IMPLICIT BIAS TOWARD CERVICAL CANCER: PROVIDER AND TRAINING DIFFERENCES

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Juliana Liang
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Mentor: Dana M Chase, MD

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Abstract

Background and Significance. Implicit prejudice and stereotyping may exist in health care providers automatically without their awareness. These biases can correlate with outcomes that are consequential for the patient. This study examined gynecologic oncology care providers' implicit prejudice and stereotyping toward cervical cancer.

Research Question. In the setting of women with cervical cancer versus women with ovarian cancer, does provider bias, measured by the Implicit Association Test (IAT), affect patient outcomes?

Methods. Members of professional gynecologic oncology organizations were asked to complete two IATs to determine if they implicitly associate cervical cancer with feelings of anger (prejudice) and risky health behavior (stereotypes), compared to ovarian cancer. Linear models and student t-tests examined average levels of implicit bias and moderators of the implicit bias effects.

Results. One-hundred seventy-six (132 female, 43 male, 1 nonresponse; mean age = 39.18, years, SD age = 10.58 years) providers were recruited and the final sample included 151 participants (93 physicians and 58 nurses, mean age = 38.93, SD age= 10.59). Gynecologic oncology providers showed significant levels of implicit prejudice, $\bar{X}$ = 0.17, SD = 0.47, 95% CI: (0.10, 0.25) toward cervical cancer patients. They also showed significant levels of implicit stereotyping of cervical cancer patients, $\bar{X}$ = 0.15, SD = 0.42, 95% CI: (0.08, 0.21). Whereas physicians did not demonstrate significant levels of implicit bias, nurses demonstrated greater levels of implicit prejudice and implicit stereotyping. Providers without cultural competency training or implicit bias training demonstrated greater bias than those who had completed such training ($p < 0.05$).

Conclusions. This study provides the first evidence that gynecologic oncology providers hold implicit biases related to cervical cancer. Interventions may be designed to target specific groups in gynecologic oncology to improve interactions with patients.

Table of Contents

Figures and Tables

Introduction/Significance

The present research investigates one potential barrier to cervical cancer care: the negative emotions and beliefs that health care providers may associate with the women who contract the disease. Recent research, for example, shows that 37% of female community members attributed blame toward cervical cancer patients.[1] Another study suggests that women with cervical cancer are viewed more negatively compared to women with ovarian cancer.[2] These findings underscore the importance of understanding whether gynecologic oncology providers hold similar negative emotions and beliefs about women with cervical cancer that may impact patients' quality of cancer care and outcomes.

In contrast to self-reported, or explicit attitudes and beliefs, implicit emotions and beliefs come to mind relatively quickly, are less easy to control, and may influence behavior outside of conscious awareness.[3,4] Several studies have shown that health care providers hold negative implicit associations toward a variety of patient groups[5–14], and that these negative implicit associations relate to lower quality of care for patients[8,15]. However, few studies to date have examined the prevalence of implicit bias toward cervical cancer patients. One study suggests that health care providers hold negative implicit attitudes toward patients with lung cancer[16], and another study shows that negative implicit attitudes are associated with lower quality of care for African American cancer patients.[12] The purpose of this study was to examine implicit biases that relate to cancers of the reproductive system e.g., cervical cancer. Specifically, the current study measured the degree to which the implicit biases toward cervical cancer reflect negative stereotypes about risky health behavior and negative emotions such as anger and frustration.

This study used the well-established Implicit Association Test (IAT),[17] to examine two forms of implicit bias toward cervical cancer versus ovarian cancer among gynecologic oncology providers. The IAT uses respondents' reaction times or error rates to calculate the degree to which individuals associate particular target groups with specific characteristics and attributes. The present study also investigated possible factors that may moderate the degree to which

providers hold implicit bias, such as provider's specialty (e.g., nurses versus physicians), previous training in cultural competence or implicit bias, demographic variables (e.g., sex, ethnicity), and providers' explicit internal and external motivations to avoid bias.

