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Bridging Gaps in Youth Mental Health: Insights from the MOST Program

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ABSTRACT Objective: This study evaluates the efficacy of a community-based mental health workshop intervention aimed at increasing mental health literacy and reducing stigma among high school students in Newark, New Jersey, predominantly from African American and Latino backgrounds.
Methods: The intervention, conducted in partnership with United Community Corporation, comprised bi-weekly workshops over five weeks, integrating didactic and activity-based components. Participants (n=23) were high school students. The workshop curriculum covered various mental health topics and was supplemented by activities aimed at enhancing positive coping mechanisms. Data collection included pre- and post-intervention surveys using the Peer Mental Health Stigmatization Scale and the Mental Health Literacy questionnaire, along with a focus group discussion.
Results: The intervention demonstrated a significant reduction in mental health stigma ($p<0.05$) and an increase in positive attitudes towards recovery from mental illness. However, no significant changes were observed in overall mental health literacy scores. Qualitative analysis revealed a perceived distance from mental illness issues among participants and a preference for activities aligned with their interests. The study faced limitations, including a small sample size and inconsistency in survey matching.
Conclusions: The study suggests that community-based interventions can effectively reduce mental health stigma among minority adolescents. However, enhancing mental health literacy may require more targeted and culturally relevant approaches. The findings highlight the importance of tailoring mental health education to the specific interests and cultural contexts of minority youth to improve engagement and outcomes.

KEY WORDS Mental Health, Health Literacy, Health Knowledge, Attitudes, Practice

INTRODUCTION

The onset of mental health disorders often peaks around 14 years of age, with an average delay of ten years between the emergence of symptoms and the first contact with treatment services[1,2]. This delay can significantly hinder daily functioning in adolescents, particularly affecting their social, emotional, behavioral and academic development during a crucial stage of their lives, with lasting consequences for their long-term well-being[3]. Therefore, early recognition and intervention are pivotal in mitigating adverse effects of mental illness. However, the reality remains that only a minority of youths with psychiatric disorders receive necessary treatment[4].

Barriers to early detection and access to health services are present at both individual and structural levels. Individual-level challenges include limited mental health literacy and personal stigma[5]. Education has been identified as a fundamental strategy in the reduction of stigma and the enhancement of mental health literacy[5,6].

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Although education-based mental health workshops and programs have shown efficacy in improving mental health literacy and attitudes toward mental illness among adolescents, few have focused on historically marginalized communities or examined their impact on actual help-seeking behaviors[7,8].

Recent studies have begun to address these gaps. For instance, Phan and Renshaw provided guidelines for the culturally sensitive delivery of evidence-based mental health programs to marginalized youth in schools[9]. Similarly, a multi-site feasibility study aimed at reducing stigma and increasing mental health referrals in low- to middle-income countries demonstrated the value of targeted interventions[10]. However, implementing mental health programs in underserved communities often poses challenges, including difficulties in recruiting participants and tailoring content to meet specific community needs. Community-based participatory models have proven effective in adapting interventions to better align with the needs of these populations[11,12].

Mental health literacy—defined as the comprehension of maintaining positive mental health, understanding mental disorders and their treatments, reducing stigma and enhancing help-seeking efficacy— is vital for early intervention[13]. This is especially crucial in minority populations such as Latinos and African Americans, where lower levels of mental health literacy and higher levels of stigmatization are prevalent[14-16]. Disparities in mental health service usage suggest a more severe illness course for minorities, with racial/ethnic minorities being less likely to use mental health services than whites yet more inclined to use emergency and inpatient services[17,18]. Therefore, enhancing mental health literacy in these communities is a critical step toward promoting timely care for mental health needs and addressing racial/ethnic disparities in symptom severity.

The appropriateness of the school setting for delivering education-based mental health interventions, particularly for minority communities, warrants consideration. While schools can increase access to services for low-income populations, evidence suggests that school-based interventions may be less effective for low-income urban youth compared to community-based interventions[19,20]. Factors such as cultural mistrust, systemic stressors in underfunded urban schools and high rates of absenteeism and truancy, which are often linked to mental health issues, may contribute to the reduced efficacy of school-based programs[21-24].

