



# Truckies' Nutrition and Physical Activity: A Cross-sectional Survey in Queensland, Australia

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## Abstract

Truck drivers are at increased risk of diet- and physical activity-related chronic diseases. Despite this, there is a paucity of data about Australian truck drivers' diet and physical activity behaviors. A multiple choice and short response survey was distributed to truck drivers attending an Australian Truck Show. The survey asked about self-reported health, source of health information, number of serves of fruit, vegetables, unhealthy food, and sugary drink consumed per day, and frequency of moderate- and vigorous-intensity physical activity per week. The survey was completed by 231 truck drivers—almost all were male, with a mean age of 46 (range 20 to 71) years. Over 85% of survey respondents worked more than 9 hrs per day. Nearly 75% acknowledged the need to make changes to improve their health. Half consumed fewer serves of fruit and 88% consumed fewer serves of vegetables than national recommendations. Over 63% consumed at least one serve of unhealthy foods per day, and 65% drank at least one can of sugary drink per day. Most (80%) undertook less than moderate- and vigorous-intensity physical activity levels provided in national recommendations. Of concern, almost 90% of drivers had above the recommended body mass index—approximately 60% were obese. This is almost double the proportion found in the general population. These findings highlight the importance of health promotion to help drivers make better choices about their health behaviors, which are often underpinned by the limitations of their work environment. Health promotion in transport industry workplaces should be an important topic for future research.

**Keywords:** Motor Vehicles; Obesity; Health behavior; Risk factors; Nutritional status; Exercise; Health promotion

## Introduction

Approximately 209 000 people work as truck drivers in the Australian road transport industry.<sup>1</sup> Truck drivers' work environments are characterized by long sedentary hours and erratic schedules and time pressures, with few opportunities to access healthy food options or environments conducive to physical activity.<sup>2</sup> As a result, truck drivers are con-

sistently identified as being at increased risk of diet- and physical activity-related chronic diseases such as obesity, cardiovascular disease and diabetes.<sup>3</sup>

To address the risks associated with truck drivers' work environment, it is important to understand their diet, physical activity and related health behaviors. Some studies have explored these behaviors in the US truck drivers,<sup>4-6</sup> however there is little data from the Australian con-

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text, where most studies have focused on “safety” issues.<sup>7-9</sup> The limited data available on diet and physical activity of Australian truck drivers to date has (change from have to has) come from small-scale health promotion intervention studies.<sup>10,11</sup>

To address this gap, we conducted a survey with a large, diverse cohort of Australian truck drivers to examine (a) self-reported diet and physical activity behaviors, (b) readiness to make lifestyle changes to improve their health, and (c) sources of health information.

## Materials and Methods

A survey was distributed to truck drivers attending the 2015 Brisbane (Queensland) Truck Show—the Australian transport industry's premier event.<sup>12</sup> The survey was based on an instrument developed for a previous transport industry workplace health promotion project,<sup>11</sup> and consisted of 32 multiple-choice and short-response questions organized in five parts. Here, we report the findings from the first three parts of this survey.

### Part 1: Demographic Information and General Health Behaviors

This part of the survey asked about age, sex, self-reported height and weight, home post code, type of truck-driving, average hours worked per day, self-reported health

rating, and sources of health information.

### Part 2: Healthy Eating Behaviors

This part asked about the number of serves of fruit and vegetables, unhealthy food, that is, foods high in saturated fat with added salt or added sugar such as burgers, chips, pies and cakes, and cans of sugary drink such as soft drink and energy drinks consumed per day, for comparison to national recommendations.<sup>13</sup>

### Part 3: Physical Activity Behaviors

This part asked about the number of times per week of moderate-intensity (equivalent to brisk walking) and vigorous-intensity (equivalent to heavy loading, jogging, fast cycling) physical activity of specific durations, for comparison to national recommendations.<sup>14</sup>

The survey used simple Likert scales, checkboxes and short answers questions. Drivers were notified that responses were confidential and anonymous. Non-responses were cleaned from the data and excluded from counts and percentage calculations. Consent to participate was assumed if the driver chose to complete and return a survey.

### Ethics

Ethical approval for this project was obtained from the Queensland University of Technology Human Research Ethics Committee. All participants gave their informed consent.

