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Trends and Characteristics of Terrorist Attacks Against Nightclub Venues Over 5 Decades

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Original Research

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Abstract

Introduction: Nightclubs are entertainment and hospitality venues historically vulnerable to terrorist attacks. This study identified and characterized terrorist attacks targeting nightclubs and discotheques documented in the Global Terrorism Database (GTD) over a 50-y period.
Methods: A search of the Global Terrorism Database (GTD) was conducted from 1970 to 2019. Precoded variables for target type "business" and target subtype "entertainment/cultural/stadium/casino" were used to identify attacks potentially involving nightclubs. Nightclub venues were specifically identified using the search terms "club," "nightclub," and "discotheque." Two authors manually reviewed each entry to confirm the appropriateness for inclusion. Descriptive statistics were performed using R (3.6.1).
Results: A total of 114 terrorist attacks targeting nightclub venues were identified from January 1, 1970, through December 31, 2019. Seventy-four (64.9%) attacks involved nightclubs, while forty (35.1%) attacks involved discotheques. A bombing or explosion was involved in 84 (73.7%) attacks, followed by armed assault in 14 (12.3%) attacks. The highest number of attacks occurred in Western Europe and Sub-Saharan Africa. In total, 284 persons died, and 1175 persons were wounded in attacks against nightclub venues.
Conclusions: While terrorist attacks against nightclub venues are infrequent, the risk for mass casualties and injuries can be significant, mainly when explosives and armed assaults are used.

Nightclubs are entertainment and hospitality venues where patrons socialize through music and dancing, often with food and alcoholic beverage service.[1] Outside the United States, nightclubs may also be called discotheques. Much like other entertainment venues, nightclubs and discotheques draw in substantial crowds to enclosed spaces, rendering them susceptible targets for acts of terrorism. The convergence of factors such as loud noise, inadequate lighting, and restricted exit options establishes an environment conducive to potential mass casualties in the event of a terrorist attack and may potentially overwhelm emergency medical response systems.

Trends in terrorist attacks against nightclub venues have not been well-described apart from high-profile attacks such as the 2002 Bali bombings and the 2016 Pulse Nightclub shooting. A better understanding of the trends of these attacks is needed to assess the threat to these venues and can assist emergency planning by identifying attack patterns and informing the medical response to common injuries encountered.

In this retrospective study, the Global Terrorism Database (GTD) was analyzed to determine the frequency of attacks against nightclub venues, the methods of attack used, and the injury patterns incurred.

Methods

The GTD is an open-source database maintained by the National Consortium for the Study of Terrorism and Responses to Terrorism (START; College Park, Maryland, USA) reporting information on terrorist attacks from 1970 to 2020.[2] To be included in the GTD, an incident must be intentional, entail some level of violence or immediate threat of violence, and be perpetrated by sub-national actors. Furthermore, an incident must meet at least 2 of the following 3 criteria: (1) the act must be aimed at attaining a political, economic, religious, or social goal; (2) there must be evidence of an intention to coerce, intimidate, or convey some other message to a larger audience than the immediate victims; and (3) the action must be outside the context of legitimate warfare activities.[2]

Precoded variables for target type "business" and target subtype "entertainment/cultural/stadium/casino" were initially used to identify attacks in the GTD potentially involving nightclub venues. Nightclub venues were specifically identified using the search terms "club,"

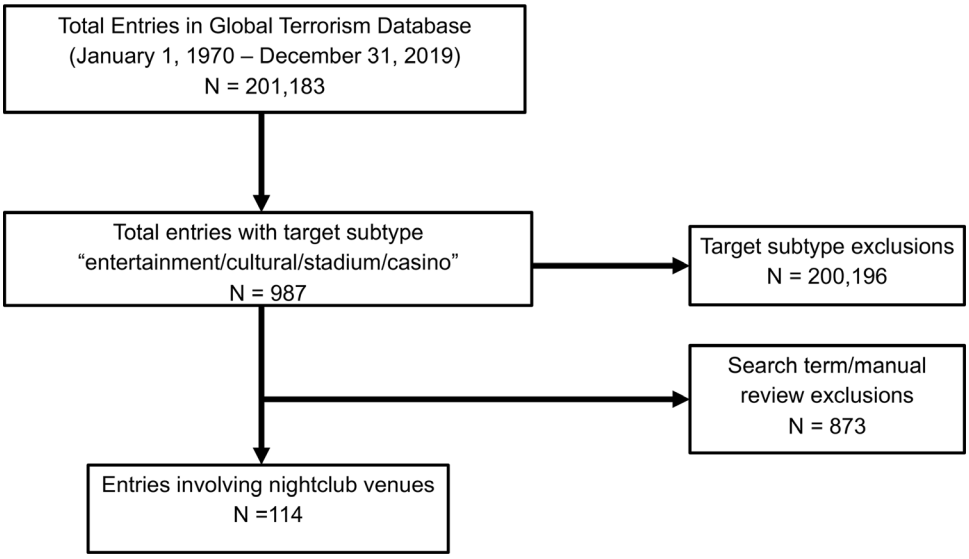

Figure 1. Flow diagram for inclusion/exclusion of entries from the Global Terrorism Database.