Materials and Methods

Participants and Procedure

A total of 176 (132 female, 43 male, 1 non-response; Mage = 39, sage = 11) participants were recruited primarily through emails to listservs for health care providers in gynecologic oncology. Listservs included gynecologic fellowship programs, Society of Gynecologic Oncology, Society of Gynecologic Nurse Oncologists, US Oncology Network of Gynecologic Oncologists, and Western Association of Gynecologic Oncologists. Participants were invited to participate in a grant-funded study examining perceptions of patients. After consenting to take part in the study, participants completed the study tasks individually on a computer. First, participants completed two measures of implicit associations: one assessing prejudice and the other assessing stereotyping of cervical cancer patients. The IAT is designed to assess relative associations so implicit prejudice and stereotypes towards cervical cancer were assessed relative to another cancer of the reproductive organs – ovarian cancer. Following the implicit measures, participants provided demographic information and ratings of external and internal motivation to respond without prejudice toward women with cervical cancer. All participants were thanked, debriefed, and compensated with a $50 Amazon gift card.

Measures of Implicit Associations

Two IATs were used to assess implicit associations – one assessed implicit prejudice (e.g., negative emotions) and the other assessed implicit stereotypes (e.g., negative beliefs). The prejudice and stereotype measures were designed to examine the extent to which individuals associated cervical cancer with emotions and beliefs that may extend from blame. Specifically, the prejudice measure examined the extent to which individuals associated cervical cancer with anger-related emotions and the stereotype measures examined the extent to which individuals associated cervical cancer with beliefs related to risky health behavior.

The IAT requires participants to sort words related to two opposing target categories while simultaneously sorting words related to two opposing attribute categories. The IAT sorting task is based on the premise that stimuli belonging to categories that are more strongly associated

in one's mind (e.g., prejudice or stereotype congruent information) will be easier to sort when they share a response key; and stimuli belonging to words that are unassociated in one's mind (e.g., prejudice or stereotype incongruent information) will be more difficult to sort when they share a response key. A person who associates cervical cancer with anger more than empathy would then be faster and more accurate on trials for which cervical cancer and anger share a response key and slower on trials for which cervical cancer and empathy share a response key. As such, implicit bias on the IAT is quantified as the extent to which an individual is faster on bias congruent trials compared to bias incongruent trials.

For both the stereotype and prejudice measures, the two target categories were cervical cancer versus ovarian cancer. Stimuli related to ovarian cancer and cervical cancer were identical across the two implicit bias measures. Ovarian cancer stimuli were: *pelvic exam, genetics, CA-125, bloating, abdomen pain*. Cervical cancer stimuli were: *pap test, HPV, Gardasil, bleeding, discharge*. For the prejudice IAT, the attribute categories were anger (e.g., *hostile, resentful, indignant, infuriated, offended*) versus empathy words (e.g., *sympathetic, compassionate, supportive, understanding, considerate*). For the stereotype IAT the attribute categories were compliance (e.g., *exempt, excusable, forgivable, justifiable, sensible*) versus risk (e.g., *reckless, liable, defiant, negligent, blamable*). The prejudice and stereotype IAT measures were identical except for the attribute categories and stimuli.

For each IAT, words belonging to one of the target or attribute categories appeared on the screen one at a time. For example, in the prejudice IAT, participants saw words related to ovarian cancer, cervical cancer, empathy and anger appear on the screen one at a time. Participants were instructed to respond by pressing the "E" key if the word was related to either cervical cancer or anger and to press the "I" key if the word was related to either ovarian cancer or empathy. This block would be considered a bias congruent block because cervical cancer and anger share a response key. In the second half of the IAT, the response mappings were reversed. That is, in the second half of the task, participants were instructed to press the "E" key in response to cervical cancer words or empathy related words and to press the "I" key

in response to ovarian cancer words or anger related words. This response configuration is considered bias incongruent because cervical cancer and empathy share a response key. If a participant incorrectly categorized one of the words, a red "X" appeared on the screen until they corrected their response. Participants completed two blocks (one with 20 trials and one with 40 trials) of the bias congruent and two blocks of the bias incongruent tasks. The order of the blocks (e.g., whether the bias incongruent or bias congruent blocks appeared first) was counterbalanced across participants.

