

## Epidemiology

Post Wed 3.3

944 **FALLS RELATED INJURIES IN BANGLADESH: EXPERIENCES FROM A COMMUNITY-BASED SURVEILLANCE SYSTEM**

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**Background** Injuries have become a major public health concern in Bangladesh due to epidemiological transition. Falls among children is one of the leading cause of childhood morbidity in Bangladesh. Falls among adults has great impacts on our economy as falls is a major cause of permanent and long-term disability. However, falls among whole population has not yet been studied. In this study, we aimed at exploring the distribution and determinants of falls among all age groups.

**Methods** A community-based active surveillance system covering around 150,000 population was developed in three unions (lowest administrative infrastructure) of a sub-district of Sirajgonj district, Bangladesh in 2005. Every year, four rounds of data are being collected from the each and every households of the surveillance areas by the trained surveillance data collectors. One year data (July 2009 to June 2010) generated from this surveillance system was analysed for this study.

**Findings** Rate of non-fatal falls was higher among children (<18 years) than adults (405.24 and 304.60 per 100,000 population per year respectively). Falls from the same level (67.1%) was significantly higher than falls from height (32.9%) and slipping or tripping was the main mechanism for falls from the same level. Most of the falls occurred in the sport areas (18.9%) followed by street (17.2%). Accidental falls was the main mechanism for falls from height (32.6%). For falls from height, trees were identified as the most common place (40.7%) whereas height of the most of the incidents were less than 1 metre. Most of the falls occurred in the yards (34.6%). Mean days for school loss among the injured students were  $13.39 \pm 14.15$  while workday loss among injured person was  $12.65 \pm 14.54$ . Among the productive age groups, most of the injured persons were the main income earners of the family.

**Conclusion** Considering the extent of falls in Bangladesh, the issue needs to be addressed on priority basis. Findings of this study could be a knowledgebase for developing an evidence-based intervention to address the issue.

945 **ACCURACY OF SHORT-TERM FORECASTING OF OCCURRENCE OF MOTORCYCLE INJURY USING TIME SERIES ANALYSIS**

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**Background** Disease forecasting is useful for effective planning of prevention and control program. Time series analysis is one of quantitative methods applied in disease forecasting. Motorcycle injury was a major problem in Thailand. It was reported each year 54000–61000 cases and cases, including 3000–4000 deaths. Most of severe injury case under 15 years old was 5,000–6,000

and 200 died annually. Objective of the study is to compare accuracy between the Exponential Smoothing (ES) and Autoregressive Integrated Moving Average (ARIMA) Models for short-term forecasting of motorcycle injury, in order to estimates of the magnitude of problems, and prepare resources for injury prevention and control.

**Methods** Monthly data of motorcycle injury numbers from 2006–2014 were collected from Thailand National Injury Surveillance System. Two forecasting methods with the criterion of minimum Mean absolute error (MAE) and Mean Absolute Percent Error (MAPE) based on 2006–2010 data. The selected ES and ARIMA models then were applied for forecasting number of injury in 2011–2014. MAE and MAPE of one-, two-, three-, and four-month forecasting were compared between the two models. P value from paired t-test was calculated for each comparison.

**Results** The result showed that, in terms of forecasting accuracy, Exponential Smoothing (Simple Seasonal) model performed better than ARIMA (1,0,0) (1,1,1) model. MAPE of the forecasts from ES at one-, two-, three-, and four-month were 2.7%, 6.1%, 7.5% and 7.9% respectively, while those from ARIMA methods were 3.0%, 6.4%, 7.8% and 8.3% respectively.

**Conclusions** We suggested that the Exponential Smoothing (Simple seasonal) should be used as a tool to provide affordable and reliable short-term forecast of motorcycle accident.

946 **PERIL IN PARADISE: AN EPIDEMIOLOGICAL ANALYSIS OF INJURIES IN TROPICAL NORTH QUEENSLAND, AUSTRALIA**

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**Background** Tropical North Queensland is a popular national and international tourist destination in Queensland, Australia. Approximately 2000000 tourists visit the region annually; there are approximately 150000 residents. Tourists and residents participate in activities like bushwalking in the surrounding rainforests, swimming/snorkelling/diving in the Great Barrier Reef, and a range of adventure sports. Consequently, exposure to a range of venomous creatures and other risky situations is higher than usual. Cairns Hospital is the main public hospital in the region; the annual throughput of the Emergency Department (ED) is 60000 presentations. The purpose of this study was to investigate the epidemiological characteristics of the injuries treated at Cairns Hospital ED over a 4 yr period.

**Methods** Data were obtained regarding all injury presentations at the Cairns Hospital Emergency Department over 4 yrs (1<sup>st</sup> Jan 2010–31<sup>st</sup> Dec 2013). Descriptive analyses were completed to determine the epidemiological characteristics of these injury presentations (via SPSS).

**Results** There were 55,475 injury episodes treated at the Cairns Hospital ED over the study period, comprising 25.73% of all presentations to the ED. Injury was the leading cause for ED presentation over the 4 yr period. The proportion of injury presentations did not vary significantly over time. 15% of injury episodes involved tourists (3.6% interstate, 3.7% international, 7.5% from elsewhere in Queensland). Interstate tourists and tourists from elsewhere in Queensland were significantly more likely to be hospitalised as a consequence of their injury than residents of North Queensland (29% vs 22%;  $p < 0.001$ ), and international tourists were less likely to require hospitalisation (17%). Every year from

2010–2013, approximately 75 patients were treated for poisoning by venomous creatures. The majority of these were residents of Far North Queensland, but 10 international and 7 interstate tourists per year experienced poisoning of this nature. Mechanism and patterns of injury (e.g., most frequent injuries sustained) in relation to tourist status, age group and gender will be presented in further detail at the conference.

