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Improved follow-up care for gun violence survivors in the Trauma Quality of Life Clinic

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ABSTRACT

Background Outpatient follow-up represents a crucial opportunity to re-engage with gun violence survivors (GVS) and to facilitate positive health outcomes. Current outpatient models for firearm-related injuries and trauma care are inconsistent and unstandardized across trauma centers. This project describes the patient population served by the multidisciplinary Trauma Quality of Life (TQoL) Clinic for GVS. Also of primary interest was the outpatient follow-up services used by patients prior to their clinic appointment. Subsequent referrals placed during Clinic, as well as rate of attendance, was a secondary aim.

Methods This was a descriptive retrospective analysis of a quality improvement project of the TQoL Clinic. Data were extracted from the electronic medical record and were supplemented with information from the trauma registry and the hospital-based violence intervention program database. Descriptive statistics characterized the patient population served. A X^2 analysis was used to compare no-show rates for the TQoL Clinic against two historical cohorts of trauma clinic attendees.

Results Most attendees were young (M=32.0, SD=1.8, range=15–88 years), Black (80.1%), and male (82.0%). Of the 306 total TQoL Clinic attendees, 82.3% attended their initial scheduled appointment. Most non-attendee patients rescheduled their appointments (92.1%), and 89.5% attended the rescheduled appointment. TQoL Clinic demonstrated a significantly lower no-show rate than the traditional trauma clinic model, including after the implementation of the hospital's inpatient violence intervention program ($\chi 2(2)=75.52$, $p<0.001$).

Conclusion The TQoL Clinic has demonstrated improved outpatient follow-up to address the comprehensive needs of GVS. Trauma centers with high gunshot wound volume should consider the implementation of the multidisciplinary TQoL Clinic model to increase access to care and to continue partnership with violence intervention programs to address health outcomes in those most at risk of future morbidity and mortality.

Level of evidence Therapeutic/care management, level III.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ The pilot of the Trauma Quality of Life (TQoL) Clinic was first introduced in 2018 with a small sample size of patients with traumatic injury patients of any mechanism.
⇒ Gun violence survivors have comprehensive biopsychosocial needs after injury.
⇒ An expanded TQoL Clinic for gun violence survivors was created in 2020.

WHAT THIS STUDY ADDS

⇒ The addition of a hospital responder from a hospital-based violence intervention program as part of the TQoL Clinic's treating team facilitated culturally appropriate care, addressed non-recidivism, and promoted clinic attendance.
⇒ Nearly all patients who visited the emergency department prior to their outpatient TQoL Clinic appointment did so for reasons that could have been addressed within the TQoL Clinic appointment.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Although steps have been taken to make trauma outpatient follow-up more interdisciplinary and patient-centered, these improvements are not standardized across the country.
⇒ This work highlights critical features and practice implications for establishing a trauma outpatient clinic specifically for survivors of firearm injuries.

BACKGROUND

Aside from risk of recurrent injury and death, gun violence survivors (GVS) are also at high risk of an array of adverse mental and physical health outcomes. Post-traumatic stress disorder (PTSD) affects up to 20% of trauma patients post-injury.[1 2] Individuals who survive a gunshot wound in particular are at even higher risk of developing PTSD when compared with non-assaultive mechanisms of injury (e.g., motor vehicle crash survivors).[3] Prior research has identified that GVS are also at high risk of developing chronic pain, increased alcohol and substance use, decreased physical function, and overall worsened physical and mental health-related quality of life.[3 4] These outcomes impact the daily lives of GVS and negatively impact interpersonal relationships through increased irritability and hypervigilance, avoidance of external reminders, sleep disturbance, and intentional withdrawal and isolation, which further hinder optimal recovery and support.[5]

