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Medical School Negatively Affected Underrepresented Minority Student Wellness: A Rapid Review

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Abstract

Introduction: Medical school is an important time for aspiring physicians, shaping their identities and well-being. The wellness of underrepresented minority students has recently gained attention due to unique stressors leading to isolation, imposter syndrome, and burnout, affecting academic performance and patient care. This rapid review aimed to provide a comprehensive examination of the factors influencing the wellness of underrepresented minority medical students and identify initiatives that contribute to diversity, equity, and inclusion in medical education, advocating for a supportive learning environment.

Methods: The PsycINFO [OVID] and MEDLINE [OVID] databases were used to search for relevant peer-reviewed manuscripts between March 2014 and March 2024. Covidence was utilized for screening. During the initial screening round, titles and abstracts were reviewed. The findings were synthesized narratively and categorized into six common themes. The literature was summarized into racial microaggressions, LGBTQ+ medical student experiences, African American and Asian American medical student experiences, multiple marginalized identities, and the medical school learning environment.

Results: 17 studies were relevant to the criteria and were included in the review. Unique groups (Latinas, African Americans, Asian Americans, and LGBTQ+) all faced racial microaggressions that negatively impacted their mental well-being. It was found that each of these groups had different types of stressors and challenges. Students with multiple marginalized identities reported increased mistreatment and discrimination during medical school. A negative medical school learning environment also increases depression symptoms among students.

Discussion: Factors such as racial microaggressions, multiple marginalized identities, and a negative medical school environment contribute to poor student mental health. Understanding racial differences is crucial for providing tailored support and interventions for each group. Women's findings were excluded from this paper because women now make up the majority in medical school. This study was not without its limitations, including a single reviewer, potential publication, and response bias.

Conclusion: Medical schools should focus on adopting inclusive policies, mentorship programs, and mental health initiatives that cater specifically to the needs of underrepresented minority medical students. Future research should examine the long-term impact of these educational interventions on the wellness and success of these students.

Keywords: medical student; mental health; wellness; burnout; depression; anxiety; stress; minority; underrepresented; microaggressions

Introduction

For aspiring physicians, medical school is a critical time that shapes their professional identities and significantly impacts their personal well-being. In recent years, the wellness and mental health of students underrepresented in medicine (URiM) have become focal points of concern within the healthcare community [1]. The Association of American Medical Colleges (AAMC) defines underrepresented groups in medicine as racial and ethnic groups that are not proportionately represented in the medical field compared to their presence in the broader population [1]. In 2018-2019, the largest proportions of medical school graduates were White (54.6%), Asian (21.6%), and Multiple Race/Ethnicity (8.0%) [2]. Despite a decrease in numbers over the years, White students still comprise the largest proportion of enrolled students in U.S. MD-granting medical schools, making up approximately 43.9% of the total enrollment in 2023-2024 [3].

URiM students often face a range of stressors that impact their mental well-being, including racial microaggressions and the challenges of navigating multiple marginalized identities in a predominantly White medical school. These issues can lead to increased feelings of isolation, imposter syndrome, and burnout, negatively

affecting academic performance [4]. Despite having similar or healthier profiles, medical students experience higher psychological distress than their peers, with 37% reporting worsening depression symptoms from their first to fourth year [4, 5]. URiM students also see lower clinical grades, reduced chances of entering competitive specialties, and higher attrition rates due to financial strain, insufficient mentorship, and systemic bias, particularly among those with multiple marginalized identities [6, 7].

This rapid review aimed to 1) provide a comprehensive examination of the factors influencing the wellness of URiM students during medical school and 2) contribute to the ongoing dialogue surrounding diversity, equity, and inclusion in medical education, ultimately advocating for a more supportive and inclusive learning environment for all students.

Methods

Study Design

A rapid review, which streamlines traditional systematic review methods, was conducted [8]. This approach was chosen to provide timely, resource-efficient summaries of the literature to address this urgent issue [9]. Based on the Cochrane Rapid Review Guidelines, we used six steps for our review: setting the research question, setting eligibility criteria, searching, study selection, data extraction, and synthesis.

Identifying Research Question

Our research question was, "How is the wellness of underrepresented minority students impacted during medical school training?"

