. Specific experiences included actions of favoritism, bias, negativity, abuse of power, and examples of positive role modeling. A survey was sent to all members of the National Society of Genetic Counselors and program directors in order to reach graduates of Accreditation Council for Genetic Counseling (ACGC)-accredited programs from 2015–2019 who were eligible to participate. Responses to questions relating to demographics, satisfaction with graduate education, behaviors experienced or seen during graduate school, and reporting of inappropriate behaviors were collected and analyzed. Results demonstrated that 95% of the genetic counseling graduates were highly satisfied with their graduate education and those who experienced inappropriate behaviors during their training were somewhat less satisfied ($p=0.04$). Individuals who felt more prepared by their graduate education were more satisfied with their graduate education ($p<0.01$). Being publicly embarrassed or humiliated, being made to feel like a burden in clinic, or being subjected to negative or offensive behavior based on their personal beliefs or personal characteristics (excluding areas of gender, race/ethnicity, or sexual orientation)

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Author Contributions

P.D. and M.W. conceptualized the idea for the research. P.A. designed the research. L.W. performed the data analysis. P.A. had full access to the data and takes responsibility for the integrity of the data and accuracy of the data analysis. P.A. drafted the manuscript. G.H.V., W.T., L.W., P.D., M.W. assisted in the design of the survey and critically revised the manuscript. All authors provided final approval of the version to be published and agree to be accountable for all aspects of the work.

Conflict of Interest Statement

P.A., P.D., M.W., L.W., G.H.V., W.T. declare that they have no conflicts of interest.

Human Studies and Informed Consent

All procedures were followed in accordance with ethical standards of the Indiana University Institutional Review Board and with the Helsinki Declaration of 1975, as revised in 2000. Implied informed consent was obtained for individuals who voluntarily completed the online survey and submitted their responses.

Animal Studies

No non-human animal studies were carried out by the authors for this study.

Data Accessibility

These data are not publicly available. Please contact the corresponding author (MW) for data access.

were all negatively associated with satisfaction (all p<0.04). We conclude that this survey could serve as a "Genetic Counseling Training Experiences Assessment" which could be incorporated into annual evaluations required by the ACGC. Implementation of this assessment would enhance the current evaluations of genetic counseling training programs and provide important information regarding student experiences during their training.

Keywords

Genetic Counseling Education; Genetic Counseling Students; Training; Graduate Students; Program Evaluation; Education; Genetic Counseling; Professionalism

Introduction:

Genetic counseling training programs collectively receive approximately 1,000 match applications each year. Fewer than half of those applicants are matched to a program, due to the limited availability of training programs and the small class sizes (*Summary Results of the Match for Positions Beginning in 2019*, 2019). Despite the limited student capacity, it is the responsibility of genetic counseling programs to provide outstanding training to those who are matched and enter the training programs. This training should be administered professionally and respectfully and should be mindful of the personal needs of students. There are several aspects of genetic counseling training programs that have received special attention. These aspects include comprehensive training to adequately train students to work with individuals with disabilities (Murphy, Lincoln, Meredith, Cross, & Rintell, 2016; Nagakura, Schneider, Morris, Lafferty, & Palmer, 2015; Sanborn & Patterson, 2014), the training of students from other countries (Sabbadini, Naldi, Packman, Youngblom, & Weil, 2013), the training of students to work with individuals from different cultural backgrounds (Agather, Rietzler, Reiser, & Petty, 2017), and the training of students to counsel individuals with psychiatric illnesses (Low, Dixon, Higgs, Joines, & Hippman, 2018).

Very few studies have examined the emotional impact of genetic counseling training on the students themselves. Jungbluth et al found that stressors of genetic counseling graduate students include academic coursework, financial strain, and lack of recreation. This same study reported that positive experiences in graduate school included academic rewards, interpersonal interactions, and career and personal affirmation (Jungbluth, Macfarlane, Veach, & Leroy, 2011). Another study noted that student defensiveness, inter-student or faculty conflicts, and power struggles between supervisors and students were all challenges faced by supervisors and students, as reported by clinical supervisors (Lindh, Veach, Cikanek, & LeRoy, 2003). MacFarlane et al surveyed genetic counseling students focusing on supervision and clinical rotation satisfaction, students' views of the structure and processes of supervision, and their views of how their personal anxiety affected their performance. The authors reported that students were satisfied overall with the supervision provided and felt that the structure of in-person supervision provided a great resource for improving training. However, they also reported that anxiety had a negative effect on overall counseling performance. They also reported that the presence of a supervisor observing a counseling session was associated with increased student anxiety (MacFarlane, McCarthy

Veach, Grier, Meister, & LeRoy, 2016). These studies document specific stressors experienced by genetic counseling students during their training. However, other aspects of the training program may influence student satisfaction, such as professionalism exhibited by the faculty, staff, and students towards one another. A literature search utilizing the terms “genetic counseling student”, “genetic counseling training”, “genetic counseling student AND professionalism”, “genetic counseling graduate” and “genetic counseling graduate training” failed to identify any studies that report on how professional behaviors experienced by genetic counseling students during their training influence satisfaction with their training.

There are studies however, reporting on professional experiences of medical students during their training. Each year, graduating medical school students in the United States complete a questionnaire produced by the Association of American Medical Colleges (AAMC) to evaluate several influences on their training experience. In addition to assessing overall satisfaction with their medical education, students report on personal experiences, including being embarrassed or humiliated, threatened or physically harmed, subjected to unwanted sexual remarks, or denied opportunities for training based on gender, sexual orientation, ethnicity, or race. Data collected from this annual survey allows medical schools and accrediting agencies to identify strengths and weaknesses within their respective programs, which subsequently may be addressed to improve student training. Identifying such key issues and events in genetic counseling training programs could improve the educational and personal experiences of genetic counseling students.