nightclub," and "discotheque" by 2 authors (S.Y.L. and G.R.R.). Discotheques were included in the search as they function similarly to nightclubs and are referred to collectively with nightclubs as nightclub venues for this analysis. Two authors (G.R.R. and S.Y.L.) reviewed each entry, including free text variables, for specific target venue information to confirm appropriateness for inclusion in the analysis. Nightclub venues were preferentially identified as settings where patrons were likely to participate actively in dancing and socializing; venues where patrons were primarily spectators of a performance were excluded. When consensus could not be reached regarding the inclusion or exclusion of an entry, a third author (G.N.J.) reviewed the data to resolve any discrepancy. All events were categorized into 2 nightclub venue types: "nightclub" and "discotheque." Additional variables were analyzed, which included the date of the attack, the country in which the attack took place, the method of attack, and the number of victims killed or wounded.

Data were analyzed using R (version 3.6.1; R Core Team, 2019).[3] Categorical variables were reported using frequencies [n (%)]. This study was deemed exempt from review by the Washington University School of Medicine Human Research Protection Office.

Results

A total of 201,183 entries involving intentional global incidents were reported in the GTD from January 1, 1970, through December 31, 2019. Of those, 987 entries were identified by the precoded subtype variable for "entertainment/culture/stadium/casino." Upon further review, 114 terrorist attacks targeting nightclub venues were included in the analysis (Figure 1).

Seventy-four (64.9%) attacks involved nightclubs, while 40 (35.1%) attacks involved discotheques (Table 1). Most attacks occurred in Sub-Saharan Africa and Western Europe, specifically Spain (13).

A bombing or explosion was involved in 84 (73.7%) attacks, followed by armed assault in 14 (12.3%) attacks, damage to a facility or infrastructure (excluding the use of an explosive) in 5 (4.4%) attacks, assassination in 3 (2.6%) attacks, hostage taking involving a barricade incident in 3 (2.6%) attacks, unarmed attack in 3 (2.6%) attacks and unknown attack type in 2 (1.8%) attacks. Perpetrators used explosives in 86 (75.4%) attacks, firearms in 16 (14.0%) attacks, incendiary weapons in 6 (5.3%) attacks, unknown weapons in 3 (2.6%) attacks, melee weapons in 2 (1.8%) attacks, and a chemical agent in 1 (0.9%) attack.

In total, 284 persons died, and 1175 persons were wounded in attacks against nightclub venues from 1970 through the end of 2019 (Figure 2). Notably, a 1986 nightclub bombing in Germany wounded 230; a 2001 nightclub bombing in Israel wounded 100 and killed 32; a 2003 nightclub bombing in Colombia injured 162 and killed 32; and a 2004 bombing in Colombia wounded 82 and killed 6.

Discussion

In this retrospective analysis, 114 terrorist attacks against nightclub venues worldwide were identified between 1970 and 2019, with over half of the attacks occurring in Sub-Saharan Africa and Western Europe, specifically Spain, with 13 of 33 attacks in Western Europe. For all 114 terrorist attacks reviewed, the most frequent weapon types used by attackers were explosives and/or firearms. Although most terrorist attacks against nightclub venues resulted in few, if any, casualties, a subset of attacks contributed disproportionately high numbers of fatalities and wounded.

Nightclubs and discotheques are venues sought out as spaces for pleasure and self-expression through socializing, dancing, and the enjoyment of food and drink.[1,4] The combination of alcohol consumption, loud ambient noise, poor lighting, and crowding creates conditions conducive to accidental injuries even during normal operations. A terrorist attack can exacerbate these baseline hazards resulting in life-threatening injuries and potential deaths. As nightclub venues concentrate large numbers of patrons within contained spaces, bombings and shootings can potentially inflict mass casualties.[4]

A mass casualty event (MCE) is a sudden event that results in multiple fatalities and a "surge of injured patients necessitating emergency services."[5,6] Although MCEs are infrequent, hospital systems should have coordinated emergency plans in place to provide immediate care to injured victims of attacks.[5] The type of