**Conclusions** This is a descriptive epidemiological study of injuries sustained by residents and tourists of Far North Queensland. These data can be used to inform injury prevention strategies, and to adequately prepare visitors and residents for safe enjoyment of the region.

#### 947 CHILDREN AND ADOLESCENTS ADMITTED TO A DANISH LEVEL 1 TRAUMA CENTRE 2002–2011

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**Background** Prevention of mortality and severe injury following trauma requires unbiased epidemiological surveillance. The epidemiology of children or adolescents admitted to a Danish trauma centre is largely unknown in particular in relation to home- and leisure risk areas. To describe the epidemiology and severity of potential severely injured children and adolescents admitted to the level 1 trauma centre at Odense University Hospital, Denmark.

**Methods** A descriptive study including all children and adolescents aged 0–17 admitted to the level 1 trauma centre at Odense University Hospital, Denmark 2002–2011. Data was extracted from the multiple trauma register and medical records. The Abbreviated Injury Score (AIS) was calculated in each patient.

**Results** 950 children and adolescents were included. The median age was 13 (0–17) years. Boys accounted for 60.6% of the cases. Accidents accounted for 97.2%, violence 1.4%, and self-inflicted injuries 0.4%. More than  $\frac{3}{4}$  of the injuries occurred either in traffic or at home. The occurrence was greatest in the summer (34.0%), during weekends (48.9%), and in the hours between 12.00 and 20.00 (59.2%). 58.5% of the injuries were due to traffic. Of these 39.7% were passengers in motor vehicles, 27.5 % drivers/passengers of a scooter/MC, 21.8 % bicyclists and 10.3 % pedestrians. The median ISS and MAIS was 4 (1–75) and 2 (1–6), respectively. Head/face injuries accounted for 36.5% and extremities for 30.9% of all injuries. 153 (16.1%) suffered from severe injuries (ISS > 15). Altogether, 49 (5.2%) died due to their injuries. The mortality among severely injured was 31.4%.

**Conclusions** Based on a local trauma register it was possible to describe the epidemiology and severity of potential severely injured children and adolescents admitted to a level trauma centre.

#### 948 URBAN VERSUS RURAL INJURY DIFFERENCES IN OMAN: RESULTS FROM A PROSPECTIVE TRAUMA REGISTRY

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**Background** Oman is a high-income country located in the Arab Gulf Region. The coastal regions of this country consist of highly developed urban centres, with the interior regions being rural and less developed. To-date little data has been generated on the regional differences in injury scale and case mix. Understanding these differences will allow for effective injury-prevention policies and targeted interventions.

**Methods** A prospective trauma registry was launched in two hospitals in Oman: Khoula Hospital, the national referral centre located in Muscat and Nizwa Hospital, a regional centre serving rural communities. All patients who were admitted with a history of trauma between October 2014 and April 2015 were included. Data was captured on injury details, demographics and treatment received. Further analysis was conducted by hospital of admission.

**Results** 2,596 cases were included, 62% were captured at Khoula. Age and sex distribution were similar across both sites. The leading cause of injury at Khoula was falls (39%) versus transport crashes in Nizwa (38%). Pedestrians were commonly injured in Muscat (17%) vs. Nizwa (6%). Approximately 22% of cases at Nizwa reached the hospital in less than 30 minutes since time of injury compared to less than 5% in Muscat. 61% of patients in Nizwa were transferred from other centres for definitive treatment as compared to Khoula (35%).

**Conclusions** Important differences exist between these two hospitals of Oman. A greater proportion of falls in Muscat might reflect the greater number of construction projects. In Nizwa, a rural environment highlights the burden of road injuries. More inter-facility transfers in Nizwa were observed due to initial triage of the victims to the nearest facility. These findings suggest that different injury prevention strategies and trauma care priorities are needed for each location. Additionally, significant differences in hospital transport times highlight the need for improved pre-hospital care.

#### 949 THE CHARACTERISTIC AND TREND OF INJURY MORTALITY IN CENTRAL-CHINA, 2008–2012

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**Background** Injury is now an emerging public health problem in China. Hubei Province, located in the central of China, has an area of 185,900 km<sup>2</sup> and a population of 57.9 million. Injury is the fourth leading cause of death both in Hubei Province and in China. Given the similar injury mortality situation, this study result will be useful to offer reasonable strategies in China.

**Methods** The injury mortality rate, distribution of rate by gender and age, potential years of life lost (PYLL) were adopted to analyse injury mortality data from the Death Registry System in Hubei Province during 2008–2012.

**Results** The proportions of annual injury deaths were 10.59%, 10.26%, 9.62%, 9.92% and 9.16% respectively during 2008–2012. The mortality rates were 60.54/10<sup>5</sup>, 60.79/10<sup>5</sup>, 61.41/10<sup>5</sup>, 59.72/10<sup>5</sup> and 59.81/10<sup>5</sup> respectively from 2008 to 2012. The standardised mortality rates were 53.21/10<sup>5</sup>, 52.34/10<sup>5</sup>, 52.19/10<sup>5</sup> and 48.96/10<sup>5</sup> respectively. The male mortality rates were 72.63/10<sup>5</sup>, 71.70/10<sup>5</sup>, 68.33/10<sup>5</sup>, 77.59/10<sup>5</sup> and 73.82/10<sup>5</sup> while the female mortality rate were 47.49/10<sup>5</sup>, 49.10/10<sup>5</sup>, 44.35/10<sup>5</sup>, 44.81/10<sup>5</sup> and 44.86/10<sup>5</sup> respectively during 2008–2012. Besides, injury mortality comprised about 9.88%