



Associations between long commutes and subjective health complaints among railway workers in Norway

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ABSTRACT

Commuting is an important aspect of daily life for many employees, but there is little knowledge of how this affects individual commuters' health and well-being. The authors investigated the relationship between commuting and subjective health complaints, using data from a web-based questionnaire. In a sample of 2126 railway employees, 644 (30.3%) had long commute times. A 29-item inventory was used to measure the number and degree of the subjective health complaints. Those who commuted 60 min or more each way were characterized by significantly higher numbers and degrees of subjective health complaints compared with their peers with short commutes. The mean number of complaints was 7.5 among the former group and 6.4 for the latter group ($p = 0.009$). In a regression model, in which the authors controlled for age, gender, education, self-rated health, and coping, the employees with long commutes reported more complaints than those with short commutes. Significant associations were found between those with long commutes and the number and degree of incidences of self-reported musculoskeletal pain, pseudo-neurologic complaints, and gastrointestinal problems. Commuters who had had long commutes for more than 10 years reported more gastrointestinal and musculoskeletal complaints than those with long commutes for less than 2 years. Also, commuters with long commutes spent less time with their families and leisure activities compared with those with short commutes. The authors conclude that the association between long commute times and higher levels of subjective health complaints should attract the attention of transport planners, employers, and public health policymaker.

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1. Introduction

A growing number of employees have long commutes. Social and economic changes from an industrial society to a service/knowledge society and general improvements in transport systems have made commuting an important part of modern life in Norway and other Western societies (Engebretsen et al., 2012; Green et al., 1999; Sandow & Westin 2010). There have been important changes in working life and family life due to more non-manual occupations, more women in employment, and more flexible working practices (Green et al., 1999). One negative implication is increased time spent on traveling, which makes people less physically active (Lindström, 2008). Long commutes can also contribute to stress experiences and sleep problems for workers (Hansson et al., 2011). However, there has been little research conducted on the possible health effects of long commutes in Norway.

For many people, commuting is a mental and physical burden, which can result in health complaints. Commuters have reported lower

subjective well-being, that commuting was time-consuming, that it made family life harder; and that traveling time increased their stress levels (Stutzer & Frey, 2008). Long commutes are more common among men (Lyons & Chatterjee, 2008). Both men and women with long commutes have reported poor mental health and psychological distress (Feng & Boyle, 2014; Hansson et al., 2011). Disorders such as high blood pressure, overweight, low energy levels, and reduced physical and mental health have been related to long-distance commuting (Hansson et al., 2011, Hoehner et al., 2012).

Subjective health complaints (SHC) are complaints without objective pathological signs (Eriksen et al., 1999). Such complaints are common everyday symptoms, but for some individuals they reach a level of discomfort that can lead to sickness absence (Ihlebak & Eriksen, 2003). Women have reported SHC more frequently and to a greater extent than men, and the intensity of most of their complaints increases with age (Ihlebak et al., 2002).

Previous studies have focused on long commuting times and mental health problems, stress, and physical health complaints. To our knowledge, no studies to date have investigated the associations between long commutes and subjective health complaints. Better awareness and information about the burdens of long commutes are important for health promotion and preventative actions in public health.

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The aim of the study was to investigate the prevalence of SHC in a Norwegian working population and the associations between long commuting times and SHC. We also aimed to explore whether the number of years with long commutes affected the prevalence of SHC.

2. Methods

2.1. Study population

In March 2015, we invited all 7307 members of the Norwegian Train Drivers Union (Norsk Lokomotivmannsforbund) and the Norwegian Union of Railway Workers (Norsk Jernbaneforbund) to participate in the study. Representatives of all professions in these unions were included in the study, such as conductors, bus drivers, office workers, train drivers, and other railway workers. After 93 individuals with invalid e-mail addresses were excluded, invitations were sent to 7214 workers. Of these, 2215 individuals participated in the study (response rate 30.8%). A total of 89 individuals were removed due to missing values and the final size of the target population was 2126. The questionnaire was given in Norwegian only.

2.2. The questionnaire

The online questionnaire, produced by Survey Monkey (SurveyMonkey Inc.), included a broad range of demographic variables such as gender, age, family situation, and education; travel variables such as commuting time to the working place, number of years commuting, and traveling method; and variables related to health such as self-rated health, subjective health complaints, complaints related to commuting, and individual coping resources.