## Results

### Demographic Information

Two-hundred and thirty-one questionnaires were completed. Most participating truck drivers were male (99.1%,  $n = 223$ ), with a mean age of 46 years ( $n = 229$ , range 20 to 71).

Most reported working local (day) trips

### TAKE-HOME MESSAGE

- Truck drivers consume fewer serves of fruit per day and most consume fewer serves of vegetables per day than Australian recommendations.
- Less than one-third of truck drivers met the Australian recommendations of a minimum of 150-minute moderate-intensity activity per week.
- Approximately two thirds of truck drivers are classified as obese compared with one third of the Australian population.

(46.9%,  $n = 98$ ). Smaller numbers completed long-distance (overnight) across-state trips (18.7%,  $n = 39$ ), long-distance (overnight) within-state trips (11.0%,  $n = 23$ ) or a mixture of two or three of these (23.4%,  $n = 49$ ). The majority of drivers reported working of 9+ hours per day (85.6%,  $n = 197$ ). Most of the remainder work 8 to 9 hours per day on average (12.2%,  $n = 28$ ).

The mean body mass index (BMI) ( $n = 214$ ) was 32.3 kg/m<sup>2</sup>, classified as Obese – Class I (Table 1).<sup>20</sup> BMI's ranged from 18.6 (Normal) to 69.9 kg/m<sup>2</sup> (Obese – Class III). Approximately, 29.0% ( $n = 62$ ) of the cohort were overweight (Pre-Obese, BMI 25.0 to 29.9 kg/m<sup>2</sup>); 59.8% were obese (Classes I – III, BMI  $\geq 30.0$  kg/m<sup>2</sup>). Of those who were obese, 10.3% ( $n = 22$ ) were morbidly obese (Obese – Class III, BMI  $\geq 40$  kg/m<sup>2</sup>).

### Consumption of Fruit and Vegetables

Most drivers reported eating an average of one serve (33%,  $n = 74$ ) or two serves (61%,  $n = 27.2\%$ ) of fruit per day (Fig 1). Half (40%,  $n = 112$ ) met the Australian recommendations of 2+ serves of fruit per day.<sup>13</sup> Nearly one-fifth of the total cohort reported not eating any fruits (17%,  $n = 38$ ). Most drivers reported eating an average of one serve (37.5%,  $n = 84$ ), two serves (25%,  $n = 25$ ), or three serves (19.6%,  $n = 44$ ) of vegetables per day (Fig 1). Only one-tenth (11.9%,  $n = 13$ ) met the Australian recommendations of 5+ serves of vegetables per day.<sup>13</sup>

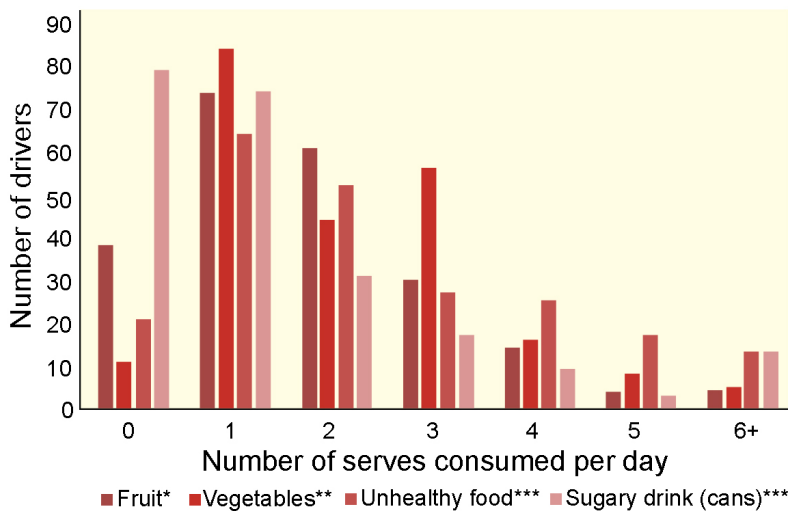
### Consumption of Unhealthy Food and Drink

Most drivers reported eating an average of one serve (28.3%,  $n = 64$ ), two serves (23%,  $n = 52$ ) or three serves (11.9%,  $n = 27$ ) of unhealthy foods per day (Fig 1). Most reported consuming an average of none (35.9%,  $n = 79$ ), one (33.6%,  $n = 74$ ) or two (14.1%,  $n = 31$ ) cans, or equivalent, of unhealthy drink per day.