To address these gaps, the present study introduces a community-based workshop intervention aimed at improving mental health literacy and attitudes in Newark, New Jersey, where over 75% of residents identify as non-white[25]. The intervention also offers screening and referral services to encourage help-seeking behaviors alongside improved knowledge about mental health. In partnership with a local non-profit organization, a series of mental health workshops were delivered to high school students in Newark. By adopting a community-based approach, we aimed to create a supportive environment for engaging minority youth in mental health education. We hypothesized that the workshops would lead to increased mental health literacy and decreased stigma compared to baseline levels.

METHODS

Study Design

A mental health workshop series was carried out for high-school-age students in Newark, New Jersey, from April to May 2023. Workshops were held twice weekly over a period of five weeks. Each workshop consisted of an hour-long didactic session on a topic related to mental health, followed by an hour-long activity-based component intended to augment participant wellness and positive coping mechanisms. A pre-survey at the start of the program, a post-survey at the conclusion of the program and a single 30-minute focus group during the last session were used for data collection. Students were allowed to participate in the workshops and activities regardless of their participation in the research component of the study. A total of 23 surveys were obtained; 17 were pre-surveys and six were post-surveys. Eight participants took part in the focus group. Participants were informed of the inclusion of this component of the program in the week prior to the final session and were asked whether they would like to volunteer. The focus group facilitators were provided a set of predetermined questions about the participants' experiences in the program, and participants were asked to provide feedback during that time.

Approximately 30 total students took part in the workshops. As a consequence, 13 students attended the program but were not captured as a part of the pre- or post-survey data. All students identified as either African American or Latino. The participants who took part in the workshops but did not fill out a survey attended the program only on occasion and did not complete study enrollment. The discrepancy between the number of pre-and post-surveys collected is an expected by-product of the study design, which sought to maximize participant

engagement at the cost of data collection.

Setting and Location

The workshops were conducted in partnership with United Community Corporation, a local non-profit with sites in Newark, New Jersey. Students who took part in the program were enrolled in local public high schools within the city. The non-profit provided the researchers with a classroom and an open gymnasium in which didactic and activity-based components were carried out. Students were not mandated by either the researchers or the non-profit to attend the workshop, although participation was incentivized through the provision of lunch at every workshop. All workshops were conducted in a face-to-face setting in a large lecture-style group.

The decision not to mandate attendance for all or any of the sessions was based on the goal of ensuring accessibility and inclusivity for all students, regardless of their ability to attend every workshop. By not requiring students to attend a set number of sessions, the program ensured that participants could still benefit from the educational, wellness and community support components of the workshop. This flexibility was particularly important for students who may have faced barriers such as scheduling conflicts, personal circumstances or other logistical issues that might have limited their ability to attend consistently. This approach was designed to prioritize student participation and engagement over rigid attendance tracking, reflecting the program's commitment to meeting the needs of the community it served.

Recruitment Strategy

The researchers collaborated with the non-profit site to distribute the IRB-approved flyer. Most participants were students who were already receiving after-school services at the study site. Students who were already attending after-school programming at the non-profit were informed about the opportunity to participate in the study. Prior to the study implementation, the non-profit offered a site for recreational basketball to the students and was exploring ways to make programming more educational. Once the workshops began, students were informed that the basketball courts would not be available until after the conclusion of that day's didactic and experiential activities to maximize participation. There was no other requirement to be able to enroll in the afterschool services at the non-profit site prior to workshop implementation. Additional participants were recruited prior to the study implementation by word of mouth of both students and staff from the not-for-profit site. As mentioned previously, survey and/or focus group participation was not necessary to attend the didactic or activity-based components of the workshop. Students were also not mandated to attend all or any of the sessions.

Study Participants

To be eligible for participation in the study, participants needed to fulfill the following criteria: (1) 12-18 years of age; (2) able to speak, read and write in English well enough to understand the informed consent and complete the study; (3) willing to engage in conversations surrounding mental health, recovery and treatment services.
Attendance at each workshop varied widely. The most well-attended workshop, with 18 participants, was the paint night session, which occurred in the third workshop. Interestingly, participants were informed that this activity would take place ahead of time, which likely contributed to its higher attendance. One of the students, a female participant, even recruited a friend to attend as part of a social outing, highlighting how social elements outside the workshop content might influence attendance. In contrast, topics such as sports performance and mental health, which were considered relevant by both staff and students, saw only moderate to low attendance. This suggests that while the relevance of the topic played a role in attendance, external factors, such as students' personal schedules and whether they could "coincidentally" attend, seemed to have a stronger impact.

