

# Changing Attitudes toward Youth Violence: The Role of Brief Hospital-based Interventions

*Cambio de Actitudes Hacia la Violencia Juvenil: El Papel de las Intervenciones Hospitalarias Breves*

Michel Aboutanos<sup>1</sup>, Salpi Kevorkian<sup>2</sup>, Kelly E O'Connor<sup>3</sup>, Rachele Hunley<sup>4</sup>, Robin Foster<sup>5</sup>, Sheryl Garland<sup>6</sup>, Nicholas Thomson<sup>7</sup>

Received on: 06 October 2023; Accepted on: 18 March 2024; Published on: xxxx

## ABSTRACT

**Aims and background:** The epidemic of youth violence is sweeping the nation and has become a public health crisis. The impact of hospital-based interventions on risk (violent attitudes and behaviors) and protective factors [attitudes toward school (ATS) and attitudes toward employment (ATE)] remains unknown. This study will assess changes in attitudes toward violence (ATV) in response to a hospital-based brief violence intervention (BVI) and community case management services (CCMS).

**Materials and methods:** Youths (10–24 years) who were intentionally injured and admitted to a level 1 trauma center were prospectively randomly assigned to BVI alone (group I) or in combination with BVI + CCMS (group II). Recidivism, ATV, triggers for fighting (TFF), ATS, ATE, and future aspirations (FAs) were assessed at baseline (BsL) during admission, 6 weeks (6W), and 6 months (6M) postdischarge.

**Results:** A total of 75 injured patients were enrolled. The groups did not significantly differ in demographics or injuries. Around 21% of the participants reported having a history of violent recidivism. ATS improved from 64% BsL to 81% 6W ( $p = 0.14$ ) and 92% 6M ( $p = 0.07$ ). ATV improved from 68% BsL to 79% at 6W ( $p = 0.0061$ ) and (78%) at 6M ( $p = 0.0199$ ). TFF was transiently decreased (<50%) at 6W, returning back to BsL (>50%) at 6M. ATE was high, >90% at all levels. The hospital experience was associated with a positive change in future outlook and aspirations in 70 to 80% (group I 75% and group II 78%) at all time periods.

**Conclusion and clinical significance:** Hospital BVI has a positive impact on youths' perception of and vulnerability to violence while promoting protective factors.

**Keywords:** Brief violence intervention, Case management, Youth violence.

## ABSTRACTO

**Objetivos y antecedentes:** La epidemia de violencia juvenil está arrasando la nación y se ha convertido en una crisis de salud pública. Aún se desconoce el efecto de las intervenciones hospitalarias sobre los factores de riesgo (actitudes y comportamientos violentos) y los factores de protección (actitudes hacia la escuela y el empleo). Este estudio evaluará los cambios en las actitudes hacia la violencia en respuesta a una intervención breve contra la violencia (BVI) en un hospital y servicios comunitarios de gestión de casos (CCMS).

**Materiales y métodos:** Los jóvenes (10 - 24 años) que sufrieron lesiones intencionales y fueron admitidos en un centro de trauma fueron asignados aleatoriamente prospectivamente a BVI solo (Grupo 1) o en combinación de BVI + CCMS (Grupo 2). La reincidencia, las actitudes hacia la violencia (ATV), los desencadenantes de las peleas (TFF), la asistencia a la escuela (ATS), el empleo (ATE) y las aspiraciones futuras se evaluaron al inicio (BsL) durante el ingreso, a las 6 semanas (6W) y a los 6 meses. (6M) después del alta.

**Resultados:** Se incluyeron 75 pacientes lesionados. Los grupos no difirieron significativamente en cuanto a datos demográficos o lesiones. El 21% de los participantes refirió tener antecedentes de reincidencia violenta. ATS mejoró de 64% BsL a 81% 6W ( $p=0,14$ ) y 92% 6M ( $p=0,07$ ). ATV mejoró de 68% BsL a 79% a 6W ( $p=0,0061$ ), y (78%) a 6M ( $p=0,0199$ ). Los TFF disminuyeron transitoriamente (<50%) a las 6W y regresaron a BsL (>50%) a las 6M. La ATE fue alta >90% en todos los niveles. La experiencia hospitalaria se asoció con un cambio positivo en las perspectivas y aspiraciones futuras en un 70 a 80% (GR1 75%, GR2 78%) en todos los períodos.

**Conclusión e importancia clínica:** Los hospitales BVI tienen un impacto positivo en la percepción y la vulnerabilidad de los jóvenes a la violencia, al tiempo que promueven factores protectores.

