ORIGINAL CONTRIBUTION

Efficacy of a Universal Brief Intervention for Violence Among Urban Emergency Department Youth

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Abstract

Background: Violent injury is the leading cause of death among urban youth. Emergency department (ED) visits represent an opportunity to deliver a brief intervention (BI) to reduce violence among youth seeking medical care in high-risk communities.

Objective: The objective was to determine the efficacy of a universally applied BI addressing violence behaviors among youth presenting to an urban ED.

Methods: ED youth (14 to 20 years old) seeking medical or injury-related care in a Level I ED (October 2011–March 2015) and screening positive for a home address within the intervention or comparison neighborhood of a larger youth violence project were enrolled in this quasi-experimental study. Based on home address, participants were assigned to receive either the 30-minute therapist-delivered BI (Project Sync) or a resource brochure (enhanced usual care [EUC] condition). The Project Sync BI combined motivational interviewing and cognitive skills training, including a review of participant goals, tailored feedback, decisional balance exercises, role-playing exercises, and linkage to community resources. Participants completed validated survey measures at baseline and a 2-month follow-up assessment. Main outcome measures included self-report of physical victimization, aggression, and self-efficacy to avoid fighting. Poisson and zero-inflated Poisson regression analyses analyzed the effects of the BI, compared to the EUC condition, on primary outcomes.

Results: A total of 409 eligible youth (82% participation) were enrolled and assigned to receive either the BI ($n = 263$) or the EUC condition ($n = 146$). Two-month follow-up was 91% ($n = 373$). There were no significant baseline differences between study conditions. Among the entire sample, mean ($\pm$SD) age was 17.7 ($\pm$1.9) years, 60% were female, 93% were African American, and 79% reported receipt of public assistance. Of participants, 9% presented for a violent injury, 9% reported recent firearm carriage, 20% reported recent alcohol use, and 39% reported recent marijuana use. Compared with the EUC group, participants in the therapist BI group showed self-reported reductions in frequency of violent aggression (therapist, −46.8%; EUC, −36.9%; incident rate ratio [IRR] = 0.87; 95% confidence interval [CI] = 0.76 to 0.99) and increased self-efficacy for avoiding fighting (therapist, +7.2%; EUC, −1.3%; IRR = 1.09; 95% CI = 1.02 to 1.15). No significant changes were noted for victimization.

Conclusions: Among youth seeking ED care in a high-risk community, a brief, universally applied BI shows promise in increased self-efficacy for avoiding fighting and a decrease in the frequency of violent aggression.

Youth violence is a significant public health problem. Homicide rates among U.S. youth are 14 times higher than those among youth in other high-income countries.[1] Violent injury is the leading cause of death for urban minority youth and responsible for more than 600,000 adolescent emergency department (ED) visits annually.[2] Nationwide, 25% of high school–age students report fighting in the past 12 months and 18% report carrying a weapon in the past month.[3] Societal costs associated with this violence are substantial, estimated at more than $4 billion for acute medical care and $32 billion for lost wages/productivity annually.[4] Developing effective prevention programs for at-risk youth is a significant focus of public health efforts,[5–11] especially given data demonstrating that adolescent violence involvement is linked with negative long-term health and psychosocial outcomes, including substance abuse/dependence, anxiety/depression, posttraumatic stress disorder, incarceration, violent injury, and death.[5,12–22]

Urban EDs are an important, but underutilized setting for violence prevention.[5] Prior data highlight that youth seeking ED care within urban settings have elevated rates of violence, as well as associated risk behaviors, including substance use, firearm possession, and weapon carriage.[23–26] Urban EDs also provide an opportunity to access traditionally difficult-to-reach adolescents, including uninsured/underinsured youth, as well as those without a primary care physician and those not regularly attending school.[27,28] Prior studies have demonstrated the effectiveness of brief interventions (BIs) for the prevention of a range of injury-related risk behaviors, most commonly alcohol use.[29–35] More recently, ED-based BIs have been expanded to incorporate violence prevention.[36,37] Findings from the SafERteens study, a randomized control trial (RCT) conducted among ED adolescents screening positive for alcohol and peer violence demonstrated that a therapist-delivered BI significantly reduced peer aggression, peer victimization, dating victimization, and alcohol-related consequences.[36–38] While such selective interventions conducted among an at-risk population (i.e., youth with a history of alcohol use and prior violence) have been shown to be effective, researchers have not previously evaluated a BI to reduce violence behaviors among a universal population of ED youth living in neighborhoods with elevated levels of community violence. Such a universal prevention-based approach (i.e., addressing violence risk among all youth who are seeking ED care from a high-risk neighborhood) has the potential to substantially effect the public health of urban communities, especially if the BI is designed to be delivered seamlessly during an ED visit.