The Accreditation Council for Genetic Counseling (ACGC) requires program evaluations on alumni performance on the American Board of Genetic Counseling board certification examination, program leadership, primary instructional faculty/course directors, courses and fieldwork (ACGC, 2019). These required evaluations do not include assessment of the professional behaviors encountered by students. The current study examined the professional and unprofessional experiences that genetic counseling students encountered during their training and the impact of those experiences on their satisfaction with their education. Specifically, this exploratory study is modeled after the AAMC Graduate Questionnaire and examined students’ experiences related to their interactions with program leaders, instructors, supervisors, and other trainees as they pertain to actions of favoritism, bias, negativity, abuse of power, and examples of positive role modeling.

Methods:

Participants and Procedures:

Approval was obtained from the Indiana University Institutional Review Board (IRB #1903271925). Graduates from accredited genetic counseling training programs in North America from 2015–2019 were recruited to participate. An e-blast was sent to all members of the National Society of Genetic Counselors (NSGC) in July of 2019, and a reminder e-blast was sent two weeks after the initial invitation. In addition, in August of 2019 an email was sent to all program directors of ACGC-accredited North American genetic counseling training programs with a request to forward information regarding the study to genetic counseling graduates from the classes of 2015 through 2019. The invitation included a description of the study and a link to participate in the online survey.

Instrumentation:

The online survey created through REDCap (Harris et al., 2009), a HIPAA compliant data collection tool, was designed by all coauthors. The survey contained seven sections. Section one ensured respondents were eligible for participation by asking the year of graduation from an ACGC-accredited genetic counseling training program. Questions from section two and section seven included information describing demographics (year graduated, years practicing, sex, sexual orientation, race/ethnicity, region of graduate school, current region of practice, age, current practice specialty, current affiliation with a training program, and current involvement in clinical supervision of genetic counseling graduate students). In section three and four, respondents were asked about their satisfaction with the quality of graduate education ("Overall I am satisfied with the quality of my genetic counseling graduate education"), and preparation for their genetic counseling career in various settings (the latter two utilized a six-point Likert scale from strongly disagree to strongly agree).

Section five was modeled after the AAMC graduate questionnaire, and assessed whether, as a student, the participant had seen or experienced any of 26 behaviors, seven positive and 19 inappropriate. Medical students rated the frequency of certain positive behaviors demonstrated by their medical school's faculty (never; almost never; sometimes; fairly often; very often; always) as well as the frequency of personally-experienced specific inappropriate behaviors (never; once; occasionally; frequently) (©2019 Association of American Medical Colleges. Used by permission.). Our survey included several questions which were worded as closely to the AAMC questions as possible. Our survey also included novel questions specific to genetic counseling training programs (See S1 in Supplementary Material). In addition to asking GC students if they themselves had experienced the behaviors, our survey differed from the Graduate Questionnaire in that we also evaluated whether the student had seen the behavior demonstrated toward other students. Questions for positive and inappropriate behaviors were intermixed. Students were offered the responses:

- Yes, I have experienced this behavior
- Yes, I have seen this behavior demonstrated toward another
- Yes, I have experienced this behavior AND seen it demonstrated toward another
- No, I have never experienced or witnessed this behavior.

To explore if students reported inappropriate behaviors, section six asked about support resources and investigative agencies at the graduate school (e.g. Title IX office, Dean's office, etc.), reporting of the inappropriate behaviors the participant had seen or experienced, and overall satisfaction with the outcome of having reported inappropriate behaviors. The full survey is available in Figure S1 the Supplementary Material.

Participants had the option to complete a separate survey to be entered in a drawing for one of seventeen $10 gift cards. Participants were informed that their Genetic Counseling Training Experiences Assessment survey responses would not be connected to their identifying information in the optional gift-card drawing survey. This allowed the data collected in the Genetic Counseling Training Experiences Assessment survey to be anonymous.

Data Analysis:

Due to the small number of endorsements across the three possible positive response categories (I experienced the behavior, I saw the behavior, both), responses from these positive categories were combined into “yes.” Responses of never were coded as “no.” Three individuals responded “prefer not to respond” for gender. Due to lack of power with N=3, their gender was recoded to “missing”, in order to exclude them from analyses which included gender as a variable. Race was analyzed as Caucasian vs non-Caucasian. Very few people disagreed when asked about satisfaction with the quality of graduate education (“Overall I am satisfied with the quality of my genetic counseling graduate education”), and satisfaction with the preparation for their genetic counseling career in various settings (“Rate how much you agree or disagree with the following statements: My genetic counseling graduate program successfully prepared me to…”). Due to the small numbers distributed across the three disagree categories “strongly disagree”, “disagree”, and “somewhat disagree,” these categories were collapsed into “disagree” or “not satisfied,” depending on the question. Similarly, most individuals indicated they “strongly agree” with the statements. Therefore, responses from “somewhat agree” and “agree” categories were collapsed into “agree” or “satisfied” depending on the nature of the question. This resulted in three potential outcomes for questions asking about satisfaction or agreement with a statement: “strongly agree” or “very satisfied,” “agree” or “satisfied,” and “disagree” or “not satisfied.”