Moreover, since participants did not know the topics ahead of time, it is possible that their experiences with previous workshops influenced their decision to attend subsequent sessions. For example, students who had a positive experience with an activity like the paint night may have been more inclined to return for future sessions, while those who did not engage as much in earlier workshops may have been less motivated to attend later ones. This dynamic suggests that both topic relevance and timing—the order in which topics were presented—may have influenced attendance patterns.

Workshop Curriculum

The workshop curriculum was developed through iterative collaboration between the research team and United Community Corporation (UCC), the partnering non-profit organization. The research team initially identified topics by conducting a literature review on common mental health concerns among adolescents, including anxiety, depression, substance use disorders, mindfulness, and trauma-related issues. The lessons were developed

according to the issues that were cited as widely prevalent by reputable sources such as the American Academy of Child & Adolescent Psychiatry and the Office of Population Affairs[26,27]. UCC staff provided input on the relevance of the topics based on their experiences working with local youth. Specific adjustments were made to incorporate topics that were more directly relevant to the student's interests, such as the impact of social media on mental health and the relationship between mental health and athletic performance. These changes were made to ensure that the curriculum aligned with the students' lived experiences while maintaining a foundation in evidence-based practices. The final list of topics was as follows: 1) Anxiety/Depression, 2) Substance Use Disorders, 3) Mindfulness and Meditation, 4) Food/Diet and Mental Health, 5) Psychosis and Other Paranoid Disorders, 6) Adverse Childhood Experiences and the Effect of Trauma on the Brain. 7) Applying Mental Health to Sports and Performance 8) Building Emotional Intelligence in the Age of TikTok. Two additional sessions were initially planned but were canceled due to the lack of attendees.

The activity portion of the workshop occurred during the second hour of programming. The activity-based component of the workshops was as follows: One paint night, two high-intensity interval training classes, one yoga class, one dance class, two Zumba sessions and one experiential mindfulness session. The experiential activities were planned according to instructor availability, with both the study team and non-profit staff expressing some uncertainty as to their reception, given that most students had not tried yoga, Zumba, or meditation practices in the past. Study staff decreased the frequency with which Zumba classes would occur as a consequence of students' negative perceptions. Thus, activities were uncoupled to the topics that would be presented in that day's didactic curriculum. Students were asked for feedback regarding the content and activities that were planned for the program at the conclusion of each session. Content topics, activities, and even the type of food that was ordered for students were modified based on feedback.

Study Staff

The content and scope of the workshop materials were developed by a medical student with supervision from a researcher and a faculty member from the Department of Psychiatry. The workshops were all carried out by a team of three medical students at each workshop, and the instructors were not different. Lecture slides were distributed to the team for preview at least a day prior to the lesson. Students who helped co-facilitate workshops were provided an orientation on the background of the students, group dynamics and the need to cultivate an educational, albeit still informal, learning environment.

Survey Design

The survey included basic demographic questions (i.e., age, race, gender). The Peer Mental Health Stigmatization Scale (PMHSS), is a 24-item five-point Likert response scale that evaluates beliefs about mental health[28]. The scale is composed of two segments: societal stigma and personal stigma. Previously validated among respondents aged 9-16 years, the PMHSS offers a comprehensive view of mental health stigmatization among youth. The second scale, the Mental Health Literacy questionnaire (MHLq), a 33-item five-point Likert response scale, delves into mental health beliefs, dissecting three core factors: help-seeking and first aid skills, knowledge and stereotypes about mental health problems and self-help strategies[29]. This questionnaire, validated for respondents aged 11-17 years, complements the PMHSS by providing a broader understanding of mental health literacy in the youth demographic.

Analytical Plan

The surveys were administered via paper copies and manually inputted by one member of the study team into SPSS. Another study team member subsequently verified the data entry's validity. All statistical analysis was conducted on IBM SPSS V 29.02. Participant scores for each subscale within the PMHSS and MHLq were calculated in accordance with their original studies. The distribution of scores was assessed using Levene's Test for Equality of Variances. Since participants could not match pre and post-surveys, an independent t-test was conducted to assess for study effects.

The purpose of the focus group was to (1) understand how youth in urban cities experience mental health and mental illness in daily life and (2) describe how youth in urban cities cope with mental health stressors and support others who need mental health support. To capture the multifaceted experiences and perceptions of urban youth regarding mental health, we employed Thematic Analysis (TA) for its flexibility, adaptability and depth. Using an inductive approach, the researchers systematically coded the focus group transcripts, collated codes into potential themes, and rigorously reviewed and refined these themes to ensure they authentically represented the data. Insights from the pre- and post-surveys were also integrated to provide a comprehensive understanding of

participants' experiences.