**Palabras clave:** Gestión de casos, Intervención breve contra la violencia, Violencia juvenil.

*Panamerican Journal of Trauma, Critical Care & Emergency Surgery* (2024): 10.5005/jp-journals-10030-1443

## INTRODUCTION

Violence is the leading cause of injury and mortality among youth in the United States.<sup>1</sup> Violently injured youth lack sufficient resources and support to change their violence-related attitudes and behaviors, resulting in a heightened risk of being both the victim and perpetrator of violence. Youth exposed to firearm violence are twice as likely to commit serious violence within 2 years, and youth who are violently injured are 88 times more

<sup>1,3</sup>Department of Surgery, Virginia Commonwealth University Health, Richmond, Virginia, United States

<sup>2</sup>Department of Criminology and Criminal Justice, Florida International University, Miami, Florida, United States

<sup>4</sup>Combating Crime Guns Initiative, Brady United, Washington DC, United States

<sup>5</sup>Department of Pediatrics and Emergency Medicine, Virginia Commonwealth University Health, Richmond, Virginia, United States

likely to be retaliatory reinjured.<sup>2-4</sup> Prior research has estimated that, for victims of intentional injury, between 10 and 50% will be reinjured within 5 years, and another 20% will die as a result of reinjury.<sup>5,6</sup> An innovative strategy for reducing retaliatory violence and violence-related reinjury is through hospital-based violence intervention programs, which capitalize on the catalyst of serious trauma, especially near-death experiences, to engage youth in violence prevention and pursue a nonviolent lifestyle,

Richmond, Virginia, has one of the highest rates of intentional injuries among young people in the United States. The homicide firearm fatality rate for Richmond youths under the age of 25 significantly exceeds both state and national rates.<sup>7-9</sup> Virginia Commonwealth University Trauma Center (VCUTC) is a level I trauma center that receives 85% of injuries that occur in Richmond and nearly 100% of all intentional and violence-related injuries. A review of VCUTC data revealed that 62% of patients presenting with violent injuries were <25 years of age, and nearly 96% of assault-related injury visits (446) to the emergency department (ED) were for youths <25 years of age.<sup>7</sup> In response, VCUTC developed “bridging the gap” (BTG), an evidence-based violence prevention and intervention program that integrates hospital-based brief violence intervention (BVI) for the youth during his/her hospital stay, and a wraparound intensive community case management services (CCMS) when the youth returns to his/her community. An initial evaluation showed BTG participants had greater improvements in hospital and community service utilization, low reinjury rates, and greater reductions in drug use.<sup>10</sup> The current study provides further analysis of our data with a focus on how hospital-based interventions influence both risk factors (e.g., violent attitudes and behaviors) and protective factors [e.g., positive attitudes toward school (ATS) and attitudes toward employment (ATE)]. Using a randomized design, we expected:

- Both BVI and BVI + CCMS will reduce violent reinjury rates.
- Both BVI and BVI + CCMS will reduce triggers for fighting (TFF) and positive attitudes toward violence (ATV).
- Both BVI and BVI + CCMS will increase positive ATS and ATE and increase future aspirations (FAs).
- In line with prior work, we expect the BVI + CCMS group to show the greatest improvements across all risk and protective factors.

## MATERIALS AND METHODS

Patients aged 10–24 years admitted to VCUTC with an intentional injury over a 2-year period were prospectively randomized to receive a BVI at bedside in hospital (psychoeducational violence intervention; group I) or BVI and CCMS (group II). A full description of our methodology is noted in our previous publication.<sup>10</sup> BVI, as described in Table 1, consists of six steps founded on the principles of motivational interviewing, psychoeducation, and cognitive-behavioral therapy. The “wraparound” CCMS are community-based, intensive case management services for youth and families provided for 6 months (6M) postdischarge and include the delivery of highly personalized and coordinated services aimed at addressing the needs of the individual patient and their family.<sup>11,12</sup>

All participants and caregivers completed a baseline (BsL) demographic, behavior, and attitudes assessment battery regardless of the intervention group. The assessment battery is based on the Centers for Disease Control and Prevention’s collection of assessment tools to measure violent attitudes, behaviors, and influences among youth.<sup>10,13</sup> This study utilized a consortium of validated measures to assess the history of recidivism, ATV, ATS,

<sup>6</sup>Office of Health Equity, Virginia Commonwealth University Health, Richmond, Virginia, United States

<sup>7</sup>Department of Surgery and Psychology, Virginia Commonwealth University Health, Richmond, Virginia, United States

**Corresponding Author:** Michel Aboutanos, Department of Surgery, Virginia Commonwealth University Health, Richmond, Virginia, United States, Phone: +1 804 827 1207, e-mail: michel.aboutanos@vcuhealth.org

**How to cite this article:** Aboutanos M, Kevorkian S, O’Connor KE, et al. Changing Attitudes toward Youth Violence: The Role of Brief Hospital-based Interventions. *Panam J Trauma Crit Care Emerg Surg* 2024;https://doi.org/10.5005/jp-journals-10030-1443.

