



Motorcycle riders' perception of helmet use: Complaints and dissatisfaction

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ABSTRACT

In accidents which involve two-wheeled vehicles the helmet plays a life-saving role, but very little is known about the motorcycle rider's perception of the helmet. We evaluated the relationships between having been involved in an accident and dissatisfaction with the helmet, and between the perception of motorcycle riders and the objective features of the helmet. This was a case-control study: riders of motorized two-wheelers who had been involved in accidents (accident cases) were compared against a similarly interviewed sample of riders that had not been in accidents (control cases). Information about the driver, the vehicle and the helmet was collected in all interviews. To evaluate the relationships, logistic regressions were carried out. The majority of drivers were dissatisfied with their helmets, but no evidence was found to link this dissatisfaction with having been involved in an accident. The two most common complaints related to noisiness, followed by the helmet visor. Complaints did not seem to be statistically associated with physical features of the helmet.

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1. Introduction

About 43,000 people die and 1.8 million people are injured every year in the European Union as a direct result of road accidents (European Road Safety Observatory, 2008). Two-wheeled motor vehicles are involved in 14% of all traffic accidents in the European Union. The associated number of fatalities is over 6000 per annum (EU Injury Database, 2007).

Riding motorized two-wheeled vehicles carries a higher risk of being involved in a fatal traffic accident than from using any other common mode of transport. It has been estimated that, per 100 million person travelling hours, 440 motorized two-wheeled vehicle rider fatalities occur, compared to 75 and 25 fatalities for bicyclists and car drivers, respectively (Koornstra et al., 2003). Half of these accidents are caused by collision participants other than the motorcycle riders while approximately 40% are caused by the motorized two-wheeled vehicle riders, and the remainder are attributable to factors associated with the vehicle or the road. Drivers and passengers of cars are better protected than riders of motorized two-wheeled vehicles, whose survival of an accident is

most strongly guaranteed by wearing a helmet, especially a full-face motorcycle helmet. Cognitive failures on the part of motorized two-wheeled vehicle riders are known to cause 34% of these accidents (ACEM, 2004; Magazzù et al., 2006).

Several studies have shown that a helmet can be a life saver in an accident and can protect against severe head injuries, particularly integral helmets with full facial protection (Branas and Knudson, 2001; Christian et al., 2003; Cui et al., 2009; Deutermann, 2004; Eastridge et al., 2006; Forero Rueda et al., 2009, 2010; Houston and Richardson, 2008; Hundley et al., 2004; Keng, 2005; Lin et al., 2001; Liu et al., 2008; Nakahara et al., 2005; Norvell and Cummings, 2005; Ouellet and Kasantikul, 2006; Sauter et al., 2005). However, little is known about whether helmets can be optimised to improve a rider's perception of the helmet. In fact, the rider's perception can actually be influenced by some features of the helmet (noisiness, temperature, ventilation, field of vision, and size), as the following authors have found.

With regards to noisiness, Carley et al. (2010) conducted a study of helmet noise mechanisms using measurements inside and outside a helmet during on-road riding; they presented evidence of the inability of a helmet to protect against hearing damage at low frequencies and its tendency to attenuate acoustic signals, such as speech, at high frequencies. In another study on the attenuation of noise by motorcycle helmets, Młynski et al. (2009) found simi-

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