

## **Out-of-Hospital Cardiac Arrest in Infants, Children, and Adolescents in the Kyushu Area in Japan**

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### **Background**

In addition to Utstein-style reporting templates, information in detail that relate to out-of-hospital cardiac arrest (OHCA) may help prevent OHCA in pediatric patients.

### **Purpose**

To clarify the characteristics of OHCA and determine risk factors associated with OHCA in the young.

### **Methods**

The Council of the Kyushu Medical Association obtained data of patients with OHCA aged <20 years between 2012 and 2016 using questionnaires from local fire departments and school officials in Kyushu, Japan. The questionnaire asked about OHCA cases using the Utstein form and information on underlying diseases, prior activities, location of OHCA, and cause/situation. Subjects were divided in four groups: 0, 1–5, 6–11, and 12–19 years. One-month survival with a favorable neurological outcome was defined as a cerebral performance category of 1 or 2.

### **Results**

A total of 605 cases were obtained, with 190, 118, 79, and 218 cases, respectively, in 0, 1–5, 6–11, and 12–19 age groups. The prevalence of a favorable outcome was 5%, 18%, 27%, and 21% ( $P<0.001$ ) and prevalent cause/situations were during sleeping (71%), during sleeping (31%), water accident (26%), and suicide (24%), respectively, in each group.

OHCAs at home showed a significantly lower prevalence with a favorable outcome (24/388, 6%) than outside home/school (31/152, 20%,  $P<0.001$ ) or at school (41/65, 63%,  $P<0.001$ ). Exercise-related OHCA (31/48, 48%) and subjects with cardiovascular disease (21/55, 38%) showed a relatively high prevalence with a favorable outcome among prior activities and underlying diseases, respectively.

Multiple regression analysis with favorable outcome as the dependent variable showed that the presence of bystander CPR (odds ratio, 51.4; 95% CI, 23.2–113.9,  $P<0.001$ ) and occurrence at school (5.5, 2.1–14.8,  $P=0.001$ ) were independently predictive for a favorable outcome, and occurrence at home (0.33, 0.14–0.77,  $P=0.01$ ) was a risk factor for an unfavorable outcome.

### **Conclusion**

Different age-targeted strategies are required to reduce the prevalence of pediatric OHCA. Clarifying the etiology of infant death during sleep is required. Survival with a favorable outcome has been increasing in the school setting. To decrease the prevalence of OHCA at home, parents and/or the general population need CPR training.