



Development and Validation of the Vicarious Racism in Healthcare Workers Scale

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Abstract

Vicarious racism occurs when hearing about or observing people of the same racial and/or ethnic group experience racism. Healthcare workers may face unique experiences of vicarious racism through witnessing or hearing about racism that their patients and colleagues face. However, there are no validated measures of vicarious racism for the healthcare worker population. In this study, we developed and conducted an initial evaluation of the Vicarious Racism in Healthcare Workers Scale. We developed the 12-item scale based on a qualitative study exploring the experiences of racism among healthcare workers and existing literature on the topic. We administered the scale to a cohort of 259 healthcare workers identifying as a racialized minority to evaluate its factor structure, internal consistency, and construct validity. Factor analysis yielded two factors: racism in social networks and racism in society at-large. This two-factor solution had good model fit (standardized root mean square residual = 0.061). The internal consistencies of the overall scale, social networks subscale, and society subscale were excellent ($\alpha = 0.93, 0.92,$ and $0.89,$ respectively). We found evidence in support of convergent validity; scale scores were higher among Black healthcare workers compared with non-Black healthcare workers and those with greater social support needs. Scale scores were positively correlated with directly experienced racism and symptoms of posttraumatic stress, depression, and anxiety. The scale demonstrated discriminant validity; scale scores did not differ based on gender or job. The Vicarious Racism in Healthcare Workers Scale demonstrated favorable psychometric properties and may be used to assess vicarious racism in this population.

Keywords Racism · Vicarious racism · Healthcare workers · Scale development · Psychometrics · Scale validation

Introduction

Racism, defined as a system of oppression in which a dominant racial group uses its power to devalue and limit access to resources to groups that they define as inferior, has been

identified as a root cause of racial disparities in both mental and physical health outcomes [1]. Experiences of racism that happen directly to an individual as well as to other members of their racial and/or ethnic group contribute to their racism-related stress and subsequent health [2]. The latter is called *vicarious racism*, or secondhand experiences of prejudice and discrimination through observation and report [2–4].

Various social theories have described how vicarious racism influences health outcomes. For example, the theory of “linked lives” suggests that events that happen to one member of an identity group also impact other members of that group through social connectedness [5, 6]. Thus, experiences of vicarious racism may spread to other people who identify as that race and/or ethnicity and can evoke similar stress and physiologic responses [7, 8]. Furthermore, social identity theory holds that an individual’s self-esteem is influenced by the value that society attaches to their social group [5]. Witnessing actions that devalue a member of one’s racial or ethnic group can therefore

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influence an individual's self-esteem and, ultimately, mental health [9–11].

Previous studies have sought to explore the effect of vicarious racism on mental and physical health outcomes through self-report instruments. For example, one study that included 431 African American women with systemic lupus erythematosus (SLE) from the Black Women's Experiences Living with Lupus Study found that increased self-report of vicarious racism was associated with heightened SLE disease severity, even after adjusting for demographics, social factors, and direct experiences of racism [12]. Another study including 604 Asian American and 844 Black American adults found that heightened perceived vicarious racism was associated with increased symptoms of depression and anxiety [13].

Despite burgeoning research on this topic, a key limitation to the study of vicarious racism is a lack of validated self-report instruments. Indeed, in a systematic review of 30 studies of vicarious racism among children, the authors described a lack of psychometrically validated measures to assess this construct [14]. Among these studies and others that focus on adults, authors have adapted measures of direct racism or created their own scales for assessing vicarious racism, without assessing factor structure, reliability, and validity [12–18]. For example, the aforementioned study that assessed the association between vicarious racism and SLE disease activity among Black women created their own four-item measure of vicarious racism [12]. Although this measure was developed through a literature review of vicarious racism, additional studies are needed that assess its psychometric properties. Validating measures of vicarious racism may also promote standardization of definitions and tools, which can further the field conceptually and through meta-research [14].