Clinical follow-up represents a crucial opportunity to re-engage with GVS and to facilitate positive

health outcomes through an increase in access to care. However, in this population, loss to follow-up complicates the transition to outpatient care. Loss to follow-up rates have been reported as high as 69% in this population, and firearm injury has been shown to be an independent predictor for loss to follow-up.[6] Current discharge models for firearm-related injuries and trauma care are generally inconsistent and unstandardized across trauma centers.[7] These models fail to account for the spectrum and severity of physical, psychological, and social needs that GVS face in recovery. Overall, the transition of care that occurs when GVS are discharged from the hospital setting is plagued with poor communication, varied access to resources, and insufficient referrals—especially to psychological services.[8]

Some hospital systems have attempted to address these concerns by developing programs that focus on the unique social and psychological needs of trauma patients, in addition to addressing physical recovery.[9–11] Although advances have been made in making follow-up care increasingly interdisciplinary and patient-centered, these improvements are not tailored to the unique needs of GVS. The Trauma Quality of Life (TQoL) Clinic was developed in 2018 in response to the specific medical and psychosocial needs of the overall trauma patient population, given the significant risk of future morbidity. After a feasibility trial that demonstrated a reduction in no shows and an increase in access to care in comparison with standard of care,[7] the TQoL Clinic was reimagined and formally established specifically for GVS in 2020. The decision was made to focus specifically on this patient population due to their higher risk for poor patient-reported outcomes and complex psychosocial needs. At the initial appointment, patients see a trauma provider, psychologist, physical therapist, and social worker specialized in trauma care. A hospital-based violence interrupter was added to the treatment team to complement the multidisciplinary team approach to follow-up care and further address the safety and psychosocial needs for GVS. This article aimed to provide a clinical description of the patients seen in TQoL Clinic and the emergency healthcare services used prior to their first appointment. A secondary aim was to describe subsequent referrals placed during clinic, as well as the rate of attendance for those referrals.

METHODS

This was a retrospective, observational, descriptive project using the medical records of patients engaged with TQoL Clinic. Patients evaluated had TQoL Clinic visit dates between November 2020 and August 2022. This article used the Standards for Quality Improvement Reporting Excellence 2.0 guideline for reporting the results of this quality improvement project (SDC 1).

Clinic description

The TQoL Clinic is a hospital-based, interdisciplinary trauma clinic at an urban, Midwestern level I trauma center. It is the only level I trauma center serving the region, and therefore receives all medically complex firearm injuries in a large catchment area either through direct admission or through interfacility transfer. It receives approximately 4200 trauma activations yearly with over 550 patients with firearm injury seen, independent of admission status.

The goal of TQoL Clinic is to respond to the specific medical and psychosocial needs of GVS patients, to ultimately improve functional recovery as well as physical, social, and psychological well-being, and to reduce violent recidivism and reinjury. GVS inpatients admitted to the trauma surgery service are referred for a TQoL Clinic appointment approximately 1 week after hospital discharge. However, as with the implementation of any new clinical program, there was a run-in period for implementing this new referral protocol for GVS to TQoL Clinic specifically, as opposed to the previous protocol of scheduling any trauma patient in the general trauma clinic, which continued to serve non-GVS outpatients after discharge. This project used data from the run-in period of the program, and as such, the number of GVS patients eligible for scheduling in Clinic did not inherently equate to all GVS admitted to the trauma service for their hospitalization.

Within this Clinic appointment, the patient sees a trauma nurse practitioner, a trauma psychologist, a physical therapist, a social worker, and a hospital responder from the trauma center's hospital-based violence intervention program. The trauma nurse practitioner provides routine medical follow-up such as suture removal, medication adjustment, and placing referrals for additional specialized medical concerns, including connecting patients with necessary subspecialty follow-up care and referrals to trauma-informed primary care providers as needed. The physical therapist provides functional evaluations, appropriate exercises, and outpatient therapy recommendations. These were re-evaluations in which further screening interventions were performed, and if patients required additional treatment, they were then referred as appropriate. The two physical health provider roles of TQoL Clinic aimed to mitigate the development of chronic pain and to improve physical independence.

