

Acknowledgements

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Conflicts of interest: None declared.

Key points

- Former communist (transition) countries in Europe had substantially lower caesarean section rates than other European countries in 2000.
- Between 2000 and 2010, transition countries have experienced far greater increases (in both absolute and relative terms) in caesarean section rates.
- These findings have important implications for health care planning, including raising the possibility that resources are not being used efficiently within newly reformed health systems. Further comparative research is needed to determine the causes of the growth in caesarean section.

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Short Report

Effects of the 2010 World Cup football tournament on emergency department assault attendances in England

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We explore the impact of the 2010 World Cup, held in South Africa, on levels of assault attendances to 15 emergency departments in England. The majority (70.1%) of assault attendees during the 2010 World Cup was male and aged 18–34 years (52.5%). Assault attendances increased by 37.5% on the days that England played ($P < 0.01$). Preparation for major sporting events in non-host countries should include violence prevention activity. Emergency department data can be used to identify violence associated with such events and thus inform both the targeting of prevention efforts and assessments of their effectiveness.

Introduction

Major international sporting events can raise significant public health challenges for both host and non-host countries.^{1,2} World Cup football tournaments in particular attract widespread public attention from participating nations, and factors such as heightened emotions and alcohol consumption in spectators can contribute to increased violence.^{3,4} For example, an English study found increases in assault-related ambulance call-outs immediately following a World Cup (2006) football match in which England played and later again in the evening.² Although major international football tournaments do not necessarily elevate

overall emergency department (ED) attendances,⁵ assaults can be among the most common causes of ED attendance related to football World Cups, often associated with alcohol use.⁶ A Welsh study found that ED assault attendances increased on days when Wales played international rugby or football tournaments.¹ However, there is little information available on the impact of World Cup football tournaments, specifically on assault-related ED attendances.

The 2010 World Cup was held in South Africa and involved the England team in four of a possible seven matches. This report explores the impact of this World Cup on assault attendances to 15 EDs in England.

Methods

Data were extracted from the Trauma and Injury Intelligence Group Injury Surveillance System⁷ (hosted by the Centre for Public Health; www.tiig.info), which warehouses routine attendance data from EDs in the north west of England. Data are anonymized, and their use is governed through data-sharing protocols agreed with information-sharing leads (Caldicott guardians) at each participating ED.⁷ ED attendances are categorized into injury groups, allowing the identification of assault attendances. Here, we analysed data from 15 EDs before (7th May–6th June), during (11th June–11th July) and after (16th July–15th August) the 2010 World Cup. Periods used for comparison in previous years (2007–09) cover the same periods matched on weekdays rather than dates and consequently include equal numbers of Fridays and Saturdays and equivalent number of days (31). Variables included in the analyses were age, sex and time/date of attendance. Additional variables were derived to indicate the days that England played and the World Cup period (i.e. pre, during and post). Days were re-coded into 24-h periods beginning at 6 am (e.g. Friday: Friday 6 am to Saturday 5.59 am).

Analyses utilized descriptive statistics with 95% confidence intervals (CIs) calculated from standard errors of the mean. Basic differences between means were tested using paired samples *t*-tests. Generalized linear modelling (GLM) was used to examine the independent effects of World Cup activity on levels of assault attendance. For the purposes of GLM, counts of assaults per day were square root transformed to ensure they approximated to a normal distribution (assault per day transformed, one sample Kolmogorov–Smirnov test for normality, $P=0.339$). All variables were entered into the model. Data were analysed in SPSS version 17.

Results

Throughout the World Cup period, there were a mean of 44.6 assault attendances per day. The majority (70.1%) was male and aged 18–34 years (52.5%). The first England game (vs. USA, 19:30 pm kick-off, score 1–1) took place on Saturday 12th June, the busiest day for assault attendances ($n=88$) during the World Cup period. The days on which the three other England games took place (none of which were Saturdays) all saw between 56 and 58 attendances.

Figure 1 shows the mean daily number of assault attendances for the periods pre-, during and post-2010 World Cup and for equivalent periods in 2007, 2008 and 2009. Across all years, there were no significant differences in the daily number of assault attendances across the three periods. A general downward annual trend in assault attendances was seen across the 4 years (29.0% decrease, 95%

CIs 22.7–35.3, $P<0.001$). Between 2007 and 2010, the mean number of assault attendances per day decreased from 62.6 (95% CI 43.8–71.5) to 41.4 (95% CI 36.4–46.5) in the pre-World Cup period ($P<0.001$), from 58.0 (95% CI 50.2–65.8) to 44.6 (95% CI 38.8–50.4) in the period during the World Cup ($P<0.001$) and from 56.5 (95% CI 49.1–63.9) to 39.7 (95% CI 33.9–45.6) in the period post-World Cup ($P<0.001$).