Eligibility Criteria

The PICO framework guided the paper selection process. It also helped formulate the research question and specific inclusion and exclusion criteria, as outlined in Table 1.

Table 1. Inclusion and Exclusion Criteria for Selected Papers on the Wellness of Underrepresented Minority Medical Students

	Inclusion	Exclusion
Date	2014	2013 or earlier
Geographic Location	Worldwide	N/A
Language	English	Non-English
Participants	Underrepresented minority medical students	N/A
Peer-Reviewed	Yes	Non peer-reviewed
Reported Outcomes	Measures of well-being (burnout, depression, and anxiety)	Non-mental health-related outcomes
Setting	Clinical	Non-clinical
Study Design	Observational, randomized controlled trials (RCT), or survey	Reviews, commentaries
Types of Publication	Full manuscripts	Abstracts, dissertations

Search Strategy

A literature search was conducted from March 10th, 2014, to March 10th, 2024, using the PsycINFO [OVID] and MEDLINE [OVID] databases. The terms "medical student," "well-being," "underrepresented," and "minority," including synonyms, were used in order to access relevant sources. To enhance the search precision, additional limitations aligned with the eligibility criteria specified in Table 1, including language, age group, and population, were also applied. The full search strategy can be found in Tables A1 and A2 in Supplemental Appendix A.

Study Selection & Extraction

Covidence screened and automatically removed duplicates identified by the software. The author conducted the screening. During the initial screening round, titles and abstracts were reviewed. Papers that met inclusion criteria proceeded to full-text screening, where all PICO criteria had to be met for inclusion. The uncertainty of study inclusion prompted the involvement of the mentor to determine eligibility.

Data Synthesis

In the second round of screening, we synthesized the findings narratively by grouping themes based on common messages among the papers. The studies were categorized into common themes: racial microaggressions, LGBTQ+ medical student experiences, African American and Asian American medical student experiences, multiple marginalized identities, and the medical school learning environment.

Results

The screening process is identified in the PRISMA flowchart (Figure 1). After searching the two databases, 903 studies were found, and 52 duplicates were removed. 851 studies were screened for title and abstracts, finding

752 studies irrelevant. 99 studies were assessed in the full-text round of screening for eligibility. 82 studies were excluded, and 17 studies were included, as these studies fulfilled all PICO criteria requirements.

