

Scientific Electronic Archives

Issue ID: Sci. Elec. Arch. Vol. 12 (3)

June 2019

Article link

<http://www.seasinop.com.br/revista/index.php?journal=SEA&page=article&op=view&path%5B%5D=900&path%5B%5D=pdf>

Included in DOAJ, AGRIS, Latindex, Journal TOCs, CORE, Discoursio Open Science, Science Gate, GFAR, CIARDRING, Academic Journals Database and NTHRYS Technologies, Portal de Periódicos CAPES.



Quality of the sleep of truck drivers that travel in the region of the extreme-west of Santa Catarina

R. Silva¹, G. C. M. Berber², S. F. Cetolin¹, J. M. Joris¹, A. M. M. Moser¹, J. A. Steffani¹

¹ Universidade do Oeste de Santa Catarina

² Faculdade de Sinop

Author for correspondence: sirleicetolin@gmail.com

Abstract. This study aimed to perform a subjective evaluation of the sleep quality of truck drivers in the extreme western region of Santa Catarina. For this purpose, a questionnaire was used to evaluate the participants' profile and two other questionnaires to measure the degree of sleepiness (Epworth Scale) and Pittsburgh sleep quality index. The sample consisted of 179 truck drivers, all of them male, aged between 21 and 65 years; 77.65% married and 22.34% single; 72.6% have children, with an average of two children per participant. As for the professional profile, 75.9% of the interviewees work as wage earners and 24.1% as freelancers. The type of route covered, in most cases, is long distance, representing 66%, and 34% being short distance routes. Regarding the educational level, 53.5% of the participants have elementary education; 42.4% high school and 3.9% were graduates. Overweight or obesity was identified in 59.80% of the interviewees. About sleep quality, 22.5% reported sleeping less than 5 hours daily; 35.1% from 5h to 6h; 29.0% from 6h to 7h; 12.8% sleep more than 7 hours. On the Epworth Sleepiness Scale, 67.0% presented no sleepiness; 27.3% presented mild degree of somnolence; 5.5% had moderate degree of somnolence. Regarding the Pittsburgh Sleep Quality Index, it was verified that 55.8% presented subjective poor sleep quality. The results suggested that lifestyle and poor habits can negatively influence the health of these professionals.

Keywords: Sleep quality, Truck drivers, Traffic-accidents

Introduction

It is undeniable that Brazil's progress depends on the trucks. The work performed by the driver is essential for Brazil's economy and supply. These workers ensure the functioning of the market and social life. Without them, products would not reach consumers, and industries would not receive raw materials and would not be able to dispose of production. It is a totally horizontal sector, which influences all sectors of the economy (MASSON; MONTEIRO, 2010).

According to the Brazilian Ministry of Labor and Employment, truck drivers are self-employed or salaried workers who provide services to logistic and land transportation companies, loading and unloading in various locations around the world (PENTEADO et al., 2008).

However, truck drivers are increasingly exposed to inadequate working conditions, such as long journeys, irregular food, violence, among others. Furthermore, they are exposed to the risk of

road traffic accidents (MASSON; MONTEIRO, 2010).

In this context, Brazilian traffic is complex due to the factors that involve safety, engineering of the automobile industry and transportation, education, legislation, medicine, curative and preventive, among others (JORGE; KOIZUMI, 2007).

Statistics and operational costs related to traffic accidents have increased on a yearly basis, worrying the public authorities and competent sectors (TUFIK, 2008). Data published by the World Health Organization revealed that in 2009, there were approximately 1.3 million deaths from traffic accidents in 178 countries around the world. In this trajectory, it is estimated that there will be 1.9 million deaths in traffic in 2020 and 2.4 million in 2030. Between 20 and 50 million survive with trauma and injuries. Traffic accidents represent the third cause of deaths of people between 30 to 44 years; the 2nd between 5 to 14 years and the 1st between 15 to 29 years of age (WAISELFISZ, 2012).