The other providers address the patients' psychosocial recovery. The psychologist is specialized in post-traumatic psychopathology and identifies symptoms of acute stress disorder and depression, provides education on symptom management, and makes referrals for continued follow-up for treatment with our own clinical team, if necessary. The social worker and the hospital responder address various social concerns including transportation to appointments, securing safe housing, discussing non-retaliation, and applying for disability, unemployment, and the state's Crime Victim Compensation program. The hospital responder is a credible messenger positioned to impart culturally appropriate interventions focused on non-retaliation after firearm injury. As a credible messenger, they are from and have lived in the communities of our city in which the majority of intentional firearm injuries occur. They traditionally meet with patients only during their hospital admission, but involvement with TQoL Clinic expanded their continuity of care by following patients into the outpatient setting. Altogether, the multidisciplinary team works collaboratively through real-time communication to develop a healthcare plan moving forward for each patient seen.

Scheduling for this appointment was incorporated into the inpatient discharge process for all GVS. Patients were told about this appointment by the discharging advanced practice provider or resident physician, and their bedside nurse. On the discharge paperwork, it stated that the patient was scheduled with the TQoL Clinic nurse practitioner, trauma psychologist, physical therapist, and social worker. Unfortunately, at this time, there is no designation for the hospital responder in the clinic due to administrative/billing barriers that are actively being addressed. However, follow-up was encouraged by all of the providers, particularly the hospital responder, but not through a formal or standardized process. Lastly, due to resource constraints and potential higher need for additional social and mental health needs due to severe injury, we chose to scope TQoL Clinic to only those patients who required admission to the inpatient trauma surgery service.

Data collection

Data were extracted from the center's electronic medical record and were supplemented with information from the trauma registry and the hospital violence intervention program database. Collected data included injury and demographic characteristics, clinic no-show rates, emergency department (ED) visits between discharge and clinic follow-up, 30-day readmission, and descriptions of the TQoL Clinic visit interventions including themes from the hospital responder's interventions. A window of 7–14 days for clinical follow-up was applied when assessing TQoL Clinic attendance. This is because the institutional standard of care protocol is to see patients within 2 weeks of discharge. We aimed to follow up with patients sooner than this window to facilitate close contact with patients and to decrease the opportunity for ED misutilization. Misutilization in this instance refers to using ED care for concerns that are addressable within the TQoL Clinic.

Statistical analysis

The primary aim was to describe the patient population served by the TQoL Clinic, and to identify the ED services utilized prior to their clinic appointment. This primary outcome was selected because it was of interest to learn if patients were visiting the ED prior to their pre-scheduled discharge follow-up clinic appointment. Subsequent referrals placed during TQOL Clinic, as well as rate of attendance, was a secondary aim. Descriptive statistics were used, including counts and frequencies for categorical variables, and mean with SD or median with IQR for continuous variables depending on their distribution.

The secondary aim was to compare no-show clinic rates using a control group to detect if TQoL Clinic had a different attendance rate compared with the traditional outpatient trauma clinic model. To investigate this, there were three analytic groups. The first group was the control group: a cohort of GVS who were scheduled for the trauma outpatient clinic prior to the implementation of the hospital's violence intervention program and prior to initiation of TQoL Clinic (May 2018–April 2019). The second group was a cohort of GVS seen in the standard trauma clinic between May 2019 and November 10, 2020 after implementation of the hospital's violence intervention program for inpatient GVS. This group was used to understand if there was an impact on clinic attendance due to the implementation of this violence intervention program. The last group was a cohort of patients seen in the newly developed TQoL Clinic between November 11, 2020 and October 19, 2022 when the violence intervention program hospital responder was following patients in TQoL Clinic. The group comparison analysis was conducted using a χ^2 test to compare proportions of no shows across all three groups. Analyses were conducted using R Statistical Software (V.4.2.2).[12] A p value of <0.05 was considered statistically significant.