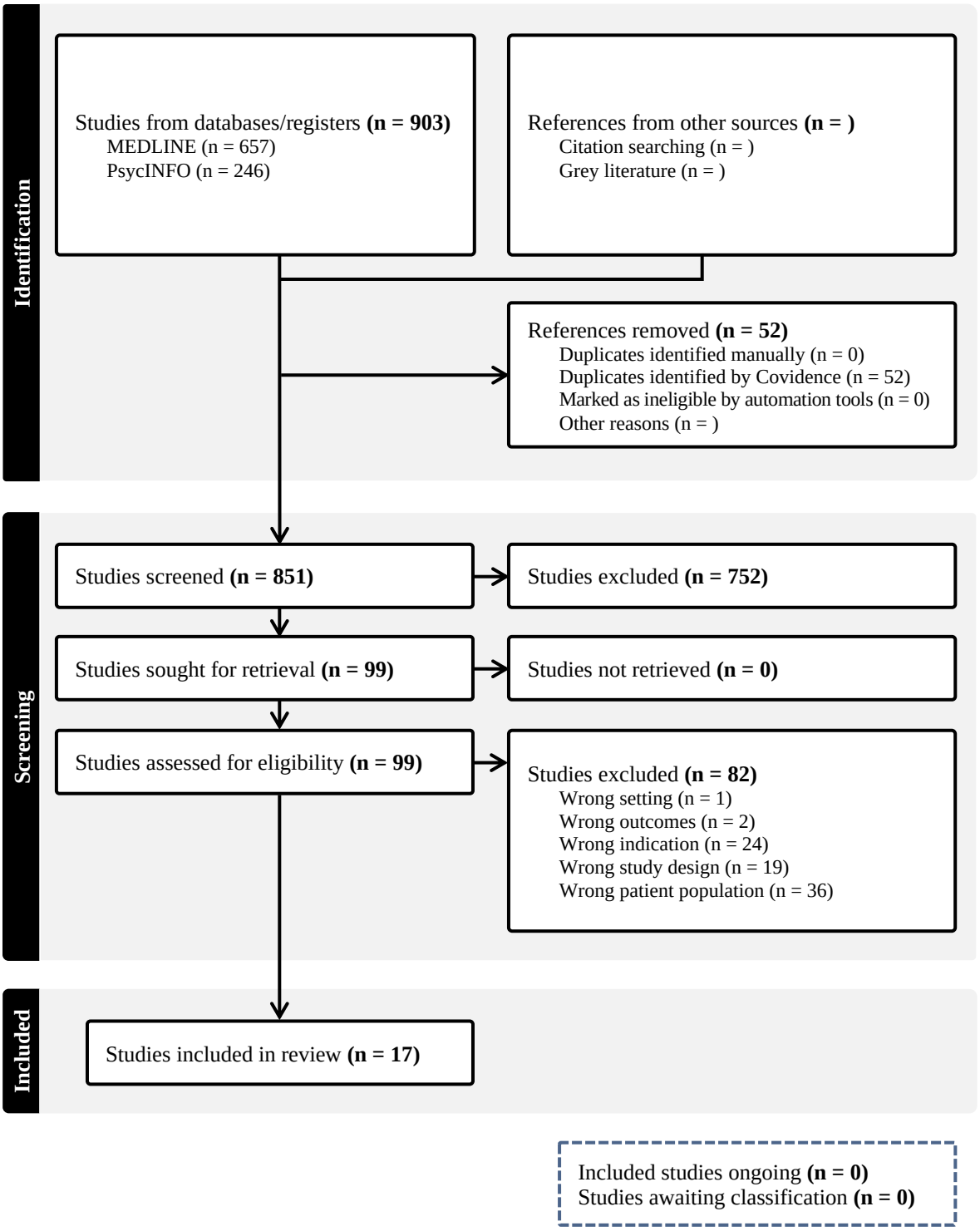

Figure 1. PRISMA flowchart illustrating the research paper inclusion and exclusion process (figure created using Covidence).

Table 2. Summary of Studies That Investigated Different Factors Affecting URiM Students' Well-Being

Study	Sample Size	Method	Measurement Tools	Findings
Anderson et al., 2022 [10]	759	Survey	-IBQ -PHQ-2 -REMS	Experiencing microaggressions correlated with higher depression screening and reduced satisfaction with medical school.
Briggs et al., 2023 [11]	1,178	Survey	-MBI-2	There were no differences in burnout across racial groups.
Chisholm et al., 2021 [12]	217	Survey	-REMS	Microaggressions negatively impacted the learning environment, and there was a lack of resources to help address this.
Geiger et al., 2024 [13]	230	Survey	-Not reported	Latinas reported feeling high rates of imposter syndrome, burnout, depression, and anxiety during medical school.
Hardeman et al., 2016 [14]	4,732	Survey	-MIBI -PROMIS Anxiety SF-8 -PROMIS Depression SF-8 -PSS-4	African American medical students with lower racial identity levels had a lower likelihood of depressive and anxiety symptoms.
Hardeman et al., 2016 [5]	3,756	Survey	-PROMIS ED-D SF	Witnessed discrimination, a negative racial climate, and negative role modeling were linked to higher depression symptoms.
Hardeman et al., 2015 [15]	4,732	Survey	- Brief-COPE - MC-SDS - MOS-SSS - PROMIS Anxiety SF-7 - PROMIS Depression SF-8 - SOMS-7 - SSES	African American medical students were at a higher risk for depressive symptoms and anxiety.
Nguyen et al., 2024 [16]	27,009	Survey	- OLBI-MS	Asian and URiM students with multiple disabilities had the highest burnout risk.
O'Marr et al., 2022 [17]	26,567	Survey	- OLBI-MS	URiM students showed elevated exhaustion-related burnout levels and were more likely to experience burnout if they encountered racial discrimination during training.
Przedworski et al., 2015 [18]	4,673	Survey	- EDS - MC-SDS - PROMIS Anxiety SF-7 - PROMIS Depression SF-8 - ULS	SM students experienced a significantly greater risk of depression, anxiety, and low self-rated health than heterosexual students.
Ryus et al., 2022 [19]	25,757	Survey	- MSLES - OLBI-MS	SM students had less favourable perceptions of the medical school learning environment and were more likely to experience burnout than their heterosexual peers.
Samuels et al., 2021 [20]	26,123	Survey	- OLBI-MS	LGB medical students were more likely to report perceived mistreatment of all types, and a greater likelihood of burnout compared with heterosexual students.