The measure of bias resulting from an IAT is called a d-score. These IAT d-scores were calculated following well-established scoring algorithms.[18] After cleaning each dataset for individual trials that were too fast (< 300 ms) or too slow (> 10,000 ms), d-scores were calculated for each participant. To calculate these d-scores, average latency to correct response on stereotype/prejudice compatible blocks was subtracted from the average response latency to correct response on stereotype/prejudice incompatible blocks. Latencies on trials where participants initially responded incorrectly were included in the calculation of the d-score. However, the response latency used in these cases was the amount of time it took from the start of the trial until the participant corrected their response. This allows for a "time penalty" for incorrect responses. This difference score was then standardized using the standard deviation in response latency on all critical blocks. This resulted in a single IAT d-score on each IAT for each participant with higher values indicating greater facilitation of correct responding on stereotype/prejudice compatible blocks. Thus, larger positive IAT d-scores scores were indicative of stronger implicit stereotypes or prejudice and IAT d-scores at 0 were considered indicative of a lack of implicit stereotypes or prejudice.

Demographic Variables

Participants reported the number of years in practice, area of specialty, job title, practice setting, medical school location, and whether or not they had training in cultural competency and implicit bias during medical school. Participants also reported their sex, age, ethnicity, race, birthplace, years living in the United States, and their first language.

External and Internal Motivation to Respond Without Prejudice

The External and Internal Motivation to Respond Without Prejudice Scale[19] was adapted to measure explicit motivations to be non-prejudiced against women with cervical cancer. Participants used 7-point Likert scales (1 = completely disagree to 7 = completely agree) to rate the degree to which they agreed with five external motivation scale (EMS) items (e.g., "If I acted prejudiced toward women with cervical cancer, I would be concerned that others would be angry with me") and five internal motivation scale (IMS) items (e.g., "I am personally motivated by my beliefs to be non-prejudiced against women with cervical cancer"). Ratings were averaged to create separate individual scores for the external motivation scale (EMS, $\alpha = .74$) and the internal motivation scale (IMS, $\alpha = .74$).

Data Analysis

The same analysis approach was used to examine both implicit prejudice and implicit stereotypes. First, a single sample t-test was estimated to examine whether participants, on average, demonstrated implicit associations that were statistically different from neutral (e.g., IAT d-scores significantly different from 0). Second, independent samples t-tests (for categorical variables) and simple regression models were estimated to examine whether implicit associations differed as a function of participant demographic variables, variables related to medical experience and training, or motivation to respond without prejudice. Results of these models are presented in Tables 2 and 3. When there was evidence of significant moderation, single sample t-tests were used to examine the implicit bias d-score at different levels of the moderator (reported in the body of the text). Although implicit stereotypes and prejudice were related, r = .45, 95% CI: (0.31, 0.57), R2 = .20, the correlation was not high enough to assume that the two measures captured the same construct. As such, the results are presented separately for the two implicit bias measures.

Results

Study Sample

Of the total 176 providers recruited, 12 of the participants were recruited at the 2016 Western Association of Gynecologic Oncologists Annual Meeting and the remaining participants were recruited through emails to listservs. Of these participants, 10 (5.7%) were excluded for exhibiting high error rates (> 30%) on at least one IAT. An additional 15 participants were excluded from the analyses because they identified themselves as nurse practitioners – a category distinct from both physicians and nurses. This resulted in a final sample consisting of 151 (112 female, 39 male, mean age = 39 years , SD age = 12) gynecologic oncology care providers (93 physicians and 58 nurses). The average number of years in practice was 12 years with a standard deviation of 11 years. 67.5% of participants reported having completed cultural competency training and 41.1% of participants reported having completed implicit bias training. Table 1 contains additional demographic information for this final sample.