GLM was used to examine the independent effects of World Cup activity and other factors on levels of assault attendances. Results show that whether England played had a significant effect on assault attendances, which increased on these days [estimated marginal means; no England match: 47.6, 95% CI 46.3–48.9, England match 65.4, 95% CI 51.4–81.1; percentage increase = 37.5%, $P=0.012$]. Other factors independently associated with assault attendances were day of the week (assaults were higher on Fridays, Saturdays and Sundays; $P<0.001$), period (pre- and during World Cup periods were higher than the post period; $P<0.05$) and year (attendances decreased each year; $P<0.001$).

Discussion

Understanding the effects of major sporting events on violence is critical in planning local and national responses, including health staffing requirements, service provision, policing responses and violence prevention activity. Our analysis found that during the 2010 World Cup, assault attendances across 15 EDs in England increased by one-third when England played. Although all England matches may present an increased risk of violence, impacts may be greater for those that occur on weekends when assaults are increased regardless of World Cup activity.²

A combination of factors are likely to influence levels of violence during major football tournaments, including the effects of winning or losing a game on supporters' emotions⁴ and increases in alcohol consumption in both private and public settings. Although data on alcohol use is not collected by all EDs in our study, approximately half of all assault patients report having drunk alcohol before violence, with alcohol-related violence most common in young males (those accounting for most assault presentations in our study).⁷ Alcohol was widely promoted in England during the 2010 World Cup, and beer sales increased.^{8,9} Up to 4 million adults were expected to watch the first England match in pubs while each England match attracted >13 million domestic television viewers,¹⁰ with thousands more gathering in public places to watch on big screens. The congregation of large numbers of alcohol-consuming individuals with heightened emotions in public places creates potential for aggressive confrontation, while police reports of

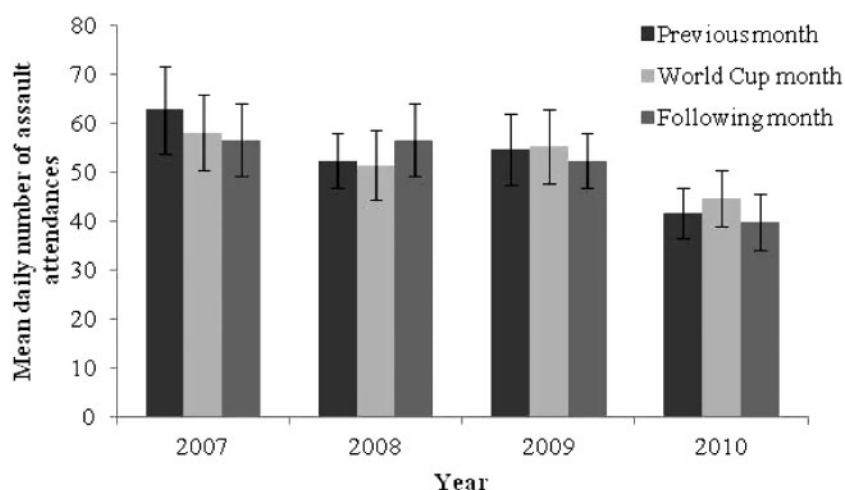


Figure 1 Mean daily number of assault attendances to 15 EDs in the month during, before and after the 2010 World Cup and equivalent periods in 2007, 2008 and 2009. Bars represent 95% CI

domestic violence also increase during major sporting events, often fuelled by alcohol.⁴ Thus, preventing violence during major international football tournaments should be a priority. Efforts may be best focused on controlling alcohol promotions and preventing excessive alcohol consumption among spectators.¹¹ At present, however, with the alcohol industry as a major sponsor of World Cup events, powerful commercial interests are often favoured over public health; a point clearly demonstrated by measures to remove alcohol bans from Brazilian stadia during the forthcoming 2014 World Cup.¹²

During the 2010 World Cup, expected increases in violence in England led to the implementation of a range of prevention initiatives including awareness campaigns (e.g. domestic violence) and increased police enforcement activity. Our study could not control for any impacts of these interventions on ED assault attendances. Further, England were only involved in four matches during the tournament, and the impact of the World Cup may have been different had England progressed to the final. Equally, our analysis focused on EDs in the north west of England and therefore does not account for regional variations. However, our study provides empirical evidence to support the need for prevention measures during World Cup tournaments and shows that ED data have the potential to identify violence associated with such events and thus inform both the targeting of prevention efforts and assessments of their effectiveness.

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Conflicts of interest: None declared.

Key points

- Our study explores the impact of the 2010 World Cup, held in South Africa, on levels of assault attendances to 15 EDs in England.

- Findings show that on the days that England played, ED assault attendances significantly increased by one-third.
- Preparation for major sporting events in non-host countries should include violence prevention activity.
- Our study shows that ED data have the potential to identify violence associated with such events and thus inform both the targeting of prevention efforts and assessments of their effectiveness.

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