Mortality at Music Festivals: An Update for 2016-2017 – Academic and Grey Literature for Case Finding

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Abstract
In 2016, the authors published a paper on music festival fatalities between the years 1999 and 2014 (n=722). In this Special Report, they provide an update on fatalities reported at music festivals globally for the period 2016-2017 (n=201). Using a search strategy designed to capture grey literature and media reports of music festival fatalities, reports of the overall frequency and cause-of-death breakdown for publicly reported, festival-related deaths are recorded. This update shows an increase in the frequency of festival-related fatality reports during the new period, together with an increase in the number of deaths attributable to terror (n=60) and overdose/poisoning (n=41). Drawing conclusions about the cause of this increase is challenging given the growth in Internet use, online media reports, and number of music festivals occurring annually when compared with the previous reporting period. The authors re-emphasize the need for a uniform reporting standard and reliable epidemiological data for fatalities related to music festivals, mass gatherings, and special events.

Introduction
Background
In December of 2016, Prehospital and Disaster Medicine published a paper on music festival fatalities between 1999 and 2014. Since that time, the research team has continued to follow fatality reports in both media and the published literature. Given the exponential growth in use of the Internet, the authors hypothesized that reports of festival-related deaths would also multiply. In this short report, they provide an update on fatalities at music festivals for 2016-2017, inclusive.

In this manuscript, the authors present an analysis of fatalities associated with music festivals, drawn from both the academic and grey literature. Challenges related to data collection and analysis underscore the magnitude of the problem and the need for uniform reporting standards.

Research Questions
The research questions asked for this report included the following:

1. How many, and what types of fatalities were reported in the setting of music festivals between 2016 and 2017 (inclusive)?
   a. In the academic literature?
   b. In the popular media?
2. What are the sources and limitations of the evidence available for analysis?

Methods
Case Finding
A search strategy, reported in the original paper, was created in consultation with a reference librarian and applied to the academic literature. The authors also conducted a search of English language articles published in the mainstream media during 2016-2017, using academic and non-academic search terms. Retrospective case-finding identified articles referencing death at eligible events during the time period of the study. Prospective Internet
alerts were set up using Google Alerts (Google; Mountain View, California USA). Search depth was a minimum of 10 pages deep.

Academic and media reports were used to locate new cases (eg, researchers [and reporters] sometimes cited previous, similar deaths). Names of victims (when publicly available) were recorded to prevent double counting. Additional information gleaned from reports allowed the search strategy and database to grow and become more specific over time.

Inclusion and Exclusion Criteria
Reports were selected for review if:

1. They were published in the English language;
2. The death or deaths occurred from January 1, 2016 through December 31, 2017;
3. The report(s) described a fatality related to attendance at a music festival; and
4. The report included demographic information such as the name and location (city/town and country) of the music festival, the month/year of the fatality, age of the deceased, and sex and/or name of the deceased.

Reports were excluded from review if the fatality:

1. Was not clearly related to attendance at a music festival;
2. Occurred in the setting of a permanent nightclub or dance venue; or
3. Was only reported in private blogs or social media sites.

Data Extraction and Analysis
An Excel spreadsheet (Microsoft [Microsoft Corp.; Redmond, Washington USA] for Mac [Apple Inc.; Cupertino, California USA 2011) was created for data extraction per the original protocol. Data were reviewed and subsequently entered by two research team members (TJ, ST). Classification and categories for fatalities were identified inductively as the data were collected and analyzed. Fatality data were then summarized.

Categorizing Cases
Cases were categorized according to proximal cause of death. For example, if an individual imbibed a recreational drug, became paranoid, and then ran into oncoming traffic, the case was categorized as a death resulting from trauma. Due to a general lack of detailed reporting on cause of death, overdose (ie, taking too much of a recreational drug or drugs) and poisoning (ie, death related to contaminated recreational drugs) were classified in the same category. If a death occurred off-site, but was clearly associated with attending a music festival, the case was included (eg, attendee returning to personal vehicle after being ejected from a festival, hit by a car).2

Ethics
Ethics approval was waived by the University of British Columbia (Vancouver, British Columbia, Canada) Research Ethics Board, as data were collected from publicly available sources.

Results from the Original Study
The grey literature documented a total of 722 deaths, including traumatic (594/722; 82%) and non-traumatic (128/722; 18%) causes. Traumatic fatalities were caused by trampling (n=479), motor-vehicle-related (n=39), structural collapses (n=28), acts of terror (n=26), drowning (n=8), assaults (n=6), falls (n=5), hanging (n=2), and thermal injury (n=2). Non-traumatic deaths included overdose/poisoning (n=96/722; 13%), environmental causes (n=8/722; 1%), natural causes (n=10/722; 1%), and unknown/not reported (n=14/722; 2%). The majority of non-trauma-related deaths were related to overdose (96/128; 75%). The majority of deaths reported in the academic literature were also reported in the grey literature (368/380, 97%). The academic literature documented trauma-related deaths (n=368) and overdose-related deaths (n=12). Mortality rates could not be reported, as the total attendance at events (denominator) was not known.

Two Additional Years: Fatalities at Music Festivals in 2016-2017
The grey literature for 2016-2017 documented a total of 201 deaths,3-91 including both traumatic (105; 52%) and non-traumatic (96; 48%) causes. Music festival fatalities were evenly distributed between the two years, with roughly 100 fatalities per year. Deaths resulted from acts of terror (n=60), trampling (n=13), motor-vehicle-related (including pedestrians being struck; n=10), thermal injury (n=6), shootings (n=5), falls (n=4), structural collapses (n=3), miscellaneous trauma (n=2), and assaults (n=2). Non-trauma deaths included overdoses/poisonings (n=41), non-trauma miscellaneous causes (n=36; eg, cardiac arrest or seizure), unknown/not reported (n=18), and natural causes (n=1). The majority of non-trauma-related deaths were related to overdose (44%).

No academic literature was found documenting fatalities that occurred while attending a music festival during 2016 or 2017.

Discussion
Comparing the data from the original study with data from 2016-2017, two things are noteworthy. There was an apparent shift in cause of death and there was an overall increase in the number of media reports on music festival fatalities.

In the previous paper, over a period of 15 years, there were a total of 26 deaths related to acts of terror. This stands in contrast to a total of 60 terror-related fatalities for 2016/2017 (a two-year period), which accounted for 56% of the trauma-related deaths. This finding is in keeping with the current national and international political situation and points to the need for continued and focused attention on emergency planning for venues and special events.

In the most general terms, the original results translate into an average of 45 deaths related to music festival attendance, reported annually during the 15-year study period. Roughly six deaths each year were related to overdose/poisoning. In contrast, data from 2016–2017 illustrated an average of 100 deaths each year related to music festival attendance and nearly 20 deaths each year related to overdose/poisoning. This finding must be interpreted with extreme caution as the Internet was not in widespread use during the early days of the previous study and so fatalities may have been under-reported by the media and/or not posted online.

The lack of academic reports during this period may well be explained by the lengthy process for traditional publishing with ethics, data collection, writing, and peer review. In contrast, grey literature publication can occur within hours to days.

Conclusion
In this extension of the original study, new results confirm that the annual number of fatality reports has increased when compared to
the annual average for the previous 15 years. This may indicate one or more of the following:

1. An actual increase in fatalities;
2. An increase in the number of reports about fatalities and/or;
3. An increase in the number of music festivals occurring annually.

These findings also show an increase in the number of music-festival-related fatality reports attributable to terror and overdose/poisoning.

These and the previous results confirm the need for a uniform approach to reporting on fatalities that occur during, or in association with, music festivals, special events, and mass gatherings.

References


