

Systematic Review of Studies on Health-Promoting Interventions in Professional Drivers

Revisión sistemática de estudios sobre intervenciones que promueven la salud en conductores profesionales

Revisão sistemática de estudos de intervenções de promoção à saúde para condutores profissionais

*Miguel Andrez Valencia-Contrera*¹, ORCID 0000-0002-4943-5924
*Sandra Verónica Valenzuela-Suazo*², ORCID 0000-0002-1308-4835
*Varinia Alejandra Rodríguez-Campo*³, ORCID 0000-0001-8170-6184
*Patricia del Tránsito Jara-Concha*⁴, ORCID 0000-0003-1580-3976
*Elena Belén Sepúlveda-Guerra*⁵, ORCID 0000-0002-1094-0990

¹ Universidad de Antofagasta, Chile

¹ Universidad Andrés Bello, Chile

^{2 3 4 5} Universidad de Concepción, Chile

Abstract: Introduction: Workers engaged in the driving field are exposed to factors that hinder their work tasks, such as: problems associated with temperature, noise and vibrations, insufficient and inefficient ventilation, traffic jams and interpersonal relationships with passengers. Objective: To identify, in the available state of the art, which interventions promote the health of professional drivers. Method: Systematic review, following the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), guided by the question: what interventions promote the health of professional drivers? Results: The search yielded 1303 articles, of which 11 were included; the interventions identified were associated with handheld devices and mobile health messaging, motivational interviewing, interactive documents, exposure to natural environments, intensive programs, counseling, policy-level changes, environmental and systems changes. Conclusion: Interventions were identified that included technology, interviews, the environment and strategic control; the implementation of the identified interventions is recommended, since it is urgent to address the health of professional drivers, considering the characteristics described in this study.

Keywords: work; health promotion; automobile driving.

Resumen: Introducción: Los trabajadores que se dedican al rubro de conducción están expuestos a factores que dificultan su quehacer laboral, tales como: problemas asociados a la temperatura, ruidos y vibraciones, ventilación insuficiente e ineficiente, atascos y

relacionamientos interpersonales con los pasajeros. Objetivo: Identificar, en el estado del arte disponible, qué intervenciones promueven la salud de los conductores profesionales. Material y método: Revisión sistemática, siguiendo las recomendaciones de Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA), orientada por la pregunta: ¿qué intervenciones promueven la salud de los conductores profesionales? Resultados: La búsqueda arrojó 1303 artículos, de los cuales se incluyeron 11; las intervenciones identificadas se asociaron a dispositivos portátiles y mensajería de salud móvil, entrevistas motivacionales, documentos interactivos, exposición a entornos naturales, programas intensivos, asesoramiento, cambios a nivel de políticas, cambios ambientales y de sistemas. Conclusión: Se identificaron intervenciones que incluyeron a la tecnología, entrevistas, el ambiente y control estratégico. Se recomienda la implementación de las intervenciones identificadas, pues se torna perentorio el abordaje de la salud de los conductores profesionales, considerando las características descritas en el presente estudio.

Palabras claves: trabajo; promoción de la salud; conducción de automóvil.

Resumo: Introdução: Os trabalhadores envolvidos na condução estão expostos a fatores que dificultam o seu trabalho, tais como: problemas associados à temperatura, ruído e vibrações, ventilação insuficiente e ineficiente, engarrafamentos e relações interpessoais com os passageiros. Objetivo: Identificar, a partir do estado da arte disponível, quais as intervenções que promovem a saúde dos condutores profissionais. Método: Revisão sistemática, seguindo as recomendações dos itens Preferred Reporting Items for Systematic Reviews e Meta-Analyses (PRISMA), orientada pela pergunta: Quais intervenções promovem a saúde dos condutores profissionais? Resultados: A pesquisa produziu 1303 artigos, dos quais 11 foram incluídos; as intervenções identificadas foram associadas a dispositivos portáteis e mensagens de saúde móveis, entrevistas motivacionais, documentos interativos, exposição a ambientes naturais, programas intensivos, aconselhamento, mudanças a nível político, mudanças ambientais e de sistemas. Conclusão: Foram identificadas intervenções que incluíram tecnologia, entrevistas, ambiente e controle estratégico; recomenda-se a implementação das intervenções identificadas, pois é imperativo abordar a saúde dos condutores profissionais, considerando as características descritas no presente estudo.