Vicarious racism scales may also need to be tailored for certain groups based on important characteristics, such as age and occupation. For example, children's experiences of vicarious racism may be centered around witnessing or hearing about experiences of racism targeting their parents [14], and, likewise, parents' experiences of vicarious racism are impacted by hearing about racism targeting their children [15, 19]. In a similar vein, healthcare workers (HCWs) may face unique experiences of vicarious racism based on their roles in hospitals; witnessing or hearing about experiences of racism that their patients and colleagues deal with may contribute to providers' experiences of vicarious racism [20]. For example, in a qualitative study exploring the role of racism in the training and practice of Black physicians, one trauma surgeon described her experiences of vicarious racism by treating Black patients who were victims of police brutality, which affected her both personally and professionally [20].

As racial and ethnic diversity of the healthcare workforce is critical to improve team functioning and mitigate racial health disparities, understanding the influence of vicarious racism on the career satisfaction, retention, and well-being of HCWs is warranted [21–23]. Although direct racism and ethnic discrimination have been associated with decreased opportunities for career advancement [24–26] and increased job turnover among HCWs [27], few studies have explored the role of vicarious racism in supporting a diverse workforce. Therefore, developing a rigorous measurement of vicarious racism in HCWs is critical to assess the impact of vicarious racism on their professional lives, as well as to develop and evaluate support services for those impacted. This scholarship has the potential to positively influence not only HCWs themselves but also their patients and the health system at-large.

Toward this end, we sought to develop and validate a vicarious racism scale among HCWs in the United States (US). To our knowledge, no vicarious racism scale has been developed or evaluated among HCWs. We developed the scale by analyzing experiences of racism reported by HCWs and conducting a literature review on racism scales. We then administered the proposed Vicarious Racism in Healthcare Workers Scale among a cohort of 259 HCWs identifying as racialized minorities in order to evaluate its factor structure, internal consistency, and construct validity.

Methods

Scale Development

We developed the Vicarious Racism in Healthcare Workers Scale by analyzing experiences of racism reported by HCWs and reviewing the literature on direct and vicarious racism. First, in January 2021, we examined responses to an open-ended question asking HCWs ($n = 123$) to describe experiences of racism in the preceding year [28]. We collected responses using an anonymous, web-based survey. Among the 123 HCWs who responded to the open-ended question, 45 (36.6%) identified as Black/African American, 43 (35.0%) as Asian, 17 (13.8%) as Latinx, 14 (11.4%) as White, 2 (1.6%) as American Indian/Alaskan Native, 1 (0.8%) as Native Hawaiian/Pacific Islander, and 1 (0.8%) as another race. Using thematic analysis, we identified experiences of vicarious racism, such as publicized police killings of unarmed Black people and violence against Asian Americans during the pandemic [28]. Respondents described that these experiences of vicarious racism occurred within and outside the hospital. Based on these findings, we generated an initial list of scale items.

Subsequently, we conducted a literature review of studies focused on direct and vicarious racism. We noted that

previously used vicarious racism scales have asked about the victim (e.g., friends/family members), perpetrator (e.g., politicians), and outlet (e.g., social media) [12–15]. Studies focusing on HCWs specifically found that experiences of racism involved patients as both perpetrators and victims [20, 21, 29]. Furthermore, previous racism scales include items focusing on the frequency of these experiences and perceived distress [12, 13, 30, 31].

Based on these observations, we developed a 12-item Vicarious Racism in Healthcare Workers Scale. Table 1 shows the 12 items, as well as whether they were developed based on our prior qualitative study, our review of the literature, or both. We included items assessing the frequency in which respondents had experienced vicarious racism directed at different victims (i.e., family and friends, patients, and colleagues), by various perpetrators (i.e., patients, colleagues, politicians, and other public figures), and in several venues (i.e., social media, news, public, and hospital). We also included one item asking about level of distress related to these events. For the frequency questions, we used a six-point Likert scale similar to other studies, including options of never, about once a month, a few times a month, once per week, a few times per week, and every day [15, 30]. For the associated distress item, we included a four-point Likert scale, ranging from not at all distressed to extremely distressed.