(Suárez et al., 2021) [21]	554	Survey	- AIS - AUDIT-C - EAT-5 - SRQ-20 - SWLS - WHO-5	Non-heterosexual medical students experienced a higher prevalence of anxiety, depression, suicidal ideation, eating disorder symptoms, and substance use.
(Teshome et al., 2022) [22]	30,651	Survey	- OLBI-MS	Medical students with multiple marginalized identities reported increased mistreatment and discrimination during medical school, correlating with burnout.
(Toman, 2019) [23]	12	Focus groups	-Not reported	LGBTQ+ medical students faced challenges managing their SM status in medical school. Pressure to hide aspects of their identity led to stress and poor mental health.
(Yang et al., 2022) [24]	457	Survey	- PHQ-9	Most AA medical students reported mild to severe depressive symptoms, unaffected by social support, while SAA students were affected.
(Zhang et al., 2024) [25]	331	Survey Interviews	- REMS - WRMS-AAA	AA medical students faced high exposure to racial microaggressions, which impacted their mental health.

Abbreviations: AA=Asian American; AIS= Athens Insomnia Scale; AUDIT-C= Alcohol Use Disorders Identification Test; Brief-COPE= Brief Coping Orientation to Problems Experienced Inventory; EAT-5= Eating Attitudes Test; EDS= Everyday Discrimination Scale; IBQ= Institutional Betrayal Questionnaire; LGB= Lesbian, Gay, and Bisexual; LGBTQ= Lesbian, Gay, Bisexual, Transgender, and Queer; MBI-2= 2-Item Maslach Burnout Inventory; MC-SDS= Marlowe-Crowne Social Desirability Scale; MIBI= Multidimensional Inventory of Black Identity; MOS-SSS= Medical Outcomes Study Social Support Survey; MSLES= Medical School Learning Environment Survey; OLBI-MS= Oldenburg Burnout Inventory for Medical Students; PHQ= Patient Health Questionnaire; PROMIS = Patient-Reported Outcomes Measurement Information System; PROMIS ED-D SF= PROMIS Emotional Distress-Depression SF-8; PSS-4= Short Form Perceived Stress Scale; REMS = Racial and Ethnic Microaggressions Scale; SAA=South Asian American; SF=Short Form; SM= Sexual Minority; SOMS= Pearlin's Mastery Scale; SRQ= Self-Reporting Questionnaire; SSES= State Self-Esteem Scale; SWLS= Satisfaction with Life Scale; ULS= UCLA Loneliness Scale; URiM= Underrepresented in Medicine; WHO-5= World Health Organization Well-Being Index; WRMS-AAA= Workplace Racial Microaggression Scale for Asians and Asian American

Racial Microaggressions

Racial microaggressions are often subtle, unintentional, discriminatory comments or actions that negatively impact minority students [10]. In this section, four studies that explore the impact of racial microaggressions on medical students are examined, highlighting their challenges and the need for targeted interventions to promote equity and well-being.

Anderson et al. investigated the impact of microaggressions on U.S. medical students' mental health and medical school satisfaction. They found that 61% experienced at least one microaggression weekly, with 60.5% citing race/ethnicity as a primary microaggression factor [10]. 14.2% reported a positive screen for depression [10]. Students that faced at least one microaggression per week were more likely to consider transferring (14.5% vs. 4.7%, $p < 0.001$) or withdrawing (18.2% vs. 5.7%, $p < 0.001$) from medical school [10]. White individuals had lower scores for microaggression frequency than individuals of any other racial or ethnic identity [10].