**Table 1:** Demographic characteristics of truck drivers

| Parameters  | n (%)      |
|---|------------|
| Sex ( $n = 225$ respondents)  |            |
| Male  | 99.1 (223) |
| Female  | 0.9 (2)    |
| Age ( $n = 229$ respondents), yrs   |            |
| <20   | 0.0 (0)    |
| 20–30   | 9.2 (21)   |
| 31–40   | 16.6 (38)  |
| 41–50   | 34.5 (79)  |
| 51–60   | 27.5 (63)  |
| 61–70   | 11.8 (27)  |
| >70   | 0.4 (1)    |
| Type of work ( $n = 209$ respondents)   |            |
| Long-distance (overnight) across states   | 18.7 (39)  |
| Long-distance (overnight) within state  | 11.0 (23)  |
| Local (day) trips only  | 46.9 (98)  |
| A mixture of two or three of these  | 23.4 (49)  |
| Number of hours worked per day ( $n = 230$ respondents)                           |            |
| $\leq 7$  | 2.2 (5)    |
| 8   | 6.1 (14)   |
| 9   | 6.1 (14)   |
| 9+  | 85.6 (197) |
| Body Mass Index* ( $n = 214$ respondents with height + weight), kg/m <sup>2</sup> |            |
| <18.5 (Underweight)   | 0.0 (0)    |
| 18.5–24.9 (Normal weight)   | 11.2 (24)  |
| 25.0–29.9 (Pre-obesity)   | 29.0 (62)  |
| 30.0–34.9 (Obesity – Class I)   | 32.7 (70)  |
| 35.0–39.9 (Obesity – Class II)  | 16.8 (36)  |
| >40 (Obesity – Class III)   | 10.3 (22)  |

\*World Health Organization, 2017



**Figure 1:** Number of serves consumed by truck drivers per day.

\*Australian guidelines<sup>13</sup> recommend 2 serves per day.

\*\*Australian guidelines<sup>13</sup> recommend 5 serves per day.

\*\*\*Australian guidelines<sup>13</sup> recommend “sometimes and in small amounts”.

### Moderate-intensity Physical Activity

The majority of drivers reported engaging in a 30-minute moderate-intensity physical activity one or more days per week (84.5%,  $n = 191$ ). Almost 16% of drivers ( $n = 35$ ) reported no moderate-intensity activity per week. Less than one-third (30.1%,  $n = 68$ ) met the Australian recommendations of a minimum of 150-minute moderate-intensity activity per week (averaging to 30 minutes per day, at least 5 days per week).<sup>14</sup>

### Vigorous-intensity Physical Activity

Drivers reported engaging in a 15-minute vigorous-intensity physical activity on zero days (25.8%,  $n = 58$ ), one day (16.9%,  $n = 38$ ) or two days (16.9%,  $n = 38$ ) per week. Only one-fifth (20.8%,  $n = 47$ ) met the Australian recommendations of a minimum of 75-minute moderate-intensity activity per week (averaging to 15 minutes per day for at least 5 days per week).<sup>14</sup>

### Self-reported Health

The majority of drivers rated their health

as good (47.6%,  $n = 109$ ) while 25.8% ( $n = 59$ ) and 19.7% ( $n = 45$ ) reported their health as very good or fair, respectively. A minority rated their health as excellent (5.2%,  $n = 12$ ) or poor (1.7%,  $n = 4$ ).

### Readiness to Make Changes to Improve Health

Most drivers reported they were currently making changes to improve their health (35.9%,  $n = 78$ ) or thinking about doing so (31%,  $n = 67$ ). Smaller numbers reported they were planning changes (8.7%,  $n = 19$ ) or had made and maintained changes (12%,  $n = 26$ ). A minority reported they were unable to change (2.3%,  $n = 5$ ), did not want to change (3.7%,  $n = 8$ ) or did not need to change (6.4%,  $n = 14$ ).