RESULTS

Patient demographics and inpatient characteristics

Between November 11, 2020 and October 19, 2022, there were 306 GVS scheduled to be seen at the TQoL Clinic. During this same time frame, there were 538 (56.9%) GVS admitted to the hospital directly to the trauma service and did not die during hospitalization. These patients were therefore all eligible for follow-up in TQoL Clinic after discharge. Most attendees were young (M=32.0, SD=1.8, range=15–88 years), Black (80.1%) males (82.0%; tables 1 and 2). Although the average Injury

Table 1 Categorical demographic, clinical, and injury characteristics of TQoL Clinic patients (N=306)

Characteristic	n	%
Sex		
Male	252	82.4
Female	54	17.6
Race		
Black	245	80.1
Other	23	7.5
White	21	6.9
Hispanic	12	<5
AIAN	<5	<5
Unknown	<5	<5
Length of stay		
0–2 days	67	21.9
3–7 days	146	47.7
7–14 days	57	18.6
>14 days	35	11.4
Injury Severity Score		
Minor (1–8)	48	15.7
Moderate (9–15)	71	23.2
Serious (16–24)	54	17.6
Severe (25–49)	37	12.1
Critical (50–74)	0	0.0
Maximum (75)	<5	<1
DC disposition		
Home	162	52.9
Correctional facility	24	7.8
Home with services	5	<5
Left AMA	8	<5
Mental health	<5	<1
Rehab	<5	<1
Skilled nursing facility	<5	<1
Missing	102	33.0
Had other (non-TQoL) DC appointments scheduled		
Yes	59	19.3
No	244	79.7
If yes, number of appointments		
1	36	61.0
2	14	23.7
3	7	11.9
4	<5	<5
If yes, appointments attended		
1	30	50.8
2	12	20.3
3	<5	<5
ED visit before TQoL Clinic		
Yes	52	17.0
No	253	82.7
Showed to first TQoL Clinic appointment		
Yes	267	82.3
No	38	12.4
Referrals made in TQoL Clinic		
Trauma psychology follow-up	92	30.1
APNP follow-up	127	41.5
PT follow-up	111	36.3
Orthopedic	25	8.2
Number of trauma psychology follow-up appointments attended (up to 30 days)		

Continued

Table 1 Continued

Characteristic	n	%
0	194	63.4
1	44	14.4
2+	5	<5
Number of PT follow-up appointments attended (up to 30 days)		
0	236	77.1
1+	8	<5
Number of TQoL Clinic follow-up appointments attended after index visit		
0	179	58.5
1	46	15.0
2+	17	5.0

AIAN, American Indian/Alaska Native; AMA, against medical advice; APNP, advanced practice nurse prescriber; DC, discharge; ED, emergency department; PT, physical therapy; TQoL, Trauma Quality of Life.

Severity Score was 15.3 (SD=10.2, range=1–75), most patients had minor (15.7%) or moderate (23.2%) injuries.

On average, patients had an inpatient length of stay of 7.54 days (SD=9.0, range=0–68 days). For those who required intensive care unit (ICU) admission, the ICU average length of stay was 1.84 days (n=183, SD=4.2, range=0–31 days). Most patients had contact with the trauma psychology team (73.9%), social work (98.7%), and physical therapy (PT)/occupational therapy (91.2%) while inpatient. Nearly half of patients (52.9%) were discharged home, with the next most common discharge location being a correctional facility (7.8%).

Outpatient follow-up services

Of the 306 TQoL Clinic attendees, 82.3% attended their initial scheduled appointment. Most non-attendee patients rescheduled their appointments (92.1%), and 89.5% attended the rescheduled appointment, for a total show rate of 98.3%. The average monthly patient volume for the clinic was 13 patients, however ranged from 1 to 30 patients. Lower patient volume occurred in the early months of clinic implementation.