Similar to other urban communities with elevated rates of crime, violence, and poverty, youth violence is a significant problem in Flint, Michigan.[39] Since 2011, the Michigan Youth Violence Prevention Center (YVPC) has been working with community partners to implement a comprehensive youth violence prevention program.[40] This study evaluates the ED-based component of this program focused on an individual level intervention addressing youth populations. Specifically, this article examines the efficacy of a therapist-delivered universal BI (Project Sync) compared to an enhanced usual care (EUC) condition in reducing violence behaviors among adolescents seeking ED care at a Level I trauma center within discrete geographical regions of Flint. It was hypothesized that youth receiving the BI would decrease self-reported violence behaviors (aggression, victimization) and increase self-efficacy for avoiding fighting compared to youth in the EUC group who did not receive the BI.

METHODS

Study Design and Setting

Project Sync is a 5-year quasi-experimental trial testing the efficacy of a BI compared to an EUC condition for a universal population of youth seeking medical or injury-related care in the Hurley Medical Center (HMC) ED in Flint, Michigan. The study was one component of a multifaceted youth violence prevention program[40] testing six interventions within a focused intervention neighborhood compared to a comparison neighborhood. Interventions were designed so as not to overlap. This study was the only intervention to focus on individual counseling of youth in an ED regarding their involvement in violence. Other interventions focused on improving social interactions (e.g., parent/adult mentoring relationships) or environmental factors (e.g., community policing, clean and green initiatives); only one other intervention was focused at the individual level, but utilized a school-based curriculum to focus on positive youth development among a younger adolescent population. Both neighborhoods were matched on multiple sociodemographic characteristics, including the percentages of African American/Hispanic residents, owner-occupied housing, high school graduates, and residents below the poverty level. The neighborhoods were also matched on adolescent population counts, median household income, and violent crime rates. The UM and HMC institutional review boards approved all study procedures; a Centers for Disease Control and Prevention certificate of confidentiality was also obtained.

Recruitment

Recruitment (October 2011–March 2015) occurred within the HMC ED between 2:30 PM and 10:00 PM, 7 days a week, excluding holidays, with additional morning (8:30 AM–4:00 PM) and midday (11:30 AM–7:00 PM) shifts as scheduling allowed. Of note, the intervention neighborhood was purposefully oversampled to meet the aims of the larger YVPC project (i.e., to interact with as many youth from the intervention neighborhood as possible).

Eligibility

ED patients (14–20 years old) were identified using electronic medical records and approached in waiting rooms/treatment spaces. Participants screening positive for a home address within the intervention or comparison neighborhood were eligible for inclusion. Patients were excluded if they were unable to provide informed consent due to medical (e.g., altered mental status) or psychiatric reasons (e.g., cognitive impairment), or if they were presenting for a sexual assault and/or suicidal ideation/attempt. Patients were also excluded if they were < 18 years old and seeking care without a parent/guardian present (or they were unavailable for phone consent), in police custody, or if they were unable to self-administer the survey or participate in the BI (e.g., non-English speaking).

Study Protocol

Following written consent (or assent with parent/guardian consent), participants self-administered a ~25-minute computerized baseline survey ($20 remuneration) via touchscreen tablet. Participants were assigned to a study condition based on home address; those residing in the intervention neighborhood received the ~30-minute BI, while those in the comparison neighborhood received a resource brochure (i.e., EUC condition). Participants self-administered a computerized follow-up assessment at 2 months ($25 remuneration). Follow-up visits, which were arranged at the time of the baseline visit, were primarily conducted in person (n = 357; 95.7%) in a convenient location (e.g., ED/hospital, home visit, community location). Of in-person follow-ups, 77% occurred at the study hospital. Participants were sent a combination of reminders for follow-up appointments, including postcards, phone calls, and texts to enhance attendance.