Coding Process

Table 3. Codebook

Name	Description	Secondary Codes	References
Program Experience	Overall perceptions and experiences with the mental health workshop.	Activity Preferences, Positive Feedback, Suggestions for Improvement	13
Mental Health Awareness	Awareness and understanding of mental health issues.	Importance of Mental Health, Observations in Others, Personal Experiences	20
Influences on Mental Health	Influence of external factors on mental health.	Barriers to Care, Coping Mechanisms, Support Systems	9

A codebook was developed using thematic analysis. Examples of prominent themes which emerged in the data included Receptiveness to the Program, Support Systems, School and Mental Health and Perceptions of Mental Health. The full codebook is included in Table 3. The first stage of thematic analysis consisted of close readings of the transcripts (memos, semi-structured interviews). Once the researcher was sufficiently familiar with the research topic, line-by-line coding was carried out. In this initial process, interview items were categorized according to broad concepts or ideas. This initial grouping and set of data organization is known as open coding and is an effective way of generating the first iteration of themes in an otherwise unorganized set of data[30]. The focus was on identifying both the content and the context of participants' feedback, allowing us to define themes that accurately reflected their experiences.

Inductive coding is a method of analysis where codes are derived from the data and the major messages it conveys. This process requires multiple iterations and can be utilized to generate frameworks[31]. From the initial subset of codes, primary, secondary and tertiary codes were utilized to develop the main themes evident throughout the data.

RESULTS

Demographic Characteristics

A total of 17 respondents completed the pre-survey, while six respondents completed the post-survey. Most pre-survey participants were aged 13 years (35.3%), followed by those aged 16 years (23.5%), 18 years (17.6%), 17 years (11.8%) and 14 years (5.9%). One pre-test survey participant chose to not provide demographic information but completed both scales. Among the post-survey participants, half were aged 16 years (50.0%), followed by those aged 17 years (33.3%) and 18 years (16.7%).

Regarding racial identity, 94.1% of pre-survey respondents and 100% of post-survey respondents identified as Black/African American. 23.5% of the pre-survey participants identified as being of Hispanic or Latino heritage, while none of the post-survey participants did.

Table 1. Demographic Characteristics of Participants

Variable	Pre-Survey (N=17)	Post-Survey (N=6)
Age		
13	6 (35.3%)	0
14	1 (5.9%)	0
16	4 (23.5%)	3 (50.0%)
17	2 (11.8%)	2 (33.3%)
18	3 (17.6%)	1 (16.7%)
Missing	1 (5.9%)	0
Race		
Black/African American	16 (94.1%)	6 (100%)
Missing	1 (5.9%)	0
Hispanic or Latino Heritage		
Yes	4 (23.5%)	0
No	12 (70.6%)	6 (100%)
Sex at Birth		
Male	14 (82.4%)	6 (100%)
Female	2 (11.8%)	0
Missing	1 (5.9%)	0

Most participants identified as male. Among pre-survey respondents, 82.4% were male, compared to 100% of post-survey respondents. Only 11.8% of the pre-survey participants identified as female and one participant did not provide this information. The findings illustrate a more significant representation of Black/African American and male participants across both survey iterations, with a notable presence of Hispanic or Latino heritage in the pre-survey group (See Table 1). No questions were asked regarding the socio-economic status or educational attainments of their parents or guardians.

Mental Health Scales

Table 2. Scale Results

Variable	Pre-Survey (N=17)	Post-Survey (N=6)	p
Peer Mental Health Stigmatization Questionnaire			
Stigma Awareness	26.35	21.17	.048*
Stigma Agreement	19.82	18.5	.657
Recovery	7.2941	8.67	.036*
Friendship	6.65	7.17	.360
Intellectual Ability	14.47	16.67	.060
Total Positive	28.41	32.50	.020*
Mental Health Literacy Questionnaire			
Mental Health Literacy (global score)	105.18	108.67	.655
Knowledge of Mental Health Problems	38.82	38.67	.964
Erroneous Beliefs/Stereotypes	29.05	31.0	.518
First Aid Skills and Help Seeking Behavior	22.35	23.5	.582
Self-Help Strategies	14.94	15.5	.722

