according to predefined eligibility criteria. Included items were read and results were compiled and summarized.
Results: In a total of 64 included items, 34 were published between 2013-2016. The most studied events were Germany's Love Parade stampede in 2010 (n = 6) and the UK Hillsborough stadium stampede in 1989 (n = 4). The literature retrieved was from a wide range of different disciplines. Conflicting definitions of human stampedes were found. The common belief that they result from an irrational and panicking crowd has progressively been replaced by studies suggesting that successive systemic failures are the main underlying causes. Stampedes are not reported in global disaster databases, making unusual sources like news reports often the only information available. Prevention measures are to date mainly related to crowd management and venue design, but their effectiveness has not been studied. Best practices for preparedness and response are not consensual.
Conclusion: Stampedes are a complex phenomenon that remains incompletely understood, hampering formulation of evidence-based strategies for their management. Many of the findings come from high-profile events and are difficult to extrapolate to other settings. More research from different disciplines is warranted to address these gaps in the knowledge in order to prevent and mitigate future events. A start would be to agree on a commonly accepted definition of stampedes.
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Common Injuries of Marathon Runners in Nigeria, Epidemiology and Preparedness

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Study/Objective: To identify the epidemiological spread of athletes, the injuries and medical conditions they present with, to assess the level of preparedness and organization of the medical care at the event, and how the medical preparedness coped with the surge at the medical tent.
Background: Marathons and ultra-marathons have become increasingly popular in Nigeria and other developing countries. Participants are more dedicated, investing time and effort to prepare and compete. As the field increases, so do the types of injuries and medical conditions that present to the medical tent on event day. As a result, a lot more goes into preparation and medical capacity for these events.
Methods: A mass gathering matrix will be applied to the event demographics to assess the projected need for the event. Actual preparedness on the ground will be assessed and studied. All athletes entering the medical tent, picked up along the route, or taken directly to hospital will be triaged and a questionnaire applied to them.
Results: Musculoskeletal injuries, dermatological, respiratory problems, collapse and hypotension have been shown to be common problems in marathon runners. The result should clarify, if this is so in marathons in Nigeria. Organization of medical coverage of these events needs to be well coordinated and staffed to be effective. The matrix will help organizers have a baseline or template for proper preparation.
Conclusion: The epidemiology of marathon injuries may follow conventional events, but a proper understanding of this will aid proper preparation for the event and organization of medical coverage. Though nothing is definite, a mass gathering matrix can give an effective guide or template for Medical organizations for marathon events.
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Can the Patient Influx at Mass Gatherings be Predicted? A First Attempt to Crunch the Numbers

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Study/Objective: To determine whether there are certain patterns that emerge at mass gatherings, in order to create a model for future predictions concerning the pace of patient influx at mass gatherings. Patient influx is an important parameter to determine the capacity of the first aid post.
Background: The Belgian Red Cross staffs first aid posts at more than 50 events with an attendance of more than 10,000 people every year. Since 2006, every patient encounter gets logged in a database called MedTRIS. The MedTRIS database contains more than 150,000 unique patient encounters.
Methods: The time of entry gets logged in the MedTRIS database for every patient. A chart is made showing the evolution of the number of patients that enter the first aid post every 30 minutes. To compare data over different editions (years), these data are 'normalized' by dividing these numbers by the total amount of patients that entered the first aid post that day. By doing this, abstraction is made of the total amount of attendees or other parameters.
Results: For all events where the number of patients is more than 300 per day in a particular first aid post, it is clear that the patient influx always follows a similar, event specific trend. Calculating the correlation between the different normalized graphs over the different years for a same first aid post on the same event, renders high rates in the range between 0.6 and 0.8.
Conclusion: For a given mass gathering, there seems to be a constant patient influx trend over the years. Further exploration is needed, and may lead to the start of creating a predictive model to determine the capacity of the first aid post.
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What Skills does a Physician Need at Mass Gatherings? An Analysis of more than 16,000 Patient Encounters that Required Medical Attention

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Study/Objective: To determine the most common type of injuries that need medical attention, to better prepare physicians at mass gatherings.