Measures

Sociodemographics. Demographic and socioeconomic characteristics (e.g., age, sex, race/ethnicity, marital status, living situation, public assistance) were assessed using items from the Add-Health Study,[41,42] the NIH Guidelines on race/ethnicity,[43] and the Drug Abuse Treatment Outcome Studies.[44] Three items from the Flint Adolescent Survey[45] assessed school completion ("Are you currently in school?"; "What is the highest grade you have completed?") and average grades ("What kind of grades do you usually/did you usually get in school?"). Participants who reported that they were not currently in school and who indicated that the highest grade completed was less than a high school diploma were coded as dropouts. Education measures were collapsed to indicate whether the participant had failing grades or had dropped out of school.

Past 2-month Background Characteristics. Firearm carriage was assessed using a single item ("How often have you carried a gun with you when you were outside your home?") from the Tulane Youth Study.[46,47] The response scale (never, one time, two times, three to five times, six to 10 times, 11 to 20 times, >20 times) was dichotomized (yes/no for firearm carriage) for analysis. This measure excludes firearm carriage for hunting/

sporting activities. Gang involvement was assessed with a single item (Do you consider yourself a member of a gang?; yes/no).[26,48] Community violence exposure was assessed with the five-item community violence scale from the "Things I Have Seen and Heard Survey."[49,50] This scale assesses the frequency of five behaviors ("heard gun shots"; "seen drug deals"; "my house has been broken into"; "seen someone get stabbed or shot"; "seen gangs in my neighborhood") on a Likert scale ranging from 0 ("never") to 3 ("many times"). For analysis, a summary score was created (range 0–15; α = 0.72), with higher scores indicative of higher perceived levels of community violence exposure.

Alcohol ("In the past 2 months, have you had a drink of beer, wine, or liquor more than 2–3 times"; yes/no) and marijuana use ("During the past 2 months, how many days did you use marijuana?") were assessed using measures from the Add-Health Survey.[42] For analysis, any response other than never to the marijuana item (response scale—never, < 1 time a month, 2–3 days/month; 1–2 days/week; 3–5 days/week; every day) was coded as positive for recent marijuana use (yes/no). Finally, participants were asked to indicate whether this ED visit resulted from a violent injury (yes/no).

Primary Outcomes. The main outcomes for the study were physical aggression, victimization, and self-efficacy for nonfighting. The adapted 12-item revised conflict tactics scale (CTS-2)[51,52] and the 4-item conflict in adolescent dating relationships inventory (CADRI)[53] were used to measure prevalence and frequency of physical aggression and victimization for peers (e.g., friends, strangers, acquaintances, relatives) and partners (e.g., girlfriend/boyfriend, fiancée, husband/wife), respectively. Each scale measures the frequency (response scale ranging from 0 [never] to six [>20 times]) of moderate (e.g., pushed, shoved) and severe (e.g., hit, punched, used a knife/gun) violence behaviors and are measured separately for victimization (i.e., someone did to you) and aggression (i.e., you did to someone). Peer and partner scores were summed for a total measure of physical aggression (α = 0.90) and physical victimization (α = 0.92). Self-efficacy for avoiding fighting was assessed using a five-item scale (How sure are you that you can "stay out of fights?"; "Understand another person's point of view?"; "Calm down when you are mad?"; "talk out a disagreement?"; "Learn to say out of fights?") from the Teen Conflict Survey;[54,55] responses ranged from 0 (not at all) to 4 (extremely) and were summed for a total self-efficacy score (range 0–20; α = 0.80).

