

ABSTRACT

Background: Injuries are the number one cause of morbidity and mortality among adolescents. Adolescent fractures are a neglected public health problem in Sri Lanka. Prevention of adolescent injuries is an investment for the country as adolescents belong to economically productive age group. To ease the burden on the State, attention has to be focused on prehospital care, hospital care and follow up care.

Objectives: To assess the risk factors, prehospital care, health seeking patterns and functional outcomes of upper limb fractures due to injuries among adolescents aged 10 to 19 years attending selected government hospitals in the Colombo district.

Methodology: The study consisted of four components. **Component one:** A descriptive cross sectional study was conducted on a sample of 1090 newly diagnosed adolescents aged 10 to 19 years treated from an Accident Service Unit or a Primary Care unit of all secondary and tertiary care hospitals in the district of Colombo. The consecutive sampling method was used to recruit adolescent victims. The data were collected using an interviewer administered questionnaire to describe prehospital care and data collection sheets overall prehospital care for upper limb fractures among adolescents was assessed using a weighted scoring system. **Component two:** This was conducted in two phases. Phase one: A descriptive cross-sectional study was conducted in a different setting to validate the new instrument, namely, the Functional Outcome of Adolescent Upper Limb Fractures (FOAULF). Adolescents who had completed six weeks of initial treatment were recruited from clinics or their residences to make up the required sample size of 183 for Exploratory Factor analysis. In Phase two, the validated FOAULF was administered to randomly selected cases (n=400) recruited in component one in order to assess their functional outcome after six weeks of initial treatment. **Component three:** An unmatched case control study was conducted to determine the risk factors using an interviewer administered questionnaire. The cases were 450 newly diagnosed victims recruited consecutively already recruited from component one, although victims with road traffic injuries were excluded. The controls were healthy adolescents recruited from the community with a case to control ratio of 1:1 selected by a purposive sampling method. **Component four:** A follow up study was conducted to determine the health seeking patterns of 400 adolescents already recruited for phase two of component two. Data collection was done by using an interviewer administered questionnaire after six weeks in the respective clinics or at participant's residences.

Results: Component one: Most of the adolescent victims were between the ages of 10 to 13 years (n=790; 72.5%) and 81.8% (n=892) of them were males. Nearly 47% (n=518) of them were injured their residences while 26.1% were injured at schools (n= 285). Falls (n=855, 78.5%) was the main mechanism of injury. Adequate prehospital care was received by only 24.1% (n=263) of participants. Prehospital care was significantly associated with the patient's social class (p=0.02), the place of injury (p<0.001), the mechanism of injury (p<0.001), the type of activity carried out (p<0.001), and the anatomical site of the fracture (p=0.004). **Component two:** The newly validated FOAULF emerged as a valid and reliable tool to assess the functional outcome of adolescents. The construct validity of the instrument showed a good fit with the seven factor model and reliability was satisfactory (Cronbach's Alpha coefficient 0.72). Out of 400 victims, 66.2% had good and satisfactory functional outcomes and their average score was 73.07 (SD=13.47). **Component three:** Parents' employment (OR=3.1; 95%CI:1.2-7.8), having a high standard of living index (OR=3.52; 95%CI: 2.3-5.2), high social class category (social class I & II) (OR=2.58, 95%CI: 1.7-3.92), mild to moderate physical or sports activity (OR= 1.48; 95%CI: 1.11-1.96), heavy intensity physical or sports activity (OR= 9.36; 95%CI: 3.31-26.47), watching television (OR= 1.95; 95%CI: 1.18 -3.22), playing video or computer games (OR= 2.35; 95%CI: 1.7-3.24), violence or related activities (OR=13.3; 95%CI: 4.75-37.25), and attending extra classes (OR= 1.82; 95%CI: 1.2-2.7) were the risk factors retained in the final logistic regression model in comparison with the community controls. **Component four:** Nearly 70.5% of the participants sought treatment directly from the same hospital, the reasons for which were the faith and trust they had in hospital and in its staff (85.5%). Out of 400 participants, 11.5% sought indigenous medical treatment.

Conclusions and Recommendations: This study highlighted adolescent upper limb fractures due to injuries and helped to identify the gaps in service provision in prehospital care, hospital care and followed up care. Policy makers need to make important decisions to prevent such injuries utilizing the individual and environmental risk factors uncovered. Further, the FOAULF to assess functional outcomes of adolescent victims has proven to be valid, reliable and acceptable in detecting poor functional outcomes in follow up care. Comprehensive preventive, curative and promotive care should thus be implemented.

Keywords: Adolescents, upper limb fractures, prehospital care, risk factors, functional outcome, health seeking