* $p < 0.05$

Baseline scores for both societal stigma (M_{pre}=26.3, M_{ref}=23.8) and personal stigma (M_{pre}=19.8, M_{ref}=18.5) in the current sample were higher compared to those in the original study from which the scale originated (Table 2)[28]. Higher scores indicate greater agreement with stigmatizing attitudes and higher awareness of stigma, reflecting elevated levels of mental health-related stigma. Notably, there was a significant reduction in stigma scores, moving from a mean of 26.3 in the pre-survey to 21.2 in the post-survey ($p<0.05$). This indicates a marked decrease in the awareness of societal stigma associated with mental health following the intervention, suggesting its effectiveness in altering perceptions related to mental health stigma. Scores for the positive statements included in the scale (recovery, friendship, intellectual ability) were similar at baseline when compared to the original study from which the scale originated (M_{pre}=28.4, M_{ref}=28.7). In terms of beliefs about the recovery from mental health conditions, there was a significant positive shift, as evidenced by the increase in 'Recovery' scores from a mean of 7.3 pre-survey to 8.7 post-survey ($p<0.05$). This enhanced belief in the possibility of recovery is a critical indicator of the intervention's impact on attitudes toward mental health conditions. However, the results were more varied in other areas. Scores in 'Stigma Agreement', 'Friendship' and 'Intellectual Ability' did not show significant changes (p-values of .7, .4 and .1, respectively).

A notable observation, though, was the upward trend in 'Intellectual Ability' scores, albeit not reaching statistical significance ($p=0.6$). The 'Total Positive' score, which is a composite measure of positive attitudes towards mental health, saw a significant rise from 28.4 to 32.5 (p=.02), underscoring a general improvement in positive attitudes towards individuals with mental illness post-intervention.

Overall mental health literacy scores at baseline were comparable to those in the original study from which the scale originated (M_{pre}=105.2, M_{ref}=105.3)[29]. This similarity suggests a potentially high baseline level of mental health literacy in our sample. However, specific knowledge of mental health problems (M_{pre}=38.8, M_{ref}=44.5), first aid skills (M_{pre}=22.3, M_{ref}=24.1), and self-help (M_{pre}=14.9, M_{ref}=16.9) remained relatively stable,. No significant differences were observed in the mental health literacy questionnaire scores post-intervention. This stability indicates that the intervention did not substantially influence these specific aspects of mental health literacy. The global score for mental health literacy, knowledge of mental health problems, erroneous beliefs/stereotypes, first aid skills, help-seeking behavior and self-help strategies remained unchanged ($p > 0.05$).

Qualitative Findings

The major themes from the focus group were based on participant responses from a 30-minute focus group that took place during the final workshop. The major themes of the focus group meetings were organized around workshop-focused themes and attitude-focused themes. Workshop-focused themes refer to aspects of participants' feedback related to the workshops' structure, content and delivery. In contrast, attitude-focused themes capture participants' broader perceptions of mental health, including their views on mental illness, stigma and help-seeking behaviors within their community.

Attitude Focused Themes

A Perceived Lack of Mental Illness in the Community

Students in the program expressed that the workshops were the only time in their life where mental health was actively discussed. Participants frequently labeled individuals with mental illness from a third-person point of view and were vocal in their distinction of mental illness as being a phenomenon that they did not personally struggle with. In instances where participants mentioned knowing someone with mental illness, individuals would qualify the mental illness as not being necessarily proven using statements such as *they claim*. When asked about how they would potentially seek help for mental illness in their community, participants were quick to remark that there are few support systems available. Interestingly, participants then described that the school does offer guidance counselors but did not acknowledge whether they personally know of people utilizing such services. For example, when the group was asked if they would consider seeking help for their mental health within the community to be difficult, one participant remarked:

> I wouldn't know cause I don't get that, but that one's... probably. Well, but I don't think it's like I spoke on a lot, so. I don't want to think there would be a lot of help. For it around here.

This highlights the general sense of disconnection from mental health struggles, where participants viewed these issues as distant and not part of their personal or community experiences. Although they acknowledged the presence of guidance counselors at school, there was little recognition of others utilizing such services, suggesting a broader stigma or reluctance to engage with mental health resources in the community.

Mixed Feelings Surrounding the Discussion of Mental Health

Participants during the focus group were able to vocalize an understanding that people with mental illness are still regular people and to relate the hardships of affected individuals as being similar to the struggle of 'everybody else.' Conceptually, members of the focus group made broad generalizations such as, "everybody has it [mental illness] to a certain extent like, some people have more severe than others and some people just have certain situations."

