RACIAL/ETHNIC REPRESENTATION IN MENTAL HEALTH WEBSITES

by

ALEKHYA BHUPALAM

A THESIS

Presented to the Department of Psychology
and the Robert D. Clark Honors College
in partial fulfillment of the requirements for the degree of
Bachelor of Science

February 2026

An Abstract of the Thesis of

Alekhya Bhupalam for the degree of Bachelor of Science
in the Department of Psychology to be taken Spring 2026

Title: Racial/Ethnic Representation in Mental Health Websites

Approved: *Alayna Park, Ph.D.*
Primary Thesis Advisor

Racial/ethnic minoritized people encounter unique structural, knowledge, and attitudinal barriers to accessing mental health services. Mental health websites could help address knowledge and attitudinal barriers, while adaptations on these websites could address structural barriers. Surface structure adaptations that incorporate visual representation could help improve the acceptance of messaging, while deep structure adaptations like acknowledging historical harm of minoritized groups can help with the salience of messaging. The study aimed to characterize surface and deep structure racial/ethnic representation on mental health websites and examine the association between representation and users' perception of the websites. For this study, a team of coders characterized 59 websites about suicide and non-suicidal self-injury (NSSI) for surface and deep structure adaptations. Participants interacted with these websites and rated for approval, personal relevance, likelihood of recommendation, and usefulness of the websites. The results showed limited racial/ethnic representation on suicide and NSSI websites, with surface structure adaptations being more common than deep structure adaptations. Websites with surface structure adaptations mainly included translation tools and diverse representation in photos and videos. Websites with deep structure adaptations included adapted website content

which tended to be written for people supporting someone struggling with suicide/NSSI (e.g., parents, teachers) rather than the affected person. No significant associations were found between the representation on websites and website ratings. This study provides recommendations for how website developers could improve racial/ethnic representation on websites. Although findings surprisingly did not indicate that representation improved ratings, it also did not detract from ratings. Given prior research demonstrating the benefit of surface and deep structure adaptations, racial/ethnic representation is likely to be more helpful than harmful, and future research should investigate how websites can have the greatest reach possible.

Acknowledgements

First, I would like to thank Alayna Park, my Primary Thesis Advisor and the Principal Investigator for the ADDRESS Mental Health Lab. Dr. Park has been an incredible mentor and support throughout this entire process. I would also like to thank Alyssa Herman, a graduate student from the ADDRESS Mental Health Lab, for mentoring me in my sophomore and junior year. I have learned a lot about the process of research from her by working directly with her. I am also grateful to everyone at the ADDRESS Mental Health Lab for giving me advice and support on this process. I also want to thank Alana David and Shadi Talaee for their help as coders on my project and their insights into my work.

Next, I want to express my appreciation for my Robert D. Clark Honors College Representative, Dr. Yalda Asmatey. Dr. Asmatey has been an amazing help through this process, giving support me on the Clark Honors College side.

Finally, I want to thank my friends and family for fostering my passions and always being there for me. They all truly kept me sane through this process, and I could not have done this without them.

Table of Contents

Introduction 7
Promoting Mental Health Awareness 7
Conceptualization 9
Design and Dissemination 11
Impact 13
Study Aims and Hypotheses 13
Methods 15
Participants 15
Mental Health Websites 15
Website Ratings 16
Coding the Websites 16
Data Analyses 18
Results 19
Racial Representation on Websites 19
Photo/Video Codes (Surface) 19
Actionability Codes (Surface) 19
Content Codes (Surface) 19
Content Codes (Deep) 20
Association between Racial Representation and Website Ratings 21
Discussion 24
Overview of Study 24
Racial Representation on Websites 24
Association between Racial Representation and Website Ratings Results 25
Limitations and Future Directions 26
Conclusion 28
Appendix 29
References 32

List of Figures

Figure 1: Designing for dissemination and sustainability (D4DS) framework model. 8

Figure 2: Participant ratings for websites that did (Yes) or did not (No) include any deep structure adaptations. 22

Figure 3: Participant ratings for websites that did (Yes) or did not (No) include any surface structure adaptations. 22

Figure 4: Participant ratings of websites that did (Yes) or did not (No) include any content (surface or deep) adaptations. 23

Figure 5: Participant ratings for websites that did (Yes) or did not (No) contain any (surface or deep) adaptations. 23

Introduction

Racial/ethnic minoritized communities in the United States face the same or less prevalence of mental illnesses compared with White populations (MHA, 2025). This trend is also observed in rates of suicide and non-suicidal self-injury (NSSI), such that non-Hispanic White people have higher suicide rates than non-Hispanic Black and Hispanic people (CDC, 2022). However, suicide rates among non-Hispanic Black and Hispanic people have increased over recent years (CDC, 2022). Additionally, racial/ethnic minoritized people are less likely to receive mental health services and have higher burden of disability, ranging from reduced quality of life and physical health issues, due to mental health disorders compared with White people (MHA, 2025; NAMI, 2021). This results in higher levels of unmet mental health needs for racial/ethnic minoritized communities due to mental health care disparities (McGuire & Miranda, 2014). These unmet needs can lead to trillions of dollars in direct and indirect health care costs for mental disorders, which includes costs for diagnosis and treatment as well as other related income losses (Trautmann et al., 2016).

Promoting Mental Health Awareness

Several barriers prevent or interfere with racial/ethnic minoritized communities accessing mental health services. One of the primary barriers is limited access to reliable information about how to recognize mental health concerns and connect with effective care (Metzger et al., 2023). This concept of mental health literacy refers to understanding of mental health disorders and using the knowledge to act upon helping your own or other's mental health (Jorm, 2012). High mental health literacy facilitates earlier recognition of mental health concerns and help-seeking, which leads to better outcomes for those with mental health disorders (Kelley et al., 2007).

However, there are racial disparities in access to reliable health information (Chaudhry et al., 2011).

To address this barrier, there have been increasing efforts from mental health professionals and organizations to distribute mental health information directly to the public with platforms like the Internet to increase access to reliable information about mental health and treatment (Becker, 2015). For example, a recent study identified more than 300 websites covering mental health information with about 60 of those covered topics related to suicide and NSSI, such as providing contact information for suicide hotlines or information about the prevalence of suicidal ideation (Herman et al., 2023).

Although mental health websites might address knowledge barriers to connecting with mental health resources, adaptations are needed to address structural barriers that perpetuate racial/ethnic mental health disparities. The designing for dissemination and sustainability (D4DS) framework provides helpful guidance on how to approach adapting health programs and information (Kwan et al., 2022). D4DS (see Figure 1) is organized into four phases of conceptualization, design, dissemination, and impact. This framework can provide insight into best practices for equitable distribution of mental health information.