Chi-squared tests were utilized to test for associations between categorical variables. When numbers in the cells resulting from the crosstab of the Chi-squared tests were less than five, results were confirmed with the Fisher’s exact test. A Mantel-Haenszel test was employed to evaluate if the increasing levels of satisfaction were associated with categorical variables. An analysis of variance (ANOVA) model was used to test if age or years of practice were different between satisfaction groups. Logistic regression models were employed to test if sex, years of practice, age, specialty, or race was associated with inappropriate behaviors. There was not enough variability in the responses for positive behaviors to perform such analyses. The following specialties had fewer than 10% respondents each and were collapsed into an “other” category: General Adult, Cardiology, Neurology, Metabolism, and Other. The proportion of responses for behaviors that were modeled after the AAMC survey were compared between genetic counseling and medical students from the 2019 results (AAMC, 2019) using a z-score test of proportions. For these analyses, the response category of *experiencing* the behavior was the focus. Medical students who responded they experienced the behavior “Once”, “Occasionally”, or “Frequently” were coded as “yes” and “Never” was coded as “no.” Novel questions specific to genetic counseling training programs were not included in these analyses, as these questions were not included in the AAMC survey.

Results:

Sample Characteristics:

An estimated 1000 eligible participants received the survey. A total of 268 graduates responded to the survey for a response rate of 26.8%. The majority of respondents were female (92.1%) and Caucasian (84.7%), consistent with the 2019 professional status survey

(95.0%, 89.5%, respectively). Responses to region of current practice were also representative of the six regions categorized by NSGC (Region 1=7.1%, Region 2=20.4%, Region 3=13.8%, Region 4= 31.1%, Region 5=11.1%, Region 6= 16.4%; 2019 Professional Status Survey: 7.1%, 20.9%, 12.2%, 27.7%, 12.5%, 19.5%, respectively) (NSGC, 2019). Additional demographic characteristics of the sample population are provided in Table 1.

Satisfaction with training:

Genetic counseling graduate students were satisfied with their graduate education (Table 1), with 94.8% responding somewhat agree, agree, or strongly agree.

Behaviors:

Table 2 summarizes the behaviors that genetic counseling students experienced or observed during their training. Nearly half (47.0%) of the participants experienced or observed another student "being made to feel like a burden when participating in a clinic." 33.3% experienced or observed another student being publicly embarrassed or humiliated during their genetic counseling graduate education. Almost one-third (32.6%) of the respondents experienced or observed another student being exposed to a conversation in which a supervisor discredited a different clinical site or supervisor. Slightly fewer participants, 30.3%, experienced or observed another student being exposed to conversations which were inappropriate for them to be exposed during their graduate education. Almost one quarter (22.1%) reported experiencing or observed another student being asked to participate in clinic to support an increased patient load. Other behaviors that over 10% of participants experienced or observed another student experience included being subjected to negative or offensive remarks based on their personal beliefs or characteristics (other than gender, race/ethnicity, or sexual orientation) (13.9%), being subjected to negative or offensive sexist remarks/names (11.2%), or being subjected to racially or ethnically offensive remarks/names (11.2%).

Gender, Age, Race Associations:

There was no association of gender with specialty ($X2(4)=1.0$, $p=0.91$), or with years of practice ($t(262)=0.2$, $p=0.88$). Males and females were equally satisfied with their graduate education ($MH(1)=0.1$, $p=0.76$). Of the 16 male respondents, 17.7% reported being denied opportunities for training based on gender, compared to 2.4% of females who reported having seen or experiencing this same denial ($X2(1)=10.9$, $p<0.01$; Fisher's exact $p=0.02$). In addition, 11.8% of males reported receiving lower evaluations or grades based solely on gender rather than performance, compared to 0.9% of females ($X2(1)=10.7$, $p<0.01$; Fisher's exact $p=0.03$). Although not statistically significant, males were 3.4 times more likely to have sexual advances made toward them compared to females ($X2(1)=2.4$ $p=0.12$; Fisher's exact $p=0.16$).

Individuals who reported they were denied opportunities for training based on their gender were more likely to be male (OR=14.64, CI=2.16–99.12, $p=0.01$) or be a practicing genetic counselor for longer (OR=0.12, CI=0.02–0.78, $p=0.03$). Although genetic counselors who responded their primary role was in a "non-clinical setting" were more likely to experience this behavior, it was not significant (OR= 16.76, CI=1.22–230.49, $p=0.09$). Caucasian

individuals were 63% less likely to have been subjected to a racial or ethnically offensive remark (OR=0.37, CI=0.15–0.93, p=0.03). Younger individuals were more likely to report having been exposed to inappropriate conversations (OR= 0.36, CI=0.18–0.72, p<0.01). They were also marginally more likely to report having been made to feel like a burden while participating in a clinic as a student (OR=0.55, CI=0.35–0.96, p=0.04) compared to older individuals, while years of practice was not significant for either (both p>0.15). More females reported being made to feel like a burden than males, although this was not significant (OR=0.34, CI=0.12–1.08, p=0.07). All statistical information is provided in Table S4 of the Supplementary Material.