### Sources of health Information

Nearly all drivers reported accessing some type of health information, frequently from general practitioners (58.5%,  $n = 131$ ) and family members/friends (26.3%,  $n = 59$ ). Smaller numbers obtained information from television (12.1%,  $n = 27$ ), their workplace (10.7%,  $n = 24$ ), the Internet (7.6%,  $n = 17$ ) and the radio (6.7%,  $n = 15$ ).

### Discussion

We found many Australian truck drivers have poor dietary behaviors. Half consume fewer serves of fruit per day and most (88.1%) consume fewer serves of vegetables per day than Australian recommendations. These results are comparable to previous Australian research, which found 28.0% and 89.0% of drivers consume fewer than the recommended number of serves of fruits and vegetables, respectively, per day.<sup>11</sup> Drivers consume more unhealthy food and drink per day than Australian recommendations. Nearly two-thirds reported eating unhealthy foods on two or more days per week and consuming at least one can of sugary drink per day.



These findings are broadly similar to previous Australian research,<sup>11</sup> and compared favorably to findings from the US truck drivers,<sup>5</sup> who eat less fruit and vegetables and more unhealthy foods than Australian drivers.

Our findings suggest many Australian truck drivers have poor physical activity behaviors. More than two-thirds do not meet the Australian recommendations for moderate-intensity physical activity, and nearly 80% do not meet recommendations for vigorous-intensity activity. These results are comparable to previous Australian and international research.<sup>4,11</sup>

Poor healthy eating and physical activity behaviors are known risk factors for overweight and obesity. The mean BMI of participating drivers is 32.3 kg/m<sup>2</sup> (Obese – Class I), with 59.8% of drivers being obese, compared with just 27.9% of the Australian population. Studies from the US report that the BMI in US drivers ranges from 30.0 to 34.5 kg/m<sup>2</sup>, which is consistent with our findings.<sup>5,6</sup>

Truck drivers have poor healthy eating and physical activity behaviors and high BMIs, largely due to the limitations of their work environment. Drivers have limited access to grocery stores,<sup>3</sup> and truck stops provide few healthy food options, instead offering foods high in saturated fat and kilojoules.<sup>15</sup> Most truck cabs lack the equipment necessary to store and prepare healthy foods,<sup>16</sup> and it is easier for drivers to eat conveniently-wrapped take-away foods than healthier food options such as salads.<sup>17</sup>

In relation to physical activity, Australian regulations permit truck drivers to drive for up to 12 hours per day, which is often uninterrupted.<sup>18</sup> During these periods, drivers are confined to their trucks, and workplace policies often prohibit them from leaving certain pre-defined areas for their own safety.<sup>3</sup> Not surprisingly, drivers do not consider transport industry work-

places to be conducive to physical activity.

Despite poor healthy eating and physical activity behaviors and high BMI, most drivers perceive their health to be good or even very good (73.4%), and most (75.6%) report contemplating, planning, or actively making changes to improve their health. This shows drivers recognize the importance of improving their health and are motivated to do so, and highlight the importance of effective health promotion for truck drivers.

Our findings are limited by the potential biases of a self-report survey and a convenience sample, and the possibility the written survey may have excluded drivers with low literacy levels. For these reasons, generalizability of findings to settings beyond Australia may be limited.

Truck drivers are a highly-mobile, pressured and hard-to-reach group, and traditional health promotion strategies may be limited in their effectiveness.<sup>3</sup> Transport industry workplaces, including truck cabs, truck depots and truck stops, are increasingly recognized as settings conducive to health promotion.<sup>3</sup> Previous Australian research shows workplace health promotion results in drivers identifying their workplace as an important source of health information<sup>11</sup> and suggests workplace health promotion can generate improvements in drivers' health knowledge, behaviors, and self-reported health outcomes.<sup>10,11,19</sup> Workplace health promotion enables truck drivers to overcome many of the limitations of their workplaces, which underpin their poor healthy eating and physical activity behaviors and may be a key strategy in improving the poor healthy eating and physical activity behaviors and outcomes such as obesity.<sup>20</sup> Our findings highlight the importance of health promotion in transport industry workplaces, to help drivers make better choices about their health behaviors.

For more information on a clinical trial on weight loss among truck drivers see <http://www.theijoem.com/ijoem/index.php/ijoem/article/view/551>



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**Conflicts of Interest:** None declared.

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