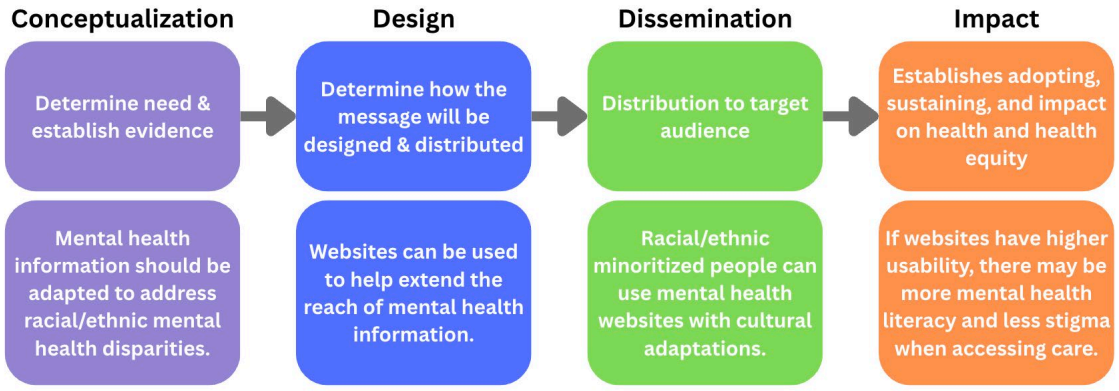

Figure 1. Designing for dissemination and sustainability (D4DS) framework model. Informed by Kwan et al. (2022).

Conceptualization

Equitable dissemination begins with conceptualizing the need to solve a health problem and evidence base of effective solutions for addressing that health problem. Currently, there is a need to disseminate mental health information to racial/ethnic minoritized people to help mitigate longstanding racial/ethnic mental health disparities. However, there is a current lack of diversity among mental health professionals. The field is currently more than 80% White, which does not reflect the racial/ethnic breakdown of the nation, which is 58% White (APA, 2020; US Census Bureau, 2024). The lack of representation in mental health professionals may cause clients to question the trust and lived experience knowledge of these providers as well as the extent they can relate to their clients from different backgrounds (Metzger et al., 2023). The overrepresentation of White mental health professionals also may lead to the underrepresentation of racial/ethnic minoritized perspectives in mental health resources such as websites.

Racial/ethnic minoritized people also face unique minority stressors such as historical abuse and discrimination by the healthcare system which highlights how current general information may not fit the needs and experiences of racial/ethnic minoritized people (Metzger et al., 2023). Also, within these communities, historical and ongoing injustices have instilled mistrust of the mental health care system, interfering with individual's ability to access reliable mental health information (Metzger et al., 2023).

Additionally, attitudinal barriers like stigma and negative preconceptions about mental illness and help-seeking can interfere with the dissemination of mental health information (Andrade et al., 2014). Websites can address some of these attitudinal barriers by allowing users to access information in a private setting (Narayan et al., 2021). Nonetheless, stigma can disproportionately impact communities of color. The barrier of stigma is associated with

disapproval and shame of utilizing mental health services and can build from system mistrust or previous experiences with the system (Metzger et al., 2023). The stigma can also be the result of knowledge barriers which refers to lack of awareness and understanding about certain mental health disorders and treatment options which can lead to harmful misconceptions (Misra et al., 2021). These barriers and misconceptions may exist more prevalently in communities of color due to the mental health field failing to adequately disseminate knowledge to them. For example, racial/ethnic minoritized youth of color are less likely to disclose suicidal ideation due to fear of negative reactions and resistance (Shin et al., 2023). Therefore, it is important to acknowledge and contextualize this information in the cultural values and of racial/ethnic minoritized communities (Misra et al., 2021).

Despite the significant underrepresentation of racial/ethnic minoritized people in mental health studies, increasing research suggests the promise of cultural tailoring and adaptation for promoting mental health parity (Huey et al., 2023). One way to incorporate culture into mental health websites is through surface and deep structure adaptations. Including surface structure adaptations can help improve acceptance of mental health websites by incorporating visual racial/ethnic representation (Griffith et al., 2024; Resnicow, 1999). Deep structure adaptations to mental health information increases the salience of the content on mental health websites by recognizing the historical influences and harm imposed on racial/ethnic minoritized communities (Griffith et al., 2024; Resnicow, 1999).

Research also highlights general recommended features for mental health websites. Kelley et al. (2007) emphasizes the importance of conducting preliminary research about the intended audience of the resource and to divide the target audience into relatively homogeneous groups to tailor messages to needs or preferences of groups. These homogenous groups can be

grouped based on similar identities (young adults or racial/ethnic minoritized communities) or backgrounds (similar careers or academic versus non-academic background). This highlights the importance of tailoring messages based on specific racial/ethnic minoritized groups to appeal to different groups since there are so many diverse needs and considerations based on target population. When considering diverse needs and preferences, some significant culturally tailored features to consider are language, metaphors, concepts, and context to allow for representation integration of surface structures and deep structures (Bernal et al., 1995).

Design and Dissemination

Websites can help extend the reach of mental health information and overcome unique barriers by directly distributing this information to the public. More than 80% of the public in North America access mental health information online due to the unique capabilities of the digital platform (Wetterlin et al., 2014). One study found most participants (61%) were satisfied with the digital aspect of the websites citing reasons such as accessibility, cost-effectiveness, and convenience (Narayan et al., 2021). Another portion of participants also highlighted reasons for privacy which can be a benefit across diverse populations where mental health discussions are highly stigmatized (Narayan et al., 2021).

Sun et al. (2019) describes different criteria and features consumers might use to evaluate online health information. The study noted that criteria like trustworthiness, expertise, and objectivity were important in the evaluation of health websites. To support their evaluation of the websites, features like source, design, and content were major indicators (Sun et al., 2019). Source refers to the hosting organization of the website. Design refers to the appearance of the website, such as interface design, interaction design, navigation design, and security settings. Content can encapsulate both factual information and personal experiences (Sun et al., 2019).

Although the internet provides immediate private access to information, the content of this information can limit its utilization. For example, users highlighted their dislike of academic language, minimal personalized information, and poor cultural responsiveness on digital websites (Narayan et al., 2021). The poor cultural responsiveness of websites may stem from the lack of proper representation and adaptation of websites. This is concerning since users may be less likely to consume or act on information if it is not relevant to their needs (Purtle et al., 2020; Sun et al., 2019).

Websites can be more culturally relevant by incorporating surface and deep structure adaptations. Surface structure adaptations focus on observable representation of a target population through pictures, videos, and language representation (Griffith et al., 2024; Resnicow, 1999). Mental health treatment research found that surface structure adaptations on websites and in culturally adaptive digital mental health interventions (DMHIs) allow for deeper acceptance of messaging (Ellis et al., 2022; Resnicow, 1999). However, limitations with surface structure adaptions exist in the limited evidence of this adaptation, such as the inclusion of individuals from the target race/ethnicity compared to mixed racial/ethnic backgrounds (Resnicow, 1999).

