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Structured Abstract

Purpose: Being a professional truck driver implies prolonged exposure to physical and psychosocial risks, which can affect health and work ability in the short and long term. This study examines the role of working conditions in truck drivers' perceived health and retirement intentions in a Portuguese transportation company.

Design/methodology/approach: Using Ergonomic Work Analysis (EWA), this study incorporates document analysis, observation, and 16 interviews. Content analysis is applied to interviews' transcripts.

Findings: In line with previous research, drivers acknowledged their activity as physically demanding (e.g., static postures, repetitive movements, heavy lifting) and psychologically demanding (e.g., high time pressure, lack of control, lack of work-family balance). Despite that, drivers report themselves to be in good health, with only some complaints related to back and knee pain. However, hard working conditions associated with ageing can contribute to gradual health deterioration, leading them to desire to retire before the legal retirement age.

Practical implications: The company can promote drivers' health by creating a unit to provide psychosocial support and career orientation, improving the mentoring programme, and investing in training on occupational risk prevention.

Originality/value: This study is the first to use Ergonomic Work Analysis to examine the impact of the complex relationship between truck drivers' work and health in their retirement intentions, adopting a temporal perspective.

Keywords: qualitative research; occupational health and safety; truck drivers; working conditions; retirement intentions; health and safety

Article Classification: Case study

1. Introduction

In recent decades the world of work has undergone profound changes. The increased use of new technologies, the ageing of the working population, globalisation (e.g., raising competition among organisations in a global market, accelerated pace of trade due to lack of internal borders control across Europe, adaptation of organisational practices to a multicultural workforce), and the economic crisis pose new challenges for health and safety at work.

These changes, mainly the free circulation of goods and services, have brought visibility to the road freight industry, one of the most important sectors in the European economy (European Commission, 2012). The relevance of the sector has prompted investment in technological driving systems and vehicle automation (Fagnant and Kockelman, 2015).

However, despite the accelerating addition of technology, for at least the next decade the drivers' role will remain crucial. Therefore, organisations still need to protect and invest in their human resources, offering attractive working conditions to professional drivers (European Commission, 2012).

This is especially important in a context of an ageing workforce. In most European Union countries, the percentage of workers over 44 years old in the road freight sector is higher than the average percentage in other industry sectors (Houtman et al., 2004). In Portugal, data from 2015 show that 15.8 percent of truck drivers were aged between 18 and 34 years old and 30 percent were 50 or over (Office of Strategy and Planning, 2016).

Moreover, drivers are exposed to several risks (Apostolopoulos et al., 2012), which puts them in a high risk professional group and contributes to higher turnover rates and lower average retirement age (Massaccesi et al., 2003; Min and Emam, 2003). Previous research has shown that professional drivers report high levels of psychological strain, fatigue, and irritability due to physical demands, irregular work schedules, overtime, night shifts, sleep deprivation, and

lack of social support (Chung and Wu, 2013; de Croon et al., 2004; Tse et al., 2006). In a recent study conducted in Portugal (Ramos, 2017), professional drivers reported to be frequently exposed to risks such as visual constraints, tension with the public, customers, or suppliers, and physical efforts (e.g., postures, repetitive gestures or movements). Drivers also revealed their job as highly demanding in terms of concentration, bureaucratic constraints, and lack of work-life balance. This last aspect is related with their atypical working schedules, which include working more than 10 hours a day, more than 50 hours per week, and in rotating shifts. Muscle, joint, or bone problems were the most reported health problems, followed by vision problems. Sleep problems, memory and concentration problems, and digestive problems were also identified by professional drivers as frequent in their occupation, which appear to be associated with irregular schedules. Also, driving conditions (e.g., traffic, roads quality, atmospheric conditions) can influence professional drivers' work, leading to a constant readjustment of schedules (Brunoro et al., 2012). In addition to this highly demanding work environment, road freight transport is characteristically low-wage employment, and salaries tend to be lower than in other categories of the transportation sector (Houtman et al., 2004; ILO, 2010). This makes the job even more unattractive since monetary incentives are perceived as important for drivers' recruitment and retention (Min and Lambert, 2002).

Literature shows that difficult working conditions contribute to drivers' physical and psychological health decline. Additionally, there is the natural process of ageing, which involves a progressive deterioration of some important physiological capacities, resulting in health limitations and age-related losses (Hansson et al., 1997; Ng and Feldman, 2013). Since driving is essentially an information-processing activity, older drivers face many challenges in decision-making processes with declines in perceptual and cognitive abilities, slower motor responses, and deterioration in visual acuity and peripheral vision (Mouloua et al., 2004;

Wood, 2002). In a nutshell, working conditions and ageing can be detrimental to drivers' health status.