Study Conditions

Brief Intervention. Youth in the intervention group received the ~30-minute therapist-delivered BI within the ED prior to hospital admission/discharge. The study therapist was aided by a tablet computer to provide both tailored feedback to the participant and to standardize the delivery of intervention content. The BI was paused and restarted as necessary to avoid interfering with medical care. The Project Sync BI integrated elements of motivational interviewing (MI) to enhance

problem recognition (i.e., why behaviors negatively influence goals) with cognitive behavioral strategies for skill development (i.e., how to change current behaviors). MI is a person-centered counseling technique emphasizing a nonjudgmental and nonconfrontational approach.[56,57] MI focuses on establishing a discrepancy between current behaviors and future goals to resolve ambivalence, enhance intrinsic motivation, and increase self-efficacy for change. The intervention proceeded through five sections: 1) reviewing personalized goals; 2) delivering tailored feedback on violence (including normative re-setting and how substance use contributes to behaviors); 3) decisional balance exercises to establish the potential benefits of avoiding fighting (e.g., preventing injury); 4) five role-playing scenarios to develop cognitive skills in anger management, conflict resolution, refusal skills for substance use/weapon carriage, and skills for avoiding violent situations; and 5) summary of goals, skills discussed, and linkage to community resources. A detailed community resource brochure was also provided.

The Project Sync BI was adapted from the previously described SafERteens BI,[36–38] which was designed specifically for teens with prior alcohol use and fighting. Modifications included adapting the role-playing scenarios and intervention content to be applicable to youth regardless of their history of prior violence or prior alcohol use (i.e., relevant for a universal ED sample). If youth had not experienced fighting, the therapist focused on the prevention of future aggression and victimization and/or discussed situations that the participant's friends, family, or neighbors had experienced. In addition, intervention scenarios were updated to be reflective of more current teen issues than those used in the SafERteens study (e.g., "someone stole your cellphone" rather than "someone stole your sneakers"). As with SafERteens, intervention content was developed to be culturally relevant for urban youth.

The Project Sync BI was delivered by study therapists trained in behavioral health fields (e.g., social work, clinical psychology). They completed a 5-day training at the beginning of the study, including training in MI techniques and intervention delivery. Prior to study initiation, therapists completed mock patient scenarios and were required to demonstrate appropriate proficiency with MI and all components of intervention delivery. In addition, study therapists were carefully monitored throughout the trial in four ways. First, they received close clinical supervision and review of audiotaped therapy sessions by a licensed therapist during the initial weeks of the study as a quality assurance check. Second, study therapists were required to complete individual regular clinical supervision twice a month and group clinical supervision once a month with a licensed therapist throughout the study to ensure adherence to all aspects of the study protocol. Third, study therapists received booster trainings throughout the study (twice/year) to maintain clinical skills and prevent drift from the study protocol. Finally, a random 5% of all therapy sessions were audiotaped and coded using the Motivational Interviewing Treatment Integrity Global Scale (MITI-3),[58] a standardized instrument for measuring and ensuring that the therapist is adhering to the principles of MI and

the therapy protocol in clinical trials that involve MI-based behavioral counseling. For this study, therapy sessions demonstrated acceptable fidelity (mean ± SD global spirit rating = 4.8 ± 0.3; range = 3.7–5.0]), exceeding the recognized competency level of 4.

Enhanced Usual Care. Participants in the EUC condition received a basic brochure listing available community resources (e.g., substance use, leisure activities).

Data Analysis

Descriptive statistics were computed for the entire sample and by assigned treatment condition. Frequencies of risk behaviors (e.g., violent victimization, aggression, self-efficacy) were computed for descriptive purposes and percent change at 2 months following the ED visit are presented. Regression analyses (i.e., Poisson based on distribution) were conducted examining the effects of the BI (compared to EUC) on the occurrence (binary variable) and frequency (continuous) of primary outcomes (i.e., aggression, victimization, self-efficacy). For victimization and aggression, zero-inflated Poisson (ZIP) models were utilized to account for the large proportion of zeros. Follow-up rates were high (91.2%) and attrition analyses demonstrated that baseline characteristics (i.e., age, race, sex, assigned group) were not significantly related to follow-up, suggesting that missing outcome data were likely missing at random. Cohen effect sizes[59] were calculated to indicate the strength of the relationship between the BI and observed outcomes to allow for future comparison. Prior prevention literature suggests that effect sizes > 0.10 are clinically meaningful.[60] Data were analyzed using SAS 9.4 (SAS Institute Inc.).