Scale Evaluation

Participants and Procedure

We distributed an online, anonymous survey to HCWs affiliated with 30 academic hospitals across the US from January 6, 2022, to March 17, 2022. We purposively sampled

hospitals by geographic region and COVID-19 transmission rates [32]. We contacted hospital department chairs to invite them to forward our survey to their staff. Our study was open to clinical and non-clinical personnel. Although the survey was inclusive of all races and ethnicities, the present study only includes participants identifying as a racialized minority, including Black/African American, Middle Eastern/North African, Latinx/Hispanic, East Asian, South Asian, Southeast Asian, Native Hawaiian/Pacific Islander, American Indian/Alaska Native, and other race. Our study was approved by the Yale Institutional Review Board and all participants provided written consent.

Measures

In addition to the proposed Vicarious Racism in Healthcare Workers Scale, we included measures of constructs to assess convergent validity, including directly experienced racism, social support needs, racial identity, and symptoms of posttraumatic stress disorder (PTSD), generalized anxiety disorder (GAD), and major depression (MD). First, previous studies have identified significant associations between vicarious racism and directly experienced racism [14]. We assessed directly experienced racism over the past year by using the General Ethnic Discrimination Scale, an 18-item scale that has been used to assess perceived discrimination among Black, Latinx, Asian, and White participants [30]. This scale captures major experiences of racism (e.g., being forced to take drastic steps such as filing a lawsuit, quitting your job, moving away, and other action to deal with a racist encounter), as well as everyday experiences (e.g., having your intentions and motives misunderstood due to your race/ethnic group). We added an item asking about racism

Table 1 Vicarious Racism in Healthcare Workers Scale items based on our preliminary qualitative study and literature review

Items	Qualitative study [28]	Literature
Item 1: How often have you heard about or seen people of your racial/ethnic group experience racism in public		[12, 13]
Item 2: How often have you heard about or seen people of your racial/ethnic group experience racism in the news	✓	[12, 13, 15]
Item 3: How often have you heard about or seen people of your racial/ethnic group experience racism in the hospital	✓	[20]
Item 4: How often have you heard about or seen people of your racial/ethnic group experience racism on social media	✓	[13, 15, 31]
Item 5: How often have you heard about experiences of racism against friends and family members of your racial/ethnic group	✓	[12–15]
Item 6: How often have you heard about experiences of racism against patients of your racial/ethnic group		[20, 21, 29]
Item 7: How often have you heard about experiences of racism against colleagues of your racial/ethnic group	✓	
Item 8: How often have you heard racist things said about your racial/ethnic group by politicians	✓	[13]
Item 9: How often have you heard racist things said about your racial/ethnic group by other public figures		[13]
Item 10: How often have you heard racist things said about your racial/ethnic group by colleagues	✓	
Item 11: How often have you heard racist things said about your racial/ethnic group by patients	✓	[20, 21, 29]
Item 12: How concerned were you when you heard or saw other people of your racial/ethnic group being treated unfairly		[12, 13, 30]

perpetrated by patients [21]. Cronbach's α for the 19-item scale in the current sample was 0.91.

Previous studies have also identified that people who experience vicarious racism may need additional social support to cope [33, 34]. We therefore used one item from the National Health and Nutrition Examination Survey to assess social support needs, with response options including needing a lot, some, a little, and no more social support [35].

We also hypothesized that vicarious racism would be reported more frequently among HCWs identifying as Black compared with non-Black HCWs based on a study during the COVID-19 pandemic that found that Black participants had higher levels of vicarious racism compared with Asian participants [13]. We therefore used single items to assess race and ethnicity.

Previous studies have also found that vicarious racism was associated with adverse mental health outcomes [13, 31]. Thus, we included validated measures of stress-related mental health outcomes, including the Primary Care-PTSD scale ($\alpha=0.70$) to assess PTSD symptoms in the previous month [36], Patient Health Questionnaire-9 ($\alpha=0.89$) to assess MD symptoms in the previous 2 weeks [37], and Generalized Anxiety Disorder-7 ($\alpha=0.92$) to assess GAD symptoms in the previous 2 weeks [38].

We evaluated discriminant validity by testing differences in perceived vicarious racism by gender and job role. Based on previous studies of racism among HCWs, we hypothesized that vicarious racism is a gender- and job-independent construct [20, 28, 39]. For example, in a qualitative study focused on the influence of racism in the practice and training of Black physicians, the authors described that Black physicians are not exempt from realizing the negative consequences of racism just because they are highly educated [20]. We used single items to assess gender identity (woman, gender minority, and man) and job (physician, medical trainee, nurse, clinical assistant, health technologist/technician, and non-clinical personnel).