**Source of support:** The efforts of Dr Thomson on this publication were supported, in part, by the Eunice Kennedy Shriver National Institute of Child Health and Human Development of the National Institutes of Health (R01HD108025: PI Thomson) and the Centers for Disease Control and Prevention (R01CE003296: PI Thomson).

**Conflict of interest:** Dr Michel Aboutanos is associated as the Editorial Board member of this journal and this manuscript was subjected to this journal’s standard review procedures, with this peer review handled independently of this editorial board member and his research group.

ATE, TFF, and FAs.<sup>14-21</sup> The assessment battery was administered at (1) admission to the hospital, (2) 6 weeks (6Ws) postdischarge, and (3) 6M postdischarge. In addition to informant-report assessment, a tracking log for case management captured the community service components. This was completed monthly to substantiate the self-reported assessment battery. Injury recidivism rates were

**Table 1:** Brief violence intervention (BVI)<sup>13,40</sup>

| Steps   | Content  |
|---|--|
| I Review and assessment of the violent incident   | Provides useful information about the incident; helps to shape the content of the intervention<br>Future behavior (e.g., retaliation) may be shaped by the understanding/meaning behind the event (e.g., perception of injustice, blocked goals, and disrespect) |
| II Discussion of conflict resolution strategies and nonviolent alternatives                       | Identify patterns of behavior or typical “roles” that the patient takes in conflict situations<br>Address response enumeration and evaluation  |
| III Safety risk assessment and information on the prevalence of violence and homicide among peers | The educational aspect of risk factors<br>Review the patient’s own risk profile  |
| IV Exploration of coping strategies, including family and social support systems                  | Explores coping skills and support systems<br>Discusses symptoms of posttraumatic stress disorder and encourages the use of mental health or counseling services if symptoms develop   |
| V Safety planning   | Develop a plan (with input from the patient) for the patient to “stay safe” after discharge from the hospital<br>Build confidence in the patient’s sense of self-efficacy to take charge of his/her life   |
| VI Referral for community-based services  | Referral to services such as outpatient counseling or victim witness programs  |

validated through the VCUTC trauma registry as well as the ED discharge database.

Fisher's exact test was conducted to determine if intervention groups differed in demographic, injury, and clinical outcomes. Analysis of variance (ANOVA) was conducted to examine differences between intervention groups at BsL, 6W, and 6M postdischarge. The statistical analysis software system was used for all analyzes. A sample size of 28 was required to detect a medium effect size ( $f = 0.25$ ) with a power of 0.80 and an  $\alpha$  level of 0.05. The VCU Institutional Review Board approved all study procedures.

## RESULTS

A total of 376 (out of 10,650) injured patients were admitted to VCUTC for an intentional injury and were eligible for the present study. Of those, 75 patients were recruited and randomized into one of the two intervention groups. Group I included 36 patients who received the in-hospital BVI. Group II included 39 patients who received BVI + CCMS. Once enrolled, each patient completed the behavior and attitude assessment battery. The 6W postdischarge assessment was completed by 72% of group I and 67% of group II. Around 56% of group I and 64% of group II completed the 6M assessment.

### Demographics

The intervention groups were similar in terms of sociodemographic characteristics, injuries, and clinical outcomes. Patients were primarily African American males with an average age of 19 with a penetrating injury secondary to the firearm. Most patients lived in inner-city Richmond and had attended some high school. Greater than 55% of patients had moderate to severe injuries. There was an average injury severity score of 12 in group I and 10 in group II. Around 60% of patients sustained injuries that required operative repair (Table 2).

### Recidivism

A total of 16 (21%) patients, nine (25%) in group I and seven (18%) in group II, reported having a previous visit to the hospital secondary to injury caused by violence. At 6W postdischarge, no new injuries were reported. At 6M postdischarge, one participant in group I reported a minor injury, which resulted in a hospital ED visit not meriting admission.

Since the beginning of our program, within the 6M follow-up period for each patient, there were no hospital admissions or deaths in either intervention group. Outside of the 6M period, one patient from group II was readmitted for a gunshot wound (GSW) 9-month postdischarge. This occurred despite relocating the patient and his family to a different neighborhood and securing school supervision. His reinjury, which occurred in his old neighborhood, was attributed

to previous gang ties and lack of guardian support. Another patient assigned to group II was discharged from the hospital to jail. He was killed 6M later, immediately after his release from jail. He did not have the opportunity to receive any wraparound services.

In summary, our recidivism rate for the 6M postdischarge is currently zero. Our overall recidivism rate, including patients outside of the 6M intervention period, is 1.5% per year. Our hospital readmission rate for this cohort of high-risk patients enrolled in BTG is 0.5% per year. Our 5-year readmission rate for violent injury is 2.5% for those enrolled in BTG.