RESULTS

Enrollment

A total of 1,188 patients aged 14 to 20 years old with a home address within the intervention or comparison neighborhood presented during recruitment (Figure 1). Of 619 youth eligible for inclusion, 80.5% (*n* = 498) were approached, with 82.1% (409; BI = 263; EUC = 146) enrolling in the study and 17.9% (*n* = 89) refusing participation. Those refusing participation were more likely from the intervention rather than the comparison neighborhood (21.7% vs. 9.9%, $\chi^2 = 10.46$; p < 0.05) and were less likely to identify as African American when compared with other racial/ethnic categories (16.6% vs. 32.5%, $\chi^2 = 6.34$; p < 0.05). No differences were noted with regards to age or sex. Compliance with assigned condition and follow-up rates exceeded 91.2%, with no differential follow-up by condition. Of note, only five participants (1.9%) in the intervention group reported exposure to one of the other youth violence initiatives, with four of the five reporting their exposure was to a community-level clean and greening initiative. The remaining 98% reported no direct exposure to the other YVPC community interventions.

Participant Characteristics

Table 1 characterizes the sample by study condition. No differences between groups were noted by condition
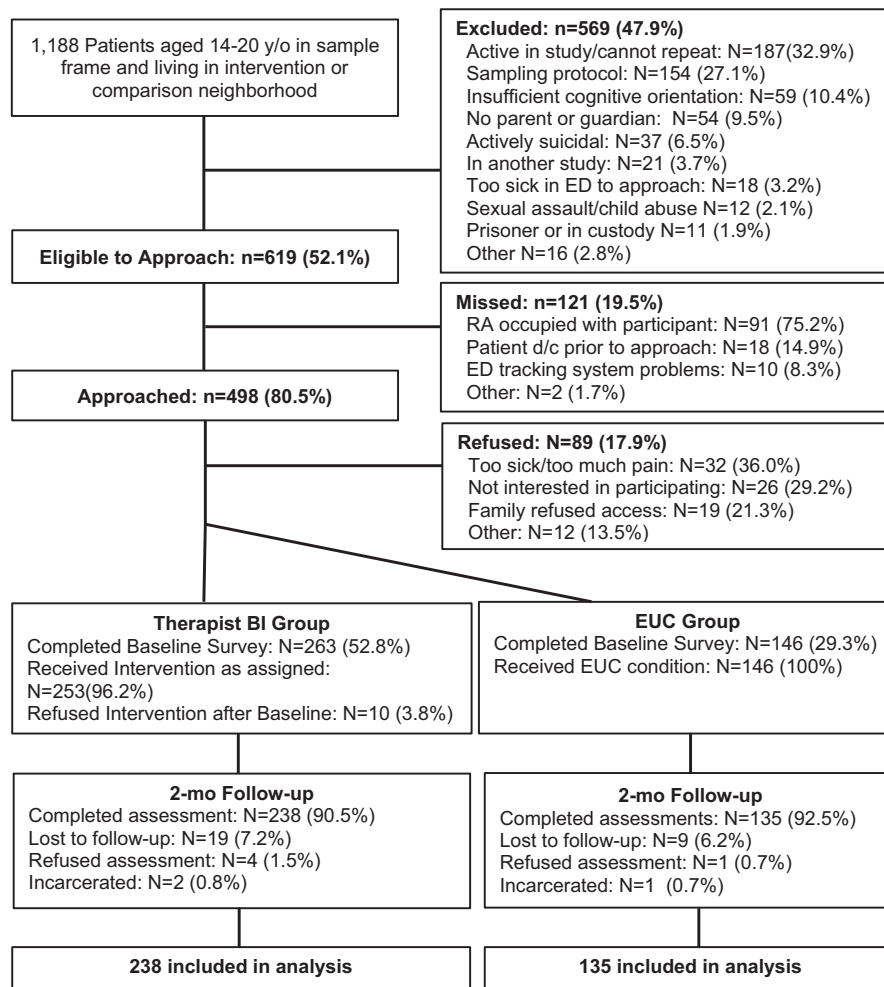
Figure 1. Project Sync flow chart for recruitment and study enrollment from Hurley Medical Center in Flint, Michigan (October 4, 2011–March 30, 2015). BI = brief intervention.

with regard to background characteristics, substance use, and/or violence involvement. Among the entire sample, 59.9% of participants were female, 93.4% were African American, and mean ($\pm$SD) age was 17.7 ($\pm$1.9) years. Most participants in both groups reported receipt of some public assistance (79.0%) and 75.3% reported living with a parent/guardian. Overall, 20.1% of youth reported recent alcohol use and 38.6% reported recent marijuana use. Recent violence involvement was similar between conditions, with two-thirds of youth reporting a recent violent event; 48.2% reported being the aggressor and 58.7% reported being victimized. Among all participants, only 8.8% were seeking care for a violent injury.