Table 1. Characteristics of Final Sample

Characteristic	Number	Gender, % Female	Age (Years), $\bar{X}(SD)$
Overall	151	74	39 (12)
Gender			
Male	39		38 (10)
Female	112		42 (11)
Race			
White	105	76	40 (11)
African American/Black	6	83	34 (6)
Asian or Asian American	25	64	37 (10)
Hispanic	6	667	32 (4)
Other	9	78	35 (5)
Ethnicity			
Hispanic	13	7	34 (6)
Non-Hispanic	138	68	39 (11)
Born in USA?			
Yes	129	63	39 (11)
No	22	11	40 (11)
English First Language?			
Yes	133	65	39 (11)
No	18	9	39 (11)
Provider Type			
Nurse	58	97	37 (10)
Doctor	93	57	41 (12)
Cultural Competency Training?			
Yes	102	80.4	35 (9)
No	49	61.2	47 (10)
Implicit Bias Training?			
Yes	62	79.0	42 (11)
No	89	70.8	35 (9)

Continuous Variables

Characteristic	Number	$\bar{X}$ (SD)
Age	151	39 (12)
Years in USA	151	36 (12)
Years in practice	151	12 (10)
IMS	151	7 (1)
EMS	151	4 (1)

Note: This table contains descriptive statistics by race and gender for the final sample of 151 participants. The race and ethnicity items both included a "Hispanic" response so the category is reported twice. Number of responses, mean and standard deviation for continuous variables are provided in the bottom section of the table. $\bar{X}$ refers to sample mean and SD refers to the sample standard deviation.

Implicit Prejudice

The average prejudice d-score was significantly different from 0, indicating that gynecologic oncology providers showed significant levels of implicit prejudice towards cervical cancer patients, $\bar{X}$ = 0.17, SD = 0.47, 95% CI: (0.10, 0.25). Providers associated cervical cancer with emotions related to anger/frustration and ovarian cancer with empathy to a greater degree than the reverse. Table 2 presents tests of the potential moderators of the implicit prejudice d-score as well as means and standard deviations of the implicit prejudice d-score at different levels of the moderators. On average, nurses demonstrated greater levels of implicit prejudice than physicians. Whereas physicians did not demonstrate significant levels of implicit prejudice, 95% CI: (-0.02, 0.18), nurses did exhibit significant implicit prejudice, 95% CI: (0.21, 0.44). Cultural competency training also significantly moderated implicit prejudice effects. Although individuals associated cervical cancer with anger over empathy both with and without cultural competency training ps < 0.02, the magnitude of implicit prejudice was greater for those who did not report having received such training. Older providers and providers with more experience in the field both held stronger implicit anger associations towards women with cervical cancer. There was some evidence that ethnicity moderated implicit prejudice with Hispanic providers demonstrating no evidence of implicit prejudice, 95% CI: (-.49, .14), and non-Hispanic providers demonstrating significant implicit prejudice, 95% CI: (0.13, 0.28). But, there were only 13 providers who identified as Hispanic (compared to 138 who did not). Responses on the IMS and EMS scales did not significantly moderate implicit prejudice scores, both ts < 1.