Analyses

We first assessed descriptive statistics of the Vicarious Racism in Healthcare Workers Scale, including item- and scale-level statistics (i.e., mean, standard deviation [SD], and range). Then, we used the Kaiser–Meyer–Olkin measure of sampling adequacy and Bartlett's test of sphericity to assess appropriateness of the data to conduct exploratory factor analysis, using a threshold of Kaiser–Meyer–Olkin index >0.60 . We then conducted exploratory factor analysis using maximum likelihood and varimax rotation, including all factors with eigenvalues >1 . We used standardized root mean square residual (SRMR) to determine model fit, with acceptable model fit defined as SRMR <0.08 [40]. We retained items that had factor loadings ≥ 0.50 and loaded

onto a single factor. We assessed internal consistencies of the overall scale and subscales by calculating Cronbach's α .

We evaluated the validity of the scale by testing relationships between total scale score and validation constructs. We used Pearson correlation to test relationships between vicarious racism score and continuous variables, including directly experienced racism and symptoms of PTSD, GAD, and MD. We used one-way analysis of variance (ANOVA) to test if vicarious racism scores differed by social support needs, racial identities, gender identities, and job. If the tests of homogeneity were significant, we conducted Bonferroni-corrected post hoc tests to assess pairwise differences between categories. We conducted analyses in SPSS [41] and RStudio [42].

Results

Sample

Table 2 presents participant characteristics. Our sample included 259 HCWs, with a mean age of 37.8 years (SD = 10.2). Most of our sample included participants who identified as women ($n = 183$, 70.7%). One-quarter ($n = 68$) of our participants identified as mixed race, 23.6% ($n = 61$) as East Asian, 13.9% ($n = 36$) as Black, 12.4% ($n = 32$) as South Asian, 8.5% ($n = 22$) as Southeast Asian, 8.1% ($n = 21$) as Middle Eastern/North African, and 7.3% ($n = 19$) as another race. One-fifth of our sample ($n = 53$) identified as Hispanic/Latinx ethnicity and 29.0% as immigrants.

Exploratory Factor Analysis

The Kaiser–Meyer–Olkin index (0.90) and Bartlett's test of sphericity (Bartlett's test = 2392.9, $df = 66$, $p < 0.0001$) indicated that the data were appropriate for factor analysis. We identified a two-factor solution that explained 69.2% of the variance in reported vicarious racism. The SRMR was 0.061, indicating good model fit of the two-factor solution. The scree plot is presented in Fig. 1.

Table 3 shows factor loadings for the two-factor solution. Factor 1 included seven items related to an individual's experiences with vicarious racism in their immediate social network, e.g., their patients and family/friends. Factor 2 included five items related to an individual's experiences hearing about racism targeting their racial/ethnic group in society more generally, e.g., in the news or social media. The correlation between the two factors was 0.66. The internal consistencies of the overall 12-item scale, factor 1 subscale, and factor 2 subscale were excellent ($\alpha = 0.93$, 0.92, and 0.89, respectively).

Table 2 Participant characteristics

Characteristics	Mean (SD) or <i>n</i> (%)
Age	37.8 (10.2)
Gender	
Woman	183 (70.7%)
Man	71 (27.4%)
Non-binary or other	5 (1.9%)
Race	
Mixed race	68 (26.3%)
East Asian	61 (23.6%)
Black	36 (13.9%)
South Asian	32 (12.4%)
Southeast Asian	22 (8.5%)
Middle Eastern/North African	21 (8.1%)
Other	19 (7.3%)
Ethnicity	
Hispanic/Latinx	53 (20.5%)
Immigrant	75 (29.0%)
Profession	
Physician	93 (35.9%)
Trainee	65 (25.1%)
Nurse	24 (9.3%)
Health technician/technologist	13 (5.0%)
Nursing or medical assistant	12 (4.6%)
Other clinical job	29 (11.2%)
Non-clinical job	23 (8.9%)
Vicarious racism	29.4 (12.0)
Direct racism	31.3 (11.3)
Social support needs	
None	39 (15.1%)
A little more	65 (25.1%)
Some more	80 (30.9%)
A lot more	75 (29.0%)
PTSD symptoms	1.5 (1.4)
GAD symptoms	4.8 (5.0)
MD symptoms	4.8 (4.8)