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Table 1. Characteristics of terrorist attacks against nightclub venues

Characteristic	*N* (%)
Club venue type (n = 114)*	
Nightclub	74 (64.9%)
Discotheque	40 (35.1%)
Region	
Western Europe	33 (28.9%)
Sub-Saharan Africa	23 (20.2%)
South America	15 (13.2%)
Central America and Caribbean	12 (10.5%)
Middle East and North Africa	10 (8.8%)
Eastern Europe	7 (6.1%)
Southeast Asia	6 (5.3%)
North America	4 (3.5%)
East Asia	2 (1.8%)
Australasia and Oceania	2 (1.8%)
Attack type	
Bombing/explosion	84 (73.7%)
Armed assault	14 (12.3%)
Facility/infrastructure attack	5 (4.4%)
Assassination	3 (2.6%)
Hostage taking	3 (2.6%)
Unarmed attack	3 (2.6%)
Unknown	2 (1.8%)
Weapon type used in an attack	
Explosives	86 (75.4%)
Firearms	16 (14.0%)
Incendiary	6 (5.3%)
Unknown	3 (2.6%)
Melee	2 (1.8%)
Chemical	1 (0.9%)
Victims	
Killed, total	284
Wounded, total	1175

weapon used differentiates the injury patterns sustained by victims, thus dictating the course of treatment, resources used in a hospital setting, and survivability.

Explosives

In this study, explosives were implicated in 75.4% of attacks against nightclub venues. Explosives offer several advantages to terrorist organizations. They are relatively easy and cheap to manufacture and can be detonated remotely. Additionally, in the confines of a crowded nightclub or discotheque, they can cause many casualties. One of the most lethal bombings involving a nightclub occurred on October 12, 2002, in Bali, causing a fire and resulting in more than 200 deaths.[7] Around 11:00 PM, a suicide bomber triggered a backpack bomb inside a nightclub, and then approximately 15 s later, a 1000 kg car bomb detonated outside, leaving a 1-meter-deep crater.[8] A third bomb was detonated outside the American Consulate in Bali.[8] The initial emergency response to care for victims was conducted primarily by vacationing health-care professionals supporting an overwhelmed local hospital system.[9] Victims sustained burn and shrapnel-related injuries. A surge in polytrauma patients on a remote island with limited medical resources necessitated the evacuation of many victims to other neighboring countries for treatment, including Australia.[7] Reliance on international assistance to address and treat many complex patients resulted in challenges in coordinating critical care and delayed treatment.[6] Fifteen patients were evacuated to and treated at Singapore General Hospital Burns Centre, while another 48 burn patients were transferred to various Australian burn centers.[10]

Firearms

Firearms were used in 14% of attacks against nightclub venues. Without rigorous security checks and thorough background assessments, establishments may open their doors to individuals possessing firearms. This deficiency in screening not only jeopardizes the safety of patrons but poses a significant risk to staff and surrounding communities. Addressing this issue calls for proactive measures, including implementing security protocols and collaborating with local law enforcement to mitigate the threat of gun violence and create a secure space for all to enjoy the excitement of the nightlife.

One of the deadliest firearm attacks occurred in Orlando, Florida, at the Pulse Nightclub on June 12, 2016. A shooter killed 49 and injured 53 during a 3-h rampage.[11] The nearest hospital, Orlando Regional Medical Center (ORMC), was located 3 blocks away, allowing only short notice to the emergency department and trauma teams before critically-injured patients arrived by means of emergency medical services (EMS).[12] ORMC had recently conducted a mass casualty drill to receive a rapid surge of patients.[12] A comprehensive retrospective study published in 2018 described the injury patterns of the Pulse Nightclub shooting victims and evaluated strategies to improve the morbidity and mortality of victims.[11] Thirty-nine victims died in the nightclub from gunshot wounds.[13] Many patients suffered gunshot wounds to the chest, pelvis, extremities, and abdomen.[11,13] A total of 58% of survivors experienced an injury to an extremity, while over 50% of the deceased victims experienced polytrauma involving the head, abdomen, or extremities. A total of 83% of the admitted patients received emergency surgery within 24 h, and life-saving care for the injured required the administration of 171 units of packed red blood cells, 116 units of plasma, 90 units of cryoprecipitate, and 25 units of platelets.[13] The Pulse Nightclub attack exacted a significant mental toll on treating health-care professionals in the form of burnout, major depression, and post-traumatic stress disorder.[14] The Pulse Nightclub attack highlights the devastating injuries that can be inflicted upon patrons and stresses the importance of emergency preparedness and multidisciplinary teamwork in hospital settings.[5,13]