The average time between hospital discharge and the first attended TQoL Clinic appointment was 15.2 days (SD=5.7) and ranged from 3 to 30 days when excluding patients who were not seen within the first 30 days. However, within the follow-up window of 7–14 days, 117 patients attended (38.2%). Seventeen percent of patients (n=52) visited the ED prior to their outpatient TQoL Clinic appointment, and 92% of these visits were due to the index gunshot wound. These visits were for reasons that could have been addressed within the TQoL Clinic appointment scheduled in the coming days including pain, wound checks, and constipation or diarrhea. The two patients who visited the ED for a non-index gunshot wound chief complaints did so for a dog bite (n=1) and skin rash (n=1). Similarly, few patients had an inpatient readmission before their scheduled TQoL Clinic appointment (n=25, 8.2%), but of those readmissions, 92% were due to the index gunshot wound.

Table 2 Continuous demographic, clinical, and injury characteristics of TQoL Clinic patients (N=306)

Characteristic	M	SD
Age	32.0	11.8
Injury Severity Score	15.3	10.2
Length of stay		
Intensive care unit	1.8	4.2
Total	1.8	9.0
Time from hospital to TQoL Clinic (days)		
Of patients who returned within 30 days	15.2	5.7
Of patients who returned within 60 days	17.6	9.5

TQoL, Trauma Quality of Life.

TQoL Clinic referrals

During TQoL Clinic, additional referrals were placed for subsequent follow-up care per the individualized recovery needs of the patients. These referrals were based on the additional mental and physical health assessment findings performed during the initial clinic visit.

Referrals for additional follow-up with trauma psychology were made for 30.1% of patients (n=92), with 48% of those referred patients (n=44) attending outpatient trauma psychology follow-up within 30 days of their TQoL Clinic appointment. For ongoing PT, referrals were placed for 111 patients (36.3%); however, similar to trauma psychology, the majority of patients (n=236, 77.1%) did not attend PT follow-up within 30 days of their TQoL Clinic appointment.

Aside from being scheduled in TQoL Clinic, most patients did not have necessary subspecialty follow-up appointments scheduled at the time of hospital discharge (79.7%). For the 19.3% who did have additional appointments, most had only one additional appointment (61.0%), and that appointment was attended by 76% of patients. Orthopedic concerns due to traumatic injury are serviced specifically by orthopedic surgery, which is a separate specialty at our institution. Therefore, referrals were placed during TQoL Clinic for 25 patients (8.2%) needing continued orthopedic care. General referrals for ongoing follow-up with the trauma surgical services' advanced practice nurse prescribers were placed for 127 patients (41.5%).

No-show rates

TQoL Clinic demonstrated a significantly lower no-show rate than the traditional trauma clinic model, even after the implementation of the hospital's inpatient violence intervention program ($\chi 2(2)=75.52$, $p<0.001$) (table 3). The standard trauma clinic (prior to 2019) had a no-show proportion of 38%. After the implementation of the violence intervention program (May 2019 - November 2020), the proportion of no shows increased to 45%. However, once TQoL Clinic was established, the proportion of no shows decreased to 12%.

Table 3 Comparison of no-show rates for trauma clinic by chronological order of new clinical intervention additions for patients with gunshot wound from 2018 to 2022

		'No-show' patients	
Time period	Dates	n	%
Pre-HVIP (N=143)	May 6, 2018–April 30, 2019	55	38
HVIP before TQoL Clinic (N=219)	May 1, 2019–November 1, 2020	99	45
TQoL Clinic (N=306)	November 11, 2020–October 19, 2022	38	12

TQoL Clinic's HVIP is 414LIFE, which provides hospital responders to inpatients with gunshot wound, and now outpatient through this clinic.
TQoL Clinic no-show rate is significantly lower than each of the prior time periods.
X^2 test to compare proportions of no-shows across all three time periods: $X^2(2)=75.52$, $p<0.001$.
HVIP, hospital-based violence intervention program; TQoL, Trauma Quality of Life.