Abbreviations: *SD*, standard deviation; *PTSD*, posttraumatic stress disorder; *GAD*, generalized anxiety disorder; *MD*, major depression

Validity

Convergent Validity

We identified positive correlations between direct racism and the total vicarious racism score ($r=0.64$, $p<0.001$), social network subscale ($r=0.62$, $p<0.001$), and society subscale ($r=0.53$, $p<0.001$). We also identified differences in reporting vicarious racism by racial identity ($F[6, 252]=8.12$, $p<0.001$). Table 4 displays the mean scores for vicarious racism by race. In Bonferroni-corrected post hoc tests, Black participants reported significantly higher

vicarious racism compared with mixed race ($M_{diff}=10.93$, $SE_{diff}=2.29$, $p<0.001$), East Asian ($M_{diff}=11.25$, $SE_{diff}=2.33$, $p<0.001$), South Asian ($M_{diff}=17.31$, $SE_{diff}=2.70$, $p<0.001$), Southeast Asian ($M_{diff}=12.48$, $SE_{diff}=3.01$, $p<0.001$), Middle Eastern/North African ($M_{diff}=14.15$, $SE_{diff}=3.05$, $p<0.001$), and other race ($M_{diff}=13.57$, $SE_{diff}=3.15$, $p<0.001$) participants.

We also identified significant differences in reporting vicarious racism by perceived social support ($F[3, 255]=9.54$, $p<0.001$). Those who needed a lot more social support reported higher vicarious racism compared with those who needed some more support ($M_{diff}=7.15$, $SE_{diff}=1.84$, $p<0.001$), a little more support ($M_{diff}=9.65$, $SE_{diff}=1.94$, $p<0.001$), and those with no social support needs ($M_{diff}=7.48$, $SE_{diff}=2.26$, $p=0.006$).

Vicarious racism was positively correlated with symptoms of PTSD ($r=0.20$, $p=0.001$), GAD ($r=0.20$, $p=0.002$), and MD ($r=0.13$, $p=0.036$).

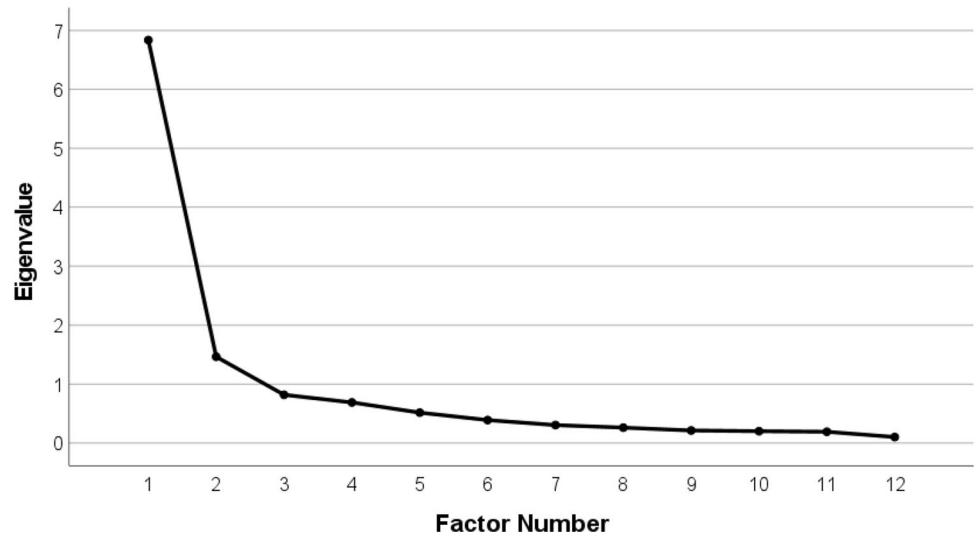
Discriminant Validity

We did not identify any significant differences in reporting vicarious racism by gender category ($F[2, 256]=1.69$, $p=0.187$) or by job category ($F[6, 252]=1.23$, $p=0.179$), providing evidence in favor of discriminant validity.