Deep structure adaptations focus on the deeper meaning and content on websites regarding historical harm, systemic issues, and familial cultural values. Mental health treatment research also found that deep structure cultural adaptations on websites and in culturally adaptive DMHIs convey culturally salient information and are generally accepted by racial/ethnic minoritized communities (Ellis et al., 2022; Resnicow, 1999). Narayan et al. (2021) also broadly discusses the need to go beyond language translation on websites and how the representation on digital websites was poor. This might highlight the need to include representation beyond surface structures such as deep structures to improve salience of mental health content. But, similarly

with surface structures, limitations arise around the evidence about the effectiveness of deep structure and culture-based messages (Resnicow et al., 1999).

One example of a mental health website that incorporates surface and deep structure adaptations is the Help Your Keiki (HYK) website. HYK was created by the State of Hawai‘i Child and Adolescent Mental Health Division (CAMHD) to provide clinical information to youth and their families (Okamura et al., 2018). The website was tailored to reflect Hawai'i culture by utilizing terminology that is more easily understood by all (Okamura et al., 2018). As an example of a surface structure adaptation, the website title uses the word "keiki" which is a Hawaiian word for child or children as utilized in everyday speech. As an example of deep structure adaptation, HYK website includes specific disaster resources for Hawai'i which recognizes the specific struggles of Hawaiian families who may receive frequent alerts for natural disasters such as hurricanes.

Impact

The inclusion of racial/ethnic representation in digital mental health websites is important. If racial/ethnic minoritized users think the websites are relevant, they may be more likely to recommend and approve of it. Increasing the usability of information on mental health websites has the potential to improve mental health literacy. As a result, there may be less stigma attached to accessing care which might make racial/ethnic minoritized individuals feel more comfortable accessing the mental health services they need.

Study Aims and Hypotheses

This study aimed to explore the representation of racial/ethnic minoritized individuals on suicide and NSSI websites recommended by professionals and to investigate perceptions of these websites. First, this study aimed to identify and characterize surface structures (i.e., language,

picture, video representation) and deep structures (i.e., cultural considerations, target population) on suicide and NSSI websites. Second, this study aimed to examine the association between structure and deep structures and perceptions of suicide and NSSI websites. Based on previous literature that has found low levels of representation and cultural tailoring in mental health research (Metzger et al., 2023), it is hypothesized that websites will lack racial/ethnic representation. For second aim, it is hypothesized that there will be higher relevance, recommendation, and approval rating for websites with any representation compared to websites with no representation, as supported by previous literature that found that cultural adaptations on websites leads to more acceptance of the messaging (Ellis et al., 2022).

Methods

Data used in this study were originally collected as part of a larger mixed-methods investigation on the usability of mental health websites (Herman et al., 2023). All study procedures were approved by the Institutional Review Board of the University of Oregon (STUDY00000710).

Participants

Three hundred sixty-seven undergraduate students were recruited from the University of Oregon's (UO) Psychology and Linguistics human subjects pool between January 2023 and February 2024. Participants received course credit for participating. Based on self-reported demographic data, study participants identified as women (75%), men (18%), nonbinary (5%), transgender (1%), and another gender (<1%). Additionally, participants identified as White (65%), Latine or Hispanic (16%), Asian or Asian American (9%), African American or Black (4%), Multiracial or Multiethnic (2%), Middle Eastern or North African (1%), American Indian or Alaskan Native (1%), and Native Hawaiian or Other Pacific Islander (1%). Some participants did not report their racial/ethnic identity (1%). The participants' ages ranged from 18 to 45 years ($M = 19.27$, $SD = 2.58$). For this specific study, the focus is on a smaller sub-section of participants. This study examined a subset of participants who viewed suicide and NSSI websites for feasibility and focus purposes.

Mental Health Websites

Mental health professionals nominated 396 mental health websites (Herman et al., 2023). All websites were online, free, contained accurate mental health information, and available in English. Websites covered mental health wide variety of topics including attention deficit/hyperactivity disorder (ADHD), anxiety and obsessive-compulsive disorder (OCD),

bipolar disorders, depression disorders, eating disorders, general mental health, general treatment, post-traumatic stress disorder (PTSD), substance use disorders (SUD), and suicide and NSSI. This study focused on a subsection of the websites (59 websites total) with the primary mental health topic of suicide and NSSI. Suicide and NSSI websites were chosen due to the recent and alarming trends of suicide and NSSI rates increasing among racial/ethnic minoritized groups. Websites included factsheets about suicide, hotlines, and information for support groups.

Website Ratings

Undergraduate students viewed four to five websites on a specific mental health topic, and participants interacted with each website for two to three minutes. After interacting with each website, participants were directed to complete an 11-item online survey that assessed the perceived usefulness and ease of using the website. This survey was hosted on Qualtrics and contained questions about the following constructs: overall approval, personal relevance, likelihood of recommendation, understandability, and ease of navigation. Additionally, a usefulness rating was calculated by summing up the original ratings of approval, recommendation, and relevance to have a more overarching view of these constructs.

Coding the Websites

The websites were coded by three undergraduate students with one undergraduate student acting as the primary coder and the other undergraduate students acting as the secondary coders. The secondary student coders were trained to use a codebook to qualitatively code websites for surface and deep level adaptations. The secondary coders were also given background information on surface and deep structure adaptations to guide them through the qualitative coding process. All websites in this study were double coded by the primary coder and one of the

secondary coders. The coders met monthly to discuss discrepancies, coding applications, and better operationalize the variables and codebook constructs.

The codebook was developed by the primary coder to identify and characterize the ethnic/racial representation of the websites. Codes were informed by Sun et al. (2019), which characterized website design in terms of photo/video codes, actionability codes, and content codes. The framework of surface structure adaptations and deep structure adaptations was informed by Resnicow et al. (1999). Resnicow et al. (1999) mainly guided the definitions and characterizations of website features as surface or deep level adaptations, and the coders read the article during the coding process to increase reliability of coding. The table below is how the codes were defined in the coding manual.