Table 2. Moderators of the Implicit Prejudice Effects

Categorical Variables					
Moderator	$\bar{X}$(SD)	df	t	95% CI	Cohen's D
Gender					
Male	0.10 (0.49)				
Female	0.20 (0.47)	149	-1.21	-0.28, 0.07	-0.21
Race					
White	0.21 (0.46)				
Minority	0.08 (0.50)	149	-1.54	-0.29, 0.04	-0.27
Ethnicity					
Hispanic	-0.17 (0.52)				
Non-Hispanic	0.21 (0.46)	149	2.83**	0.12, 0.65	0.80
Born in USA					
Yes	0.16 (0.48)				
No	0.27 (0.45)	149	-0.98	-0.32, 0.11	-0.23
English First Language					
Yes	0.17 (0.48)				
No	0.17 (0.42)	149	0.03	-0.23 0.24	0.00
Provider Type					
Nurse	0.32 (0.42)				
Doctor	0.08 (0.48)	149	3.16**	0.09, 0.40	0.51
Cultural Competency Training					
Yes	0.12 (0.48)				
No	0.28 (0.44)	149	-2.00*	-0.32, -0.002	-0.34
Implicit Bias Training					
Yes	0.13 (0.49)				
No	0.21 (0.46)	149	-0.98	-0.23, 0.08	-0.17
Continuous Variables					
Moderator	b	df	t	95% CI	R^2
Age	0.01	149	2.58*	0.002, 0.02	0.04
Years in USA	0.00	149	1.25	-0.002, 0.010	0.01
Years in Practice	0.01	149	2.93**	0.003, 0.018	0.05
IMS	0.02	149	0.37	-0.08, 0.12	0.00
EMS	-0.01	149	-0.21	-0.06, 0.05	0.00

Note: The race and ethnicity items both included a "Hispanic" response so the category is reported twice. Test statistics refer to tests of mean differences (categorical moderators) or tests of simple slopes (continuous predictors). $\bar{X}$ refers to sample mean and SD refers to the sample standard deviation. 95% CI refers to 95% confidence intervals of the mean differences (categorical predictors) or the 95% confidence interval for the slope (continuous predictors). *p < .05, **p < .01, ***p < .001.

Implicit Stereotyping

On average, gynecologic oncology providers showed significant levels of implicit stereotyping of cervical cancer patients, $\bar{X}$ = 0.15, SD = 0.42, 95% CI: (0.08, 0.21), suggesting that providers associated cervical cancer with risk and ovarian cancer with compliance to a greater degree than the opposite. Table 3 presents tests of the potential moderators of the implicit stereotype effect as well as means and standard deviations of the implicit stereotyping d-score by moderator group (for categorical moderators). Similar to implicit prejudice, provider type significantly moderated the implicit stereotype d-score such that physicians' implicit stereotypes were not reliably different from 0, 95% CI: (-0.05, 0.13), but nurses' scores were higher than 0, indicating significant average implicit stereotypes, 95% CI: (0.22, 0.41). Although providers with and without cultural competency training demonstrated significant implicit stereotypes, ps < 0.03, implicit stereotypes were stronger for providers who reported never having participated in such training. Providers who reported never completing any implicit bias training associated cervical cancer and ovarian cancer with compliance, 95% CI: (0.01, 0.17), while providers who reported completing implicit bias training did not demonstrate significant implicit cervical cancer stereotypes, 95% CI: (-0.04, 0.16). Similar to their moderating effects on implicit prejudice, older providers and providers with more years of experience both exhibited stronger implicit stereotypes. Unlike the implicit prejudice effect, the implicit stereotype effect was marginally moderated by provider gender. Whereas males did not demonstrate significant implicit cervical cancer stereotype effects, 95% CI: (-0.09, 0.19), females did, 95% CI: (0.10, 0.26). As with the implicit prejudice measure, responses on the IMS and EMS scales did not significantly moderate implicit stereotyping scores, both ts < 1.

