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# Mobile phone use while driving: Underestimation of a global threat

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ABSTRACT

The use of mobile phones (cell phones) has increased dramatically in the 21st century. The popularity of mobile phones and smart phones in the computer age can in part be associated with the growing problem of driver distraction. There are indications that the use of mobile phones while driving is one of the leading contributors to road traffic collisions (RTCs). However the true impact of the contribution of mobile phones to RTCs is masked by deficiencies in reporting. This review examines the evidence of association between mobile phone use and RTCs, placing emphasis on the challenges associated with reporting the role of mobile phones in RTCs across different countries, including the United States of America, Canada, China and Great Britain.



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## 1. Introduction

Over the past decades, there has been an increasing problem of driver distraction (Engelberg et al., 2015). Although the term 'distracted driving' (DD) is subject to several interpretations, National Highway Traffic Safety Administration (NHTSA) describes DD as any activity that could divert a person's attention away from the primary task of driving to other activities (NHTSA, 2015c). Diversion of a driver's attention could either be from sources internal or external to the vehicle. Internal sources include the use of mobile phones while driving, eating while driving, talking to passengers, smoking, reading (books, written texts), using a navigation system, watching television or movies via tablet devices, adjusting a radio, CD player, or MP3 player among others (NHTSA, 2010a, 2010b; Strayer and Drews, 2004). Those external to the vehicle include looking at moving objects outside the vehicle or watching people along the road (NHTSA, 2010a, 2010b). Distraction can take several forms including physical (taking hands off the steering wheel), visual (taking eyes off the road), cognitive (taking minds off the road) and auditory (Olson et al., 2009; WHO, 2011). The impact of driver distraction varies according to the

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source of distraction, form, frequency and duration of distraction. WHO (2011) argued that the risk of an RTC increases with the frequency and length of distraction. The consequence of RTCs resulting from driver distraction is devastating, both in terms of deaths and injuries (Farmer et al., 2010; Hoff et al., 2013; NHTSA, 2015b; Vegega et al., 2013).

## 2. Evidence of an association between mobile phone use while driving and RTCs

The use of mobile phones while driving is one of the most serious forms of distraction. This might be largely due to the fact that mobile phone use while driving requires visual, physical and cognitive attention of the driver (Caird et al., 2008; Horrey and Wickens, 2006; McCartt et al., 2006; Olson et al., 2009). Brookhuis et al. (1991) contended that mobile phone use (for calling and texting) whilst driving significantly decreases a drivers capacity to control a vehicle. Similarly, the World Health Organisation estimates that drivers who use mobile phones for text messaging or calling while driving have between 2% and 9% increased risk of RTCs (WHO, 2011). The debate on the comparative safety of hands-free has also been dispelled by Strayer and Drews (2004) who revealed that hands-free devices also impairs driving performance of both young and experienced drivers.

Epidemiological studies suggest that mobile phone use (handheld or hands-free) increases a driver's crash risk by a factor of four (Redelmeier and Tibshirani, 1997; McEvoy et al., 2005). An earlier epidemiological case-control study in the USA found that talking for more than 50 min per month on a mobile phone whilst driving was associated with a 5.59-fold increased risk of road traffic accident (Violanti and Marshall, 1996). There are also indications that text messaging might be more dangerous than making or receiving a phone call while driving (Yannis et al., 2014). This is because in addition to cognitive impairment, sending a text message while driving also keeps the driver's eyes away from the road (physical impairment) for at least five seconds and one or both hands from the wheel. This equals the time taken to cover the entire length of a football field blindfolded when driving at 55 mph (Olson et al., 2009). Additionally, a simulator study by Drews et al. (2009) revealed that texting while driving increases the risk of an RTC by six fold. Similarly, Olson et al. (2009) argued that the probability of RTCs increases by 23.3 and 5.9 times among drivers who text and call respectively. This seems to support the findings from Klauer et al. (2006) which indicates that a driver is 3.38 times more likely to be in a crash or near-crash while reading and driving than if she/he were just driving normally (Klauer et al., 2006).

The burden of RTCs associated with distracted driving appears to be higher among young drivers aged 15–19 (Hosking et al., 2009; NHTSA, 2015a; WHO, 2011). Frequent use of mobile phones (for browsing, calling or texting) while driving, and the lack of driving experience are plausible explanations for this trend (Hosking et al., 2009; Klauer et al., 2006; WHO, 2011). Although teenage drivers are at a higher risk of a mobile phone related RTC, this does not suggest that older adults and experienced drivers are exempted from the consequences of using mobile phones while driving (WHO, 2011).

The impact of the contribution of mobile phones to RTCs is masked by under-recording and under-reporting. In many countries, police reported data represent the sole or major source of information on the association between mobile phone use and RTCs (National Safety Council, 2012). Other government organisations and non-government organisations including insurance companies and employers could also play a role in collecting data on mobile phone use while driving (WHO, 2011). However, there are several issues affecting the validity of reported data; examples include deficiency in detecting mobile phone use, time taken for analysis of mobile phones and under-reporting of mobile phone use in RTCs (Engelberg et al., 2015). This review examines the manner of reporting the contribution of mobile phone use in RTCs in the United States, China, Canada and United Kingdom. The review further identifies the risk factors associated with under-reporting and offers some possible solutions.

## 3. Recording and reporting of mobile phone involvement in RTCs

In a bid to reduce the prevalence of distracted driving and mortality associated with it, laws have been implemented in a number of countries to restrict the use of mobile phones while driving (U.S Department of Transportation NHTSA, 2010a, 2010b; WHO, 2011). However, there is a paucity of evidence on the effectiveness of such measures. This is partly linked with the unavailability of comprehensive and complete data on the role of mobile phones in RTCs (Beck et al., 2007; WHO, 2011). Police officers are often charged with the responsibility of providing information on RTCs within their jurisdictions. The quality of the data captured is sometimes measured by its completeness and ability to provide contextual information on risk factors underlying each investigated crash. However, evidence suggests that police reports do not provide reliable information to assess the risk factors surrounding a collision (Ma et al., 2012; Wilson et al., 2003), particularly on the involvement of mobile phones (WHO, 2011). This makes it difficult to assess whether a causal relationship exists between mobile phone use and crash involvement. The subject of under-reporting of involvement of mobile phones and other risk factors in RTCs has a long history. A study conducted by Harris (1990) in the Netherlands revealed that police recording of RTCs and risk factors are un-representative and incomplete. Under-reporting is a broad term that encompasses both deficiencies in reporting and recording (Jacobs et al., 2000). For the purpose of this review, the term ‘under-reporting’ will be used.

Several measures such as surveys and in-video footage of vehicles are being adopted to estimate the true prevalence of distracted driving in different countries including the United States (NHTSA, 2010a, 2010b), New Zealand (Sullman and Baas, 2004), and Canada (WHO, 2011). A major drawback however, is that these methods often utilise self-reported data from drivers and hence rely on driver sincerity (Asbridge et al., 2013). The difficulty in capturing mobile phone involvement increases if a collision occurs. This might be as a result of the challenges associated with encouraging drivers to admit to mobile phone use, since it is an offence (National Safety Council, 2012) and the interest of the police in recording more obvious violations such as speeding (Asbridge et al., 2013). Ma et al. (2012) noted that police officers are more interested in identifying evidence that can be used for prosecution and since mobile phone use at the exact moment of collision is often considered as a subjective judgement of the police, it is not given due attention.

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