Likewise, health can have an impact on work. According to the health-work framework proposed by Volkoff and Molinié (2011), work and health are two parallel axes on which individuals advance over time (i.e., while ageing), and which maintain complex two-way relationships between them. In the light of this diachronic approach, work influences the evolution of health throughout life, and health can influence decisions about the working life. In this sense, health has been consistently identified as an important predictor of retirement intentions (e.g., Beehr, 1986; Fisher et al., 2016; Topa et al., 2009). Studies show that poor health results in a diminished work ability, which frequently pushes workers out of the occupation or out of the work role (Fisher et al., 2016; Oksanen and Virtanen, 2012). In other words, individuals facing stressful situations, such as hard working conditions, will feel relieved when they decide to leave these harmful circumstances. Thus, health is, among other factors (e.g., financial aspects, family support), an important condition for retaining older workers in the workforce.

Although some of the aspects influencing individual's health are not susceptible to interventions by management, other aspects can, at least partially, be influenced by the organisation. That said, organisations are responsible for promoting workers' health and well-being, guaranteeing that valuable human resources will remain available, active, and productive in the future (Hansson et al., 1997; Vendramin et al., 2012). Managers should take into account workers' age, needs, and preferences in the development of management practices, ensuring better working conditions and a healthy environment for all, from the moment they enter the labour market (Hellemans and Laphorn, 2016).

With this in mind, this study examines the influence of truck drivers' working conditions on their perceived health, and the role that this perception has in their retirement intentions, in a

Portuguese transport company. It is, therefore, a case study in the transport sector. Our aim was to explore how and why working conditions affect health and retirement intentions of truck drivers.

This study contributes to the literature by bringing together a number of different features. Firstly, we study the relationship between truck drivers' health and their retirement intentions, a topic that has received little attention. Secondly, we use Ergonomic Work Analysis (Wisner, 1995) to better understand truck drivers' activity and explain the relationship between truck drivers' working conditions and health, and its impact on their retirement intentions. Thirdly, we focus on working conditions that can be changed by organisations when fostering prevention-based strategies that accommodate workers' ageing and needs.

1.1 The company

This case study was developed in a large Portuguese company in the road freight transport and logistics sector. Founded more than 60 years ago in Portugal, the company has had its headquarters in Spain since the 1970s. This company leads the national market of road freight transport and employs around 1800 workers in the Iberian Peninsula. In Portugal the transport area consists of 508 professionals: 352 are truck drivers, aged between 25 and 64 years old, with an average age of 44.3 years old. Their tenure in the organisation varies between 2 and 32 years, with an average of 13.3 years. There is only one female truck driver.

2. Method

2.1 Ergonomic Work Analysis

Considering the multiplicity of human reactions and responses to work, a deep understanding of workers' perceptions and behaviours is needed. Ergonomic Work Analysis (EWA) (Wisner, 1995) is an activity-centred approach, meaning that the focus is on the activity (i.e.,

actual work) which refers to what is put into practice by the individual to perform the task (i.e., *prescribed work*) and achieve an outcome (Leplat and Hoc, 1983; Wisner, 1995).

Activity must be understood as a response from the worker to prescribed work, transforming work and re-defining the task, its goals and its conditions (Six, 2016). EWA aims to characterise work situations and to identify their consequences for workers' health and organisations. To this synchronic approach, and following the health-work framework (Volkoff and Molinié, 2011), a temporal perspective was introduced: participants reconstructed their current activity through their memory of past work experiences. Thus, drivers' activity was analysed through three qualitative techniques: document analysis, observation, and semi-structured interviews.

2.2 Procedure

2.2.1 Document analysis

In this phase, document analysis (Bowen, 2009) was employed seeking to obtain information about drivers' activity and potential constraints, as a starting point for data collection, and later as a complementary source to the findings. The first documents collected for this research were National and European legal regulations for professional drivers regarding driving time and rest periods, and requirements for the initial qualification and periodic training of professional drivers holding a C or D licence (required to drive heavy vehicles). Organisational documents were also collected. We started by examining truck drivers' job descriptions to better understand the prescribed task. Then, we analysed demographic information and statistical data of truck drivers' health and safety at work.