Palavras-chave: trabalho; promoção da saúde; condução de automóvel.

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Correspondence: Sandra Verónica Valenzuela-Suazo. E-mail: svalenzu@udec.cl

Introduction

According to the World Health Organization (WHO), all workers are exposed to risks in their workplace, ranging from biological, chemical, physical, and ergonomic factors, as well as accidents and psychosocial risks. ⁽¹⁾ These risks can be present in all Works, distributed in different measures, depending on, among other things, job characteristics, position, and work environment. In the case of workers who are dedicated to driving, problems associated to temperature, noise, and vibration, insufficient and inefficient ventilation, traffic jams and interpersonal relationships with passengers. ⁽²⁾

Other items that have been identified as risks in professional drivers are those of psychosocial type, ⁽³⁾ which in turn seem to have a negative relationship with the quality of life of such group, preventing the efficient performance of their work, and even associating it to an increase of the likelihood of causing traffic accidents. In addition to the foregoing, it has been mentioned ⁽⁴⁾ a constant fear on the part of professional drivers of being assaulted or involved in an accident; additionally, this group has been negatively associated to alcohol consumption and poor eating habits, culminating in chronic non-communicable diseases, for example, high blood pressure, which is present in more than one third of drivers worldwide, exceeding the general population. ⁽⁵⁾

In view of the above, this is particularly relevant when the International Labor Organization (ILO) states that the road transport sector is of fundamental strategic importance for social and economic development. In addition, it ensures the mobility of passengers and goods between territories and countries, thus contributing greatly to economic growth and job creation. ⁽⁶⁾ However, evidence indicates that public transport drivers present, in general and at a global level, unfavorable working conditions, with the presence of physical and psychological risks. ⁽⁷⁾ In the case of truck drivers, not only do they face fatalities and injuries caused by vehicle collisions, but compared to other workers, they are exposed to greater risks of occupational illnesses and accidents. ⁽⁸⁾

One health challenge is to support these workers by reinforcing healthier lifestyles and promoting their personal health through actions aimed at maintaining physical, mental, and social well-being in the workplace. In 2012, workplace health promotion was defined by the ILO as “the joint effort of employers, workers, and society to improve the health and well-being of people in the workplace.” ⁽⁹⁾ This has been considered as a strategy that not only involves providing education, but also counseling and motivation for behavioral change.

Currently, health promotion in the workplace is addressed only to a limited extent, since few attempts have been made to apply it, which would allow professional drivers, in this case, to increase their control over their health to improve it and positively influence their working conditions. ⁽¹⁰⁾ In view of the above, considering the importance of professional drivers, the risks to which they are exposed, and the need to promote the health of this population, the present research was developed with the objective of identifying interventions, in the available state of the art, that promote the health of professional drivers.

Materials and method

Systematic review type research, whose guiding question was: What interventions promote the health of professional drivers? To carry out the review, it was structured based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement updated in 2020. ⁽¹¹⁾ Having circumscribed the research problem, the searches were

then organized in Spanish, English and Portuguese, using the MeSH and Boolean descriptors shown in Table 1.

Table 1. Descriptors and Boolean used in the searches

Descriptor in: Spanish English Portuguese	Boolean	Descriptor in: Spanish English Portuguese	Boolean	Descriptor in: Spanish English Portuguese
trabajo work trabalho	AND	promoción de la salud health promotion promoção da saúde	AND	conducción de automóviles automobile driving condução de automóveis

Source: Own elaboration (2022)

The searches performed considered articles up to December 2021, including the following databases: PUBMED (United States National Library of Medicine), SCOPUS, SciELO (Scientific Electronic Library Online), and BVS (Biblioteca Virtual en Salud). The search strategies and filters used in each database are shown in Table 2.