<table>
<tr><th>Website Design Codes</th><th colspan="3">Cultural Adaptation Codes</th><th>Example</th></tr>
<tr><td rowspan="3">Photo/Video</td><td rowspan="3">Surface</td><td rowspan="3">Skin Tone</td><td>Very light/light</td><td rowspan="3">Photo displaying two or more people with diverse skin tones</td></tr>
<tr><td>Intermediate/tan</td></tr>
<tr><td>Brown/dark</td></tr>
<tr><td rowspan="2">Actionability
❑ Support Groups
❑ Crisis Hotlines
❑ Search Tools
❑ Coping Tools
❑ Treatment</td><td>Surface</td><td colspan="2">Surface Specify</td><td>Crisis hotlines with a Spanish option</td></tr>
<tr><td>Deep</td><td colspan="2">Deep Specify</td><td>Support groups focused on acknowledging the historical harm and influences</td></tr>
<tr><td rowspan="2">Content</td><td>Surface</td><td colspan="2">Surface Specify</td><td>Statistics that include race/ethnicity data</td></tr>
<tr><td>Deep</td><td colspan="2">Deep Specify</td><td>Content acknowledging the historical harm of racial/ethnic minoritized groups</td></tr>
</table>

Data Analyses

The racial/ethnic representation of suicide and NSSI websites was characterized using descriptive statistics and deductive thematic analysis. Descriptive statistics helped quantify the number of websites that included photos or videos with racial/ethnic diversity (surface photo/videos), features for getting help like a crisis hotline with racial/ethnic diversity (surface actionability), or culturally salient messaging (surface content or deep content). Themes in the racial/ethnic representation displayed on websites were identified using thematic analysis.

To examine whether racial/ethnic representation influenced participants' perceptions of suicide and NSSI websites, t-tests were used to test whether code application (deep structure adaptations, surface structure adaptations, content adaptations, and all surface and deep structure adaptations) was associated with participant ratings (approval, relevance, recommendation, and usefulness).

Results

Racial Representation on Websites

Photo/Video Codes (Surface)

Of the 59 suicide and NSSI websites, 27 included photos or videos of humans, and 15 of those websites displayed diverse humans. These photos and videos were often featured directly on the homepage or at the front and center of a subpage. For example, the Child Mind Institute website featured photos of multiple children with varying skin tones prominently on their webpage.

Actionability Codes (Surface)

Of the 59 websites, 30 websites included crisis hotlines, and 7 of those had surface level adaptations. The primary surface adaptation to crisis hotlines was translation into another language - most commonly Spanish. When translations for crisis hotlines were available, it was usually an option at the top of the webpage, or the whole webpage included options for hotlines in multiple languages. The website that exhibited this adaptation the best was the 988-hotline website with a Spanish translation crisis hotline. Other websites provided contact information for worldwide/global crisis hotlines with translations in different languages available.

Additionally, out of the 59 websites, 8 websites included search tools, and 1 of those websites had search tools with surface level adaptations. The 988-hotline website was the one website which included this adaptation with a search tool called “Inclusive Therapist Finder.”

Content Codes (Surface)

Of the 59 websites, 18 included content with surface structure adaptations. A common surface level adaption was content translated into Spanish. Some websites would have a small section translated in Spanish that required users to leave the website to interact with the fully

translated content or related translated content. On more rare occasions, other websites had a tool to translate the entire webpage. Other websites included content about suicide impacting people of any race/ethnicity. For example, the Suicide Prevention Resource Center included the statement, “Suicide touches everyone—all ages and incomes; all racial, ethnic, and religious groups; and in all parts of the country.” Another example from Suicidology.org highlights statistics about suicide/NSSI for people of different races and ethnicities by explaining how the “Rate increases were observed for Black men (1.7% increase), Asian/Pacific Islanders (2.8% increase)...” Oftentimes, when websites included this type of surface level content, it was not a large part of the website. In addition, the adaptations of the website were more geared towards teachers or caregivers but not the person impacted by suicide/NSSI.

Content Codes (Deep)

Of the 59 websites, 13 included content with deep structure adaptations which integrated historical implications and acknowledgment of differences in race, ethnicity, and culture into the website’s content. Deep structure adaptations for content tended to be hidden away and not at the forefront on suicide/NSSI mental health websites. When deep structure content was included on a website, that website tended to be written for people supporting someone struggling with suicide/NSSI (e.g., parents, teachers) rather than the affected person. The two standout websites were the 988 websites and the Suicide Prevention Resource Center (SPRC) websites since both had adaptations that included more than a phrase or sentence. The 988 websites acknowledged historical harm and structural inequities. For example, website users can click to the “Black Mental Health” section on the webpage, which has information recognizing how social structures like financial security and racism impact Black people’s mental health (e.g., “members of the Black community face structural racism, leading to barriers to access for the care and treatment

they need") and referrals to resources specifically for Black mental health. There is also a section called "Native Americans and Alaska Natives" that mentions "Native American and Alaska Native populations can be at a higher risk due to historical trauma, adverse childhood experiences, and lack of connection to necessary resources."

The SPRC website included content that encouraged consideration of cultural context or adaptations in schools and even utilized vignettes from specific racial/ethnic minoritized backgrounds. However, the SPRC website was more tailored for teachers or parents rather than being a resource for the student, or person impacted. For example, the website states "Postvention efforts need to take into consideration the cultural diversity of everyone affected by a suicide, including the family, school, and community. This diversity may include differences in race, ethnicity, language, religion, sexual orientation, and disability. Culture may significantly affect the way people view and respond to suicide and death." Also, the website includes different vignettes of students, some of which are from minoritized racial/ethnic backgrounds. One of the vignettes was called "Adapting a Memorial for Dia de Los Muertos" which highlighted how "students requested that they be allowed to memorialize their loved ones who had died (including some who had died by suicide) by setting up an altar with images of their friends on a public section of campus."

Association between Racial Representation and Website Ratings

Results from t-tests showed no significant association between surface and deep structure codes and participant ratings. Participants were less likely to recommend websites that included any surface or deep structure adaptation, but this association was not significant ($p = .06$).

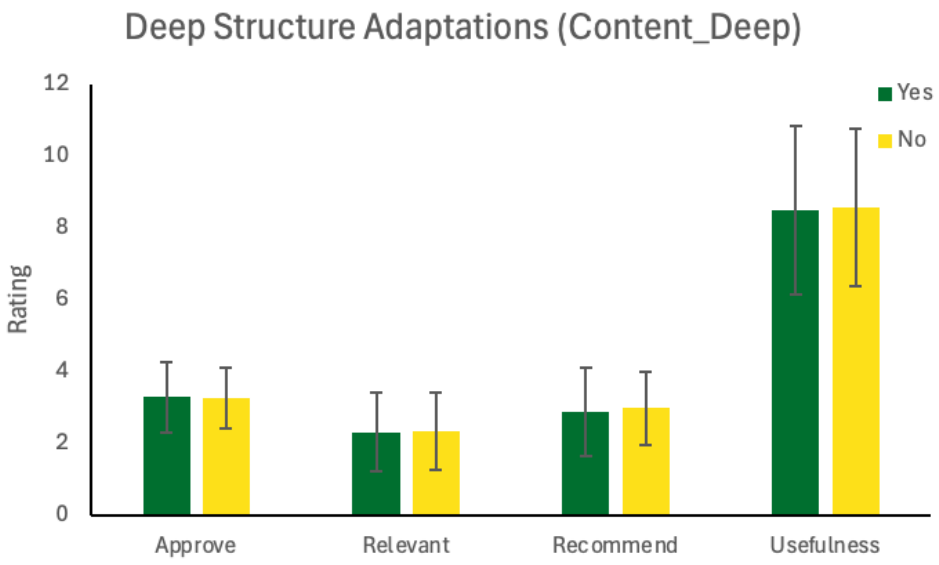

Figure 2. Participant ratings for websites that did (Yes) or did not (No) include any deep structure adaptations.