In Brazil, between 1996 and 2010, there was an increase in deaths due to traffic accidents, especially since the year 2000. In the decade 2000/2010, the number of deaths on public roads increased from 28,995 to 40,989, representing an increase of 41.4% over 10 years. Rates increased 25.8%, even considering the increase in population. (WAISELFISZ, 2012).

On the other hand, an annual economic impact for Brazil is estimated at approximately R \$ 5.3 billion, equivalent to 1% of the national Gross Domestic Product per year. According to the Institute of Applied Economic Research (IPEA), a traffic accident has an average cost of R\$8,782.00. When considering only accidents with victims, the value is R\$35,136.00. Detailing the costs according to the severity of the accident, it is estimated that a traffic accident without victims costs, on average, R\$3,262.00; with injuries the average cost is R\$17,460.00 and an accident with death R\$144,143.00. (TREVISOL; BOHM; VINHOLES, 2012; TUFIK, 2008).

In Santa Catarina, according to Jorge and Koizumi (2007, page 48), there is the largest vehicle fleet in Brazil (382.1 vehicles / thousand inhabitants). Linked to this, the incidence of traffic accidents in the State has been increasing gradually. According to Waiselfisz (2012, p.18), five people die daily in traffic accidents in Santa Catarina. Between 2000 and 2010, deaths in accidents increased by 23.5% and the rate for every one hundred thousand inhabitants increased from 27.9 to 29.6, an increase of 5.8%. Even so, Santa Catarina fell in the national ranking from 4th (2000) to 11th (2010), signaling the much more critical situation in the other states. For example, Rondônia, the champion among the 26 states, increased by 92.4% the number of deaths in the same period and the rate grew by 69.9%.

Some factors have been highlighted as determinants of the origin and severity of traffic accidents. Age, gender, socioeconomic conditions, non-compliance with traffic legislation (especially speed abuse and consumption of alcoholic beverages prior to driving) are often cited, coupled with inadequate traffic control (TREVISOL; BOHM; VINHOLES, 2012).

In this context, studies relating these accidents to driver drowsiness have been reported. Sleeping while driving is one of the most dangerous attitudes in traffic. According to the professor of the Department of Psychobiology of the Federal University of São Paulo (Unifesp) and head of the discipline of Medicine and Sleep Biology, Marco Túlio de Mello, between 27% and 32% of traffic accidents in the world are caused by drivers who sleep while driving; are also responsible for 17% to 19% of deaths on the asphalt, not counting the deaths occurring within the hospital environment after care. The data reported by the professor are based on research from the University of Genoa, Italy (LIMA, 2008; TUFIK, 2006).

Thus, the present study aimed to subjectively assess the sleep quality of truck drivers in the extreme-western region of Santa Catarina.

Methods

This is a cross-sectional, quantitative and qualitative, descriptive study, with questionnaires based on the truck drivers' population from the extreme west region of Santa Catarina. The Epworth Sleepiness Scale and the Pittsburgh Sleep Quality Index were used to perform the research.

The questionnaire and the data collection were developed by the authors in order to obtain information on the profile of the participating drivers.

The research was carried out at the Vehicle Weighing Station (PPV), located in the city of Maravilha, km 606, BR-282 / SC. This is a strategic location, since it is mandatory to weigh cargo vehicles (from São Miguel do Oeste to Maravilha), which facilitates the approach of the researchers to the drivers.

The truck drivers who traveled on the highway BR-282 / SC at the time of the study were invited to participate in the research..

According to the National Department of Infrastructure and Transport (DNIT), responsible for the Inspection Station, 8,084 trucks (an average of 269 / day) were inspected during the month of April 2013. Considering a period of 30 days for the study, with a 95% confidence coefficient, the sample was 179 drivers, who were interviewed in a period of 6 days. From the face-to-face contact with the interviewees, a brief presentation of the work and the invitation to participate in it was made. The drivers who agreed signed the Free and Informed Consent Form (TCLE) as well as the Term of Authorization of Image Use, in order to use their statements. This research project was submitted to the Ethics and Research Committee of the University of the West of Santa Catarina and approved through protocol nº219330.