Table 2. Search strategy and filters applied

Databases	Search strategy	Filters applied
PUBMED	All fields.	-Availability: Complete text -Publication date: 2000 -2021 -Species: Humans -Language: Spanish, English, and Portuguese
BVS	Title, abstract, matter.	- Availability: Complete text - Language: Spanish, English, and Portuguese -Main matter: Automobile driving - Period of time: 2001-2021
SciELO	All indexes.	No results were obtained; therefore, the filters could not be applied to the searches.
SCOPUS	All fields.	-Period of time: 2000-2021 -Type of document: Article -Publication stage: Final -Descriptor: Automobile driving - Language: Spanish, English, and Portuguese -Availability: Complete text free

Source: Own elaboration (2022)

The inclusion criteria used considered articles in the three languages mentioned (Spanish, English, and Portuguese), documents published in the period ranging from 2000 to 2021 (up to December), and related to professional drivers; the exclusion criteria corresponded to reviews, letters to the editor and duplicity of manuscripts; first of all, the titles and abstracts of the articles located were reviewed, and those that met the exclusion criteria were read in full. Figure 1 shows the review flowchart.

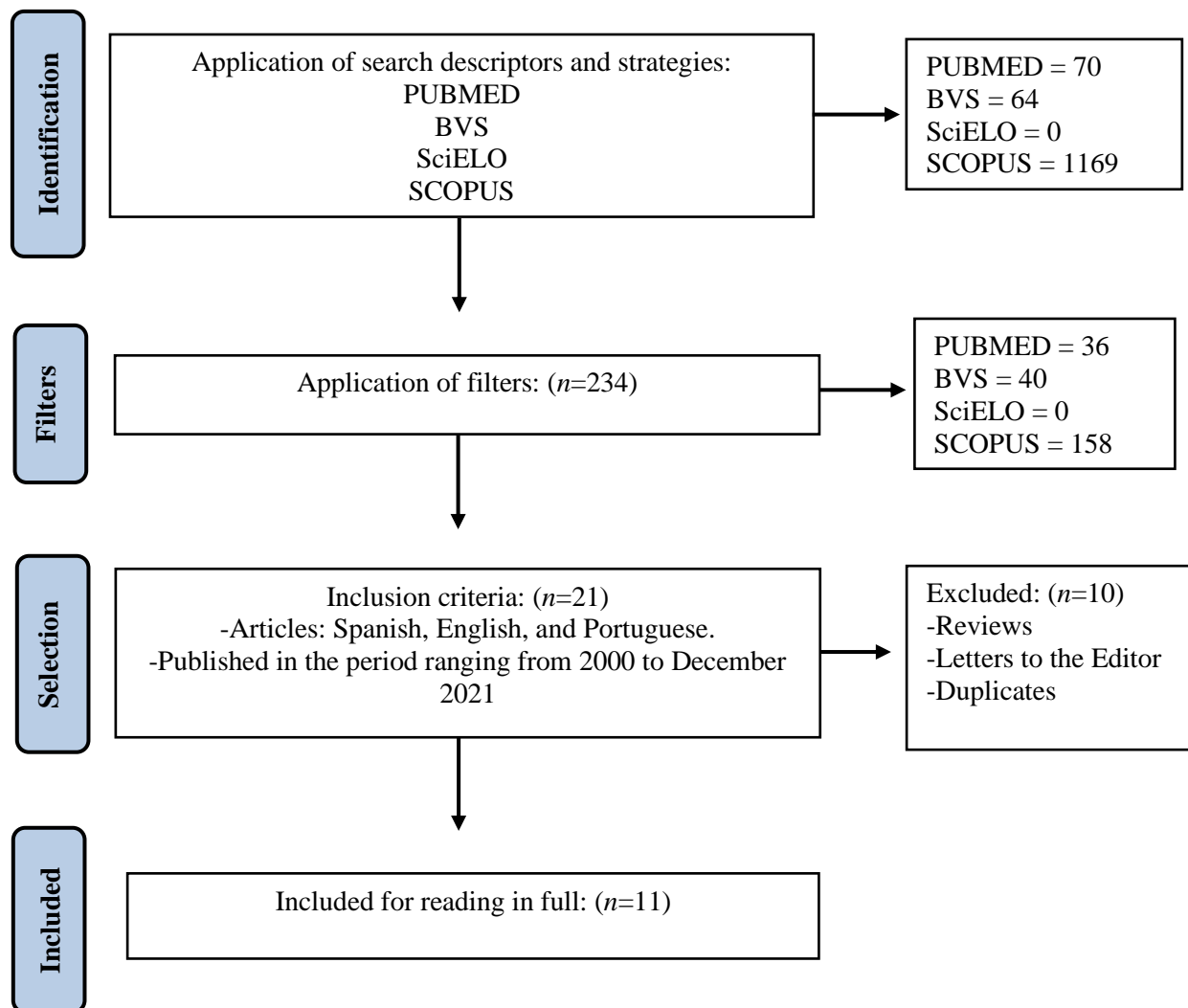


Figure 1. Review Flowchart. Adapted from PRISMA (2020)

After the application of descriptors and search strategies, a total of 1303 articles were identified; after the application of filters, 234 articles were located; after the application of the inclusion criteria, 21 articles remained; and finally, after the application of the exclusion criteria, 11 articles remained.

Results

To complete the review process, the most relevant results of the selected articles will be presented and interpreted. Valuable contributions were highlighted, which can be grouped into 5 dimensions: technology, counseling and motivational interviewing, environmental control, sexual health, and strategic approach. Table 3 summarizes these articles according to author, objective or question, sample, methodology and relevant results.

Table 3. Selected studies

Author	Objective/ Question	Sample	Methodology	Relevant Results
Greenfield R, et al. ⁽¹²⁾	To explore the views of professional truck drivers on health promotion delivered through mobile health technologies, such as handheld devices.	Four semi-structured focus groups with 34 full-time professional truck drivers in the U.K.	Phenomenological qualitative study.	Handheld devices may offer new possibilities for improving the health and well-being of truck drivers.
