

### Impact of CVD knowledge, risk perception, and barriers to healthcare on routine CVD management in Coimbatore, India

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**Background:** Cardiovascular disease (CVD) prevalence in urban India has increased 9-fold over the past decade and attributes to nearly 25% of deaths nationwide. It has been shown that diabetes and hypertension are 2 of the greatest risk factors for developing CVD. The goal of this study was to explore factors influencing the likelihood of CVD care follow-up in diabetic and hypertensive patients in a primary care setting in Coimbatore, India. This project evaluated the relationship between CVD knowledge, personal risk perceptions, healthcare barriers and self-reported CVD-related follow-up care plans. The study was designed to address CVD care limitations and to initiate effective educational programs in India.

**Methods:** A survey instrument was administered to patients attending a primary care center in Coimbatore, India. The participants were Indians greater than 18 years of age, who had a confirmed diagnosis of diabetes and/or hypertension and were not previously diagnosed with CVD. The primary outcome of the study was to investigate the factors contributing to the likelihood of receiving CVD care and the relationships between these predictors. The study was approved by the Kovai Medical Center and Hospital ethics committee and University of Connecticut IRB. After accepting the invitation to participate, participants were read the informed consent form and verbal consent was obtained.

**Findings:** 229 subjects (82 diabetics, 81 hypertensives, 66 both) were analyzed in this study. Patients with DM alone had increased knowledge scores compared to those with HTN alone ( $19.43 \pm 2.5$  vs  $16.56 \pm 3.37$ ,  $p < 0.05$ ). In those with a single diagnosis, there was a higher risk perception in diabetics ( $25.8 \pm 7.45$ ) than hypertensives ( $21.2 \pm 2.47$ )  $p < 0.01$ . There was also a positive correlation between increasing BMI and risk perception ( $r = 0.169$ ,  $p < 0.01$ ). There was a positive correlation between CVD knowledge and risk perception ( $r = 0.369$ ,  $p < 0.001$ ), healthcare barriers and GP follow-up for CVD care ( $r = 0.164$ ,  $p < 0.05$ ) and cardiologist ( $r = 0.229$ ,  $p < 0.001$ ). Conversely, an inverse correlation between healthcare barriers and cardiologist follow-up was demonstrated ( $r = -0.279$ ,  $p < 0.001$ ).

**Interpretation:** These findings suggest that increased CVD knowledge is associated with greater personal risk perception. Greater risk perception is associated with self-reported intention to receive preventive CVD care. Individuals with greater barriers to healthcare are more likely to follow-up with a GP than a cardiologist. These data suggest a role for primary preventive CVD care and education in primary care settings. Interventions focused on patients with HTN may be particularly effective in this setting. The small sample size and self-reported variables were limitations. This study was funded by the UCHC Student Research Program.

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### Emergency medical services are a critical component of maternal and child health in East Africa

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**Background:** Emergency Medical Services (EMS) are essential to the treatment of critically ill patients, who often have time-sensitive conditions. The importance of EMS has recently gained recognition in Africa, with an associated increase in prehospital care in countries such as Ghana, Uganda and Kenya. However, EMS systems in Africa treat dramatically different patient populations than those in the West. An accurate understanding of ambulance use in Africa is essential for the delineation of local resources and for EMS curriculum development. A longstanding priority for global health intervention is maternal and child health, but the importance of prehospital care to these at risk populations in Africa is not well known. In rural Uganda 66% of ambulance usage is for obstetric complaints; it is unclear if this pattern of usage holds in urban areas.

**Methods:** We are carrying out a retrospective chart review of Patient Report Forms from all patients transported in Nairobi, Kenya, by the two primary ambulance services, Emergency Plus and Saint John Ambulance, from July 1, 2013 to June 30, 2014.

**Findings:** Preliminary results—based on 1172 records, representing 30% of total data—indicate that 34% of ambulance activations were for children  $\leq 19$  years and approximately 12% of calls were for obstetric complications, primarily fetal distress and prolonged labor. Additional analyses, including a prospective arm of this study, are pending.

**Interpretation:** These data demonstrate increased utilization of EMS for maternal and child health emergencies in both urban and rural Africa relative to the United States, where pediatric patients  $\leq 19$  years constitute only 8%, and obstetric emergencies only 0.5%, of ambulance activations. EMS systems in the United States have appropriately focused their critical care education and resources on cardiopulmonary and traumatic complaints over maternal and child health. However, in Kenya, first responders are largely taught by curricula developed in the United States. Our results indicate that additional training in maternal and child health for Kenyan first responders may improve the care and treatment of these patients.

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**Abstract #:** 02NCD002

### Road traffic injuries and near misses among adolescents in Galle, Sri Lanka

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**Background:** Road traffic injuries (RTI), as the 8th leading cause of deaths worldwide, caused an increasing number of morbidity and mortality in Sri Lanka especially among young vulnerable road users. However, few studies provided evidence on the risk and related modifiable factors that adolescents are facing to support the policy making on injury prevention. Therefore, this study aims at investigating the prevalence of road traffic crashes and near misses among adolescents in Galle, Sri Lanka and identifying the risk factors.

**Methods:** A cross-sectional survey was conducted in 16 high schools in Galle, Sri Lanka during May-July 2014. Students aged between 16-

18 years old who attended schools on the day were selected to participate in the pencil-paper survey and reported their experience on road traffic crashes and near misses. Descriptive analysis and logistic regression were conducted by using STATA. Signed informed consents were given by all participants and the study was approved by IRB at Duke University and Ruhuna University.