Correlation with Graduate Satisfaction:

Inappropriate/Negative Behaviors: Participants who experienced or witnessed at least one inappropriate behavior (73.9%) were marginally less satisfied with their training (MH(1)=4.4, p=0.04). In particular, individuals who reported being and/or seeing another individual publicly embarrassed or humiliated were less satisfied with their graduate training (MH(1)=14.7, p<0.01). Similarly, individuals who reported being and/or seeing another individual subjected to negative or offensive behavior based on their personal beliefs or personal characteristics (other than gender, race/ethnicity, or sexual orientation) were less satisfied with their graduate training (MH(1)=7.8, p=0.01). Individuals who reported being and/or seeing another individual made to “feel like a burden in clinic” also reported being somewhat less satisfied with their graduate education (MH(1)=4.1, p=0.04). There was no association between the remaining inappropriate behaviors and satisfaction (unwanted sexual advances, offensive or sexist remarks or names, racially or ethnically offensive remarks or names, exposure to conversations which were inappropriate for them to be exposed to, utilization in clinic to increase patient load in the clinic, exposure to a person at a clinical site or a supervisor discrediting another site or supervisor, all p>.06). Results for all behaviors are provided in Table 2.

Positive Behaviors: There was no association between satisfaction with graduate training and experiencing or observing most positive behaviors (all p>0.16). In fact, all participants responded that they had experienced or observed empathy and respectful interaction. Interestingly, only 56.3% of genetic counseling graduates reported experiencing or observing superiors resolving conflicts in ways that respect or maintain the dignity of all involved. Results for all behaviors are provided in Table 2.

Preparation for Practice: There was a positive association between preparation for practice as a genetic counselor and satisfaction with graduate training. Specifically, participants who reported feeling prepared to work in a clinical, non-clinical, cancer, prenatal, and pediatric setting were more satisfied with their graduate training (all p<0.01). Individuals who reported being prepared to receive constructive criticism, being a clinical supervisor, using psychosocial skills in a clinical setting, integrating ethical, legal, and social issues in their professional practice, and documenting their sessions appropriately were also more likely to be satisfied with their graduate education (all p<0.01).

Other Characteristics: There was no association between age, race, or years of practice with graduate training satisfaction (all p>0.46). Three people reported that they had "never" received direction or constructive feedback in a respectful manner. These individuals were "not satisfied" (N=1) or "satisfied" (N=2) with their training. There was no association between satisfaction and current professional affiliation with a training program or supervision of trainees (p>0.07).

Comparison to Medical School Data

Compared to medical students, fewer genetic counseling students in general experienced inappropriate behaviors throughout their training. Figure 1 summarizes the comparison of medical students and genetic counseling student respondents for behaviors with a reported frequency of at least 5% in either group. Genetic counseling students reported fewer incidents of experiencing humiliation (18.1%) and more offensive remarks due to their "personal beliefs" (8.7%) compared to medical students (23.0%, 7.6% respectively, both p<0.01). On the other hand, medical students reported more occasions of receiving a lower grade due to their gender (7.1%) compared to genetic counseling students (1.7%, p<0.01). After correcting for 13 z-tests (corrected alpha = 0.0038), the only behavior reported significantly more often amongst medical students was being subjected to negative remarks based on gender. There were no statistically significant differences between the remaining behaviors (all p>0.12). All comparisons are provided in Table S2 and Table S3 in the Supplementary Material.

Official Reporting of Inappropriate Behaviors:

Of the 158 individuals who experienced or saw an inappropriate behavior, 64.6% did not report inappropriate behaviors to any authority, agency or program leadership (Table 3). The most common reasons for not reporting these behaviors were "The incident did not seem important enough to report" (53.9%), "I did not think anything would be done about it" (40.0%), "I did not know what to do" (24.2%), and "Fear of reprisal" (23.6%). Students who were required by their institution or graduate program to take Title IX training were equally likely to report inappropriate behaviors as those who were not required to take Title IX training (X2(1)=8.0, p=0.09).

Discussion:

To our knowledge, this is the first study to report on genetic counseling graduate student experiences of favoritism, bias, negativity, abuse of power, and examples of positive role modeling during their training. While almost everyone reported experiencing or witnessing a positive behavior, almost three-quarters of the respondents reported experiencing or witnessing at least one inappropriate behavior. This surprising result underscores that implementing an annual Genetic Counseling Training Experiences Assessment to collect information on professional and unprofessional behaviors encountered by genetic counseling graduate students would enhance current ACGC surveys. This could serve as a graduate training experience assessment to provide standardized questions evaluating training beyond the educational curriculum. Identifying inappropriate behaviors that are being encountered in genetic counseling training programs will provide the foundation for establishing specific

goals to improve the learning environment for students. It will also allow for the tracking of changes and improvements in behaviors encountered by students on an annual basis.

Overall, genetic counseling graduate students were highly satisfied with their graduate education with 95% of respondents indicating that they were at least somewhat satisfied with their training. These results are similar to the AAMC Graduate Questionnaire results, with 89.2% of medical school graduates agreeing or strongly agreeing that they were satisfied with their medical education (AAMC, 2019). Genetic counseling trainees who were more satisfied with their graduate education reported being more prepared for work as a genetic counselor. Being publicly embarrassed or humiliated, being made to feel like a burden in clinic, and being subjected to negative or offensive behavior based on their personal beliefs or personal characteristics (not including areas of gender, race/ethnicity, or sexual orientation) were all negatively associated with satisfaction.