However, when it came to talking about personal experiences or even recognizing mental health challenges in others, the conversation took a different turn. Despite understanding mental illness on a conceptual level, participants expressed discomfort and even anxiety about discussing these issues more openly. One participant shared that although they knew someone who "says" they have depression, they refused to delve into that experience, stating: "Bro what. No, I'm not gonna speak on that bro. That's like too crazy."
Another participant discussed how mental health issues seemed to conflict with their personal identity, describing mental health conversations as too serious or out of character for them:

> "For me personally like. I feel like. It don't, it doesn't. It (talking about mental health) doesn't necessarily have to, but like it could. Make like things. Very dull inside or like real serious type. I Usually just like. Move around and talk about. Like happy and fun stuff. For me, I don't know what the others think."

Participants in the focus group also acknowledged that some people may be struggling with the issue but are not necessarily open regarding the topic. The possibility of potentially misattributing someone's bad mood as a mental health problem was a cause for anxiety:

> "I feel like that can go both ways. The person who has it, they might not want to, but the person who's like seeing what's going on, they can't realize, or this might be that but I don't want to address it. But you know what. What if you Address it and then it's not even that. It can be something else going on. But you think it's one thing. Y'all never really know."

This sentiment highlights the anxiety and uncertainty surrounding mental health conversations, where participants were unsure how to appropriately address mental health concerns in others for fear of overstepping or misdiagnosing an issue.

Workshop Focused Themes

The importance of group-specific lessons

During the focus group discussions, a pattern emerged where the participants frequently discussed their hobbies and interests, often derailing the conversation in light-hearted banter. This highlighted the importance of aligning workshop activities with participants' personal interests to increase engagement. For example, on multiple occasions, participants paused the discussion to comment on the performance of a member's favorite basketball team, which was losing at the time. This interaction is notable, as it illustrates how enthusiastically participants responded to topics relevant to their lives.

In terms of mental health care, participants also revealed their personal coping strategies:
Speaker 2: I like listening to music.
Speaker 6: Well, there's music.
Speaker 3: I like watching football.
Speaker 5: I just smoke weed over it.
Speaker 7: Eating healthy

This interaction is notable as no other question received as much of an enthusiastic response during the workshop. In particular, the comment about weed is salient and directly impacted the workshop's overall delivery. A workshop was originally scheduled on April 20th (4/20, an unofficial 'holiday' where people who use marijuana commonly 'observe' the holiday by smoking). However, this session was ultimately not delivered as not a single student attended that day's session.

Throughout the focus group, participants, on numerous occasions, made their distaste for dance classes known. Participants made fun of the Zumba classes, as they were instructed to move in ways that made them feel less masculine. Students were not made aware of the day's didactics and/or activities prior to the start of each

workshop. This was a consequence of the activity provider not having finalized instructor availability more than one week prior. However, one participant made explicit just how conditional their enrollment in the workshop series was when asked what might keep him from attending:

> "A lot of different things. If I had, not anything else to do but like. If I have something else to do. I'll probably not come because I don't. I don't really like getting into stuff like that. I'm not saying I'm not focused on mental health, but I know it's important. I also don't know anyone with mental health issues. I don't have any. So it's like. Naturally off, just like.. Nah I'm not gonna be interested in that. Even if I would be with that, that's how I was with this, but that's it. I'd just be like nah I'm good, I'm good. That's just me though…"

This remark demonstrates that participants' low threshold for disengagement from the workshops is closely tied to the perceived relevance of the activities. For example, the lack of interest in dance classes and the conditional attendance based on personal interests highlight the need for interventions to be relevant, enjoyable and aligned with the cultural preferences of participants.

The frequent dichotomization of mental illness as something that affects "others" rather than themselves, coupled with a low engagement threshold, suggests that future programming should not only cater to interests but also work to bridge the gap between mental health awareness and personal relevance to the youth attending the program.

DISCUSSION

This study's findings contribute to the growing body of literature examining the impact of mental health interventions among adolescents, particularly those from underserved communities[32,33]. By implementing a mental health workshop series in an underserved urban community outside the school setting, this study sought to address mental health stigmatization and literacy among high school-aged students in a rarely studied context. The prioritization of participant inclusion and eligibility in the workshops, even for those not completing the research procedures, reflects a methodological choice grounded in health equity and expanded program outreach. This decision, made in consultation with non-profit site staff, likely contributed to the discrepancy between the number of workshop participants and the quantity of surveys collected.

