

to ten, from Nan Province in northern Thailand were participating.

**Results** The result of this intervention is that the children are highly capable to learn swimming, CPR and lifesaving activities within 10 days. Out of 20 participants all have successfully completed the swimming, CPR and lifesaving programs.

**Conclusions** The conclusion of this intervention study can be sum up by both the interventions result, the questionnaires and the independent evaluators is that swimming program as this one is highly needed for saving lives. Support from the local as well as the central authority is also needed.

Therefore such swimming program shows the importance of swimming knowledge and water security to prevent drowning in near future.

### 834 FEASIBILITY OF TEACHING FIRST RESPONSE TO CHILDREN BELOW 10 YEARS IN RURAL BANGLADESH

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**Background** One research activity established a community-based first response system including CPR. Participants were aged 10 years and over and each age group demonstrated that they could successfully learn CPR and retain the skills over time. Another research activity involved teaching children 4 years old and over basic swimming skills and safe rescue. Follow-up research on the children showed that many conducted rescues. The average age of rescuer and rescuee was 9 years and 3 years respectively. Some rescues were not successful as the victim lacked a pulse and respiration. This demonstrated a need for children younger than 10 years old to be able to resuscitate young children. The objective of the study was to develop a group of young community first responders between the ages of 7 and 9 years to provide first aid and CPR in order to demonstrate whether first responders in that age group were able to provide emergency response when required

**Methods** Ten community swimming instructors (CSIs) were trained to teach first aid and CPR to children 7–9 years. The CSIs participated in a two-day intensive training-of-trainers activity. A standard first aid course including CPR was taught to the children using child manikins following swim training in the SwimSafe program.

**Results** A total of 811 children participated in the training programme. The male:female proportion was 51.2 percent and 48.8 percent. A total of 82.5 percent of participants passed the first aid and CPR certification process. Passing rates were similar for both sexes and the highest passing rates were noted in 7 year old boys (85.0 percent) and girls (87.0 percent).

**Conclusion** Children aged 7–9 years old can learn the skills of first aid and CPR. Further research is needed to demonstrate that skills are retained over time and that once trained, these young children can provide successful first response activities in emergencies that include CPR.

### 835 WHAT'S THE REPORTING STATUS OF CHILD DROWNING AND NEAR DROWNING: FINDINGS FROM 10 DISTRICT'S GOVERNMENT HEALTH FACILITIES OF BANGLADESH

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**Background** Drowning is the leading killer of children globally, especially in developing countries. In Bangladesh, drowning is the cause of death in under five. Bangladesh health and injury survey published in 2004, shown that every year around 18000 children die due to drowning. While estimated magnitude of drowning deaths are still so high from other research findings in Bangladesh. Drowning death in majority cases are under reported, deaths are not properly registering in national Management Informational System (MIS) of Directorate General of Health Services (DGHS). The study is to explore district government hospital records on drowning deaths and near drowning treated in the facilities. The study also identified why deaths/near deaths due to drowning were low reported.

**Methodology** We have purposively selected 10 districts, in where 10 district hospitals and 69 Upazila Health complex (Primary health care centres at the sub-district level). Retrospective data was collected from the facilities from January – December 2014 for reported drowning death or come to hospital with near drowning. We also conducted 20 short interviews with the health care providers at the district and upazila health facilities.

**Results** A total 246 drowning deaths were reported in 9 districts during 2014, one district didn't recorded any deaths in children. Reported drowning rate was found 3.35/100,000, whereas, another 159 near drowning children come to hospital for treatment and has recorded in hospital register. Near drowning rate was found 2.0/100,000. Health care providers at districts and upazila facilities mentioned that drowning cases rarely come to hospital and the community didn't feel it's necessary to report or bring the drown child to hospital. Like this, they also mentioned, near drowning case were found to be mostly treated locally, they don't bring their children to the facilities.

**Conclusions** Present findings from the hospital record shown that there are serious under reporting of drowning and near drowning cases. Bangladesh health and injury survey shown drowning rate 28.6/100,000 in children and near drowning is 118/100,000 which are much higher. To understand the real burden of the injury and survival of the children, it's extremely essential to have a comprehensive data record on drowning nationally.

## Fire Safety

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### 836 AN EXPLORATION OF PAEDIATRIC BURN INJURIES, ASSOCIATED WITH COOKING, IN RURAL AND PERI-URBAN MALAWI

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**Background** Burn injury rates are especially high in Africa where exposure to unsafe cooking appliances and open fires pose

significant dangers to children. While it has been suggested that the use of improved cookstoves (ICS) may mitigate a child's exposure to burn injuries more evidence is needed. The aim of this study is to explore factors which contribute to the incidence, cause and severity of paediatric burn injuries associated with cooking. Malawi was selected for this study as; children are at particularly high risk of burns because of the nature of the environments in which they live and the paucity of burn prevention programs.