The most common inappropriate behaviors reported were being made to feel like a burden when participating in a clinic (47.0%), being publicly embarrassed or humiliated (33.3%), being exposed to conversations in which a supervisor discredited a different clinical site or supervisor (32.6%) or were inappropriate for a trainee to hear (30.3%), and being used in clinic to increase a clinic's patient load (22.1%). All of these behaviors, with the exception of being publicly embarrassed or humiliated, were questions unique to our survey and not asked of medical students on the AAMC Graduate Questionnaire. Thus, it is not clear if these behaviors are experienced only by genetic counseling trainees or simply overlooked by the AAMC Graduate Questionnaire. All inappropriate behaviors are provided in Table 2.

An important finding to note is that a high proportion of respondents experienced or saw another person being subjected to racially or ethnically offensive remarks or names. In particular, non-Caucasians were more likely to experience these remarks. Given the lack of diversity in the field of genetic counseling, this finding is a challenge that needs careful attention if efforts at increased diversity are to be successful.

Our survey found that males were more likely to report being denied opportunities for training and received lower evaluations based on gender more often than females. In addition, although it was not statistically significant, males were also more likely to be subjected to unwanted sexual advances. These findings should be interpreted in the light of the low number of male respondents. The majority of both faculty and students in genetic counseling training programs are female. The imbalanced ratio of females to males may have influenced how male students perceived their training. While future research with larger numbers of male respondents is necessary, the literature seems to support these results. One study on male nursing students found that 11.7% of male nurses reported being discriminated against by their instructors (Eswi & El Sayed, 2011). A different study by Sedgwick and Kellett reported that male students felt discriminated against during clinical rotations; however, due to low sample size of male nurses they were unable to note any statistically significant differences (Sedgwick & Kellett, 2015). In addition, respondents in the current study who work in a non-clinical setting or who were in practice longer (i.e. graduated from a training program less recently) reported being denied training based on gender. Since there was no association between gender and specialty or years of practice, the

hopeful implication is that programs have started to be more mindful of how males are treated during their education.

Genetic counseling students and medical students overwhelmingly experienced positive behaviors at least once in their training (Table S2). Interestingly, only 56.3% of genetic counseling graduates reported experiencing superiors resolving conflicts in ways that respected the dignity and maintained the stature of all involved compared to 99.5% of medical students responding they experienced the behavior at least once. It is possible that genetic counseling respondents misinterpreted the survey question or that the conflict may have not been resolved in front of the student and therefore an additional survey option of "not applicable" would have been more appropriate. On the other hand, perhaps residents, chiefs and attending faculty traditionally challenge the medical students as a rite of passage to the next level of training, thus providing a personal opportunity to be treated with dignity and respect.

Genetic counseling graduate students experienced fewer inappropriate behaviors than medical students during training. Yet it is important to document that inappropriate behaviors do occur. For example, these results support that genetic counseling students are utilized as genetic counselor and physician extenders to increase the clinic patient load. Unfortunately, students are also often made to feel like a burden while participating in clinic. Furthermore, this burden is felt more often by younger age individuals. However, this study could not determine if younger students are being utilized improperly, or are more likely to perceive that they are a burden in clinic. Nonetheless, according to section B3.2.1 of the ACGC accreditation standards for genetic counseling graduate training, "the program must guard against students being used to compensate for inadequate genetic counselor staffing levels" (ACGC, 2019). In our study, 22.1% responded that either they themselves or other genetic counseling trainees were utilized to increase the clinic's patient load during their genetic counseling graduate education. This violates the accreditation standards and should be investigated at each program (ACGC, 2019).

Study Limitations:

Limitations of this study include small sample size for male respondents. Although our male respondent rate was consistent with the percentage of male genetic counselors who are members of NSGC, the males who did respond may not accurately represent the perceptions of all males in the field. In addition, due to the subjective nature of some questions, e.g. did you experience lower grades based solely on gender, the respondent was asked to assume the intent of the person exhibiting the behavior. The small class sizes of genetic counseling programs could lead to a potential inflation in reporting negative experiences due to multiple individuals reporting on a single negative behavior experienced by a classmate or friend. In addition, our survey included individuals who graduated between 2015 and 2019 to ensure reporting on behaviors occurring in the last five years, which may not be representative of all graduates of genetic counseling graduate programs. It is possible that some of the questions were not clear or were misunderstood by respondents, for example "burden" was not defined for the question asking if respondents were made to feel like a burden in clinic. Similarly, "respectful" was used in several questions but not clearly defined. This could allow for

various interpretations by the respondents. The survey did not include any option for respondents to write in a response, and therefore we were unable to collect specific examples or personal opinions regarding behaviors that were experienced or observed. Finally, as this was an exploratory study, there were several statistical tests applied to the data with no correction for multiple testing.

Practice Implications:

These results provide vital information to program directors and faculty regarding the experiences of students in their programs, and the preparation of the students to become independent genetic counselors. The specific behaviors reported above provide programs a starting point to optimize the student experiences to enhance the opportunity for engaging in positive behaviors, and to identify inappropriate behaviors that require attention. This study is one of the first to report on student experiences of professionalism in genetic counseling training programs. Implementation of questions similar to our survey and requests for examples of behaviors experienced as part of an annual Genetic Counseling Training Experiences Assessment would complement current evaluations required by the ACGC for the evaluation of graduates' perceptions of training.

Future Directions:

Additional research examining specific behaviors experienced by genetic counseling students will provide valuable insight into student training experiences. Our study did not ask participants to provide details or examples of the behaviors they experienced or witnessed. Subsequent studies could ask for these details and highlight the specific behaviors that need to be addressed.