### Triggers for Fighting

The TFF assessment was completed by 92, 99, and 98% of participants at admission, at 6W and 6M postdischarge, respectively. As noted in Table 3, there was no statistical difference in TFF between groups I and II at any time period. There was a statistical decrease in susceptibility to TFF and limited use of nonviolent strategies from 48% at admission to 41% at 6W. However, there was an increase back to BsL levels in negative response to TFF by 6M postdischarge. There was no statistical difference between intake and the 6M period.

### Attitudes toward Violence

Positive attitudes about aggression and fighting were assessed using the Houston Community Demonstration Project.<sup>4</sup> The ATV component of the assessment was completed by 100, 100, and 98%

**Table 2:** Demographics and clinical characteristics

| Characteristics         | Group I<br>BVI<br>n = 36 | Group II<br>BVI + CCMS<br>n = 39 |
|-------------------------|--------------------------|----------------------------------|
|                         | Number (%)               |                                  |
| Age (average)           | 19.5                     | 19.3                             |
| Male/female             | 34 /2                    | 36 /3                            |
| African American        | 78%                      | 95%                              |
| Inner city              | 25 (69%)                 | 29 (74%)                         |
| No insurance            | 23 (64%)                 | 22 (57%)                         |
| Penetrating injury      | 36 (100%)                | 38 (97%)                         |
| GSW                     | 28 (78%)                 | 36 (92%)                         |
| Stab wound              | 8 (22%)                  | 2 (5%)                           |
|                         | Average (min-max)        |                                  |
| Hospital LOS            | 6.86 (1–34)              | 5.35 (1–16)                      |
| Intensive care unit LOS | 1.29 (0–7)               | 1.13 (0–8)                       |
| ISS                     | 11.82 (1–32)             | 10.05 (1–26)                     |
| RTS                     | 7.66 (4.09–7.84)         | 7.74 (5.97–7.84)                 |

BVI, brief violence intervention; CCMS, community case management; ISS, injury severity score; LOS, length of stay; RTS, revised trauma score; GSW, gunshot wound

**Table 3:** Triggers for fighting (TFF)

| Assessment | TFF items* |           |               | p-value        |                  |
|------------|------------|-----------|---------------|----------------|------------------|
|            | Group I    | Group II  | Groups I + II | Groups I vs II | BsL vs 6W and 6M |
| BsL        | 194 (46%)  | 201 (49%) | 395 (48%)     | 0.4436         | –                |
| 6W         | 119 (38%)  | 130 (43%) | 249 (41%)     | 0.2170         | 0.0074           |
| 6M         | 114 (50%)  | 135 (46%) | 249 (47%)     | 0.3323         | 0.9111           |

\*These items measure triggers for fighting%, which is the aggregate number of items answered positively per group. Higher % indicates higher susceptibility for violent response and limited use of nonviolent strategies. BsL, assessment at baseline (admission); 6W, 6 weeks postdischarge; 6M, 6 months postdischarge

of participants at admission, 6W, and 6M postdischarge, respectively. As shown in Table 4, there was no statistical difference in attitudes between groups I and II at admission and at 6W postdischarge. At 6M, group I reported higher positive attitudes toward using violence when compared to group II. However, for both intervention groups, there was an increase from 68% at intake during admission to 79% ( $p = 0.006$ ) and 78% ( $p = 0.019$ ) at 6W and 6M postdischarge, respectively. Thus, group II had the smallest increase in positive ATV.

**Attitude toward School**

Attitudes toward school (ATS) were assessed using the Institute of Behavioral Science’s Denver Youth Survey.<sup>13</sup> The assessment was completed by 47, 40, and 27% of participants at admission, 6W, and 6M postdischarge, respectively. As displayed in Table 5, there was no statistical difference in attitudes between groups I and II at any time period. There was a statistical improvement from 64% at intake during admission to 81 and 92% at 6W and 6M postdischarge, respectively, in both groups.

**Attitude toward Employment**

The ATE was completed by 70, 58, and 76% of participants at admission, 6W, and 6M postdischarge, respectively. ATE was

positive in greater than 90% of all responses at all levels of comparisons within and between groups, with no statistical difference noted.

**Future Aspiration**

Future aspirations (FAs) were assessed using the Center for Urban Affairs and Policy Research’s Peer Leader Survey.<sup>13</sup> The assessment was completed by 92, 99, and 98% of participants at admission, 6W, and 6M postdischarge, respectively. There were no statistical differences in FAs between groups I (70%) and II (68%) at any time period (Table 6). There was no statistical change in FAs. Overall, up to 30% of the patients had low and less diverse FAs.