Primary Outcomes

Overall, 85.7% (n = 209) of participants receiving the intervention rated the BI as very or extremely helpful (mean $\pm$ SD score = 3.3 $\pm$ 0.8). Regression models computed for violence outcomes (aggression, victimization, and self-efficacy for avoiding fighting) at 2 months (Table 2, descriptive data; Table 3, Poisson/ZIP models) demonstrated that the BI significantly decreased the frequency of violent aggression (BI, −46.8%; EUC,

−36.9%; incident rate ratio [IRR] = 0.87; 95% CI = 0.76–0.99) and increased self-efficacy for avoiding fighting (BI, +7.2%; EUC, −1.3%; IRR = 1.09; 95% CI = 1.02–1.15) when compared to EUC. No significant changes were noted for frequency of victimization or for the prevalence of victimization or aggression. Cohen's d effect sizes for the BI were as follows: violent aggression, 0.16; and self-efficacy, 0.24.

DISCUSSION

Results demonstrate that a 30-minute BI was effective at reducing violent aggression and increasing self-efficacy for avoiding fighting among a universal sample of youth seeking ED care in a high-risk community. Although effect sizes were modest, findings are similar to other ED-based behavioral[35,61] and school-based universal violence interventions.[62] Further, effect sizes are clinically significant given that violent injury is the leading cause of death among urban youth, surpassing death due to cancer, asthma, HIV/AIDS, and motor vehicle collision injury.[63] In addition, these findings further validate the findings of the SafERteens study, demonstrating that a BI delivered during an ED visit can be

Table 1

Baseline Background, Violence, and Substance Use Characteristics by Study Condition

	Therapist BI Group (n = 263)	EUC Group (n = 146)	Total (n = 409)
Background characteristics			
Age (y)	17.7 (±1.9)	17.5 (±2.0)	17.7 (±1.9)
Female	161 (61.2)	84 (57.5)	245 (59.9)
African American	243 (92.4)	139 (95.2)	382 (93.4)
Married/living with partner	43 (16.4)	26 (17.8)	69 (16.9)
Live with parent/ guardian	191 (72.6)	117 (80.1)	308 (75.3)
Public assistance (parent or participant)	209 (79.5)	114 (78.1)	323 (79.0)
Failing grades/ dropped out of school	60 (22.8)	30 (20.6)	90 (22.0)
Gang involvement	17 (6.5)	6 (4.1)	23 (5.6)
Firearm carriage	23 (8.7)	12 (8.2)	35 (8.6)
Community violence	5.2 (±3.4)	5.4 (±3.4)	5.3 (±3.4)
ED visit/presentation			
Violent injury	19 (7.2)	17 (11.6)	36 (8.8)
Past 2-month substance use			
Any alcohol use	51 (19.4)	31 (21.2)	82 (20.1)
Any marijuana use	100 (38.0)	58 (39.7)	158 (38.6)
Past 2-month violence experiences			
Any experiences of violence	173 (65.8)	90 (61.6)	263 (64.3)
Any violent aggression	128 (48.7)	69 (47.3)	197 (48.2)
Any violent victimization	162 (61.6)	78 (53.4)	240 (58.7)
Self-efficacy for avoiding fights	12.9 (±4.4)	13.1 (±4.6)	13.0 (±4.5)

Data are reported as mean (±SD) or n (%). Significance levels: *p < 0.05, **p < 0.01, ***p < 0.001.
BI = brief intervention; EUC = enhanced usual care.