**Methods** Data was collected across four sample sites. Each site had previous exposure to an ICS technology. Hospital data and community surveys were used to elicit the incidence of burns. Household interviews, focus groups and observations obtained narrative experiences from families whose children have, and have not, experienced burn injuries in the home. Interviews were undertaken with stove organisations to better understand existing quality control and safety standards in relation to ICS.

**Results** Results will include: hospital and community based data; parents attitudes towards to the causes of burn injuries; parents perception of hazards and safety within their compound; safety precautions practiced by parents in the home; barriers to preventing burns injuries; risk factors associated with the cooking process and the kitchen environment; existing measures used to determine the safety of ICS.

**Conclusions** The findings will show the key factors associated with paediatric burn injuries across rural and peri-urban areas of Malawi. This information would support the advancement of culturally and contextually appropriate interventions and policy relating to ICS programmes. The study recommendations may also be applied to a wider number of countries, whose population rely on similar cooking processes.

### 837 ECONOMIC BURDEN OF FIRE-RELATED DEATHS IN FINLAND: INDIRECT COSTS USING A HUMAN CAPITAL APPROACH

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**Background** The aim of this research was to assess the indirect economic burden of fire-related deaths in Finland in the period 2000–2010.

**Methods** Data on all fire-related deaths during 2000–2010 in Finland were obtained from the Causes of Death register administered by Statistics Finland supplemented with demographic/socioeconomic data. Lost household- and work-related productivity was valued by a Human Capital method. Additionally, Potential Years of Life Lost due to the fire-related deaths was reported.

**Results** A total of 1090 fire-related deaths were observed during the period 2000–2010 in a population of some 5.4 million. The majority of the victims died of combustion gas poisoning (65%) followed by burns (33%). Annually lost Potential Years of Life ranged from 2094 to 3299 with an annual average of 2763. Total productivity losses in the period 2000–2010 reached EUR 342 million with overall mean for a victim at EUR 0.315 million and annual average of EUR 31.1 million while using a three per cent discount rate.

**Conclusions** Losses due to fire-related deaths are high and this study remedies the lack of academic knowledge about the issue.

### 838 FIRE INVESTIGATION PLAYS A KEY ROLE IN REDUCING FIRE DEATHS

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**Background** Fire deaths have been recorded in Finland since 1960. The annual average of fire deaths has been over 100 victims per year. The ministry of interior has a vision of less than 50 fire deaths per year. In 2007 fire departments decided to investigate all the fires causing injuries or fatalities.

**Methods** The results are based on national data collected by fire investigators of fire departments in co-operation with the police. Data are analysed by the descriptive statistics.

**Results** In 2007–2009, the average number of fire deaths was 100 persons per year. In 2010–2014, the average was 75 fire deaths per year. In proportion to the population the number of fire deaths is 14 persons per million inhabitants. Commonly, fatal fire starts in sparsely populated area in a single family house with no smoke detector. The most often cigarette ignites a furniture or interior in the living room in winter time. A typical victim is an elderly man who lives alone. Often victim is divorced with low-incomes. Normally, the victim does not react to fire because the use of alcohol has influenced his ability to function properly. There is seldom someone able to function present at the scene and the first attempts to extinguish fire are rarely made. By and large, a fatal fire is detected by a bystander who makes the emergency call.

**Conclusions** Some reasons for the reduction of fire deaths can be found. Standardised practice of fire investigation carried out by the fire departments has provided support to decision making. Reduction of fire deaths has been particularly affected by: legislative changes on cigarettes sold in Finland, legislative changes on smoke alarms, legislative obligation about fire safety risks among domestic services producing actors, and targeted operations in fire departments, including safety communication.

### 839 FIRE SAFETY EDUCATION FOR CHILDREN AND YOUNG PEOPLE; A STUDY OF CURRENT UK PRACTICE

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**Background** Fire safety education for children in the UK is delivered by local Fire and Rescue Services. The aim of this study was to document the scope, format and delivery of children's fire safety education across England, Wales and Scotland and establish the priorities and issues for such programmes.

**Methods** A mixed-methods approach was used. Information about educational programmes on the websites of the Fire and Rescue Services was collated to inform semi-structured telephone interviews with informants managing fire safety education in each service. Data analysis included mapping of programmes and thematic analysis of issues identified by informants. Telephone interviews with fire safety education leaders and experts provided contextual information on priorities and practice.

**Results** The websites of 49 Fire and Rescue Services were searched and information on fire safety education was identified from 30. Telephone interviews were conducted with 28/49 (57%) services. The quantity and delivery of programmes varied by age; with children aged 5–11 years having the greatest opportunity to receive programmes, primarily through school.