Importantly, further research must be done to investigate the high number of respondents who experienced or observed another student being subjected to racially or ethnically offensive remarks or names. While all of the negative behaviors experienced by genetic counseling trainees identified in our study should be addressed, this finding is especially concerning, and could explain why efforts at increasing racial diversity have been unsuccessful. Finally, given the results of the current study that males were more likely to report receiving lower evaluations, being denied opportunities for training, and being subjected to unwanted sexual advances, future investigations should more closely examine the professional experiences of male students.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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The AAMC grants to Indiana University School of Medicine the permission to adapt or reuse verbatim any survey items from the 2018 AAMC Medical School Graduation Questionnaire (GQ) for the non-commercial purposes of educational program assessment, including but not limited to assessment of the Genetic Counseling Graduate Program. The AAMC requests that any printed material describing the methodology or development of the survey items be accompanied with the following statement:

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What is known about this topic:

Medical students experience unprofessional behaviors such as humiliation, being subjected to racially or ethnically offensive remarks/names and being denied opportunities for training based on gender.

What this paper adds to this topic:

This study is one of the first to report on student experiences of professionalism in genetic counseling training programs. It identifies the most prevalent positive and negative behaviors experienced, some of which are counterproductive to increasing diversity in the field.

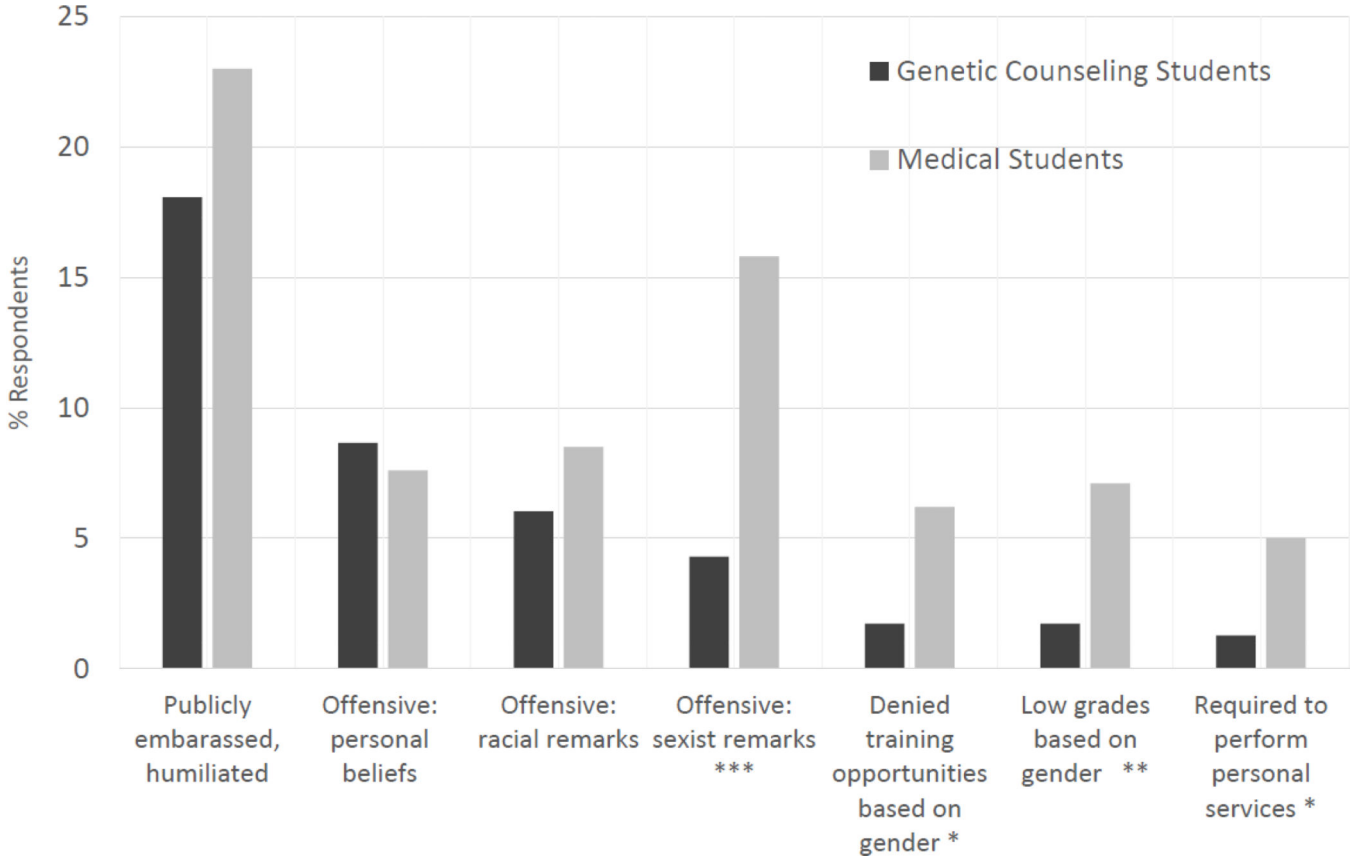

Figure 1:

Frequency of Inappropriate Behaviors

Legend: Summary of inappropriate behaviors experienced in genetic counseling graduate school compared to medical school (AAMC, 2019) for behaviors with a reported frequency of at least 5% in either group.