Interestingly, most participants in the workshops were male. The recruitment strategy and the initial conceptualization of the program may partially explain this gender discrepancy. Prior to study implementation, the not-for-profit's after-school activities mostly revolved around the provision of a safe space for youth to play indoor recreational basketball with the intention to expand into more classroom-based lessons. The previous emphasis on basketball as a draw likely contributed to higher participation rates among male students, who may have been more attracted to the option of playing basketball after the workshop ended. This may have also impacted attendance to the workshops as students were only previously incentivized to attend the after-school programming at the study site in a purely recreational fashion.

Allowing participants to attend workshops flexibly without mandating a minimum attendance had unintended consequences for the data collection process. During focus group discussions, it became clear that workshop attendance fluctuated due to various personal factors influencing participants' enthusiasm and availability. This dynamic attendance pattern underscores the challenges inherent in community-based research and highlights a need for more structured data collection protocols. To improve data collection while still maintaining a health equity approach, future studies could consider implementing incentivized follow-ups or enhanced reminders to increase survey completion rates without compromising participant autonomy. These strategies could balance the need for comprehensive data collection with the goal of maximizing accessibility and inclusivity, ensuring that participants from underserved communities continue to feel welcomed and supported throughout the research process.

Providing participants with a list of the curriculum, inquiring about food options, outlining the tentative activities for the program, and allowing changes during the introductory workshop may help participants feel a sense of ownership in attending.

The significant reduction in stigma and improvement in beliefs about recovery are consistent with previous

research indicating that educational interventions can be effective in reducing mental health stigma among adolescents[34]. However, these findings should be interpreted with caution due to data quality limitations, including incomplete post-survey responses. These issues reduce the reliability and generalizability of the results and necessitate careful consideration of the intervention's true impact.

Furthermore, our findings also highlight the persistent nature of certain stigma components, such as stigma agreement and perceptions of friendship and intellectual ability, which did not show significant change. This aligns with the notion that stigma is a complex construct that may require more multifaceted and prolonged interventions to effect change across all dimensions[35].

In terms of mental health literacy, our findings diverge from studies that have demonstrated improvements following educational interventions[36]. The lack of significant change in mental health literacy scores post-intervention suggests that while the workshop curriculum was effective in addressing stigma, it may not have been sufficiently comprehensive or targeted to enhance mental health knowledge and skills. One potential explanation for this is the delivery method used in the workshops. The curriculum relied heavily on didactic instruction, where information was presented to participants in a lecture-style format, which may have been less engaging for the youth compared to more participatory, interactive discussions. By increasing opportunities for youth to actively participate in conversations and apply mental health concepts to their own experiences, future programs could better enhance mental health literacy, which is crucial for the early identification of mental health issues and the seeking of appropriate help[13]. The overall improvement in positive attitudes toward individuals with mental illness, particularly in beliefs about recovery, is a noteworthy outcome. This shift holds potential implications for how adolescents interact with and support peers experiencing mental health issues. However, focus group themes also highlighted persistent hesitancy among participants to directly offer help or inquire about their friends' mental health.

The qualitative insights from the focus group discussions provide a nuanced understanding of the participants' perspectives on mental health, which is vital for contextualizing the quantitative findings. The expressed lack of mental illness in the community and the reluctance to discuss personal mental health experiences suggest that stigma and discomfort around mental health discussions persist, even after participating in the workshops. Participants perceived mental illness as a distant issue, not directly affecting them or their immediate community. This finding is echoed in other studies that have found that stigma can be a significant barrier to mental health discourse and help-seeking behavior among adolescents[37]. While participants conceptually acknowledged the prevalence of mental illness when discussing it in abstract terms, they hesitated to engage in conversations about personal or community-specific experiences. This indicates a persistent stigma and discomfort surrounding mental health discussions, even after the intervention.

The importance of tailoring interventions to specific groups' unique needs and interests emerged as a key theme. Participants demonstrated significant enthusiasm for discussions related to personal hobbies and interests, such as sports and music, while showing less engagement in more structured, formal activities like dance classes. This finding highlights the necessity of culturally and developmentally appropriate interventions to enhance participant engagement and program effectiveness.