**Findings:** A total of 1370 students (681 males and 689 females) with the average age 17.73 (+0.46) from 16 secondary high schools completed the survey. Among all respondents, 206 students self-reported they were involved in road traffic crashes in the past 6 months as victimized pedestrians (20.98%), cyclists (21.46%), three-wheel or motorcycle passengers (34.14%) and vehicle passengers (19.02%). 381 students experienced near misses and 33.24% of these events happened on the way to/from schools. 98 and 7 students suffered minor or severe traffic injuries respectively leading to on average 1.23 days off from school. However, only 21 students reported to the police and 16 students sought healthcare. The regression shows that male (OR=2.21, 95%CI [1.51, 3.24]) and cyclist (OR=2.20, 95% CI[1.03, 4.71]) are more likely to be involved in the crashes. Behavior factors, as crossing the street without looking both ways and vehicle conditions as not having seat belts also significantly increase the risk ( $p=0.001$  and  $0.037$ ).

**Interpretation:** This study is one of the few studies that conducted a cross-sectional survey to understand the burden of road traffic injury and near misses among adolescents in LMICs. More attention should be given to adolescents in LMICs on road traffic injury prevention especially among males and vulnerable road users. Consistently with previous studies conducted in developed countries, improving the safety on the way to school is a potential way to significantly reduce the risk of road traffic injury among adolescents in developing countries. In addition, the low rate of reporting to the police and seeking healthcare indicates most previous studies based on second hand data may underestimate the burden of road traffic injury among adolescents in LMICs.

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### Injury-related death disparity in children under age five in low-income countries: An analysis of world health organization data

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**Background:** In the last 10 years there has been increasing attention given to injury as cause of childhood death, as the relative contribution of injury to mortality has increased. A recent analysis of childhood mortality predicts that in the next two decades the contribution of injury to childhood mortality before age five will increase. We aimed to elucidate the burden of childhood injury related death before age five by country income status. We hypothesize that childhood mortality due to injury is highest in the poorest countries and that the rate of injury related mortality has not changed since the year 2000.

**Methods:** We used World Bank country income groups (quartiles), and the six World Health Organization (WHO) regions: Africa, Americas, South-East Asia, Europe, Eastern Mediterranean and Western Pacific. We used the WHO dataset for injury deaths in newborns (0-27 days old), and children (1-59 months old) from 2000-2012. Data was analyzed by analysis of variance (ANOVA) and linear regression modeling using R-statistical package. All death rates are deaths per 1000 live births. All mean values are mean  $\pm$  standard deviation. Statistical significance was set at  $p < 0.05$ .

**Findings:** From 2000 to 2012 there was only a small but non-significant world-wide decrease in injury related death rates (2.3 vs. 1.7,  $p=0.99$ ). High-income countries (HIC) had a significantly lower death rate ( $0.46\pm 0.3$ ) than low income (LIC) ( $3.4\pm 2.2$ ,  $p=0.0000000$ ), low-middle income countries (LMIC) ( $2.3\pm 1.4$ ,  $p=0.0000002$ ) and upper-middle income countries (UMIC) ( $1.6\pm 1$ ,  $p=0.0036$ ). On analysis by linear regression of injury death rates by region, LIC ( $B=2.9$ ,  $p < 2 \times 10^{-16}$ ), LMIC ( $B=1.8$ ,  $p=1.8 \times 10^{-8}$ ) and UMIC ( $B=1.1$ ,  $p=0.0004$ ) are significantly associated with higher injury related death rates. Additionally, while injury related death rates decreased, from 2000 to 2012, by 42% in HIC ( $0.6\pm 0.5$  to  $0.35\pm 0.3$ ), death rates only decreased by 16% in LIC ( $3.7\pm 2.8$  to  $3.1\pm 2.4$ ). By age groups, newborns and children in LIC suffered significantly higher death rates ( $0.4\pm 0.1$ ,  $p=0.0000000$ , and  $4.7\pm 0.3$ ,  $p=0.0000000$  respectively) than their counterparts in HIC ( $0.04\pm 0.01$  and  $0.42\pm 0.3$  respectively).

**Interpretation:** There was no significant change in worldwide childhood annual mortality due to injury from 2000-2012. Low-income countries continue to bear the burden of world injury-related deaths in children under five. Efforts should be targeted at identifying the injury mechanisms causing these deaths in order to develop country and region specific preventative measures. Limitations and strengths of the study: Our study was limited by its retrospective nature and the inconsistent manner in which death data is collected across countries. The strength is improved by our focus on mortality rather than disability due to injury, which is fraught with inaccuracy by the necessary estimation of years of life lost due to disability.

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### Sterilization and re-use of single use devices in India as a safe and acceptable method of cost reduction

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**Background:** The sterilization and reuse of medical equipment marked by the manufacturers for single use only is a common practice in many hospitals in India. This practice becomes a concern when patient safety is compromised. The adverse reactions a patient may experience that may be tied to the reuse of SUDs include fever, hypertension, hypotension, sudoresis, chills, bleeding, nausea and vomiting. There is no national licensing regulatory authority in India. Hospitals follow an in-house protocol to determine safe standards of sterilization and reuse. This raises the question of whether protocols used in India are enough to prevent adverse reactions.

**Objective:** The objective of this study is to analyze the outcomes of Percutaneous Transluminal Coronary Angioplasty (PTCA) patients at different hospitals in India in order to determine the correlation between reuse of single use devices and adverse reactions.

**Methods:** The study took place in two hospitals in India with different economic resources, Medanta Medicity (high income) and Bangalore Baptist Hospital (low income). A retrospective chart review was done for PTCA patients at each hospital to determine whether there were any correlations between the number of reused SUDs used in a procedure and adverse outcomes. Forty PTCA patient charts were analyzed in Medanta and 42 in BBH. Reasons for hospitalization were similar at both hospitals. Data regarding the SUDs used during the procedure, and information regarding serious and non-serious adverse reactions following procedures was collected. Serious adverse reactions were considered death, pyrogen reactions