Discussion

Validated measures of vicarious racism are needed to quantify the impact of vicarious racism on mental and physical health. In this study, we developed and conducted an initial evaluation of the Vicarious Racism in Healthcare Workers Scale among HCWs in the US. We developed the scale based on a qualitative study exploring the experiences of racism among HCWs and existing literature on the topic. We administered the proposed scale among 259 HCWs, and assessed its factor structure, internal consistency, and validity.

Our initial evaluation of the Vicarious Racism in Healthcare Workers Scale among HCWs identified a two-factor structure. The first factor included seven items focused on hearing about or witnessing experiences of racism in their immediate social network, such as family/friends, colleagues, and patients. The second factor included five items that described racism in society at-large, such as perpetuated by politicians and shared in the news. The item that asked about distress associated with these experiences loaded onto factor 2 (loading=0.54) and more weakly onto factor 1 (loading=0.39). This item likely loaded onto both factors because it asks about associated distress relating to any of the items. Nevertheless, other studies have also found that vicarious racism experiences in more proximal

Fig. 1 Scree plot of the Vicarious Racism in Healthcare Workers Scale

social networks may be discrete from those in society at-large, and have different implications for health outcomes. For example, a study that assessed Black parents' experiences of vicarious racism concluded that different types of vicarious racism were related to different outcomes [15]. The authors found that heightened symptoms of depression

were significantly associated with increased reports of hearing about racism targeting their child, but not when hearing about racism in the news or social media [15]. On the other hand, higher reports of hearing about racism in the news and social media, but not hearing about their child's experiences of racism, were associated with lower self-rated health [15].

Table 3 Factor loadings of the Vicarious Racism in Healthcare Workers Scale

Items	Mean	SD	Communality	Factor 1 ^a	Factor 2 ^b
Item 6: How often have you heard about experiences of racism against patients of your racial/ethnic group	2.09	1.26	.705	.86	.34
Item 7: How often have you heard about experiences of racism against colleagues of your racial/ethnic group	1.94	1.17	.709	.85	.39
Item 5: How often have you heard about experiences of racism against friends and family members of your racial/ethnic group	2.12	1.25	.713	.84	.37
Item 10: How often have you heard racist things said about your racial/ethnic group by colleagues	1.62	1.06	.707	.84	.37
Item 11: How often have you heard racist things said about your racial/ethnic group by patients	1.94	1.10	.702	.83	.38
Item 3: How often have you heard about or seen people of your racial/ethnic group experience racism in the hospital	2.03	1.32	.658	.78	.30
Item 1: How often have you heard about or seen people of your racial/ethnic group experience racism in public	2.48	1.40	.542	.63	.39
Item 9: How often have you heard racist things said about your racial/ethnic group by other public figures	2.76	1.56	.818	.36	.94
Item 8: How often have you heard racist things said about your racial/ethnic group by politicians	2.93	1.56	.801	.35	.93
Item 2: How often have you heard about or seen people of your racial/ethnic group experience racism in the news	3.45	1.60	.650	.44	.65
Item 4: How often have you heard about or seen people of your racial/ethnic group experience racism on social media	3.36	1.68	.628	.43	.64
Item 12: How concerned were you when you heard or saw other people of your racial/ethnic group being treated unfairly	2.66	.92	.269	.39	.54

Abbreviations: *SD*, standard deviation

Boldface type indicates loadings ≥ 0.50

^aFactor 1, social network; ^bFactor 2, society

Table 4 Vicarious racism total score by race

Race	<i>n</i>	Mean (SD)
Mixed race	68	29.32 (12.20) ^a
East Asian	61	29.00 (10.27) ^a
Black	36	40.25 (13.27)
South Asian	32	22.94 (5.67) ^a
Southeast Asian	22	27.80 (12.34) ^a
Middle Eastern/North African	21	26.10 (11.23) ^a
Other race	19	26.68 (10.28) ^a

Abbreviations: *SD*, standard deviation

^aSignificantly lower than Black participants

These findings support the two-factor structure we identified in the scale, which separates out experiences of vicarious racism within immediate social networks and society at-large. However, additional studies are still needed that further evaluate this scale's factor structure and assess how these different forms of vicarious racism may differentially impact HCWs of color.