Van Schaaik A, et al. ⁽¹³⁾	Can reduced work capacity and vitality of drivers during the peak industry season be prevented by self-management interventions targeting work-recovery-rest balance, eating habits, and physical activity at work?	96 drivers.	Randomized controlled trial with intervention of equal size and control arms running in parallel.	The user evaluation showed that the intervention provided an interactive document with suggestions and corresponding assignments based on three domains: Work-recovery-rest balance, food and beverage intake, and physical activity were considered positive.
Longman D, et al. ⁽¹⁴⁾	Examining whether spending time in nature is associated with lower levels of fatigue, anxiety, and depression in heavy vehicle drivers.	386 participants were recruited from 25 depots (from a large logistics and transport company) in the Midlands region of the United Kingdom.	Randomized controlled trial protocol.	Increased exposure to natural environments can make a valuable contribution to interventions to promote health and wellness in truck drivers.
Olson R, et al. ⁽¹⁵⁾	Using hierarchical cluster analysis to investigate sleep, diet, and exercise behavior patterns, and then testing whether clusters of drivers with similar behavior patterns differed in demographics, BMI, occupational health and safety incidents, stress, and social support.	452 drivers.	Cluster randomized trial to evaluate the efficacy of a weight loss, health and safety intervention.	Weight management interventions for drivers should explicitly address sleep and may be of maximum effectiveness after establishing socially supportive work environments that reduce exposure to stress.
Pandey A, et al. ⁽¹⁶⁾	To examine the extent and trend of sexual risk behavior, STI/HIV prevalence, and the link between exposure to HIV prevention programs and safe sexual behavior.	The first round of the survey was conducted in 2007 (sample: 2,066), while the second round was conducted in 2009-2010 (sample: 2,085).	Time-place cluster sampling approach; information was collected on exposure to HIV prevention interventions supported by Avahan and other agencies.	Truck drivers who practice safe sex behaviors with intensive program exposure are less likely to experience STIs and HIV.
Puhkala J, et al. ⁽¹⁷⁾	To study the effects of individual lifestyle counseling for 12 months on weight reduction and prevalence of cardiometabolic risk factors among truck and bus drivers with abdominal obesity.	113 drivers were eligible for the study and were randomized into a lifestyle counseling group and a wait-list referral group.	Randomized trial.	Weight reduction and decreased cardiometabolic risk factors were clinically significant after 12 months of counseling truck and bus drivers.