Future workshops could be more impactful by aligning their content and activities with participants' specific interests and cultural contexts. For example, instead of relying solely on didactic presentations or general activities, workshops could incorporate interactive, interest-based sessions that allow participants to explore mental health topics through their passions. This might include hosting group discussions about mental health in sports, mental health and social media, or mental health through creative expression (e.g., music, art, or theater). These sessions could involve peer-led discussions or interactive storytelling where participants connect mental health topics to their own lives, creating a more engaging and relatable learning experience.

In terms of logistics, future workshops could allow for more flexibility in terms of content choice, where participants can select topics or themes that resonate most with them. This could involve pre-workshop surveys or a focus group to gather input on topics of interest and incorporate them into the curriculum. Additionally, offering a variety of activities, such as sports-related mindfulness exercises or music therapy sessions, might help bridge the gap between mental health education and the student's interests, further increasing engagement. These participatory, interest-driven approaches would improve engagement and enhance mental health knowledge retention, which is critical for improving mental health literacy and ultimately supporting early intervention

efforts[38,39].

The participatory design of the current workshop, which incorporated input from non-profit staff to tailor topics for the student group, serves as a foundation for these future strategies. However, future interventions should aim to deepen this participatory element by actively involving the youth in designing the curriculum and activities, ensuring that the content is relevant and personally meaningful to the participants.

LIMITATIONS

Despite its contributions, this study is subject to several limitations that must be acknowledged. Firstly, the small sample size, particularly evident in the post-survey group, significantly limits the statistical power of the study. This lack of power makes it challenging to detect small to moderate effect sizes, affecting the robustness and reliability of the findings. Additionally, the decision to forgo the Bonferroni correction for multiple testing was made to avoid the inherent risk of false-negative outcomes. However, this decision is a double-edged sword, as it introduces a weakness in the results by increasing the potential for Type I errors.

The inability to match pre- and post-survey responses due to participants not filling out the questionnaire with an anonymous participant ID further complicates the interpretation of the t-test conducted. As a result, the samples cannot be truly considered independent, which is a fundamental assumption for the validity of a t-test. This limitation severely hampers the ability to make definitive conclusions about the intervention's impact.

Another limitation was the observed trend of younger adolescents and female participants being less likely to complete sessions or post-surveys. This may reflect differing levels of interest, engagement, or relevance of program content. Understanding these dynamics is crucial for future programming, as gender disparities with regard to mental health stigmatization may uncover different nuances surrounding mental health and stigma.

Moreover, despite continuous reminders to participants about the availability of referrals to community mental health providers and screeners, there was no uptake of these services. This reluctance could be attributed to the persistent perception of mental illness as an abstract phenomenon affecting others rather than a concrete issue within their own community. It highlights the challenge of engaging a demographic that may not readily identify with or acknowledge mental health struggles.

FUTURE DIRECTIONS

Future research in this area must address these limitations. Ensuring larger sample sizes and employing methods to match pre- and post-intervention data would enhance the validity of the findings. Additionally, future programs should aim to engage populations that have historically been reluctant to participate in traditional treatment avenues. This may involve developing targeted recruitment strategies and intervention components that resonate more deeply with the participants' lived experiences and cultural contexts. Depending on the timeline of the project, future research projects should seek to create a more grassroots initiative for community involvement in the project. As demonstrated in the present study, having participants who were enthusiastic about the material and willingly brought other friends to the programming was one unexpected source of attendees. However, this should be balanced with the need to convert those additional attendees into survey respondents, not to sacrifice data quality.

While the current study offers valuable insights into the impact of mental health interventions among adolescents in urban settings, the noted limitations underscore the need for more rigorous research designs and targeted engagement strategies in future work.

DATA AVAILABILITY

The data set (both quantitative and qualitative) cannot be made publicly available as informed consent was not obtained for participants to allow their responses to be posted online. The authors will make every reasonable attempt to allow for individual access to data upon request.

CONCLUSION

The program aimed to reduce mental health stigma among high school students in an underserved urban area through workshops and activities, which revealed mixed results. Quantitatively, it showed a reduction in stigma and enhanced beliefs in recovery post-intervention but no significant changes in other stigma aspects of overall mental health literacy. The focus group indicated a perceived distance from issues of mental illness and a

preference for interest-based activities over structured interventions. Key limitations included a small sample size and the inability to match pre- and post-survey responses, which hindered the robustness of findings and their generalizability. Future research should focus on larger, matched samples and further tailor interventions to participants' cultural and interest-specific contexts.

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