Key: Publicly embarrassed, humiliated=being publicly embarrassed or humiliated; Offensive: personal beliefs= being subjected to negative or offensive behavior based on your personal beliefs or personal characteristics other than gender, race/ethnicity, or sexual orientation; Offensive: racial remarks= being subjected to racially or ethnically offensive remarks/names; Offensive: sexist remarks= being subjected to offensive, sexist remarks/ names; Denied training opportunities based on gender= being denied opportunities for training based on gender; Low grades based on gender= receiving lower evaluations or grades based solely on gender rather than performance; Required to perform personal services= being required to perform personal services (running errands, babysitting, etc.); *=$p<0.05$; **= $p<0.01$; ***=$p<0.0001$

Table 1:

Demographics and Overall Satisfaction with Genetic Counseling Graduate Education

Legend: Summary of demographics of survey respondents and overall satisfaction with genetic counseling graduate education.

Item	Response Category	n	%
Year Graduated			
	2015	36	13.4%
	2016	40	14.9%
	2017	49	18.3%
	2018	66	24.6%
	2019	77	28.7%
	Total	268	
Years Practicing			
	<1	81	30.2%
	1	65	24.3%
	2	48	17.9%
	3	40	14.9%
	4	33	12.3%
	5	1	00.4%
	Total	268	
Gender			
	Male	18	6.7%
	Female	246	92.1%
	Other	0	0.0%
	Prefer not to respond	3	1.1%
	Total	267	
Sexual Orientation			
	Bisexual	13	4.9%
	Gay	3	1.1%
	Queer	5	1.9%
	Questioning	1	0.4%
	Straight/Heterosexual	237	88.4%
	Other	2	0.7%
	Prefer not to respond	7	2.6%
	Total	268	
Race/Ethnicity			
	Asian	21	7.8%
	American Indian or Alaska Native	0	0.0%
	Black or African American	2	0.7%
	Caucasian/White	227	84.7%

Item	Response Category	n	%
	Hispanic	3	1.1%
	Native Hawaiian or Other Pacific Islander	0	0.0%
	Two or more races	13	4.9%
	Prefer not to respond	2	0.7%
	Total	268	
Age			
	Minimum		23 years
	Maximum		45 years
	Mean		27 years
In what region did you attend genetic counseling graduate school?			
	Region 1 (CT, MA, ME, NH, RI, VT, CN Maritime Provinces)	11	4.8%
	Region 2 (DC, DE, MD, NJ, NY, PA, VA, WV, PR, VI, Quebec)	51	22.3%
	Region 3 (AL, FL, GA, KY, LA, MS, NC, SC, TN)	28	12.2%
	Region 4 (AR, IA, IL, IN, KS, MI, MN, MO, ND, OH, OK, SD, WI, Ontario)	92	40.2%
	Region 5 (AZ, CO, MT, NM, TX, UT, WY, Alberta, Manitoba, Sask.)	17	7.4%
	Region 6 (AK, CA, HI, ID, NV, OR, WA, British Columbia)	30	13.1%
	Total	229	
In what region are you currently practicing?			
	Region 1 (CT, MA, ME, NH, RI, VT, CN Maritime Provinces)	16	7.1%
	Region 2 (DC, DE, MD, NJ, NY, PA, VA, WV, PR, VI, Quebec)	46	20.4%
	Region 3 (AL, FL, GA, KY, LA, MS, NC, SC, TN)	31	13.8%
	Region 4 (AR, IA, IL, IN, KS, MI, MN, MO, ND, OH, OK, SD, WI, Ontario)	70	31.1%
	Region 5 (AZ, CO, MT, NM, TX, UT, WY, Alberta, Manitoba, Sask.)	25	11.1%
	Region 6 (AK, CA, HI, ID, NV, OR, WA, British Columbia)	37	16.4%
	Total	225	
What is your current primary practice specialty?			
	Prenatal	45	19.9%
	Cancer	71	31.4%
	General Pediatrics	41	18.1%
	General Adult	6	2.7%
	Cardiology	7	3.1%
	Neurology	9	4.0%
	Metabolism	8	3.5%
	Non-clinical	20	8.8%
	Other, please specify	19	8.4%
	Total	226	
Are you currently affiliated with a genetic counseling training program?			

Item	Response Category	n	%
	Yes	108	47.0%
	No	122	53.0%
	Total	230	
Are you currently involved in clinical supervision of genetic counseling students?			
	Yes	116	50.4%
	No	114	49.6%
	Total	230	
Overall, I am satisfied with the quality of my genetic counseling graduate education.			
	Strongly Disagree	4	1.5%
	Disagree	3	1.1%
	Somewhat Disagree	7	2.6%
	Somewhat Agree	22	8.2%
	Agree	93	34.7%
	Strongly Agree	139	51.9%
	Total	268	

Table 2:

Behaviors Experienced or Seen During Genetic Counseling Graduate School

Legend: Summary of behaviors experienced or seen during genetic counseling graduate school.