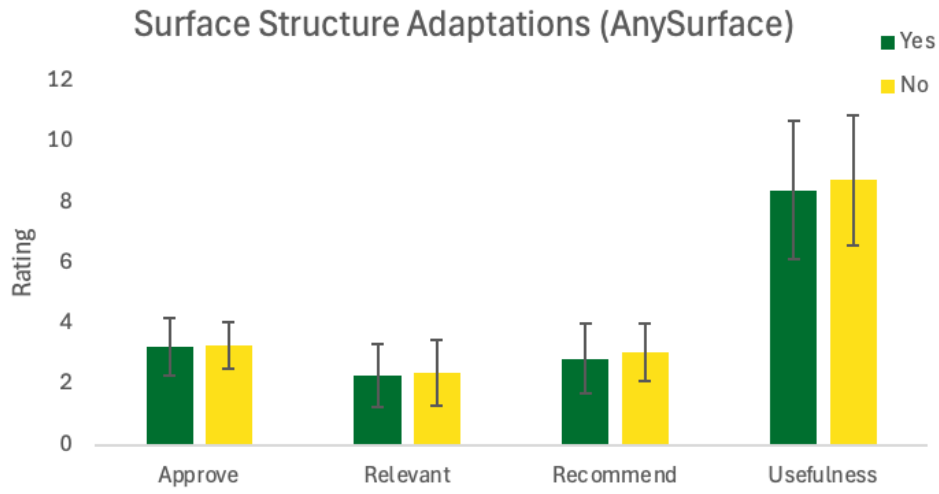

Figure 3. Participant ratings for websites that did (Yes) or did not (No) include any surface structure adaptations.

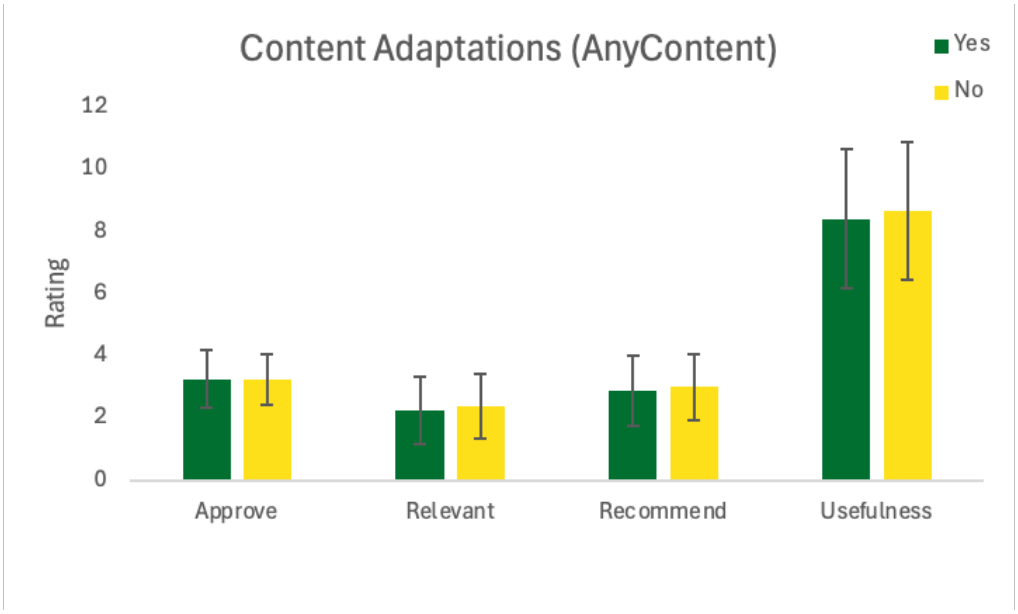

Figure 4. Participant ratings of websites that did (Yes) or did not (No) include any content (surface or deep) adaptations.

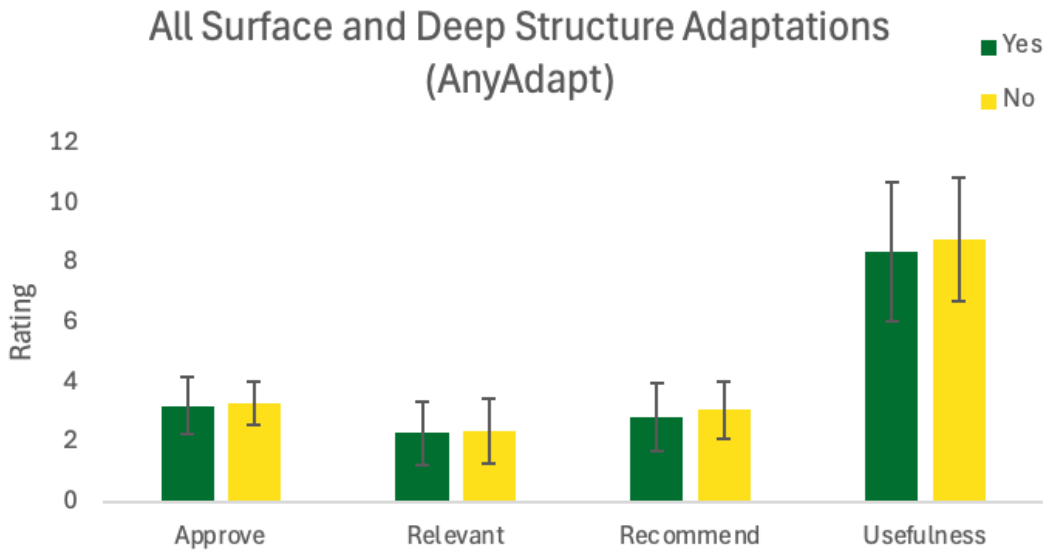

Figure 5. Participant ratings for websites that did (Yes) or did not (No) contain any (surface or deep) adaptations.

Discussion

Overview of Study

This study aimed to characterize racial and ethnic representation on mental health websites covering information about suicide and NSSI with surface structure adaptations and deep structure adaptations. This study also examined whether surface structure and deep structure adaptations influenced college students' perceptions of these mental health websites. Overall, this topic is important since it can help provide insight into racial/ethnic representation of mental health websites and point to opportunities to help increase the reach of online mental health information to the public.

Racial Representation on Websites

When the racial/ethnic representation of suicide and NSSI websites were examined, the results highlighted that surface structure adaptations were more common than deep structure adaptations. The surface structure adaptations were also usually in the form of translation tools or photos/videos representing diversity. Other websites coded for surface structure adaptions highlighted a lack of actionability features adapted for racial/ethnic minoritized people, and it was difficult to find even when the feature was present on these websites. Finally, the surface structure adapted content was not the most prominent on websites in this sub-code. According to one website in this sub-code, the research on self-injury and race/ethnicity is uncertain since it can vary across contexts, highlighting the importance of more research into this topic.