The degree of physical risk to the participants was considered minimal because there was no risk of physical integrity. The degree of social risk was also considered minimal because it was a reliability and non-identification of the participants, since only questionnaires were used and no intentional modification or intervention occurred in the physiological or psychological and social variables of the participants.

The interviews took place during the daytime between Monday and Friday, from 7:30 a.m. to 11:30 a.m. and 1:00 a.m. to 5:30 p.m., with the authorization of the professional responsible for the DNIT PPV.

After a first presentation of the survey, carried out by the department's operating assistants, the truck drivers were invited to enter the yard to facilitate the approach and ensure the safety of the researchers. It is worth mentioning that many truck drivers approached did not enter the yard, so that the majority of the interviewees was constituted by

those who were forced to enter and scrape their vehicle for some irregularity in the cargo transported. The results were made available individually to the participants, via mail, at the address given in the interview. The data storage period was five years.

Those drivers who, at the time of the interview, were not carrying freight transportation were excluded, drivers who did not sign the TCLE and those who were not within the pre-established age range

Statistical analysis

The data were tabulated in the IBM SPSS Statistics version 20. The information collected in the questionnaire and the Epworth sleepiness scale were analyzed by chi-square (X^2).

Pittsburgh Sleep Quality Index was calculated by summing points for each questionnaire and tabulating the data in the Microsoft Office Excel program.

Results and discussion

The survey included 179 truck drivers, all males, of whom 58.2% were between 21 and 40 years old and 41.8% between 40 and 65 years old; 77.65% married and 22.34% single; 72.6% have children, with an average of two children per participant. Regarding the professional activity developed, 75.9% of the interviewees work as wage earners and 24.1% as freelancers.

The type of cargo transported was very varied, being cereals, dairy products, agricultural machinery, flammable material, wood, live cargo, fertilizer, fertilizers, food products, among others. The route traveled, in most cases, was long distance, representing 66%. Some long routes reach other countries, so that some of the interviewees were Argentineans and Paraguayans. The average monthly income was approximately R\$ 2,400.00.

In this context, the working condition of these drivers is unhealthy, since staying away from their families, eating improperly and traveling without comfort and safety are normal conditions for these professionals. It is worth mentioning that several times, situations of cargo handling using buckets, carried out by the drivers, were observed.

As for physical ergonomics, there is a regulatory standard 17 that establishes parameters that allow the adaptation of the working conditions to the psychophysiological characteristics of the workers, so as to provide maximum comfort, safety and efficient performance (PEREIRA; SALLES; PASSOS, 2010).

Of the total, 53.5% had primary education, 42.4% had high school and 3.9% had higher education. This characteristic was evidenced by Resende, Souza and Cerqueira (2010), who verified that 67% of drivers had elementary education and only 22% completed high school.

The working context of the truck drivers reflects the iniquities of the market economy of the globalized world. Lack of qualifications and low level of education result in low-paid jobs, long working hours, social exclusion and distancing from the family because of the profession (RESENDE; SOUZA; CERQUEIRA, 2010).

When asked about their health, 94% answered that they did not have health problems and 6% reported having chronic problems (diabetes, hypertension and heart problems). Smokers were 38 (21.2%) and 29 (16.2%) reported they had used substances to stay awake. It is important to emphasize that it is not common to admit the use of these substances even in anonymity, so that the significant data was considered.

These characteristics are peculiar to the professional profile under study and similar results were reported by Domingos and Cols (2010) in a health campaign in Rio de Janeiro with 827 truck drivers. According to the authors, predominantly male drivers, aged 41.3 years (ranging from 21 to 72 years) and 99.3% of the cases, were married or had consensual ties.

Resende, Souza and Cerqueira (2010) in a study on the life habits of Brazilian drivers presented similar results. The interviewees were predominantly men aged between 30 to 39 years (33%). In relation to the monthly income, 70% received between one and five minimum wages, 85% have children, of these the majority have one or two children.