Table 3. Moderators of the Implicit Stereotype Effects

Categorical Variables					
Moderator	$\bar{X}$(SD)	df	t	95% CI	Cohen's D
Gender					
Male	0.05 (0.44)				
Female	0.18 (0.41)	149	-1.70+	-0.28, 0.02	-0.31
Race					
White	0.17 (0.43)				
Minority	0.08 (0.40)	149	-1.20	-0.23, 0.06	-0.21
Ethnicity					
Hispanic	0.01 (0.36)				
Non-Hispanic	0.16 (0.43)	149	1.19	-0.10, 0.39	0.36
Born in USA					
Yes	0.15(0.43)				
No	0.11(0.38)	149	0.45	-0.15, 0.24	0.14
English First Language					
Yes	0.15 (0.44)				
No	0.14 (0.28)	149	0.04	-0.20 0.21	0.02
Provider Type					
Nurse	0.32 (0.37)				
Doctor	0.04 (0.42)	149	4.14***	0.14, 0.41	0.67
Cultural Competency Training					
Yes	0.09 (0.40)				
No	0.26 (0.44)	149	-2.43*	-0.32, -0.03	-0.40
Implicit Bias Training					
Yes	0.06 (0.38)				
No	0.21 (0.44)	149	-2.15*	-0.28, -0.01	-0.36
Continuous Variables					
Moderator	b	df	t	95% CI	R^2
Age	0.01	149	2.85**	0.003, 0.015	0.05
Years in USA	0.01	149	2.36*	0.001, 0.011	0.04
Years in Practice	0.01	149	2.68**	0.002, 0.015	0.05
IMS	0.04	149	0.77	-0.056, 0.127	0.00
EMS	0.01	149	0.62	-0.032, 0.062	0.00

Note: The race and ethnicity items both included a "Hispanic" response so the category is reported twice. Test statistics refer to tests of mean differences (categorical moderators) or tests of simple slopes (continuous predictors). $\bar{X}$ refers to sample mean and SD refers to the sample standard deviation. 95% CI refers to the 95% confidence interval of the mean differences (categorical predictors) or the 95% confidence interval for the slope (continuous predictors). +p < .1,*p < .05, **p < .01, ***p < .001.