Meanwhile, deep structure adaptations were only observed in content codes, or the website's content. Most of the deep structure adaptations were not as visible on websites with website users having to scroll down to find it, or the adaptations being more integrated into the website's content. Also, websites with the strongest deep structure adaptations tended to be

directed toward audiences who may be in the position of supporting someone struggling with suicide (e.g., schools, providers). The results are consistent with findings supporting the general lack of race and ethnicity representation in the mental health field and on digital mental health resources (i.e., websites) (Metzger et al., 2023; Narayan et al., 2023).

While surface structure adaptations were still present more prominently on the websites, developers should still consider pairing that up with and incorporating more deep structures that are more prominent and visible to the audience. Given previous research showing the promise of deep structure adaptations for racial/ethnic minoritized people (Escobar & Gorey, 2018), there may be benefits to increasing the prominence of deep structure adaptations on mental health websites.

Additionally, strong deep structure adaptations should be incorporated for the person struggling with suicide or NSSI to appeal to individuals wanting to get help themselves on websites. Seeing oneself represented on mental health websites, specifically suicide and NSSI websites, is important as it could reduce stigma, increase help-seeking behaviors, and deepen understanding of how suicide can impact different communities.

Association between Racial Representation and Website Ratings Results

When assessing college students' perception of racial/ethnic representation on the websites, there were no significant associations between the ratings of the websites and the type of representation on the website. College students were less likely to recommend websites with any adaptation than websites without an adaptation, although this relationship was not statistically significant. The results did not support the hypothesis and are inconsistent with some findings about how cultural adaptations on digital mental health interventions (DMHIs) were accepted and highlighted therapeutic improvements compared to websites without adaptations

(Ellis et al., 2022). The results may be inconsistent with this previous finding due to the minimal amount of time participants spent on the websites. In general, participants may spend as little as 50 milliseconds on websites (Lindgaard et al., 2006), but participants may spend more time on DMHIs which are programs meant for deeper engagement.

Additionally, since University of Oregon is a Predominantly White Institution (PWI), the findings may not be most reflective of the American population. White participants may have missed the subtle adaptations on the websites, such as translation tools or adapted content. Meanwhile, racial/ethnic minoritized groups may feel that these adaptations are more relevant to them and could have emphasized this in ratings of the websites. Future research should specifically examine how surface and deep structure adaptations may impact the reach of mental health websites among racial/ethnic minoritized communities.

Limitations and Future Directions

One limitation of the study was only allowing participants two minutes to interact with each website. Since most people navigate away from websites quickly (Lindgaard et al., 2006), this might have been naturalistic, but it did not allow participants to delve into each website and potentially interact with culturally adapted features. Additionally, there is a potential bias with participants taking a self-reported survey about the websites. There could be a potential of a social desirability bias with participants completing the survey in the presence of research assistant. Future research could investigate participants' perceptions of websites after a longer engagement period and allow them to navigate the websites alone. If the websites were comprehensively reviewed, participants might have caught on to smaller, subtler adaptations on the websites such as translation tools or phrasing that supports racial/ethnic minoritized communities.

Another limitation was the relative underrepresentation of racial/ethnic minoritized participants in this sample. Future research should recruit a more representative sample. Since the data was used from a larger parent study, certain aspects of the study design could not be controlled. If the study focused on participants from racial/ethnic minoritized communities, then there may have been more attention to surface and deep structure adaptations, which may have consequently influenced recommendation, approval, and relevance ratings for websites.

The underrepresentation of race/ethnicity in the sample can be further compounded by other factors. Since this study took place on a university campus, there might not be an adequate representation of different socioeconomic statuses. Socioeconomic status could impact one's access to the Internet and websites or even awareness of mental health options. Also, there are several groups and sub-groups within the larger racial/ethnic minoritized community that could have different cultural values and their own histories. While the racial/ethnic minoritized community can share similar struggles and disparities regarding access to mental health information and care, there might be different cultural values that vary within these groups themselves. Overall, with the lack of representation and nuance of sub-groups in the sample, the results might not be the most generalizable to certain sub-groups in the racial/ethnic minoritized community.

Additionally, while the websites utilized in this study had some racial/ethnic adaptations and representation, the websites were not primarily made with racial/ethnic minoritized communities in mind. While general websites with some adaptations could cater to all audiences, websites that focus primarily on race and ethnicity can better adapt to the needs and experiences of racial/ethnic minoritized communities. Future research could examine the impact of websites made specifically for racial/ethnic minoritized people. This could help researchers understand if

more explicit adaptations and representation on websites is more beneficial than subtle adaptations and representation.

Conclusion

Overall, there was minimal racial-ethnic representation on suicide and NSSI websites. The surface structure adaptations such as translation tools or photo representation were more prevalent than the deep structure adaptations such as culturally salient messaging on the websites. Surface adaptations were likely more prevalent due to the ease of incorporating these adaptations as well as the forward-facing nature of surface structure adaptations. Deep structure adaptations were less prevalent and could include as little as a sentence on the page with cultural salient messaging. These websites with strong deep structure adaptations were directed towards people providing support like teachers, schools, or providers. However, when assessing the participant's perceptions of the websites, no strong associations were found between the adaptations of the websites and the participant ratings in usefulness, recommendation, approval, and relevance. Website developers can use these results to improve these websites and understand the general trends of adaptations in mental health websites, which may be particularly important to address minority stressors in the current sociopolitical climate. Mental health websites are often a favorable private setting for people from racial/ethnic minoritized communities when trying to access or understand mental health treatment. Researchers could also use these results as a starting point to conduct studies targeted directly to racial/ethnic minoritized communities and websites. Website developers can then further use the results to find ways to combat certain knowledge and attitudinal barriers. Future research can be conducted to dive deeper into this topic and explore other ways to support unmet mental health needs in racial/ethnic minoritized communities.

Appendix

Appendix 1.

