At home and away: Measuring the sleep of Australian truck drivers

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A B S T R A C T

The causes of fatigue in truck drivers related to work hours have been studied extensively and are reasonably well understood. However, much less is known about how rest opportunities can be structured to optimise recovery from fatigue. The nature of the road transport industry often requires that rest be taken in various locations. New investigation in this area, focusing on sleep obtained in truck cabs and other non-home environments is critically important to complement existing understanding. This study examined sleep at home and in truck cabs, in truck drivers who were actively working during the time of the study. Thirty-seven male drivers aged between 24 and 63 years (age: 48.7 ± 9.0 years; mean ± SD) wore activity monitors (also known as ‘sleep watches’) and completed work and sleep diaries for a period of 21 days, recording their subjective fatigue levels before, during and after work shifts, and before and after sleep periods. They also self-rated their sleep quality and noted the number of times they woke during sleep periods. Analyses focused on home versus in-truck sleep periods. The subjective data suggested that a greater quantity (P<.001) and quality (P<.05) of sleep was obtained at home than in the truck, and that sleeping at home more effectively reduced fatigue levels (P<.001). The objective data showed trends towards longer sleep length at home, but other variables, including total sleep per 24 h and sleep quality, showed no significant differences. This study demonstrates that measuring sleep quantity and quality in operational road transport environments is feasible. The findings caution against over-reliance on laboratory and simulator studies since there are critical aspects of the operating environment that cannot be validly studied in artificially controlled settings. This study is unique in its direct examination of sleep quantity and quality in truck drivers sleeping at home and away from home.

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1. Introduction

1.1. Driver fatigue

Numerous research studies have demonstrated the significant contribution of fatigue to road traffic accidents, using epidemiological, survey, and experimental studies. Within this body of research, the causes of fatigue specific to truck drivers have been examined, including hours of sleep and work prior to driving, as well as the hours and distance driven.

Many of the studies using objective (laboratory or simulator) measures have used non-professional, young adult driver participants (e.g. Reyner and Horne, 1998), since the young adult group is largely over-represented in fatigue related crashes. It is also the case that young adults are more likely to be available as study participants, particularly in university-based research. Field studies of truck drivers using activity monitors and sleep diaries have gathered contextually valid data to demonstrate the links between fatigue, accident risk and sleep opportunity (Hanowski et al., 2007; Heaton and Rayens, 2010). However, there are very few studies which have made direct comparisons of sleep in home and non-home locations, or examined the objective characteristics of sleeping (or napping) during work hours while on the road. Relevant studies have, however, been conducted in other industries.

1.2. Studies of sleep in other industries

1.2.1. Rail transport

A small number of studies most relevant to the value of rest breaks and sleep have investigated the impact of relay work on train drivers’ sleep quantity and quality, using activity monitors and sleep diaries prior to and during short (<48 h) relay trips. These trips require two crews to drive from one specified destination to another and return working in alternating shifts (Lamond et al., 2005a,b). Findings showed an average of 7.8 h of sleep per night at home, compared to only 4.0 h during relay, with relay van sleep also showing longer sleep onsets, lower sleep efficiency and poorer