2.2.2 Observation

To better understand drivers' activity, two free observations were conducted in two different settings: the first was held in the company's head office, where truck drivers receive task instructions and directions; the second was held inside the truck cabin. The aim of the first observation was to examine the influence of social, organisational, and cultural constraints on drivers' activity, focusing on how drivers behave and interact with colleagues. In the second observation, physical and cognitive aspects of the activity were analysed. Driver's verbalizations were recorded. Observations took place before interviews so that the results were returned to and discussed with drivers in the interviews.

2.2.3 Interviews

We developed a semi-structured interview guide covering five dimensions: demographics (i.e., age, nationality, tenure in the company, and tenure as a driver); tasks and skills (e.g., "How would you describe a "regular" day at work?"); working conditions (e.g., "What are the main difficulties that you feel concerning your job?"); perceived health (e.g., "In a scale from 1 (very bad) to 5 (very good), how do you rate your health?"); and retirement intentions (e.g., "At what age would you like to retire?"). Before each interview, participants gave written consent to participate and for the interview to be audio-recorded. The average duration of interviews was 32 minutes and they took place at the company.

2.3 Participants

Drivers were selected for mirroring certain aspects of the population, such as gender, age, and tenure at the company. Additionally, given the unpredictability of their work schedules, interviewees were also selected based on their availability.

To ensure the phenomenon was comprehensively represented in the study, we engaged in an iterative process of conducting interviews and pre-analysing the results. When data saturation

point was achieved (i.e., new information produced little or no change to the codebook), we stopped the data collection (Guest et al., 2006).

The sample of interviewees consisted of 16 male truck drivers, aged between 28 and 55 years old ($M = 45.2$ years old; $SD = 8.4$). All participants were considered experienced in their profession ($M = 19.38$ years; $SD = 9.1$), and the majority had been employed at this company for a considerable time ($M = 17.0$ years; $SD = 7.8$). Fourteen interviewees were Portuguese, one was Brazilian, and one Romanian.

2.4 Data analysis

The first author conducted and transcribed the interviews *verbatim* in Portuguese. All data (i.e., transcripts) were then analysed through content analysis (Bardin, 1996). Categories were determined by a combination of deductive and inductive approaches: initial categories were based on previous research, relevant literature, and the aim of the study, and additional categories emerged from the interviewees' comments (Berg and Lune, 2012; King, 2004). This was an iterative process of developing categories, creating sub-categories and sub-subcategories, and refining them to the point at which they were exhaustive and mutually exclusive (Bardin, 1996; Krippendorff, 1980). As a result, a codebook containing the detailed definition of each category, sub-category, and sub-subcategory was produced. To improve the consistency of analyses, the second author conducted an independent assessment of 20 percent of the transcripts using the codebook. Inter-rater consistency in the codification procedure (Mays and Pope, 1995) showed a good level of reliability (77% of agreement).

3. Results and discussion

Results of document analysis, observation, and interviews were integrated to obtain a comprehensive view of the data. Findings were organised into three categories defined *a*

priori: working conditions, health, and retirement intentions. These categories, their sub-categories, and sub-subcategories are presented, exemplified through quotations, and discussed below. Table 1 shows the number of units for each category, sub-category, and sub-subcategory.

Insert Table 1 around here

3.1 Working conditions

This category is the most common theme in interviewees' speech (72.2%). However, the Annual Management Report does not identify occupational risks.

3.1.1 Physical conditions

a) Truck and equipment. The truck is the space where drivers perform the driving task and where they spend most of their working time. Inside the truck cabin, there is the digital tachograph¹, the refrigerator, and the spaces for resting (bed or bunk beds) and preparing meals, presented by the driver during the observation.

There was considerable agreement across interviewees regarding the positive evolution of trucks' conditions. They considered that trucks are much more comfortable today, with pneumatic seats and the possibility of regulating the temperature inside, and better in terms of driving performance, with quieter and greener engines.

“When I came to the company, the seat seemed like a brick. It was really hard; it screwed up my back. Now seats are pneumatic².” P4

Regarding the ergonomic features of the truck, interviewees did not converge in their opinions. Despite the improvements in trucks, six drivers highlighted that poor work postures,

¹ Device fitted to a vehicle that records and stores data about its speed and distance, and about the driver's activity.