Included mental health websites with the suicide and non-suicidal self-injury (NSSI) topic

	Mental Health Website URL with Primary Mental Health Topic of Suicide & Non-Suicidal Self-Injury (NSSI)
1.	https://en.wikiversity.org/wiki/Evidence-based_assessment/Self_harm_(assessment_portfolio)
2.	https://suicidology.org/facts-and-statistics/
3.	https://suicidology.org/resources/crisis-resources/
4.	https://suicidology.org/school-resources/
5.	http://www.selfinjury.bctr.cornell.edu/perch/resources/what-is-emotion-regulationsinfo-brief.pdf
6.	https://www.quantumunitsed.com/online-ceus/free-ces/effectiveness-suicide-prevention-strategies.php
7.	https://itsok2ask.dph.ncdhhs.gov/whoCanHelp/default.aspx
8.	http://www.selfinjury.bctr.cornell.edu/
9.	https://www.adolescentselfinjuryfoundation.com/
10.	https://suicidepreventionlifeline.org/help-yourself/youth/
11.	https://www.crisistextline.org/topics/self-harm/#what-is-self-harm-1
12.	https://suicidepreventionlifeline.org
13.	https://store.samhsa.gov/product/Preventing-Suicide-A-Toolkit-for-High-Schools/SMA12-4669
14.	https://sprc.org/wp-content/uploads/2022/12/Role-of-High-School-Teachers-9_22.pdf
15.	https://sprc.org/wp-content/uploads/2022/12/AfteraSuicideToolkitforSchools-3.pdf
16.	https://sprc.org/wp-content/uploads/2022/12/Role-of-HS-MH-Providers-9_22.pdf
17.	https://www.crisistextline.org/topics/suicide/
18.	https://www.crisistextline.org/topics/self-harm/

19.	https://www.isbd.org/Files/Admin/Knowledge-Center-Documents/Suicide-Prevention-Tip-Sheet.pdf
20.	https://suicidology.org/wp-content/uploads/2021/01/2019datapgsv2b.pdf
21.	http://www.suicide.org/international-suicide-hotlines.html
22.	https://www.nami.org/About-Mental-Illness/Common-with-Mental-Illness/Risk-of-Suicide
23.	https://save.org
24.	https://en.wikipedia.org/wiki/Self-harm
25.	https://effectivechildtherapy.org/concerns-symptoms-disorders/disorders/self-injurious-thoughts-and-behaviors/
26.	https://en.wikipedia.org/wiki/Suicide
27.	https://mhfa.com.au/sites/default/files/MHFA_selfinjury_guidelinesA4%202014%20Revised_1.pdf
28.	http://www.selfinjury.bctr.cornell.edu/about-self-injury.html
29.	https://afsp.org
30.	https://suicidology.org/resources/suicide-attempt-survivors/
31.	https://suicidology.org/media/toolkits-and-briefs/
32.	https://suicidology.org/resources/suicide-loss-survivors/
33.	https://childmind.org/topics/suicide-self-harm/
34.	http://www.selfinjury.bctr.cornell.edu/perch/resources/what-is-self-injury-9.pdf
35.	http://www.selfinjury.bctr.cornell.edu/perch/resources/what-role-do-emotions-play-in-nssi-4.pdf
36.	http://www.selfinjury.bctr.cornell.edu/perch/resources/the-relationship-between-nssi-and-suicide-5.pdf
37.	http://www.selfinjury.bctr.cornell.edu/perch/resources/the-neurobiology-of-nssi.pdf
38.	http://www.selfinjury.bctr.cornell.edu/perch/resources/how-does-self-injury-change-feelings-5.pdf
39.	http://www.selfinjury.bctr.cornell.edu/perch/resources/15-misconceptionsenglish-7.pdf

40.	https://www.abct.org/fact-sheets/adolescent-suicide/
41.	https://www.abct.org/fact-sheets/military-suicide/
42.	https://www.abct.org/fact-sheets/suicide/
43.	https://en.m.wikiversity.org/wiki/Helping_Give_Away_Psychological_Science/Resources/Suicide
44.	https://en.m.wikiversity.org/wiki/Helping_Give_Away_Psychological_Science/Resources/Non_Suicidal_Self_Injury
45.	http://www.selfinjury.bctr.cornell.edu/resources.html#rAbout
46.	http://www.selfinjury.bctr.cornell.edu/recovery.html
47.	https://care.unc.edu/suicide-prevention-strategies/
48.	https://www.whiteswanfoundation.org/mental-health-matters/suicide-prevention
49.	https://www.sprc.org
50.	https://suicidology.org
51.	https://injuryfreenc.dph.ncdhhs.gov/preventionResources/Suicide.htm
52.	https://www.bethe1to.com/?_ga=2.257389641.357211288.1654193405-1500058298.1654193405
53.	https://www.youthsuicidewarningsigns.org/youth
54.	https://suicidepreventionlifeline.org/help-yourself/
55.	https://www.aacap.org/AACAP/Families_Youth/Resource_Centers/AACAP/Families_and_Youth/Resource_Centers/Suicide_Resource_Center/Home.aspx
56.	https://www.jedfoundation.org/resource/understanding-self-injury
57.	https://www.jedfoundation.org/resource/understanding-suicidal-thoughts
58.	https://www.nami.org/NAMI/media/NAMI-Media/Images/FactSheets/Suicide-FS.pdf
59.	https://www.nami.org/NAMI/media/NAMI-Media/Images/FactSheets/Self-Harm-FS.pdf

References

American Psychological Association. (2020, November 1). *Psychology's workforce is becoming more diverse*. https://www.apa.org/monitor/2020/11/datapoint-diverse

Andrade, L. H., Alonso, J., Mneimneh, Z., Wells, J. E., Al-Hamzawi, A., Borges, G., Bromet, E., Bruffaerts, R., de Girolamo, G., de Graaf, R., Florescu, S., Gureje, O., Hinkov, H. R., Hu, C., Huang, Y., Hwang, I., Jin, R., Karam, E. G., Kovess-Masfety, V., … Kessler, R. C. (2014). Barriers to mental health treatment: Results from the WHO World Mental Health surveys. *Psychological Medicine*, *44*(6), 1303–1317. https://doi.org/10.1017/S0033291713001943

Becker, S. J. (2015). Direct-to-consumer marketing: A complementary approach to traditional dissemination and implementation efforts for mental health and substance abuse interventions. *Clinical Psychology: Science and Practice*, *22*, 85–100. https://doi.org/10.1111/cpsp.12086

Bernal, G., Bonilla, J., & Bellido, C. (1995). Ecological validity and cultural sensitivity for outcome research: Issues for the cultural adaptation and development of psychosocial treatments with Hispanics. *Journal of Abnormal Child Psychology*, *23*(1), 67–82. https://doi.org/10.1007/BF01447045

Chaudhry, S. I., Herrin, J., Phillips, C., Butler, J., Mukerjhee, S., Murillo, J., Onwuanyi, A., Seto, T. B., Spertus, J., & Krumholz, H. M. (2011). Racial Disparities in Health Literacy and Access to Care among Patients with Heart Failure. *Journal of Cardiac Failure*, *17*(2), 122–127. https://doi.org/10.1016/j.cardfail.2010.09.016

Curtin, S. C., Brown, K. A., & Jordan, M. E. (2022, November). *NCHS Data Brief* (450). Centers for Disease Control and Prevention. https://www.cdc.gov/nchs/products/databriefs/db450.htm