Ferreira and Alvarez (2013) reported in a study in Rio de Janeiro, the prevalent age group from 18 to 59 years, and 7.23% of the truck drivers reported working up to 8h daily. Therefore, more than 90% work over 8 hours, with 15.8% going beyond 16 hours. The use of non-sleeping medications was reported by 23.5% of respondents. Another important fact is the truckers' perception of how the activity negatively influences health. For 53.4% of truck drivers, this activity affects physical health. For 43.9% it affects the mental health and, 72.4% signaled to damage the family and social relationship due to the profession.

Another factor that affects health is overweight and obesity. National data indicate that 32% of Brazilian adults have some degree of overweight. In addition, obesity is a major risk factor for cardiovascular disease and other noncommunicable diseases, such as type 2 diabetes mellitus. This should be considered because the earlier it is detected, the better pharmacological and non-pharmacological measures can be implemented (CAVAGIONI; PIERIN, 2010).

As shown in table 1, the index of overweight and obese individuals is quite significant, indicating an inadequate nutritional status in most of the interviewees.

Table 1. BMI values

		Frequency	%	% valid	% acumulative
Valid	< 18	3	1,7	2,1	2,1
	18,5 to 24,99	36	20,1	24,7	26,7
	25 to 29,9	58	32,4	39,7	66,4
	30 to 34,9	24	13,4	16,4	82,9
	35 to 39,9	19	10,6	13,0	95,9
	> 40	6	3,4	4,1	100,0
Absent	System	33	18,4		
Total		179	100,0		

Source: The authors

The association of overwork, long sitting hours, poor physical activity and inadequate nutrition culminate in these results.

Cavagioni and Pierin (2010) reported 81.8% of truckers body mass index above that considered adequate.

When analyzing the sleep quality of the drivers of the present experiment, 22.5% of the respondents reported sleeping less than 5 hours a day, 35.1% sleeping from 5 to 6 hours, 29.0% from 6 to 7 hours and 12.8% they sleep more than 7 hours.

On the other hand, a very large workload is observed, 15.6% work from 6 to 8 hours, 40.2% from 8 to 12 hours and 44.1% work more than 12 hours a day.

Sleep is fundamental for everyone. Proper rest is the key to the truck driver performing his or her job in the best possible way. Emphasizing that failures due to tiredness / sleep result in serious accidents, as normally occurs on our roads (RESENDE; SOUZA; CERQUEIRA, 2010).

As for the workload, item 6 of art. 235-C, of Law 12619/12, allows the possible overloading of one-day working hours to be compensated on another day, provided there is a trade union agreement. However, in this aspect, there is an adaptation of the law to the conflicts of the current business world, which seems to be: how to combine productivity, competitiveness, quality of services, cost containment without compromising health and quality of life of the worker.

Acute exposure to long working hours can lead to health problems and the possibility of functional diseases arising from rhythm disturbances due to fatigue or scams (FERREIRA; ALVAREZ, 2013).

In relation to car accidents, the most common explanations are about poor road conditions, inadequate maintenance of cars, buses and trucks and about "human error", which is often used as a synonym for imprudence and / or abuse of alcohol, but it is rarely suspected that the person causing the accident has slept driving (CANANI; BARRETO, 2001).

Data for the Epworth Drowsiness Scale showed that 67.0% of the respondents had no sleepiness, 27.3% had mild degree of somnolence, and 5.5% had moderate degree of somnolence.

The results of the present study were worrisome, since 55.8% presented subjective poor

sleep quality. However, it is important to note that the Pittsburgh questionnaire offers a "standardized" and quantitative measure of sleep quality that quickly identifies who has or does not have sleep problems, but does not provide a diagnosis (CARDOSO et al., 2009).