Behavior	Yes, I have experienced this behavior	Yes, I have seen this behavior demonstrated toward another	Yes, I have experienced this behavior AND seen it demonstrated toward another	No, I have never experienced or witnessed this behavior	Total
Negative Behavior					
Being made to feel like a burden when participating in a clinic as a student	69 (30.0%)	11 (4.8%)	28 (12.2%)	122 (53.0%)	230
Being publicly embarrassed or humiliated	17 (6.8%)	38 (15.3%)	28 (11.2%)	166 (66.7%)	249
Being exposed to a clinical site or supervisor discrediting another site or supervisor	50 (21.7%)	11 (4.8%)	14 (6.1%)	155 (67.4%)	230
Being exposed to conversations which were inappropriate for you to be exposed	44 (19.0%)	7 (3.0%)	19 (8.2%)	161 (69.7%)	231
Utilizing student participation in clinic to increase the clinic's patient load	19 (8.2%)	17 (7.4%)	15 (6.5%)	180 (77.9%)	231
Being subjected to negative or offensive behavior based on your personal beliefs or personal characteristics other than gender, race/ethnicity, or sexual orientation	9 (3.9%)	12 (5.2%)	11 (4.8%)	199 (86.1%)	231
Being subjected to racially or ethnically offensive remarks/names	10 (4.3%)	12 (5.3%)	4 (1.7%)	206 (88.8%)	232
Being subjected to offensive, sexist remarks/names	5 (2.1%)	16 (6.9%)	5 (2.1%)	207 (88.8%)	233
Being required to perform personal services (running errands, babysitting, etc.)	2 (0.9%)	7 (3.0%)	1 (0.4%)	225 (95.7%)	235
Being subjected to unwanted sexual advances	4 (1.7%)	6 (2.6%)	0 (0.0%)	223 (95.7%)	233
Being denied opportunities for training based on gender	3 (1.3%)	4 (1.7%)	1 (0.4%)	224 (96.6%)	232
Receiving lower evaluations or grades based solely on gender rather than performance	2 (0.9%)	0 (0.0%)	2 (0.9%)	228 (98.3%)	232
Being denied opportunities for training or other rewards based on race or ethnicity	2 (0.9%)	1 (0.4%)	0 (0.0%)	229 (98.7%)	232
Receiving lower evaluations or grades based solely on race or ethnicity	0 (0.0%)	3 (1.3%)	0 (0.0%)	227 (98.7%)	230
Being subjected to offensive remarks/ names related to sexual orientation	1 (0.4%)	1 (0.4%)	1 (0.4%)	228 (98.7%)	231
Being threatened or physically harmed	1 (0.4%)	2 (0.8%)	0 (0.0%)	237 (98.8%)	240
Being denied opportunities for training or rewards based on sexual orientation	1 (0.4%)	0 (0.0%)	0 (0.0%)	230 (99.6%)	231
Being asked to exchange sexual favors for grades or other rewards	0 (0.0%)	0 (0.0%)	0 (0.0%)	232 (100%)	232

Behavior	Yes, I have experienced this behavior	Yes, I have seen this behavior demonstrated toward another	Yes, I have experienced this behavior AND seen it demonstrated toward another	No, I have never experienced or witnessed this behavior	Total
Receiving lower evaluations or grades based solely because of sexual orientation rather than performance	0 (0.0%)	0 (0.0%)	0 (0.0%)	231 (100%)	231
Positive Behavior					
Showing empathy and compassion	78 (32.8%)	4 (1.7%)	156 (65.5%)	0 (0.0%)	238
Respectfully interacting with students	71 (30.3%)	1 (0.4%)	162 (69.2%)	0 (0.0%)	234
Being respectful of hospital staff and other physicians	81 (35.2%)	10 (4.3%)	137 (59.6%)	2 (0.9%)	230
Providing direction and constructive feedback in a respectful manner	73 (31.7%)	2 (0.9%)	152 (66.1%)	3 (1.3%)	230
Being respectful of diversity	57 (24.7%)	43 (18.6%)	125 (54.1%)	6 (2.6%)	231
Using professional language/avoiding derogatory language	61 (26.4%)	4 (1.7%)	146 (63.2%)	20 (8.7%)	231

Table 3:

Reporting of Behaviors Experienced or Seen During Genetic Counseling Graduate School

Legend: Summary of reporting of behaviors experienced during genetic counseling graduate school.

Item	Response	n	%
Were you aware of resources at your graduate school, outside of your graduate program, that you could go to in order to seek advice and support for any issues that arose during graduate school?			
	Yes	179	78.2%
	No	50	21.8%
	Total	229	
Were you required to take Title IX training at your graduate institute?			
	Yes	67	29.1%
	No	53	23.0%
	Unsure/Don't Remember	110	47.8%
	Total	230	
Did you report any of the previously asked about negative behaviors (regardless of whether or not they were demonstrated toward you or another person)?			
	Yes	56	24.3%
	No	102	44.3%
	I had no negative behaviors to report	72	31.3%
	Total	230	
To whom did you report the behaviors (choose all that apply)			
	Program director	39	69.6%
	Program assistant/associate director or clinical coordinator	32	57.1%
	Program faculty member or instructor	8	14.3%
	Clinical supervisor	7	12.5%
	Another graduate student	21	37.5%
	Title IX (or similar) office	1	1.8%
	Designated official in the Dean's office	0	0.0%
	Another office on campus	0	0.0%
	Total	56	
How satisfied are you with the outcome of having reported the behaviors?			
	Very Dissatisfied	4	7.3%
	Dissatisfied	10	18.2%
	Somewhat Dissatisfied	9	16.4%
	Somewhat Satisfied	19	34.5%
	Satisfied	10	18.2%
	Very Satisfied	3	5.5%
	Total	55	

Item	Response	n	%
If there were any incidents that you did not report, why did you not report them? (choose all that apply)			
	I reported all the incidents of these behaviors	16	9.7%
	I was embarrassed or ashamed of the incident	17	10.3%
	The incident did not seem important enough to report	89	53.9%
	I resolved the issue myself	29	17.6%
	I did not think anything would be done about it	66	40.0%
	Fear of reprisal	39	23.6%
	I did not know what to do	40	24.2%
	Other, please specify	26	15.8%
	Total	165	