² Adjustable seat to driver's height with lumbar support and a suspension system to absorb the vibrations.

repetitive and monotonous movements, and seat characteristics cause physical discomfort as well as knees and back pain. This was also possible to verify in the observation inside the cabin. While driving, the driver adopted a curved back position, which allowed him to be closer to the wheel and the eyes closer to the road.

“The truck causes a lot of discomfort. Being 16 hours inside a truck... The first 5, 6 hours are possible to bear... But after that, we are all crooked.” P11

In general, regardless of their age or tenure, drivers devalued these negative aspects and perceived occupational risks as a natural part of their profession. They stated that there is not much to be improved or changed, despite the potential advances in technology.

b) Cargo handling. Most interviewees reported that heavy physical work during loading and unloading operations has negative consequences for their health and hinders their performance. These tasks represent an increased effort for drivers, although they are not defined in law or in the job description.

“The law does not say that we have to unload or load the trucks, because it is not our profession.” P13

Despite the high physical demands associated with this task, drivers recognised that due to technology, it is now easier to load and unload cargo. Warehouses became more mechanical and robotized due to logistics development, and when arriving at some clients' facilities, drivers do not participate in loading and unloading operations.

However, because of their size or internal rules, some clients continue to require drivers to do these operations. According to the company's documentation, about 60 percent of the work-related accidents with drivers happened during loading or unloading tasks on clients' facilities. Only two interviewees mentioned enjoying loading and unloading as it represents a

moment of physical activity that requires new movements, in opposition to the sedentary driving lifestyle.

“There are smaller companies in which we have to help unload. In other companies they unload and we are only present to check for any damaged merchandise.” P1

c) *Roadways*. The road environment is dynamic and unpredictable, and it includes not only the behaviour of other road actors, but also the state and characteristics of the roads. All the interviewees mentioned traffic, atmospheric conditions, and the lack of civility from drivers, including colleagues, as triggers of stress. This anxiety can increase the odds of error and, consequently, of accident.

“The traffic... And when it is raining, it is even worse because people (...) have to drive differently.” P1

Drivers considered that the roads are, in general, in bad conditions, with many holes, lack of proper lighting, and insufficient warnings when doing road maintenance. Limited access motorways are in better conditions, but the company has restricted policies regarding their use due to the high financial charges (tolls) that these entail. Interviewees stated that they end up avoiding toll roads. National roads are busier, narrower, have more traffic lights and lower speed limits, and their configuration makes driving manoeuvres more difficult and prevents continuous and non-stop driving.

“We drive on roundabouts where we do not fit; we come across speed bumps, with traffic lights.” P13

Some interviewees have spontaneously pointed out the absence of infrastructures to support drivers while they are on the road as a great difficulty. Drivers mentioned that there are no exclusive or safe spaces to stay overnight, even sleeping inside the vehicle, since the places

where they park the trucks to rest are often by the road and/or isolated. Interviewees showed fear of being robbed or being hit by another vehicle. These infrastructures are also necessary for drivers to carry out their personal hygiene, especially to take a shower. Sometimes drivers have to pay to take a shower, but most of the time there is no place to do it.

“There are no parks. You sleep at the side of the road, a truck passes by, you wake up, and you go see if anything happened. It's a startling night. (...) You go to the park of the industrial zone; the police go there and fine you.” P2

3.1.2 Organisational conditions

a) Job characteristics. In Hackman and Oldham's (1976) model, job characteristics referred to the interviewees' perception regarding skill variety, task identity, task significance, autonomy, and feedback. All interviewees stated that their job requires few tasks, driving being the main activity. They reported their job as monotonous and repetitive and, for that reason, it is not possible to develop a wide variety of skills. These characteristics make work less attractive and less meaningful to them. Also, interviewees emphasised that monotonous driving causes drowsiness and enhances the probability of sleeping at the wheel.

“I can drive for four hours on a highway, and if I want to, I can programme the truck to change gear ratios, to use the brakes. It is monotonous and it can be dangerous. We can feel very sleepy.” P3

Most interviewees seem to be identified with their job as they can see a visible outcome, i.e., the delivery moment. Since drivers are responsible for the whole transportation process, they also recognised task significance and the opportunity to obtain feedback. They hold that their job clearly affects clients' business, especially in the event of delay in the delivery or when goods are damaged, but they also state that it influences the company's image. Regarding feedback, interviewees declared that they had access to instant and detailed information about

their performance (e.g., meet the deadlines, compliance with the law and the company rules). Therefore, drivers can identify specific actions that need to be taken to improve their performance. Interviewees reported facing several limitations in job autonomy. Despite their efforts and initiatives, their job depends on various factors (e.g., traffic, company's policies to avoid toll roads and reduce fuel consumption, excessive waiting times for loading or unloading), leading to a perception of less responsibility for their performance.