With regard to daytime sleepiness, the degree of sleepiness of the participants was low, however, some aspects that may have influenced the result. The courtyard of the National Department of Infrastructure and Transport (DNIT) is located in front of a Federal Highway Police Station. During the approach to drivers, many demonstrated mistrust reactions, even with the clear presentation of the research, perhaps for fear of an inspection, fine or charging by the competent departments; it is suggested that this may have influenced in some way the questionnaire response. Another important factor was the physical appearance and general appearance of the interviewees, there were clearly signs of fatigue, irritability and difficult reasoning that may be related to sleep deprivation and substance use to stay awake.

According to Ferreira and Alvarez (2013), driving for many hours a day has become "common" for truckers, probably because of the organization of work, which establishes short deadlines for the delivery of goods.

Regarding the subjective quality of sleep, 55.8% presenting poor sleep quality is an alarming percentage, especially considering that it is a sedentary work, with a high level of physical and mental exhaustion, with high cognitive demand. In this way, these professionals are vulnerable to psychological disorders, due to the many particular situations of stress inherent in the profession.

With emphasis on stress, Jora and Cols (2010) reported that 435 (87.7%) participants had concerns related to family problems, 330 (66.6%) felt nervous or irritated and 295 (59.7%) felt had slept badly in the days leading up to the survey.

The reduction of sleep, associated or not to the use of psychoactive substances is an important cause of road accidents. Fatigue is also relevant in studies of road accidents, as it can affect the driver in the first half of his journey (SOUZA; PAIVA; REIMÃO, 2008).

Another factor that affects drivers' health is violence, several studies have pointed to violence as the main stressor of the road, influencing the

emotional and psychic state of drivers. Mental overload and emotional shocks produced by workplace aggressions generate chronic stress. (FERREIRA; ALVAREZ, 2013).

As a general result, Brazilian statistics show that cargo transportation is present in 29.9% of accidents. This could be considerably reduced once attention and measures are taken to improve the working conditions of truck drivers. (FERREIRA; ALVAREZ, 2013).

Conclusions

It has generally been found that truck drivers are poorly educated men who exercise a profession with few opportunities and time for physical or leisure activities. They are professionals who work long journeys, eat inadequately and, especially, present potential risk factors for involvement in traffic accidents, such as poor sleep quality. This indicates the need for greater attention of the authorities in this matter, carrying out more epidemiological studies and elaborating a traffic legislation more adequate to the reality of our country. It is important to note that no data were found in the literature regarding the Pittsburgh Index score that may suggest sleep disturbances among the study participants; however, the results obtained in this study, on their own, suggest the degradation of the trucker's health by exerting profession over the years.

Note that it is a harm related to the bad habits and lifestyle of these professionals, many of them, related to the pace of work that is determined by the companies.

References

CANANI, Simone Fagundes; BARRETO, Sérgio Saldanha Menna. Sonolência e acidentes automobilísticos. *Jornal de Pneumologia*. 2001, vol.27, n.2, pp. 94-96.

CARDOSO, Hígor Chagas; BUENO, Fernanda Carla de Castro; MATA, Jaqueline Cardoso da; ALVES, Ana Paula Rodrigues; JOCHIMS, Isadora; FILHO, Ivan Henrique Ranulfo Vaz; HANNA, Marcelo Michel. Avaliação da qualidade do sono em estudantes de Medicina. *Rev. bras. educ. med.* [online]. 2009, vol.33, n.3, pp. 349-355. Disponível em <http://www.scielo.br/pdf/rbem/v33n3/05.pdf> Acesso em 30 de out. de 2012.

CAVAGIONI, Luciane Cesira ; PIERIN, Angela Maria Geraldo. Hypertension and obesity among professional drivers who work transporting loads. *Acta paul. enferm.* [online]. 2010, vol.23, n.4, pp. 455-460.

FERREIRA, Sérgio de Souza; ALVAREZ, Denise. Organização do trabalho e comprometimento da saúde: um estudo em caminhoneiros. *Revista Sistemas e gestão* Vol. 8, Número 1, 2013, pp. 58-66.