Heaton K, et al. ⁽¹⁸⁾	To determine Internet access and use among a sample of long-haul truck drivers.	106 truck drivers.	Cross-sectional design.	Targeted mobile health messaging can be a useful tool for informing truck drivers about health conditions and plans, and can provide links to primary care providers who need to monitor or notify drivers about diagnostic results or treatment plans.
Wilson JL, et al. ⁽¹⁹⁾	Increase self-efficacy; promote weight loss and BMI reduction.	19 participants.	Evidence-based practice (EBP) change project over a 4-week period.	The results suggest that a short-term motivational interviewing intervention may be effective when implemented as a clinical standard for commercial truck drivers.
Hege A, et al. ⁽²⁰⁾	Exploring the connections between long-haul truck drivers' work organization, job stress, and sleep health.	260 men at a large truck stop in central North Carolina.	Cross-sectional research design.	Health promotion efforts directed at long-haul drivers must be accompanied by policy, environmental and systems changes, especially at the government and trucking industry levels.
Boeijinga A, et al. ⁽²¹⁾	Gain a better understanding of the low level of effectiveness of current health interventions for Dutch truck drivers by examining to what extent they are adapted to the particular mindset of the target group (content focus) and health literacy (content presentation).	21 health promotion materials for Dutch truck drivers.	Analysis of health promotion materials for Dutch truck drivers using a two-phase approach: (a) an analysis of the materials approach, guided by the Health Action Process Approach; and (b) an analysis of argumentation, guided by pragmatics-dialectics.	The results of the study advocate incorporating two elements in the health promotion of drivers: on the one hand, the centralization of action planning and coping planning; and the use of approaches or formats that require less health literacy skills.
Murray KE, et al. ⁽²²⁾	To explore occupational health risks and opportunities for health interventions with cab drivers using community-based participatory research methods.	The study first presented a convenience sample of 19 East African cab drivers who participated in focus group discussions. Second, a convenience sample of 75 current cab drivers and 25 non-driver comparison participants were recruited to complete a structured self-report questionnaire and objective health measures.	Mixed research approach.	Within the findings, two levels of intervention were identified to address occupational health concerns of cab drivers: on the one hand, individually targeted health and education programs and industry-oriented reforms.

Source: Own elaboration (2022)

Discussion

In terms of technology, portable devices were described as new possibilities for improving the health and well-being of drivers; ⁽¹²⁾ consistent with what has been described associated with targeted mobile health messaging, ⁽¹⁸⁾ since these are useful tools for informing professional drivers about health conditions and plans, and have also been shown to contribute to primary care, especially for monitoring or reporting diagnosis results or treatment plans. This is of particular importance in the nutritional alterations due to excess in drivers, as described by the scientific community. ⁽¹⁰⁾

The above is consistent with the findings of Hafidy, et al, ⁽²³⁾ who identified 220 mobile applications that can help improve driving behavior; however, the findings of Barengo NC, et al, ⁽²⁴⁾ have reported inconsistent results on whether mobile health technologies are effective in reducing HbA1C levels or the incidence of type 2 diabetes in patients with prediabetes, but may hold promise for decreasing body weight.