In the Briggs et al. study, 75.6% of students met the criteria for burnout. While burnout prevalence showed no racial differences, contributing factors encompassed lack of sleep (42%), decreased engagement in hobbies or self-care (41%), stress about grades (37%), feeling socially disconnected (36%), and lack of exercise (35%) [11]. Students of different racial groups experience burnout for varying reasons. For instance, inadequate sleep and nutrition notably influenced burnout levels among Black students, while Asian students were more affected by academic stress, residency concerns, and pressure to publish research (all $p < 0.05$) [11]. Asian and Black students reported similar rates of stressors contributing to their burnout [11].

Chisholm et al. discovered that URiM students were significantly ($p < 0.05$) more likely to report experiencing race-related microaggressions during medical school (55% vs. 31%) [12]. They expressed that these microaggressions significantly contributed to feelings of burnout (62% vs. 29%) and hindered their learning experiences (64% vs. 49%) [12]. URiM respondents ($p < 0.05$) reported significantly higher instances of microaggressions during medical school, such as being mistaken for service workers (55% vs. 31%), encountering offensive racial comments in the learning environment (89% vs. 67%), being mistaken for other students of the same race (84% vs. 72%), and being asked to represent their race (80% vs. 52%) [12]. They also experienced assumptions about their intelligence (61% vs. 41%), being ignored (25% vs. 13%), and having their contributions devalued (35% vs. 16%) due to their race [12].

Geiger et al. investigated the experiences of Latinas in medical school. It was found that 54.5% reported negative ethnicity-based interactions from patients and/or patients' families [13]. Others in the medical profession had discriminated against 72.8% of respondents [13]. 61.1% of Latinas encountered microaggressions frequently [13]. Imposter syndrome and burnout rates stood at 90.7% and 87.4%, respectively, while 82.5% experienced depression and 82.4% faced anxiety during medical school [13].

Racial microaggressions significantly affect medical students, contributing to mental health issues, burnout, and diminished academic satisfaction. Thus, to create a supportive and equitable educational environment, it is essential to address these microaggressions.

LGBTQ+ Medical Student Experiences

In this section, four studies examine the unique challenges LGBTQ+ medical students face that significantly impact their mental health, academic experiences, and overall well-being.

The findings of the Przedworski et al. study concluded that sexual minority (SM) students experienced more social stressors than their heterosexual peers. 20.7% of SM students reported depressive symptoms, compared with 12.7% of heterosexual students [18]. Suárez et al. found that non-heterosexual students had significantly higher levels of family dysfunction and lower levels of satisfaction with life, and they rated their mental health more often as bad [21]. Toman's study revealed that LGBTQ+ medical students struggle to manage their SM status [23]. LGBTQ+ medical students give up on fostering close relationships with faculty members and educators after witnessing them make derogatory comments toward LGBTQ+ patients [23]. Samuels et al. found that LGBTQ+ medical students exhibited a significantly higher proportion of burnout compared to heterosexual peers (17.2% LGB vs. 11.1% heterosexual students; $p < 0.001$) [20].

The studies revealed that, compared to heterosexual peers, LGBTQ+ students have higher rates of social stressors, depressive symptoms, family dysfunction, and burnout.

African American Medical Student Experiences

In this section, two studies examine the unique challenges that African American medical students face that significantly impact their mental health, academic experiences, and overall well-being.

Hardeman et al. found that African American medical students with low racial identity had reduced risk for anxiety (RR, 0.88 [95% CI, 0.84 to 0.99], $p \leq 0.05$) and depression (RR, 0.58 [95% CI, 0.50-0.68]; $p \leq 0.05$) [14]. In another study conducted by Hardeman et al., it was found that African American students had a 59% greater risk of being classified as having depressive symptoms than White students and a 66% greater risk of being classified as having anxiety symptoms [15].

These findings underscore the significant mental health disparities faced by African American medical students compared to their White peers. Addressing these disparities is essential for improving the well-being and academic experiences of African American medical students.

Asian American Medical Student Experiences

In this section, two studies examine the unique challenges that Asian American medical students face that significantly impact their mental health, academic experiences, and overall well-being.