We categorized age into six groups: below 20 years, 21–30 years, 31–40 years, 41–50 years, 51–60 years, and above 60 years. The participants' family situation was categorized into four different groups: living alone, living together with cohabitant/partner, living together with persons above 18 years, and living together with persons below 18 years. Education was categorized into five groups: elementary school, vocational education, secondary school, college/university for less than or equal to 4 years, and college/university for >4 years. The variable was recoded into a three-category variable with the following categories: primary, secondary, or tertiary education. We asked about commuting time in the question: "How long time does it take to get to work (single journey)?" The question had two levels: below 60 min (short commute) or 60 min or more (long commute). Participants who answered 60 min or more also reported the number of years they had had long commutes: <2 years, 2–5 years, 6–10 years, or 11 years or more. We categorized the traveling modes into 10 different groups: walking, train, bus, underground, car, bicycle, moped/motorcycle, tram, boat, or other transport. The traveling methods were grouped into two variables. Participants who used at least one active mode of transport (walking, bicycle, and moped/motorcycle) were categorized as active travelers, and participants who used at least one mode of public transport were categorized as public travelers (train, bus, underground, tram, or boat).

Self-rated health was measured by a single question: "How is your health right now?" The participants were given four response options: very poor, poor, good, and very good. These were recoded into a two-category variable with the following levels: good and not good. The research question has been used in different health surveys (Næss et al., 2008). Participants were also asked if their health complaints could possibly be related to commuting. Individual coping was measured by the question: "Do you feel that you are coping with your day-to-day challenges?" The question required a yes or no response. The participants were also asked whether they were spending enough time with their family or on leisure activities. We considered a commuting time of 60 min or more as the exposure variable.

2.3. Subjective health complaints (SHC) inventory

In this study, we used Eriksen et al.'s subjective health complaints inventory (Eriksen et al., 1999) to measure health complaints experienced during the last 30 days. The questionnaire has been validated and has satisfactory validity and reliability (Eriksen et al., 1999). The inventory consists of 29 items, for which the severity of each complaint is scored on a four-point scale ranging from "no complaints" (0) to "severe complaints" (3). Five subscales are usually reported: *musculoskeletal pain* (headache, migraine, neck pain, lower back pain, upper back pain, arm pain, shoulder pain, and leg pain); *pseudo-neurology* (palpitation, heat flushes, sleeping problems, tiredness, dizziness, anxiety, depression); *gastrointestinal problems* (heartburn, stomach discomfort, ulcer and non-ulcer dyspepsia, stomach pain, bloating, diarrhea, and constipation); *allergy* (asthma, breathing difficulties, eczema, allergies, and chest pain); and *flu* (cough and flu) (Eriksen et al., 1999).

We summed the health complaints in two different ways. First, we counted the number of complaints, but did not differ between degrees of complaints. The total range of this variable was 0–29. The second variable was the degree of complaints (four-point scale of complaints), in which we included the severity reported. The range was 0–87. We also computed the number of complaints and degree of complaints for the five subscales.

2.4. Statistical analysis

Descriptive statistics were used to summarize the different variables in the study. We applied Chi-square tests to study the associations between categorical variables. To test whether continuous variables, such as degree of complaints, were distributed differently between the two commuting groups, we performed t-tests.

To adjust for potentially confounding variables, we used linear regression models to model subjective health complaints as a function of commuting, age, gender, education, self-rated health, and coping. The main outcome of the regression analysis was an expected difference in health complaints between participants with long and short commutes, adjusted for the confounding variables and with associated 95% confidence intervals. In separate models, we included travel modes as confounders, and in these models we reported the adjusted effects of subjective health complaints relating to commuting and travel modes.

Among the participants who commuted 60 min or more, we investigated whether the number of years they had commuted was associated with subjective health complaints. The outcome of these analyses was the expected difference in complaints for the different levels of commuting history compared with the reference category (less than two years).

P-values <0.05 were considered statistically significant. We used the free software R Version 3.2.5 (www.r-project.com).

2.5. Ethics

The questionnaire was answered anonymously and therefore approval from the Regional Ethical Committee was not necessary.

3. Results

3.1. Descriptive findings

Table 1 lists details of the target population (N = 2126). A total of 644 individuals (30.3%) had long commutes and 1482 (69.7%) had short commutes. There were 469 (22.1%) women and 1657 (77.9%) men in the sample, and their mean age was 45.5 years. In all, 25.2% had tertiary education qualifications, 68.2% had secondary level, and 6.6% had primary level.

The typical participant in the study was a male aged >50 years, who was living with someone and had secondary education qualifications.

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