*Perceived Effect of Hospitalization and the Survey on FAs*

Overall, 84, 71, and 87% of the participants completed a questionnaire assessing the effect of the hospital experience on their future outlook at admission, 6W, and 6M postdischarge, respectively. Hospital experience was associated with a perceived positive effect on future outlook and aspirations during hospital admission (group I, 65%; group II, 76%). This perception was maintained at 6W (73%) and 6M (84%) postdischarge in both

**Table 4:** Positive ATV strategies

| Assessment | ATV—positive attitude items* |           |               | p-value        |                  |
|------------|------------------------------|-----------|---------------|----------------|------------------|
|            | Group I                      | Group II  | Groups I + II | Groups I vs II | BsL vs 6W and 6M |
| BsL        | 96 (67%)                     | 107 (69%) | 203 (68%)     | 1.152          | –                |
| 6W         | 87 (84%)                     | 78 (75%)  | 165 (79%)     | 0.2134         | 0.0061           |
| 6M         | 66 (87%)                     | 72 (72%)  | 138 (78%)     | 0.0302         | 0.0199           |

\*These items measure ATV and its acceptability, particularly in relation to fighting; % is the aggregate number of items answered positively per group. Higher % indicate a positive attitude toward violent strategies. BsL, assessment at baseline (admission); 6W, 6 weeks postdischarge; 6M, 6 months postdischarge

**Table 5:** Positive ATS

| Assessment | ATS—positive attitude items* |                     |               | p-value        |                  |
|------------|------------------------------|---------------------|---------------|----------------|------------------|
|            | Group I BVI                  | Group II BVI + CCMS | Groups I + II | Groups I vs II | BsL vs 6W and 6M |
| BsL        | 51 (68%)                     | 60 (60%)            | 111 (64%)     | 0.4644         | –                |
| 6W         | 32 (80%)                     | 53 (82%)            | 85 (81%)      | 1.3228         | 0.0034           |
| 6M         | 15 (100%)                    | 39 (89%)            | 54 (92%)      | 0.3155         | 0.0001           |

\*These items measure attitudes toward school, ATS (e.g., homework, teachers’ opinions); % is the aggregate number of items answered positively per group. BsL, assessment at baseline (admission); BVI, brief violence intervention; CCMS, community case management services; 6W, 6 weeks postdischarge; 6M, 6 months postdischarge

**Table 6:** Future aspirations

| Assessment | FA—positive attitude items* |           |               | p-value        |                  |
|------------|-----------------------------|-----------|---------------|----------------|------------------|
|            | Group I                     | Group II  | Groups I + II | Groups I vs II | BsL vs 6W and 6M |
| BsL        | 138 (70%)                   | 139 (68%) | 277 (69%)     | 0.7462         | –                |
| 6W         | 100 (66%)                   | 99 (71%)  | 199 (68%)     | 0.4500         | 0.8678           |
| 6M         | 70 (66%)                    | 106 (72%) | 176 (70%)     | 0.3355         | 1.0000           |

\*These items measure future and career orientation and aspirations (FA); % is the aggregate number of items answered positively per group. Higher % indicates stronger aspirations in a variety of education, career, and social domains. Lower % indicates lower and less diverse future aspirations; BsL, assessment at baseline (admission); 6W, 6 weeks postdischarge; 6M, 6 months postdischarge



**Table 7:** Perceived effect of hospitalization/survey on FAs

|   | Effect of hospitalization* |             |               | p-value        |                  |
|---|----------------------------|-------------|---------------|----------------|------------------|
|   | Group I                    | Group II    | Groups I + II | Groups I vs II | BsL vs 6W and 6M |
| BsL                                     | 22/34 (65%)                | 22/29 (76%) | 44/63 (70%)   | 0.4142         | –                |
| 6W                                      | 19/25 (76%)                | 18/26 (69%) | 37/51 (73%)   | 0.7554         | 0.8366           |
| 6M                                      | 16/18 (89%)                | 20/26 (80%) | 36/43 (84%)   | 0.6797         | 0.1144           |
| Effect of battery survey administration |                            |             |               |                |                  |
| BsL                                     | 3/30 (10%)                 | 4/33 (12%)  | 7/63 (11%)    | 1.0000         | –                |
| 6W                                      | 3/18 (17%)                 | 6/19 (32%)  | 9/37 (24%)    | 0.447          | 0.0963           |
| 6M                                      | 5/17 (29%)                 | 7/22 (32%)  | 12/39 (31%)   | 1.0000         | 0.0185           |

\*These items measure the perceived effect of hospitalization and the administration of the survey on FAs. Higher % indicates stronger aspirations in a variety of education, career, and social domains. BsL, assessment at baseline (admission); 6W, 6 weeks postdischarge; 6M, 6 months postdischarge

intervention groups (Table 7). In comparison, the effect of participation in the survey itself during admission had a much lower perceived effect on future aspiration (group I = 10%; group II = 12%). This improved to 30% at 6M postdischarge in both intervention groups.