In relation to motivational counseling and interviewing, the intervention associated with providing an interactive document with suggestions in the area of work-recovery-rest balance, food and beverage intake, and physical activity was positively assessed. ⁽¹³⁾ In addition to the above, after 12 months of counseling with professional drivers, there was evidence of a reduction in weight and a decrease in significant cardiometabolic risk factors. ⁽¹⁷⁾ Additionally, it has been described that short-term motivational interviewing can be effective when implemented as a clinical standard for professional drivers. ⁽¹⁹⁾ It has been recommended to consider those approaches or formats that require less health literacy skills, ⁽²¹⁾ as well as an individual approach. ⁽²²⁾

This is consistent with another review, which notes that interventions that include a combination of training and other resources can provide successful weight reduction for truck drivers and are of clinical importance in guiding the development of future interventions in this industry. ⁽²⁵⁾ This takes on particular importance, since noncommunicable diseases among drivers, for example, of buses, have been described as a growing threat, generating a substantial burden on the health system and services. ⁽²⁶⁾

In terms of environmental control, an exposure to environmental settings with nature can contribute to health and wellness promotion interventions. ⁽¹⁴⁾ This is consistent with another study, where it is noted that sleep should be explicitly addressed in weight management interventions, where benefits can be obtained as maximum efficacy after establishing socially supportive work environments that reduce exposure to stress. ⁽¹⁵⁾

In the sexual health dimension, a study that is included describes that exposure to an intensive program in professional drivers who practice safe sexual behaviors was less likely to suffer sexually transmitted infections and HIV. ⁽¹⁶⁾ This is particularly important because HIV-positive drivers with associated neurocognitive impairment have been reported to be at increased risk of poor driving performance in a simulation test. ⁽²⁷⁾

Finally, in the dimension of the strategic approach, it is recommended that health promotion in professional drivers should include changes at the policy, environment and systems levels, especially at the governmental level. ⁽²⁰⁾ Another study adds centralization in action planning and coping planning, ⁽²¹⁾ and industry-oriented reforms; ⁽²²⁾ as such considerations at the strategic level will enable a culture of health promotion to be established in the target community.

It is highlighted as a challenge to continue building knowledge associated with health promotion interventions in professional drivers. Although several results were identified, there are problems not covered by the interventions identified, such as those related to musculoskeletal pain. In that line, a high prevalence has been seen in professional drivers, being the lumbar area reported in the study of Joseph L, et al, ⁽²⁸⁾ as the most affected, whose risk factors can be mitigated through stretching programs, together with road safety education. ⁽²⁹⁾

The limitations of the present study are limited to the databases consulted and, consequently, to the sample identified. In addition, in terms of strengths, the present review is the first known to provide a variety of interventions including different levels of health management, from health care and environmental aspects to strategic approaches. Moreover, the findings identified may complement other reviews that have not identified specific occupational interventions targeted at older HGV drivers in the categories of health, safety, well-being, and other occupational factors, ⁽³⁰⁾ and may provide new insights that have not been considered.

As considerations for future studies, it is recommended to generate new interventions associated with the identified gaps and their consideration in professional drivers.

Conclusions

The present study was able to respond to the objective of identifying, in the available state of the art, which interventions promote the health of professional drivers. Several interventions were identified, which were grouped into 5 dimensions: technology, counseling and motivational interviewing, environmental control, sexual health and strategic approach. It is recommended that these interventions be considered by the health area, as this approach is essential for professional drivers.

There is important evidence of the positive effect of health promotion programs in workplaces. The study subjects vary according to the objectives of the researchers, with a scarce scientific production in professional bus drivers. There is a challenge in the permanence and adherence of the study subjects to perform or integrate the interventions.

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Authors' participation: a) Conception and design of the work; b) Data acquisition; c) Analysis and interpretation of data; d) Writing of the manuscript; e) Critical review of the manuscript.

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