Stampedes

Stampedes can arise when patrons need to exit a venue precipitously in the aftermath of an attack or other life-threatening event, leading to traumatic injuries from trampling and compression leading to asphyxiation and death.[15] Airway management and respiratory support must be rendered quickly on-site to address traumatic asphyxiation. Ensuing panic can lead to crowd surges toward exits and other egress points. On October 29, 2022, thousands crowded the streets of Seoul, South Korea, to celebrate Halloween.[16] A combination of narrow streets, limited entrances/exits, and a densely populated area resulted in 1 of the worst stampedes ever, with 156 deaths and over 150 injuries related to crowd surging.[16] Although the Seoul stampede was not a terrorist attack and did not occur within a nightclub, it occurred in a district

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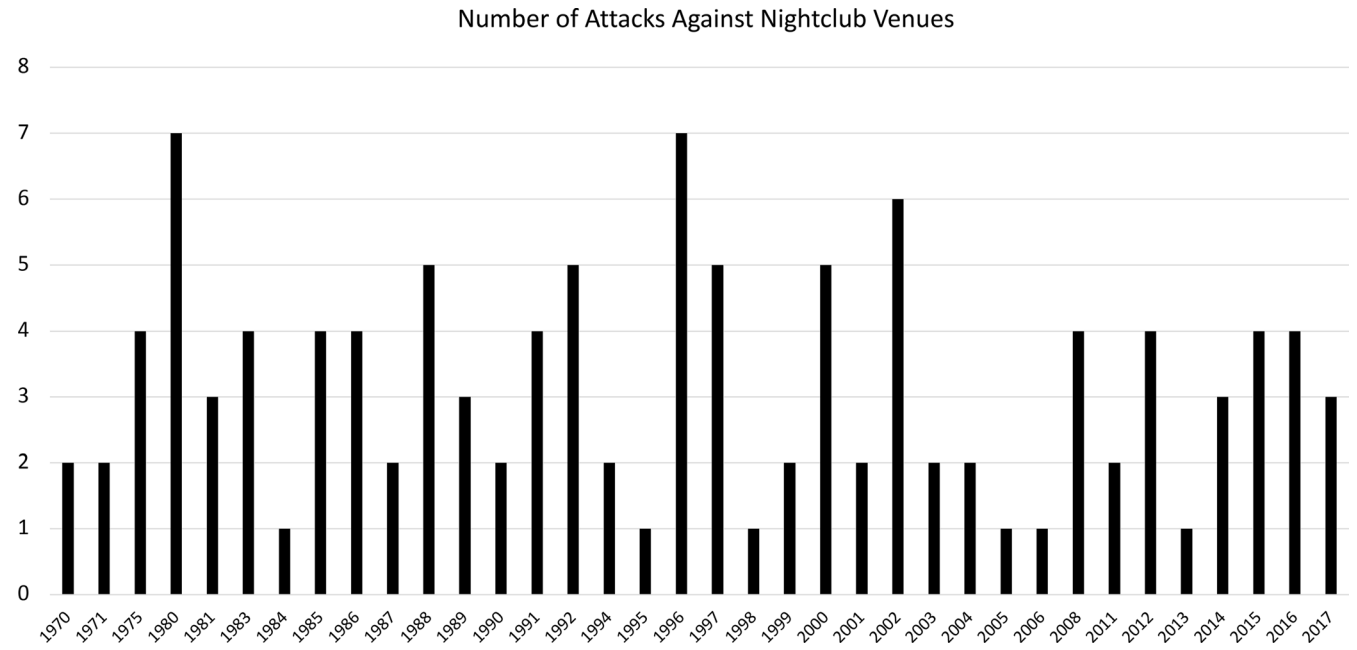

Figure 2. Number of terrorist attacks per year against nightclub venues.

popular for nightlife, including nightclubs, bars, and restaurants, and illustrates the threat posed when egress points are limited and overrun.

Emergency preparedness planning at nightclub venues should seek to facilitate rapid and safe egress of patrons, mitigate crowd surge, and support on-site first responder care of the injured when possible. Simple physical modifications within venues can include bright signage clearly indicating venue entrances and exits.[17] Video surveillance could be used to monitor the crowd, ensure entrances and exits are not blocked, and guide measures to mitigate crowd surge. Basic awareness and first responder training of nightclub venue employees could increase the likelihood that patrons critically injured in a stampede receive timely essential life support before EMS, fire/rescue, and law enforcement professionals arrive.