Table 2

Within-condition (Therapist BI Group; EUC Group) Self-report of Changes in Violent Victimization, Aggression, and Self-efficacy for Nonviolence at Baseline to the 2-month Follow-up

	Baseline	2-Month Follow-Up	Change From Baseline to 2 months, % Change
Any violent victimization			
Therapist BI group	6.07 (±11.55)	2.93 (±6.60)	−51.7%***
EUC group	4.37 (±7.20)	2.50 (±5.64)	−42.8%
Any violent aggression			
Therapist BI group	4.81 (±9.05)	2.56 (±6.06)	−46.8%***
EUC group	3.96 (±6.88)	2.50 (±6.04)	−36.9%***
Self-efficacy for avoiding fighting			
Therapist BI group	12.87 (±4.39)	13.79 (±4.64)	+7.2%***
EUC group	13.10 (±4.60)	12.93 (±5.22)	−1.3%

Data are reported as means (±SD). Significance levels: *p < 0.05, **p < 0.01, ***p < 0.001.
BI = brief intervention; EUC = enhanced usual care.

Table 3

ZIP Regression Analyses Examining the Efficacy of the Therapist BI (vs. the EUC Group) on the Extent of Violence Victimization, Aggression and Self-efficacy at the 2-Month Follow-up

	IRR* (95% CI) Frequency	AOR (95% CI) Prevalence
Any violent victimization		
Baseline victimization	1.02 (1.02–1.03)***	0.87 (0.83–0.91)***
Therapist BI	1.02 (0.89–1.16)	1.06 (0.66–1.70)
Any violent aggression		
Baseline aggression	1.04 (1.03–1.04)***	0.91 (0.88–0.94)***
Therapist BI	0.87 (0.76–0.99)*	0.78 (0.49–1.24)
Self-efficacy for avoiding fighting†		
Baseline self-efficacy	1.05 (1.04–1.05)***	—
Therapist BI	1.09 (1.02–1.15)**	—

Significance levels: *p < 0.05, **p < 0.01, ***p < 0.001.
AOR = adjusted odds ratio; BI = brief intervention; EUC = enhanced usual care; IRR = incident rate ratio; ZIP = zero-inflated Poisson.
*IRR values > 1 indicate variables associated positively with the outcome of interest and values < 1.0 indicate variables associated negatively with the outcome of interest.
†Self-efficacy for avoiding fighting was a Poisson regression model.

efficacious in reducing adolescent violent behaviors.[37,61] Our study adds to the literature by demonstrating that components of the SafERteens BI can be successfully adapted for application among a universal sample that is not being screened for alcohol use or prior violence. We found that the universal intervention was well received by participants, with low refusal rates (<20%) and with 86% of youth rating the intervention as very or extremely helpful, reinforcing that youth in high-risk neighborhoods, even those youth without prior violence history, are willing to discuss ways to reduce their future violence risk. Taken together, these findings have important public health implications for communities with elevated levels of violence, as the ED is a critical site for reaching youth who do not attend school (22%

in our sample) or receive regular primary care, and may represent a promising primary prevention tool for reducing violence in such communities.

Improved violence outcomes may have resulted from a combined focus on increasing motivation for behavior change and increasing their skills for avoiding violent situations, nonviolent conflict resolution, and anger management. Alternatively, intervention effects may have resulted from the focus on social promotive factors, including linkage to available psychosocial or

substance use resources and to positive community activities. Further study is needed to identify which intervention components were critical to the effectiveness of the BI among this universal sample. Understanding which components were the most effective will aid in the design and implementation of future violence interventions. It should be noted that aggression behaviors included moderate and severe behaviors (e.g., knife/firearm use). Due to the limited sample size, it is unknown whether youth with higher severity violence profiles were more motivated to change their behavior. More study with a larger adolescent sample is needed to understand the mediating and moderating factors that may have influenced outcomes.

Although additional study is needed to assess the generalizability of our findings, the combined approach of focusing on individual-level therapist-delivered behavioral counseling and cognitive skill development among a universal population of at-risk adolescents has the potential to be effective in other clinical and nonclinical settings. Universal school-based violence interventions have shown efficacy addressing a range of violence-related behaviors among school-aged populations.[64] Yet, most studies to date have focused on positive youth development among younger elementary and middle school–aged children. Further, among studies focused on high school–aged adolescents, most are limited to educational programs or peer-based mentoring for bullying and/or dating violence behaviors.[64] Within pediatric primary care settings, several screening tools for violence risk have been developed,[65–67] but few researchers have examined the best methods of intervening with adolescents who screen positive for violence risk and/or those who are at risk as a result of living in high-risk communities.[68] In addition, few researchers have examined a therapist-delivered BI to address a broader range of violence behaviors in school or primary care settings. Such an approach may be an effective universal prevention tool for addressing violence risk among adolescent populations in these settings, although further study is needed.