Zhang et al. found that AA medical students faced high exposure to racial microaggressions during medical school, which had a negative impact on their mental health [25]. 69.8% of students reported experiencing at least one episode of microaggression during medical school training [25]. Yang et al. discovered that the institution's failure to meet their unique needs led South Asian American students to report more depressive symptoms [24].

These findings highlight the significant mental health challenges faced by Asian American medical students due to racial microaggressions and unmet institutional needs. Addressing these specific challenges is crucial for enhancing the well-being and academic experiences of Asian American medical students.

Multiple Marginalized Identities

In this section, two studies reveal the unique challenges experienced by medical students from intersecting minority groups, emphasizing how their overlapping identities contribute to these difficulties.

Nguyen et al. explored the impact of race, ethnicity, and disability status on student burnout. 13.66% were at high risk of burnout [16]. Students with one disability had a 70% higher risk of burnout, while those with multiple disabilities faced a 254% higher risk [16]. Teshome et al. found that students with multiple marginalized identities reported more mistreatment and discrimination during medical school, linked to burnout [22]. It was also found that students who were non-White and identified as lesbian, gay, or bisexual (LGB) had higher disengagement scores than students who were White and heterosexual [22].

In summary, these studies underscore the significant impact of intersecting minority identities on medical students' experiences, calling for increased attention to diversity and inclusion in medical education.

Medical School Learning Environment

In this section, four studies shed light on how factors within the medical school learning environment, such as racial climate, faculty interactions, discrimination, and perceptions of support, significantly influence student wellness.

Hardeman et al. found that exposure to a negative racial climate, witnessed discrimination, and negative role modeling were associated with an increase in depression symptoms. Among respondents, 64% reported a negative racial climate, 94% witnessed negative modeling, and 81% witnessed discrimination toward other students at least once [5]. O'Marr et al. found that URiM medical students reported slightly fewer positive faculty interactions (mean scores 14.09, SD 3.45) compared to non-URiM students (mean score 14.29, SD 3.35) ($p < 0.001$) [17]. Students who reported encountering a discriminatory event based on their race and ethnicity were found to have significantly increased odds of experiencing overall burnout (OR 1.43, 95% CI 1.30–1.58) [17]. Ryus et al. discovered that worse perceptions of the medical school learning environment correlated with higher burnout symptoms. SM students perceived medical schools as less supportive learning environments compared to their heterosexual peers [19]. Zhang et al. found that Asian Americans in medical school expressed a lack of safe spaces, leading to feelings of isolation and loneliness and fostering a negative environment [25].

In summary, the findings from these studies underscore the critical importance of cultivating a supportive and inclusive learning environment within medical schools to promote student well-being. Addressing factors such as racial climate, faculty interactions, discrimination, and perceptions of support can contribute to creating a more nurturing educational experience for all students.

Discussion

The research findings indicated a consensus that URiM students were more likely to experience poor outcomes in wellness. Factors such as racial microaggressions, multiple marginalized identities, and a negative medical school environment contribute to poor student mental health. The findings also suggested that different racial groups have different types of stressors. This was important to acknowledge because it highlighted the diverse experiences within various racial communities. Understanding these differences could lead to more tailored support and interventions that address the specific needs and challenges faced by each group.

Medical students with multiple marginalized identities were more likely to face higher rates of microaggressions, including those with disabilities, leading to increased burnout levels compared to those with a single marginalized identity [22]. This may be because individuals with multiple marginalized identities may face intersecting forms of discrimination and bias, leading to increased exposure to microaggressions. Navigating multiple marginalized identities can contribute to heightened stress levels and burnout as well.

It was also found that African American students with high racial identity were more likely to experience depression and anxiety symptoms in their first year of medical school [14]. The protective aspect of racial identity stems from its role in fostering a support network and enhancing self-esteem within a social group [14]. But, in medical school, where the majority are White, African American students with strong racial identity may lack this support network due to limited shared racial identity among peers, nullifying its potential benefits in fostering group membership [14]. This may particularly detriment the mental health of students whose racial identity is central to their self-definition.