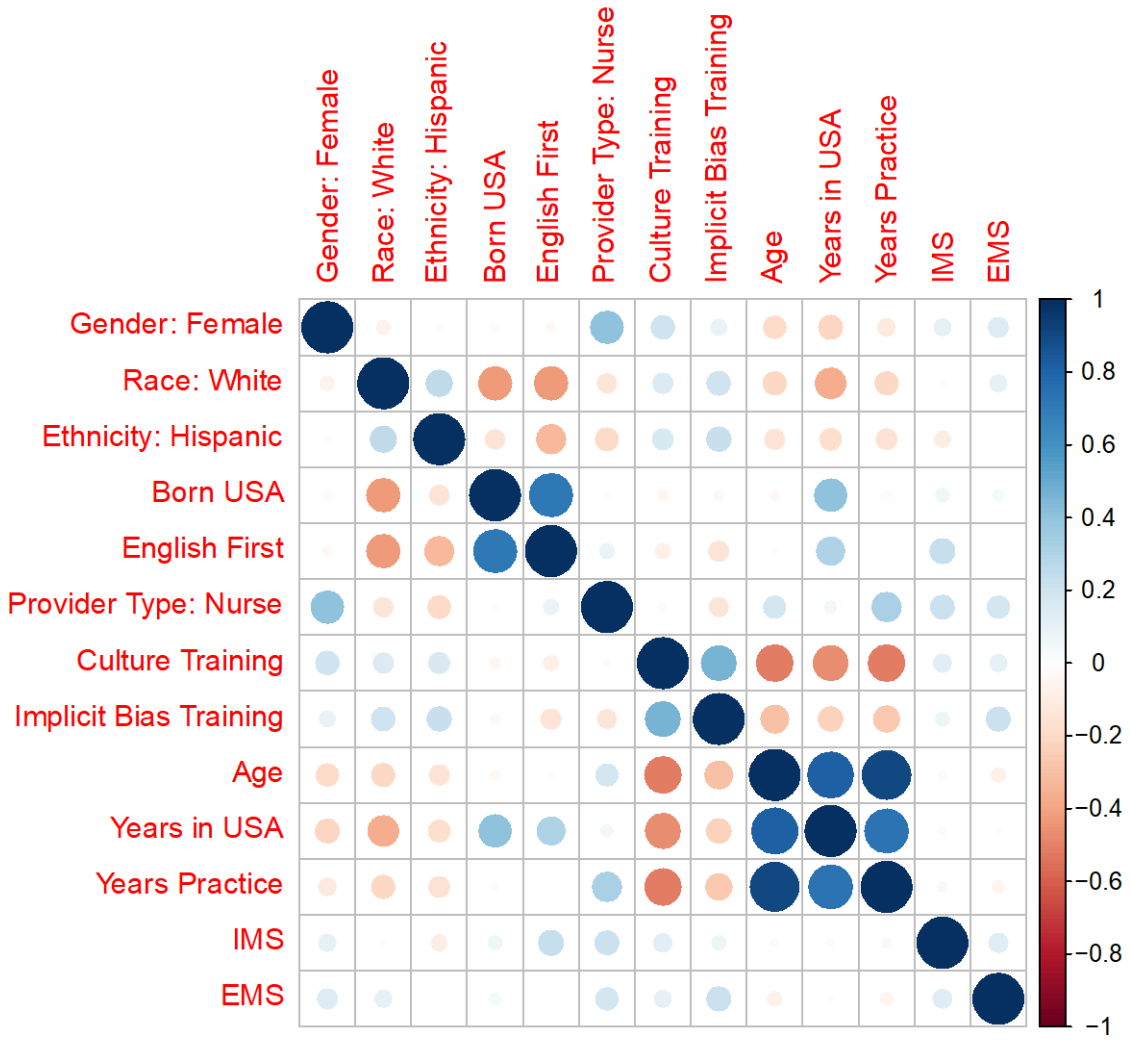

Figure 1: Moderator Relationships. Heat map of the bivariate relationships among moderator variables. Categorical variables were dummy coded and the label indicates which level of the variable was coded as 1. Due to a very small number of non-White providers in this sample, the race variable was coded as White compared to minority.

Discussion

Implicit Bias

The results of this study suggest that relative to ovarian cancer, gynecologic oncology providers hold implicit prejudice and stereotyping toward women with cervical cancer. Specifically, providers more strongly associated negative emotions related to anger and frustration with cervical cancer and positive emotions like empathy with ovarian cancer, than they associated these negative emotions with ovarian cancer and positive emotions with cervical cancer. In addition, providers expressed stronger associations between beliefs about risk and cervical cancer and beliefs about compliance and ovarian cancer, than they did for associations between cervical cancer and compliance and ovarian cancer and risk. The levels of implicit prejudice and stereotyping expressed by providers were modestly correlated, suggesting that although the two forms of bias share common variance, each form of bias may play a distinct role in how providers perceive and treat cervical cancer patients.

Demographic Moderators

Not all gynecologic oncology providers hold the same level of implicit bias toward patients with cervical cancer. In our study nurses expressed significantly greater prejudice and stereotyping of cervical cancer patients compared to physicians, which is consistent with the current literature,[10] and suggests the need to understand why specific groups report higher implicit bias than others. For example, nurses may have more extended contact with cervical cancer patients than physicians, but given the evidence that contact can also be effective for reducing explicit and implicit bias toward a group and its members,[20] including in a clinical context,[21] we suspect that the nature of the contact may play an important role in promoting negative implicit emotions and beliefs. In addition, older providers and those with more years of experience reported significantly higher implicit bias compared to younger providers and those who have less experience. But, the very high correlation between age and years of practice obscures a clear interpretation of these relationships. It may be that more experience caring for cervical cancer patients engenders more negative emotions and beliefs. Finally, consistent with previous research,[22] there was also evidence that provider ethnicity and gender moderated the

level of implicit prejudice and stereotyping, with Hispanic and male providers showing less implicit bias than non-Hispanic and female providers, respectively. These findings, however, should be interpreted with caution because they were based on small samples and only occurred on one measure.