## DISCUSSION

A growing number of studies have shown that in-hospital brief interventions can be effective in reducing risk factors for injury recidivism.<sup>22–25</sup> Initial analysis of our data focused on the utilization of hospital and community resources, alcohol and drug use, and injury recidivism.<sup>10</sup> We reported that in-hospital BVI is important for enrollment and rapport building but must be combined with CCMS in order to have significant improvement in hospital and community resource utilization.<sup>10</sup> Multiple prior studies have highlighted the importance of addressing one’s community context in risk reduction strategies for violence.<sup>26–30</sup>

The present study, which focused on changes in behavior and attitude, confirms the idea that CCMS has an integral role in long-term changes in risk factors. Furthermore, the present study highlights the importance of BVI and offers hospitals alternatives in the types of interventions they choose to engage in. In areas where resources are available, community case management programs should be combined with in-hospital intervention programs.<sup>10,26</sup> In centers where resources are constrained, BVI alone can still provide a significant tool for risk reduction. From our experience, it can be adequately performed in 30–45 minutes and can be easily taught to a social or healthcare worker.

We have shown in our current analysis that in-hospital BVI alone is equally effective in changing ATV and high-risk behavior. We noted significant improvement in positive ATE and the use of nonviolent strategies for conflict resolution. Our study, like others, capitalizes on teachable moments when injured youths are more susceptible or open to change after a life-threatening traumatic experience.<sup>4,5,12,31–39</sup> BVI is based on the current health belief model, noting that youth will change their attitude and behavior if (1) they believe they are personally vulnerable to the condition (i.e., perceived susceptibility to violence); (2) the consequence of the condition would be serious (i.e., perceived severity of the injury); (3) the precautionary behavior effectively prevents the condition (i.e., perceived benefits from the intervention); and (4) the benefits of reducing the threat of the condition exceeds the cost of taking action (i.e., the consequence of their behavioral change and the ability to successfully overcome the perceived barriers).<sup>31,40</sup>

The third and fourth concepts become the primary targets of BVI, where the perception of a positive outlook for the future is needed. The BVI couples this perception with a tangible plan and effective referral for the use of community resources. In our study, the hospital experience was associated with a sustained positive effect on FAs and outlook even 6M postdischarge. This was observed equally, even in patients who did not receive extensive community follow-up and case management services.

The question remains—does a change in attitude translate into a change in behavior and, ultimately, a change in outcome, such as a decrease in injury recidivism? The most honest answer is maybe and hopefully. It is well known that antisocial beliefs, such as TFF and positive appraisal of violence, are important risk factors for youth violence.<sup>41,42</sup> Risk modifications, therefore, become an important target for prevention efforts and could be feasible for most urban hospitals.

As noted, in the present study, the yearly recidivism rate was 0% for all patients within the 6M intervention period, 1.5% overall for hospital visits, and 0.5% overall for hospital readmissions. Our 5-year readmission rate for violent injury is, therefore, 2.5% for those enrolled in BTG. This is significantly lower than the current national rates for urban cities (35–50%) and contrasts significantly with our trauma center’s historical recidivism rate of 10–15%.<sup>5,6,43</sup>

Although the current study offers further support for the use of hospital-based BVI, findings should be interpreted with several limitations in mind. First, the study was limited to a 6M follow-up and thus restricted our ability to assess long-term effects. Secondly, the measures included were based on self-report assessments, and while self-reports are widely used and found to be effective for measuring personality and behavioral traits, there may have been a bias for underreporting bad behavior or, conversely, reporting positive attitudes. We have attempted to address such limitations by carrying out personal face-to-face interviews with the patients and their families with the same case manager who had developed rapport with the patients. Another significant bias is the selection bias in the patients participating in the surveys postdischarge. On the average, only 60% of the surveys were completed. For this high-risk population, it is considered a positive response and reflects the attitude of the patients toward the intervention process.

## CONCLUSION

Hospital-based BVI combined with coordinated community wraparound case management interventions is an essential intervention for violence prevention when resources are available. In

hospitals with limited resources or coordination, this current analysis showed that inhospital BVI alone could play a significant role in modifying attitudes and behaviors toward nonviolence strategies.

### Clinical Significance

The BVI requires minimal time and resources for its administration. We strongly submit that BVI should be considered as an essential tool for urban centers with high admissions for international violent injuries.