Although many studies suggested that a lack of social support contributes to poor mental health, it was found that there was no significant relationship between Asian American (AA) students' perception of the support they received and their depressive symptoms [24]. This may be because AA medical students are less likely to use mental health care, which suggests that increasing existing social support may not necessarily improve their mental health [24]. Additionally, AAs are often viewed as successful and immune to racism, leading to their exclusion from diversity, equity, and inclusion (DEI) efforts [25]. Thus, it's crucial to educate peers about AA disparities and include Asian-identified students and faculty in DEI initiatives to address this issue [25].

In this paper, while many studies considered women as a minority population, we excluded findings related to women and concentrated on race and unique groups. This decision was based on the recognition of women's majority status in medical school, with women comprising 50.5% of U.S. medical students in 2019 [26].

Limitations

This study's limitation included a single reviewer conducting the screening, potentially introducing selection bias and human error. Using two or more screeners would have enhanced accuracy and integrity. Most studies were conducted at American medical schools, suggesting possible publication bias, likely due to mental health stigma globally. Some studies had small sample sizes, possibly due to hesitancy to participate. Additionally, reliance on questionnaires for data collection may introduce response bias and inaccuracies.

Future Directions

Medical schools should provide URiM students with mentorship opportunities, implement zero-tolerance policies for racism and discrimination, and enhance mental health support while taking into account differences among racial groups.

Conclusions

This rapid review highlighted the significant impact of medical school experiences on the wellness of URiM students. Racial microaggressions, multiple marginalized identities, and a negative medical school environment significantly impacted URiM students' mental health. Different racial groups experienced distinct stressors, highlighting the importance of recognizing and addressing diversity within these communities. Moving forward, medical schools must prioritize the implementation of inclusive policies, mentorship programs, and mental health initiatives tailored to the specific needs of URiM students. Future studies should explore how interventions in medical education affect the wellness and success of URiM students over time.

List of Abbreviations Used

AA: Asian American
AAMC: Association of American Medical Colleges
AIS: Athens Insomnia Scale
AUDIT-C: Alcohol Use Disorders Identification Test—Consumption
Brief-COPE: Brief Coping Orientation to Problems Experienced Inventory
DEI: diversity, equity, and inclusion
EAT-5: Eating Attitudes Test
EDS: Everyday Discrimination Scale
IBQ: Institutional Betrayal Questionnaire
LGB: lesbian, gay, and bisexual
LGBTQ: lesbian, gay, bisexual, transgender, and queer
MBI-2: 2-Item Maslach Burnout Inventory
MC-SDS: Marlowe-Crowne Social Desirability Scale
MIBI: Multidimensional Inventory of Black Identity
MOS-SSS: Medical Outcomes Study Social Support Survey
MSLES: Medical School Learning Environment Survey
OLBI-MS: Oldenburg Burnout Inventory for Medical Students
PHQ: Patient Health Questionnaire
PICO: Patient/Population/Problem, Intervention, Comparison, Outcome
PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PROMIS: Patient-Reported Outcomes Measurement Information System
PROMIS ED-D SF: PROMIS Emotional Distress-Depression SF-8
PSS-4: Short Form Perceived Stress Scale
REMS: Racial and Ethnic Microaggressions Scale
SAA: South Asian American
SF: short form
SM: sexual minority
SOMS: Pearlin's Mastery Scale
SRQ: Self-Reporting Questionnaire
SSES: State Self-Esteem Scale
SWLS: Satisfaction with Life Scale
ULS: UCLA Loneliness Scale
URiM: Underrepresented in Medicine
WHO-5: World Health Organization Well-Being Index
WRMS-AAA: Workplace Racial Microaggression Scale for Asians and Asian Americans

Conflicts of Interest

Manvir Dhothar declares that she has no conflict of interest.

Ethics Approval and/or Participant Consent

Ethics approval was not required because this article is based on data from previously conducted studies. This article does not contain any new studies with human participants or animals performed by the author.

Authors' Contributions
MKD: Drafted and critically revised the manuscript for important intellectual content, made substantial contributions to the conception and design of the literature review by sourcing, examining, analyzing, and synthesizing relevant research, and provided final approval of the version to be published while agreeing to be accountable for all aspects of the work to ensure accuracy and integrity.

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