DISCUSSION

Current landscape of outpatient trauma care

Navigating follow-up care for GVS can be challenging due to poor communication across healthcare systems, varied access to resources, and insufficient specialty care referrals, especially to psychological services.[8] Complex psychosocial factors may contribute to the difficult transition of care for GVS. In long-term follow-up, 50% or more of patients with a gunshot wound screened positive for PTSD,[3 4] approximately two-thirds had chronic pain,[3] and scored below the national average for both mental and physical health.[4] The traditional model of outpatient trauma care fails to account for the full spectrum and severity of physical, psychological, and social needs that GVS often face in recovery.

A few hospital systems have attempted to create trauma follow-up programs that address the needs of trauma patients in the post-discharge period, regardless of mechanism of injury. For example, the Psychological Services Program was adopted by a level I trauma center with the goal of providing longitudinal, integrative psychological care for trauma patients and their families, and reducing trauma recidivism.[9] Another initiative, referred to as the Trauma Survivors Network, emphasizes peer mentorship, self-management, and educational resources as a means to improve patients' physical and mental health outcomes.[10] An additional hospital system created a Center for Trauma Survivorship that provided all patients who required intensive care for more than 2 days with access to a nurse practitioner, a social worker, and a healthcare navigator, as well as screening for PTSD and depression to identify additional mental health needs.[11]

Although steps have been taken to make outpatient follow-up more interdisciplinary and patient-centered, these improvements are not standardized across the country, and have not yet been tailored to the unique needs of GVS, who often endure long and complex recovery trajectories. Given the high mortality rate within a year after discharge for GVS, the post-discharge follow-up period is a crucial opportunity, and potentially the last opportunity, to intervene and facilitate positive health outcomes.

Redefining outpatient GVS care through TQoL Clinic

Preliminary results for the first 2 years of the TQoL Clinic demonstrate that the model is accessible and efficacious for its target population, particularly young Black men who are at highest risk of future mortality due to firearm injury.[13] The TQoL Clinic had a 12% no-show rate, a significantly lower loss to follow-up than the traditional trauma clinic model (i.e., one provider, one appointment) which had a 38% no-show rate for the comparison patient population. Even the addition of an inpatient hospital violence prevention program did not bolster clinic attendance, as there was a near equivalent no-show rate (e.g., from 38% to 45%).

As results demonstrate, the addition of the hospital violence prevention program alone was insufficient to decrease no shows to clinic; in fact, no-show rates increased, though that difference was not statistically significant. The outpatient hospital responder's role facilitates patients' transition from the hospital due to their ability to help demystify the healthcare system and to navigate discussions of non-retaliation and de-escalation after discharge. The hospital responders are a credible community member who add cultural competency to the clinical care provided, build trust within the healthcare system, and work closely with the social worker to provide additional social services. The work of the hospital responders is unique and imperative to the care provided for GVS, and likely contributes to increased attendance at TQoL Clinic, as it provides a clear touchpoint after discharge.

Prior to the TQoL Clinic, but after the implementation of the hospital responders within the treatment team, the hospital responders stressed the importance of follow-up clinical care after discharge to GVS. For example, there are ample anecdotal examples of trauma patients removing their own staples at home or asking a nursing friend or family member to perform a wound check. This situation is understandable. An hour-long trip on public transportation or losing hourly wages may be seen as undesirable when patients felt well physically or could have a friend assist with care. With the multidisciplinary approach of TQoL Clinic, these appointments have more services to offer in one appointment, rather than through referral to multiple additional providers at multiple appointments (i.e., psychology, PT, social work, violence prevention, or additional specialty services).

Limitations and future directions

This work is limited by the inherent design constraints of a retrospective, observational, descriptive medical record review. There is no experimental design, yet we offer a description of the TQoL Clinic and its potential benefits. Further, although there is a historical match control sample for the purposes of comparing no-show rates, it precludes the benefit of prospectively collected data and higher level of evidence that would be possible from a randomized controlled trial. This limitation also impacts the ability to track how many GVS initially admitted to the trauma service may have gone on to be discharged from a different service, thus inflating the number of GVS reported to be eligible for scheduling in TQoL Clinic.