### ORCID

Salpi Kevorkian  <https://orcid.org/0000-0002-1839-9924>  
 Kelly E O'Connor  <https://orcid.org/0000-0003-1314-9851>  
 Robin Foster  <https://orcid.org/0000-0002-6255-7977>  
 Sheryl Garland  <https://orcid.org/0000-0002-8553-0638>  
 Nicholas Thomson  <https://orcid.org/0000-0001-5127-8174>

### REFERENCES

- David-Ferdon C, Vivolo-Kantor AM, Dahlberg LL, et al. A comprehensive technical package for the prevention of youth violence and associated risk behaviors. Atlanta, Georgia: National Center for Injury Prevention and Control, Centers for Diseases Control and Prevention; 2016.
- Sampson RJ, Raudenbush SW, Earls F. Neighborhoods and violent crime: a multilevel study of collective efficacy. *Science* 1997;277(5328):918–924. DOI: 10.1126/science.277.5328.918
- Dowd MD. Consequence of violence: premature death, violence recidivism, and violent criminality. *Pediatr Clin North Am* 1998;45(2):333–340. DOI: 10.1016/s0031-3955(05)70009-2
- Cunningham R, Knox L, Fein J, et al. Before and after the trauma bay: the prevention of violent injury among youth. *Ann Emerg Med* 2009;53(4):490–500. DOI: 10.1016/j.annemergmed.2008.11.014
- Shibru D, Zahnd E, Becker M, et al. Benefits of a hospital-based peer intervention program for violently injured youth. *J Am Coll Surg* 2007;205(5):684–689. DOI: 10.1016/j.jamcollsurg.2007.05.029
- Goins WA, Thompson J, Simpkins C. Recurrent intentional injury. *J Natl Med Assoc* 1992;84(5):431–435.
- Aboutanos MB, Jordan A, Goldberg S, et al. Bridging the gap: hospital community-based youth violence prevention program—pitfalls and lessons learned. *Curr Trauma Rep* 2017;3(2):79–88. DOI: 10.1007/s40719-017-0084-0
- Centers for Disease Control and Prevention. Youth Violence: Facts at a Glance. Atlanta, GA; 2016.
- Masho SW, Schoeny ME, Webster D, et al. Outcomes, data, and indicators of violence at the community level. *J Prim Prevent* 2016;37:121–139. DOI: 10.1007/s10935-016-0429-4
- Aboutanos MB, Jordan A, Cohen R, et al. Brief violence interventions with community case management services are effective for high-risk trauma patients. *J Trauma Inj Infect Crit Care* 2011;71(1):228–237. DOI: 10.1097/TA.0b013e31821e0c86
- Winters NC, Metz WP. The wraparound approach in systems of care. *Psychiatr Clin North Am* 2009;32(1):135–151. DOI: 10.1016/j.psc.2008.11.007
- Ketterlinus R. Interventions for Health Care Providers. Washington, DC: APHA 2008.
- Dahlberg LL, Toal SB, Swahn MH, et al. Measuring Violence-Related Attitudes, Behaviors, and Influences among Youths: A Compendium of Assessment Tools. Second Edition. Centers Dis Control Prev. Accessed September 4, 2005.
- Johnson CD, Messe LA, Crano WD. Predicting job performance of low income workers: the work opinion questionnaire. *Pers Psychol* 1984;37(2):291–299. DOI: 10.1111/j.1744-6570.1984.tb01451.x
- Simpson DD, McBride AA. Family, Friends, and Self (FFS) assessment scales for Mexican American youth. *Hisp J Behav Sci* 1992;14(3):327–340. DOI: 10.1177/07399863920143003
- Miller-Johnson S, Sullivan TN, Simon TR, et al. Evaluating the impact of interventions in the multisite violence prevention study: samples, procedures, and measures. *Am J Prev Med* 2004;26(1 Suppl):48–61. DOI: 10.1016/j.amepre.2003.09.015
- Brener ND, Kann L, McManus T, et al. Reliability of the 1999 youth risk behavior survey questionnaire. *J Adolesc Health* 2002;31(4):336–342. DOI: 10.1016/s1054-139x(02)00339-7
- Gorman-Smith D, Tolan PH, Zelli A, et al. The relation of family functioning to violence among inner-city minority youths. *J Fam Psychol* 1996;10(2):115–129. DOI: 10.1037/0893-3200.10.2.115
- Koren PE, DeChillo N, Friesen BJ. Measuring empowerment in families whose children have emotional disabilities: a brief questionnaire. *Rehabil Psychol* 1992;37(4):305–321. DOI: 10.1037/h0079106
- Dunst CJ, Leet HE. Measuring the adequacy of resources in households with young children. *Child Care Health Dev* 1987;13(2):111–125. DOI: 10.1111/j.1365-2214.1987.tb00528.x
- Kabacoff RI, Miller IW, Bishop DS, et al. A psychometric study of the McMaster family assessment device in psychiatric, medical, and nonclinical samples. *J Fam Psychol* 1990;3(4):431–439. DOI: 10.1037/h0080547
- Williams S, Brown A, Patton R, et al. The half-life of the 'teachable moment' for alcohol misusing patients in the emergency department. *Drug Alcohol Depend* 2005;77(2):205–208. DOI: 10.1016/j.drugalcdep.2004.07.011
- Johnson SB, Bradshaw CP, Wright JL, et al. Characterizing the teachable moment. *Pediatr Emerg Care* 2007;23(8):553–559. DOI: 10.1097/PEC.0b013e31812c6687
- Monti PM, Colby SM, Barnett NP, et al. Brief intervention for harm reduction with alcohol-positive older adolescents in a hospital emergency department. *J Consult Clin Psychol* 1999;67(6):989–994. DOI: 10.1037//0022-006x.67.6.989
- Becker B, Woolard R, Nirenberg TD, et al. Alcohol use among subcritically injured emergency department patients. *Acad Emerg Med* 1995;2(9):784–790. DOI: 10.1111/j.1553-2712.1995.tb03272.x
- Richmond TS, Schwab CW, Riely J, et al. Effective trauma center partnerships to address firearm injury: a new paradigm. *J Trauma Inj Infect Crit Care* 2004;56(6):1197–1205. DOI: 10.1097/01.ta.0000130760.87714.0e
- Meyer AL, Cohen R, Edmonds T, et al. Developing a comprehensive approach to youth violence prevention in a small city. *Am J Prev Med* 2008;34(3):S13–S20. DOI: 10.1016/j.amepre.2007.12.006
- Griffith DM, Allen JO, Zimmerman MA, et al. Organizational empowerment in community mobilization to address youth violence. *Am J Prev Med* 2008;34(3):S89–S99. DOI: 10.1016/j.amepre.2007.12.015
- Bruns EJ, Suter JC, Force MM, et al. Adherence to Wraparound principles and association with outcomes. *J Child Fam Stud* 2005;14(4):521–534. DOI: 10.1007/s10826-005-7186-y
- Cheng TL, Schwarz D, Brenner RA, et al. Adolescent assault injury: risk and protective factors and locations of contact for intervention. *Pediatrics* 2003;112(4):931–938. DOI: 10.1542/peds.112.4.931
- De Vos E, Stone DA, Goetz MA, et al. Evaluation of a hospital-based youth violence intervention. *Am J Prev Med* 2006;12(5 Suppl):101–108. DOI: 10.1016/S0749-3797(18)30242-3
- Rebecca C, Maureen W, Marc Z, et al. SafERTeens: computerized screening and brief intervention for teens at-risk for youth violence. *Acad Emerg Med* 2007;14(Suppl 1):S106–S107. DOI: 10.1197/j.aem.2007.03.996
- Becker MG, Hall JS, Ursic CM, et al. Caught in the Crossfire: the effects of a peer-based intervention program for violently injured youth. *J Adolesc Health* 2004;34(3):177–183. DOI: 10.1016/j.jadohealth.2003.04.001
- Zun LS, Downey L, Rosen J. The effectiveness of an ED-based violence prevention program. *Am J Emerg Med* 2006;24(1):8–13. DOI: 10.1016/j.ajem.2005.05.009
- Cooper C, Eslinger DM, Stolley PD. Hospital-based violence intervention programs work. *J Trauma Inj Infect Crit Care* 2006;61(3):534–540. DOI: 10.1097/01.ta.0000236576.81860.8c