Geographical Trends

Of interest, Western Europe was identified as the geographical region with the most terrorist attacks against nightclubs in the GTD. This contrasts with other studies of targeted terrorism, which have shown a predilection for the Middle East, North Africa, and parts of Southeast Asia. This could be due to the popularity of nightclub venues in Europe as opposed to other parts of the world.

Within Western Europe, a disproportionate number of terrorist attacks occurred in Spain (13/33). Most terrorist attacks against nightclub venues in Spain were perpetrated by a local terrorist group, Euskadi Ta Askatasuna (ETA), accounting for 10 of the 13 attacks conducted between 1975 and 2006.[1] The ETA attacks were distinct from other nightclub attacks in several ways. First, whereas other terrorist groups may have targeted nightclubs for ideological or religious reasons, ETA's motivation was rooted in the objective of seeking Basque independence from Spain.[18] Their attacks on nightclubs were part of a broader strategy to undermine the Spanish state, generate fear among the population, and inflict harm within their own country rather than targeting foreign interests or establishments abroad. In contrast, other nightclub attacks tended to be isolated.

Emergency Medical Preparedness

A better understanding of the injury patterns and methods of terrorist attacks against nightclub venues can help inform future emergency responses to such events. The Hartford Consensus is a strategy focused on improving victim survival following a mass shooting, applying the "THREAT" framework.[19] The acronym "THREAT" stands for Threat suppression through law enforcement, Hemorrhage control, Rapid Extrication to safety, Assessment by medical providers, and Transport to definitive care.[19] Controlling catastrophic hemorrhage through tourniquet use can increase survival and prevent death.[20] Hospitals and first responders should have an organized emergency preparedness plan emphasizing communication and ensuring adequate resources to address patients with polytrauma. Training exercises should be conducted regularly to improve competency and confidence toward implementing emergency plans and protocols in response to MCEs.[5]

Tactical Emergency Casualty Care (TECC) is a trauma care curriculum adapted for civilian applications from US Department of Defense's Tactical Combat Casualty Care (TCCC) guidelines.[21] TECC is designed to offer comprehensive trauma treatment guidance to first responders, such as EMS personnel, with the aim of reducing preventable deaths among trauma victims.[21] A critical element of this guideline is the management of life-threatening hemorrhage in individuals who may sustain injuries from gunshot wounds or explosions. TECC places a significant emphasis on the proper application of tourniquets, often in combination with hemostatics and dressings, as an effective means to reduce mortality.[21]

In a 2015 study, law enforcement officers (LEOs) reported feeling adequately equipped and prepared to stabilize trauma victims after receiving TECC training.[21] In the future, adaptation and dissemination of this training to other first responders to mass casualty events involving nightclub venues, including staff, could save lives.

Optimal strategies to manage mass casualty events targeting nightclub venues remain to be determined. Hospitals should be

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prepared to manage surges of patients, ensuring effective and timely response, triage, and resource allocation. Comprehensive disaster preparedness plans should prioritize increasing staff and resources to effect efficient patient flow. Moreover, collaboration between health-care institutions, fire and emergency medical services, and law enforcement is essential to create a seamless and organized response to an MCE. This multifaceted approach is vital to ensure the best possible care for those affected and to minimize the impact of such incidents on both patients and the health-care system.

Limitations

Strengths of this study include the size and scope of the GTD, considered the most comprehensive unclassified database of terrorist attacks worldwide available to researchers. However, source data for the GTD originate from publicly available materials, including media reports, existing datasets, secondary sources (eg, books, journals), and legal documents, but not medical records. Additionally, the GTD does not include foiled or failed plots, attacks in which violence is threatened as a means of coercion, incidents reported from non-high-quality sources, or attacks in conflict zones where the combatant may be "national" and fall out of their inclusion criteria. Access to reliable source materials and efficiency of workflows have varied over the long history of the GTD. All of these limitations may mean that the true incidence and human toll of terrorist attacks targeting nightclub venues could be underreported or misreported. The GTD likely underreports the number of individuals killed or wounded; these numbers are unknown in many instances, so no numbers are reported. Finally, attacks where terrorism is a strong possibility but some uncertainty exists were included in the GTD and identified as such for incidents occurring after 1997. A clear association between an attack and terrorism can be difficult to establish. This study included these attacks to provide a broader, more complete understanding of attacks against nightclub venues captured in the GTD.

Conclusions

Terrorist attacks against nightclub venues can inflict mass casualties, especially when explosives and firearms are used. A greater understanding of global trends and characteristics of previous events can serve as a starting point for venue owners, hospitality industry leaders, emergency management, and pre-hospital and emergency clinicians to assess risk, create comprehensive plans to prevent deaths, and anticipate injury patterns.

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