Ellis, D. M., Draheim, A. A., & Anderson, P. L. (2022). Culturally adapted digital mental health interventions for ethnic/racial minorities: A systematic review and meta-analysis. *Journal of Consulting and Clinical Psychology*, *90*(10), 717–733. https://doi.org/10.1037/ccp0000759

Escobar, K. M., & Gorey, K. M. (2018). Cognitive behavioral interventions for depression among Hispanic people: Promising meta-analytic evidence for deep cultural adaptations. *Social Work in Mental Health*, *16*(6), 746–758. https://doi.org/10.1080/15332985.2018.1476284

Feldstein Ewing, S. W., Wray, A. M., Mead, H. K., & Adams, S. K. (2012). Two approaches to tailoring treatment for cultural minority adolescents. *Journal of Substance Abuse Treatment*, *43*(2), 190–203. https://doi.org/10.1016/j.jsat.2011.12.005

Griffith, D. M., Efird, C. R., Baskin, M. L., Hooper, M. W., Davis, R. E., & Resnicow, K. (2024). Cultural sensitivity and cultural tailoring: Lessons learned and refinements after two decades of incorporating culture in health communication research. *Annual Review of Public Health*, *45*(Volume 45, 2024), 195–212. https://doi.org/10.1146/annurev-publhealth-060722-031158

Herman, A. M., Park, A. L., Lee, C., Paul, H., Choplin, E. G., Deitcher, L., ... & Youngstrom, E. A. (2023). Advancing the actionability of mental health information: Identifying online, evidence-based mental health resources. *Administration and Policy in Mental Health and Mental Health Services Research, 50*(5), 773-780.

Huey, S. J., Park, A. L., Galán, C. A., & Wang, C. X. (2023). Culturally responsive cognitive behavioral therapy for ethnically diverse populations. *Annual Review of Clinical Psychology*, *19*(1), 51–78. https://doi.org/10.1146/annurev-clinpsy-080921-072750

Jin, L., & Acharya, L. (2022). Developing tailored messages to improve mental health and adjustment of Asian international students. *Journal of International Students*, *12*(4), Article 4. https://doi.org/10.32674/jis.v12i4.3934

Jorm, A. F. (2012). Mental health literacy: Empowering the community to take action for better mental health. *American Psychologist*, *67*(3), 231–243. https://doi.org/10.1037/a0025957

Kelly, C. M., Jorm, A. F., & Wright, A. (2007). Improving mental health literacy as a strategy to facilitate early intervention for mental disorders. *Medical Journal of Australia*, *187*(S7), S26–S30. https://doi.org/10.5694/j.1326-5377.2007.tb01332.x

Kwan, B. M., Brownson, R. C., Glasgow, R. E., Morrato, E. H., & Luke, D. A. (2022). Designing for dissemination and sustainability to promote equitable impacts on health. *Annual Review of Public Health*, *43*, 331–353. https://doi.org/10.1146/annurev-publhealth-052220-112457

Lindgaard, G., Fernandes, G., Dudek, C., & and Brown, J. (2006). Attention web designers: You have 50 milliseconds to make a good first impression! *Behaviour & Information Technology, 25*(2), 115–126. https://doi.org/10.1080/01449290500330448

McGuire, T. G., & Miranda, J. (2008). Racial and ethnic disparities in mental health care: Evidence and policy implications. *Health Affairs (Project Hope)*, *27*(2), 393–403. https://doi.org/10.1377/hlthaff.27.2.393

Mental Health America. (2025). *Racism and Mental Health*. https://mhanational.org/resources/racism-and-mental-health/

Metzger, I. W., Turner, E. A., Jernigan-Noesi, M. M., Fisher, S., Nguyen, J. K., shodiya-zeumault, shola, & Griffith, B. (2023). Conceptualizing community mental health service utilization for BIPOC youth. *Journal of Clinical Child & Adolescent Psychology*, *52*(3), 328–342. https://doi.org/10.1080/15374416.2023.2202236

Misra, S., Jackson, V. W., Chong, J., Choe, K., Tay, C., Wong, J., & Yang, L. H. (2021). Systematic review of cultural aspects of stigma and mental illness among racial and ethnic minority groups in the United States: Implications for interventions. *American Journal of Community Psychology*, *68*(3–4), 486–512. https://doi.org/10.1002/ajcp.12516

Narayan, S., Mok, H., Ho, K., & Kealy, D. (2023). "I don't think they're as culturally sensitive": A mixed-method study exploring e-mental health use among culturally diverse populations. *Journal of Mental Health*, *32*(1), 241–247. https://doi.org/10.1080/09638237.2022.2091762

National Alliance on Mental Illness. (2021, July 19). Mental Health Inequities: Racism and Racial Discrimination. https://www.nami.org/advocacy-at-nami/policy-positions/supporting-community-inclusion-and-non-discrimination/mental-health-inequities-racism-and-racial-discrimination/

Okamura, K. H., Orimoto, T. E., Mah, A. C., Slavin, L. A., Rocco, S., Shimabukuro, S. K., Michels, M. S., & Nakamura, B. J. (2018). Insights in public health. *Hawai'i Journal of Medicine & Public Health*, *77*(8), 203–207.

Purtle, J., Marzalik, J. S., Halfond, R. W., Bufka, L. F., Teachman, B. A., & Aarons, G. A. (2020). Toward the data-driven dissemination of findings from psychological science. *American Psychologist, 75*(8), 1052–1066. https://doi.org/10.1037/amp0000721

Resnicow, K., Baranowski, T., Ahluwalia, J. S., & Braithwaite, R. L. (1999). Cultural sensitivity in public health: Defined and demystified. *Ethnicity & Disease*, *9*(1), 10–21.

Shin, K. E., Spears, A. P., Zhang, R., & Cha, C. B. (2025). Suicide-related disclosure patterns among culturally minoritized youth: Examining differences across race, ethnicity, gender identity, and sexual orientation. *Suicide & Life-Threatening Behavior*, *55*(1), e13026. https://doi.org/10.1111/sltb.13026

Sun, Y., Zhang, Y., Gwizdka, J., & Trace, C. B. (2019). Consumer evaluation of the quality of online health information: Systematic literature review of relevant criteria and indicators. *Journal of Medical Internet Research*, *21*(5), e12522. https://doi.org/10.2196/12522

Trautmann, S., Rehm, J., & Wittchen, H. (2016). The economic costs of mental disorders. *EMBO Reports*, *17*(9), 1245–1249. https://doi.org/10.15252/embr.201642951

United States Census Bureau. (2024, July 1). *QuickFacts*. https://www.census.gov/quickfacts/fact/table/US/PST045224

Wetterlin, F. M., Mar, M. Y., Neilson, E. K., Werker, G. R., & Krausz, M. (2014). eMental health experiences and expectations: A survey of youths' web-based resource preferences in Canada. *Journal of Medical Internet Research*, *16*(12), e293. https://doi.org/10.2196/jmir.3526