36. Cheng TL, Wright JL, Markakis D, et al. Randomized trial of a case management program for assault-injured youth. *Pediatr Emerg Care* 2008;24(3):130–136. DOI: 10.1097/PEC.0b013e3181666f72
37. Marcelle DR, Melzer-Lange MD. Project UJIMA: working together to make things right. *WMJ* 2001;100(2):22–25.
38. Zun LS, Downey LV, Rosen J. Violence prevention in the ED: linkage of the ED to a social service agency. *Am J Emerg Med* 2003;21(6):454–457. DOI: 10.1016/s0735-6757(03)00102-5
39. Dicker RA, Jaeger S, Knudson MM, et al. Where do we go from here? Interim analysis to forge ahead in violence prevention. *J Trauma* 67(6):1169–1175. DOI: 10.1097/TA.0b013e3181bdb78a
40. Redding CA, Redding CA, Rossi JS, et al. Health behavior models. *Int Electron J Health Educ* 2000;3:180–193.
41. Thomson ND. *Routledge International Handbook of Psychopathy and Crime*. London: Routledge; 2018. pp. 508–525.
42. Youth Violence: A Report of the Surgeon General. US Department of Health and Human Services. Rockville, MD. accessed January 20 2001.
43. Centers for Disease Control (CDC). Repeat injuries in an inner-city population: Philadelphia, 1987–1988. *MMWR Morb Mortal Wkly Rep* 1990;39(1):1–3.