We found evidence in support of construct validity of the Vicarious Racism in Healthcare Workers Scale. Consistent with our hypotheses, Black participants reported significantly greater vicarious racism compared with all other non-White racial categories (i.e., Southeast Asian, Middle Eastern/North African, South Asian, East Asian, and mixed race), as did those who needed a lot more social support compared with those with lower social support needs. Scale scores were also positively correlated with directly experienced racism and symptoms of PTSD, GAD, and MD. For discriminant validity, we found that scale scores were not significantly different based on gender or job in the hospital. These findings suggest that the Vicarious Racism in Healthcare Workers Scale captures elements of vicarious racism relevant to the studied racial and ethnic minority groups, including elements that relate to needing more social support and adverse mental health outcomes. Our analyses of discriminant validity suggest that vicarious racism among HCWs may be a gender- and job-independent construct.

Our finding that Black participants had higher vicarious racism scores compared with other racialized minorities suggests that Black HCWs may be at particularly heightened risk. In another study that assessed vicarious racism during the COVID-19 pandemic, the authors also found that Black participants had higher reports of vicarious racism compared with Asian participants [13]. Another study that used data from the Nashville Stress and Health Study found that Black participants reported significantly higher levels of vicarious racism compared with White participants [16]. In multivariable models that stratified by race, vicarious racism was significantly associated with lower life satisfaction among Black participants, but not among White participants [16]. Future

studies are warranted that explore the prevalence and effects of vicarious racism faced by different racial and ethnic groups in order to design targeted solutions. These studies should consider stratifying their samples by racial and/or ethnic group, given differences in the magnitude and effects of vicarious racism experienced by Black, Asian, Latinx, and White people.

Although the Vicarious Racism in Healthcare Workers Scale was developed for HCWs specifically, items of the scale may be relevant to the general population. For example, the items that ask about hearing or witnessing racism targeting family/friends and colleagues in public, in the news, and on social media (items 1, 2, 4, 5, 7) were adapted from scales focused on measuring vicarious racism in the general public [12, 13, 15]. The items that ask about perpetrators of vicarious racism, including politicians, other public figures, and colleagues, are also relevant to non-HCW populations. Furthermore, the items focused on HCWs' vicarious racism experiences with patients and in the hospital (items 3, 6, and 11) may be adapted based on the target population. For example, item 3, which asks about hearing or witnessing people of their racial/ethnic group experience racism in the hospital, may be adapted to "in your workplace." The items asking about patients (items 6 and 11) may be adapted to "people you interact with at your workplace." Future studies are warranted that assess the adaptability and validity of this scale among non-HCW populations.

Our study has several limitations and strengths. First, we did not assess test-retest reliability, and future studies are warranted that explore the stability of this scale. Despite our sample size of 259 HCWs of color, the racial and ethnic subgroup categories were relatively small; thus, future evaluations of this scale should oversample from racialized minority groups in order to test for measurement invariance. Although the scale includes an item asking about patients as perpetrators of vicarious racism, we did not ask about patients' family members with whom HCWs frequently interact as perpetrators; additional research exploring this source of vicarious racism may be warranted. Notwithstanding these limitations, our study was strengthened by using both our prior qualitative analysis of experiences of racism among HCWs and literature review to generate scale items. Our study was also strengthened by including several validation constructs to assess both convergent and discriminant validity.

Conclusion

We developed and conducted an initial evaluation of the Vicarious Racism in Healthcare Workers Scale among HCWs in the US. We identified promising psychometric

properties of this scale; however, additional validation studies are warranted to ensure that the measure is valid, reliable, and stable. These studies may consider adapting scale items to assess this construct in non-HCW populations. Future studies may benefit from oversampling from racial and ethnic minority groups and collecting repeated measures of vicarious racism to assess test–retest reliability.

Author Contribution All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by RH and SRL. The first draft of the manuscript was written by RH, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Declarations

Ethics Approval This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of Yale University.

Consent to Participate Informed consent was obtained from all individual participants included in the study.

Consent for Publication Not applicable.

Competing Interests The authors declare no competing interests.

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