JORA, Natália Priolli; MAGALHÃES, Thaís Roberto; DOMINGOS, Josélia Benedita Carneiro; PILLON, Sandra Cristina. Campanha saúde na estrada: avaliação do padrão de consumo de álcool e do estresse. *Revista Eletrônica de Enfermagem* [Internet]. 2010;12(1):37-46. Disponível em <<http://www.fen.ufg.br/revista/v12/n1/v12n1a05.htm>> Acesso em 24 de out. de 2012.

JORGE, Maria Helena P. de; KOIZUMI, Maria Sumie. Acidentes de trânsito no Brasil: um atlas de sua distribuição / Traffic accidents in Brazil: a distribution map. São Paulo; ABRAMET; 2007. 192 p. graf, tab, mapas.

LIMA, Mário Sérgio. Sono provoca até 32% dos acidentes de trânsito. Agência Estadão. 2008. Disponível em <<http://www.estadao.com.br/noticias/geral,sono-provoca-ate-32-dos-acidentes-de-transito,133195,0.htm>> Acesso em 02 de mai. de 2013.

MASSON, Valéria Aparecida; MONTEIRO, Maria Inês. Estilo de vida, aspectos de saúde e trabalho de motoristas de caminhão. *Rev. bras. enferm.* [online]. 2010, vol.63, n.4. Disponível em <<http://www.scielo.br/pdf/reben/v63n4/06.pdf>> Acesso em 04 de Out. de 2012.

PENTEADO, Regina Zanella; GONCALVES, Claudia Giglio de Oliveira; COSTA, Daniele Damaris da; MARQUES, Jair Mendes. Trabalho e saúde em motoristas de caminhão no interior de São Paulo. *Saude soc.* [online]. 2008, vol.17, n.4, pp. 35-45. ISSN 0104-1290. Disponível em <<http://www.scielo.br/pdf/sausoc/v17n4/05.pdf>> Acesso em 17 de out. de 2012.

PEREIRA, Caroline Aquino; SALLES, Glauce Cristina Silva; PASSOS, Joanir Pereira. As condições de trabalho e sua relação com a saúde dos trabalhadores condutores de transporte. *Revista de Pesquisa Cuidado é Fundamental*. online 2010. out/dez. 2(Ed. Supl.):904-907

RESENDE, Paulo Tarso Vilela; SOUZA, Paulo Renato de ; CERQUEIRA, Paulo Rodrigues. Hábitos de vida e segurança dos caminhoneiros brasileiros. 2010. Disponível em <http://www.simpoi.fgvsp.br/arquivo/2010/artigos/E20_10_T00259_PCN31310.pdf> Acesso em 08 de mai. de 2013.

SOUZA, José Carlos; PAIVA, Teresa; REIMAO, Rubens. Sono, qualidade de vida e acidentes em caminhoneiros brasileiros e portugueses. *Psicol. estud.* [online]. 2008, vol.13, n.3, pp. 429-436.

SOUZA, José Carlos; REIMAO, Rubens. Epidemiologia da insônia. *Psicol. estud.* [online]. 2004, vol.9, n.1, pp. 3-7.

TREVISOL, Daisson José; BOHM, Richard Lemos; VINHOLES, Daniele Botelho Perfil epidemiológico dos pacientes vítimas de acidentes de trânsito atendidos no serviço de emergência do Hospital Nossa Senhora da Conceição em Tubarão, Santa Catarina. Revista Scientia Medica (Porto Alegre) 2012; volume 22, número 3, p. 148-152.

TUFIK, Sérgio. Medicina e biologia do sono. Barueri, SP: Manole, 2008. 483 p.

WAISELFISZ, Julio Jacobo. Mapa da Violência 2012. Os novos padrões da violência homicida no Brasil. São Paulo, Instituto Sangari, 2012. Disponível em <
http://www.mapadaviolencia.org.br/pdf2012/mapa2012_transito.pdf > Acesso em 08 de mai de 2013.