We did not observe a decrease in victimization during follow-up. This finding, which differs from the SafERteens study, may have resulted from our focus on a universal sample. Less than 65% of our youth reported violent experiences (aggression or victimization) in the 2 months preceding their ED visit. In contrast, recent fighting and alcohol use were inclusion criteria for the SafERteens study, and more than 80% of that sample reported experiencing consequences (e.g., trouble at school) due to their violence involvement.[61] Prior violence may serve to differentially enhance the salience of intervention components related to victimization, including such cognitive elements as developing skills for avoiding violence. Alternatively, the shorter follow-up period for our study may have limited participant exposure to violence situations, reducing the opportunity to observe changes in victimization. Further study and a longer follow-up period are needed to fully understand the effects of the Project Sync BI on victimization.

While a computerized workbook was used to guide the BI and increase fidelity, it is important to note that an on-site, in-person therapist was required. This approach has implications for translating and disseminating the Project Sync BI into busy, understaffed urban EDs, as well as for the cost-effectiveness of this BI as a universal prevention tool. Prior evaluations testing a fully computerized version of the SafERteens BI did not demonstrate efficacy for violence, but did reduce alcohol-related consequences.[61,69] Similarly, a recent study demonstrated that a fully automated stand-alone computer BI was effective in reducing alcohol consumption and alcohol related consequences (e.g., DUI) among underage risky drinkers.[35] It may be that key components of violence BIs, including empathy or complex therapist reflections concerning youth involvement in violence, may not be easily transferred to a computerized platform. Alternatively, recently tested BIs with efficacy reducing substance use may have benefited from advancements in automated tailoring technology. In addition, the marked increase in adolescent utilization of interactive technologies such as social media may serve to enhance the effectiveness of newer technology-based therapeutic interventions. Regardless, further study is needed to develop the most seamless and cost-effective delivery method for a universal violence BI. One potential alternative is the use of centralized call centers with access to remote therapists that can deliver the intervention, especially among low-resource urban EDs. This approach has recently gained acceptance in medical and research communities, as well as among large insurance agencies for other disease management and behavioral interventions,[70–74] and may offer a more cost-efficient delivery method for underserved low-resource settings.

LIMITATIONS

Study limitations should be acknowledged, including the quasi-experimental rather than RCT design. This concern is partly mitigated by the absence of baseline differences among study conditions and the focus of the study on replicating the positive SafERteens effects among a universal sample. However, it must be acknowledged that we cannot fully account for the full range of potential unmeasured confounding variables with this design. Findings may not generalize to youth not included in the study, including those in Flint who do not reside in the intervention or comparison neighborhoods, as well as those who were excluded (e.g., youth seeking care for suicidal ideation/sexual assault). While the sample reflected the racial and ethnic composition of the study site, further testing among youth with other racial and ethnic characteristics (e.g., Hispanic) is required. The use of self-report data is a potential limitation; however, prior studies confirm the reliability and validity of self-report data when privacy and confidentiality are assured.[75] Although attrition is a potential limitation, follow-up rates exceeded 90%. Further study with a longer follow-up period is required to assess the effects of the BI on long-term outcomes. Finally, as this was one component of a larger youth violence prevention program, there may have been spillover effects from the other interventions; however, less than 2% of the intervention group reported exposure to one of the other youth violence initiatives.

CONCLUSION

Our evaluation suggests that a universal brief intervention for violence, delivered by a therapist in the ED setting, can be effective in reducing aggression and increasing self-efficacy for avoiding fighting among a universal sample of youth in a high-risk community. These findings have important implications for community-based violence prevention programs addressing this complex public health problem. Future research should focus on investigating alternative cost-efficient delivery mechanisms that can improve the likelihood of translating this universal brief intervention into the routine clinical care that is provided to ED youth in high-risk communities to decrease the leading cause of morbidity and mortality among urban youth.

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