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Causes of death in the decade after hospitalisation for injury during adolescence: a study using linked hospital admissions and death registrations data

Herbert, Annie^{1*}, Gilbert, Ruth², Cottrell, David J³, Gonzalez-Izquierdo, Arturo⁴, and Li, Leah³¹Department of Epidemiology and Public Health, University College London²Institute of Child Health, University College London³Institute of Health Sciences, University of Leeds⁴Farr Institute of Health Informatics, University College London

Objectives

To quantify risks of cause-specific death up to ten years after discharge from an emergency admission to hospital for violent, self-inflicted, or drug/alcohol-related injury, during adolescence. To compare these risks by type of original injury, and with risks after accident-related injury.

Methods

We used admissions data for England linked to death registrations from 1997 to 2012. We identified emergency admissions for injury in 10-19y olds and categorised type of injury as either violent, self-inflicted, drug/alcohol-related, or accident-related (no record of violent, self-inflicted, or drug/alcohol-related injury, but record of an accident), using ICD-10 codes in admission records. We categorised causes of death as homicide, suicide, drug/alcohol-related, accidental (excluding drug/alcohol-related accidents), or 'other' (remaining causes), using ICD-9 and ICD-10 codes from death registration records. We estimated cumulative risks of cause-specific death in the ten years after discharge, by sex and type of original injury. We used time-to-event regression models to estimate risks of cause-specific death, after violent, self-inflicted or drug/alcohol-related injury (relative to those after accident-related injury), adjusted for age-group (10-15, 16-17, 18-19y) and chronic condition status (yes/no; indicated by ICD-10 codes in past year admission records), and stratified by sex.

Results

There were 333,009 adolescents admitted for violent, self-inflicted, or drug/alcohol-related injury (girls 181,926, boys

181,053), and 649,818 for accident-related injury (girls 166,462, boys 483,356). There were 4,782 deaths in the ten years after discharge: 2,415 after violent, self-inflicted or drug/alcohol-related injury (girls 873, boys 1,542) and 2,367 after accident-related injury (girls 439, boys 1,928). Deaths after violent, self-inflicted or drug/alcohol-related injury were mostly accounted for by suicide (girls 35.8% of all deaths, boys 34.2%) or drug/alcohol-related death (girls 31.7%, boys 35.6%). Risks of suicide were similar to those for drug/alcohol-related death, regardless of the type of original injury. Adjusted risks of death were 1.4 to 6.8 times greater than after accident-related injury (by cause and sex).

Conclusion

Adolescent girls and boys discharged after violent, self-inflicted, or drug/alcohol-related injury had similar risks of suicide and drug/alcohol related death, regardless of the category of the original injury. These adolescents also had increased risks of cause-specific deaths compared to those discharged after accident-related injury. Current practice to assess and reduce risks of future harm after self-inflicted injury should be extended to adolescents discharged after violent or drug/alcohol-related injury. Preventive strategies should address risks of drug/alcohol-related death as well as risks of suicide.

*Corresponding Author:

Email Address: annie.herbert.12@ucl.ac.uk (A. Herbert)