Another design-related limitation was the use of a single site for this review. TQoL Clinic exists within the only level I trauma center in the region, which although it serves all medically complex gunshot wounds, GVS may pursue follow-up clinical or social needs care in other clinics, if preferred. Our trauma center is located on the outskirts of the greater metropolitan area where, due to historical racist redlining practices and segregation, the majority of the Black population of the city do not reside.[14] This is an important consideration given the overrepresentation of Black men in the gunshot wound patient population. Due to this, it is possible that the TQoL Clinic patients seek further outpatient care closer to home, which could in turn explain why referrals for PT and trauma psychology have low attendance rates within 30 days post-referral. Patients with mobility deficits requiring subsequent PT care may find it even harder to navigate the public transportation system, if necessary to get to the trauma center, which can be cumbersome even without functional deficits.

Regarding trauma psychology referrals, during the time of this project, the trauma center's psychologists were frequently booked out months in advance. This presented scheduling and flexibility difficulties which may explain low attendance and possible desire to seek follow-up care outside of our system. However, this conversely underscores the need for follow-up psychological services for this patient population.

Lastly, the finding that the addition of the hospital violence intervention program responders to trauma clinic alone was insufficient to significantly improve attendance may be a byproduct of COVID-19. Although we assume that COVID-19 had an effect on no-show rates, the non-elective nature of trauma care indicates future work is needed to ascertain its true impact

on trauma clinic attendance. At our trauma center, the violence intervention program began in 2019 with a primary focus on program implementation in the inpatient setting. Late 2019 into 2020 was when the outpatient presence of hospital responders became routine. These two reasons could have then set up rates to be inherently higher in 2021 as clinic attendance recovered from system-mandated COVID-19 precautions and alterations to normal clinic operations.

Future directions include a comprehensive research agenda assembled by this investigative team. Long-term outcomes (e.g., reinjury, readmissions, mortality), psychosocial health screening results (e.g., PTSD and depression symptom severity, pain, quality of life, physical functioning, exposure to violence, experiences of discrimination), and primary care provider referral rates remain to be examined to evaluate the specific health impact of TQoL Clinic for GVS. This will be the content for a future study as data collection is ongoing. Further, as a result of this project, we identified that specialist appointments (i.e., at non-trauma outpatient clinics) were not being scheduled appropriately for our patients after discharge. This is a huge deficiency in the discharge process and is a definite opportunity for improvement. Whether this could be due to weekend discharges or the discharge process of individual surgical subspecialties is unclear at this point. Ongoing quality improvement work is underway to improve the discharge and follow-up process due to this finding. Lastly, although GVS are the primary focus of TQoL Clinic, future interest lies in examining this clinic model as a standard for other injury populations. Moreover, the TQoL Clinic is just now expanding access to non-admitted GVS seen in the ED in late 2023. Although due to initial implementation and significant resource utilization reasons the TQoL Clinic had to be limited to trauma service discharge-only GVS, there are opportunities forthcoming to evaluate the impact of this expanded access.

CONCLUSION

Our TQoL Clinic has demonstrated improved outpatient follow-up to address the comprehensive needs of GVS. Trauma centers with high gunshot wound patient volume should consider the implementation of a multidisciplinary clinic model to serve the unique needs of this vulnerable patient population. Additionally, for trauma centers partnered with hospital-based violence intervention programs, integration into the healthcare system and outpatient clinic model can maximize resources, reduce redundancy, and may contribute to improved patient outcomes.

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Contributors CMT and TdR-C designed the overall project. AB, EAB, MW, NAW, HC, and MES were responsible for data collection. CWT was responsible for the statistical analysis. CWT, CMT, TdR-C, MES, AB, and EAB interpreted the results. AB, CMT, EAB, MW, and NAW wrote substantial portions of the article. All authors critically reviewed and approved the final article. The guarantor of this project is CMT and in this role they accept full responsibility for the finished work and the conduct of the project, had access to the data, and controlled the decision to publish.

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