Background

People with motor impairments are often dependent on mobility scooters for independent mobility. In the Netherlands, most of the mobility scooters are provided by municipalities as part of the Social Support Act. The ageing of the population has led to an increase in the number of mobility scooters. Between 1999 and 2009 the number of mobility scooters in the Netherlands has almost tripled: from 51,000 to 146,000. Since 2010 the number of mobility scooters has stabilized. However, the number of road fatalities among the users of mobility scooters has increased from 19 traffic fatalities in 2010 to 38 in 2016. This has led to major concerns about the safety of mobility scooters. Similar concerns have been raised in other countries such as the United Kingdom and Australia.

Aim

The aim of this study was to gain more insight into the factors and circumstances that influence the occurrence and consequences of accidents involving mobility scooters. A second aim was to select promising measures to prevent these accidents and reduce any resulting injuries.

Method

A dedicated team for in-depth road accident investigation collected and analysed detailed information on 35 accidents involving mobility scooters that occurred between February 2015 and November 2017 in The Hague (NL) and the surrounding area. This resulted in a description of the course of events for every accident that was analysed, including a list of factors that contributed to the occurrence of the accident and possible injuries. Accidents with a similar course of events and a comparable combination of contributory factors were grouped into (sub)types of accidents involving mobility scooters. A prototypical scenario was written for every identified type of accident, based on the common characteristics of its accidents, including a description of the road users involved, where and how the accidents typically occur, what injuries result from them, and contributory accident and injury factors. Based on the contributory factors to the identified types of accidents, measures will be selected to prevent similar accidents from occurring in the future. These will include measures to improve road user behaviour, road design and vehicle design.

Results

Four types of accidents were identified, varying from single-vehicle accidents in which vehicle design played an important role to accidents in which the mobility scooter fell over after contact with an obstacle, and collisions with cars. This paper contains the prototypical scenarios of these types of accidents, common contributory accident and injury factors, and the injuries of the road users involved.

Discussion
Study results will be compared with those of other accident studies carried out in the Netherlands and in other countries in- and outside Europe. Any differences in study results will be related to differences in legislation and use of mobility scooters in these countries. In addition, promising measures will be discussed to prevent similar accidents from occurring in the future.

Conclusions

This in-depth study and the development of prototypical scenarios give insight into the contributing factors to specific types of accidents involving mobility scooters. Based on this knowledge, countermeasures can be developed to prevent these types of accidents and to improve the safe mobility of older road users.