Cultural Competency and Implicit Bias Training

Gynecologic oncology providers who report having had training in cultural competency or implicit bias expressed lower implicit bias than providers who did not. Whereas this could reflect the effectiveness of training providers to recognize the role that culture and their own biases can play in the care they provide to patients, the correlational nature of the finding could also reflect a third variable like motivation to appear low in prejudice. However, the correlations illustrated in Figure 1 show that the relationship between internal motivation to avoid prejudice and self-reports of having completed cultural competence and implicit bias training are small and not significant. The same is true of the relationship between external motivation to avoid prejudice and self-reports of training in cultural competence; only the relationship between external motivation to control prejudice and self-reports of having completed training in implicit bias, while small, is significant ($r = 0.22$, 95% CI: (0.06, 0.38). This suggests that the relationship between cultural competency or implicit bias training and the level of implicit bias toward cervical cancer is not likely due to the desire to appear unbiased for internal or external reasons. However, the correlational nature of the finding does not permit firm conclusions that the training was a causal factor in the lower implicit bias scores.

Older providers reported less training in cultural competency and implicit bias. In addition, older providers can also show more implicit bias because they can have less inhibitory ability.[23] Thus, the relationship between age and bias is not necessarily related to years of experience with cervical cancer patients.

Limitations and Future Directions

The data for the present study were drawn from a convenience sample of gynecologic oncology providers who are members of several professional gynecologic oncology organizations. The sample did not include those who do not belong to these organizations, and therefore, may not reflect the implicit attitudes and beliefs of all gynecologic oncology providers. The present study also did not examine other potential emotions and beliefs that gynecologic oncology providers may hold toward cervical and ovarian cancer patients. Future research should examine the degree to which providers implicitly associate other emotions and beliefs to cervical and ovarian cancer patients that may impact their care. Another question for future study is to determine if differences in the way that nurses and physicians interact with cervical and ovarian cancer patients, above and beyond their differences in training and role in patient care, makes a unique contribution to the development and expression of implicit bias.

Another limitation is whether implicit bias toward cervical cancer reflects implicit bias towards ethnic or racial minority patients. The incidence of cervical cancer is disproportionally higher among African-American and Hispanic women than White women.[24] If gynecology care providers strongly associate cervical cancer with race or ethnicity, it is possible that the results on the IAT measures in the present study reflect biases based on these categorizations, rather than type of cancer. Future studies should separate these influences by varying the race or ethnicity of targets with cervical versus ovarian cancer.

Another future direction for research on implicit bias among gynecologic oncology providers is to examine if and when the biases influence judgment and behavior toward cervical cancer patients.[12,25] A recent study reported that the mortality rate for Black women was 10.1 per 100,000 compared to 4.7 per 100,000 for White women.[25] Whereas the role that provider behavior plays in creating disparities in the survivorship of racial and ethnic women is currently unknown, if providers feel anger and frustration in the presence of a minority cervical cancer patient, or blame the patient for engaging in risky health behavior, it is possible that these

emotions and beliefs may influence treatment decisions and interactions with the patient that ultimately affects they way they respond to diagnosis and treatment.

Finally, receiving training in cultural competency and implicit bias may reduce the tendency to automatically associate cervical cancer with negative emotions and beliefs about risk. Nurses and older providers with more experience may especially benefit from the training, but only if the training is effective for helping gynecologic oncology providers change their behaviors.

Conclusions

Although it may be reasonable to assume that health care providers are particularly motivated to be egalitarian [26] they hold similar intergroup implicit biases to the general public. This study provides the first evidence that gynecologic oncology providers hold negative implicit biases related to cervical cancer. Interventions may be designed to target specific groups in gynecologic oncology such as nurses, older providers, and providers who have been practicing for a longer amount of time to improve interactions with patients.

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