"The speeds and the consumption constrain us because the company wants more work, less consumption, and the client wants more speed... They want the load there as soon as possible. (...) And now we have to avoid the highways." P13

b) Schedule and work pacing. Working hours was one of the topics most addressed by all the interviewees. To deeply understand the working times of drivers, document analysis was crucial. In general, Regulation (EC) No 561/2006, a common set of European Union rules relating to road transport, distinguishes four driver activities: rest periods, breaks, driving time, and other work. Due to the complexity of this regulation, drivers and staff receive specific training regarding the topic of working hours. Training is very important for drivers to perform their job safely and with responsibility, and also to sensitize other staff for the need to anticipate constraints on driver schedules in the short and long term.

A driver's work day is manifestly unpredictable, with an irregular schedule, which makes it difficult to plan the working week or month. Drivers receive guidelines for their service and their schedules are assigned based on the legal regulation, but countless factors can prevent the driver from complying with the expected departure or arrival times. This creates a feeling of lack of control, and sometimes anxiety and frustration as they never know when and where their work day will end.

“We do not have a fixed bedtime because this depends on when we arrive at the clients’ premises; it takes time to unload, it takes time to load, and only after that can we rest.” P8

The irregularity of schedules affects all domains of the driver’s life, especially personal, social, and family dimensions. Drivers have difficulty in taking part in family activities or events, and often have schedules that do not coincide with those of their family and friends (e.g., working during the night). This unpredictability triggers stress that is often exacerbated by the traffic operators and the family asking drivers when they will finish the service.

“Sometimes they ask: “Are you here on the 18th for Jane Doe’s birthday?” I don’t know. “What time do you arrive today?” I don’t know. (...) I cannot schedule anything. I think that’s the worst part of this profession.” P11

In general, interviewees considered that driving time and rest periods are respected, since there are frequent inspections by the competent authorities, and there are also monetary penalties for non-compliant drivers. For this control, the digital tachograph is an important tool, as we were told during the observation.

c) Organisational policies. In general, interviewees expressed discontent with recent policy changes due to cost savings. They considered that there was a huge concern with numbers and profit, and a lack of concern about workers as human beings. Firstly, there were changes in the structure of the company with the redefinition and renaming of departments. For most interviewees, this resulted in the division of people and increased competitiveness between departments.

The cost reduction policy has also translated into the reduction of the fleet of vehicles, which has a huge impact on drivers’ well-being, as it is no longer possible to assign a unique and exclusive vehicle to each driver. Drivers are subject to frequent truck exchanges and, because

they consider the truck as their home, they feel lack of privacy. Due to the lack of responsibility and care of some drivers, sometimes trucks lack in cleanliness and hygiene, posing a threat to drivers' health. Before starting their service, drivers must often clean the truck and check the mechanical condition of the truck.

“With this policy of changing trucks... I lie down on another's bed. People have health problems. Am I going to lie in a bed where there was a guy who's been a week without a shower?!” P3

This policy also reflects on drivers' performance through the limits imposed on fuel consumption, speed, and the use of toll roads. Limits are strictly controlled and, if exceeded, drivers are penalized monetarily. Drivers were also subjected to wage cuts. However, few interviewees talked about this topic, revealing that they accept this change naturally, due to the economic-financial context of the country.

Regarding positive policies, older interviewees recognised the importance of mentoring practice implemented by the Human Resources (HR) department as an opportunity for personal growth and professional appreciation for both mentors and mentees, but also for the company's productivity in the long run. To improve this practice, interviewees suggested the assessment of mentors' skills to pair mentors and mentees according to their individual characteristics and interests.

“A new driver came in and was trained with an old driver. I think this was very beneficial to the company. There was a correction of bad habits in every aspect. I got to ride with drivers who were seeing the red traffic light at 10 meters and continued to accelerate the truck until they suddenly hit the brake. (...) [With mentoring] they could save on fuel and on brakes.” P3

d) Organisational support. Drivers spontaneously approach the need to improve the support provided by the company regarding various dimensions of their life. For most interviewees it would be very important to have the opportunity to be listened to and supported in their personal and professional problems, which could contribute to their well-being and motivation.

“It would be a good idea to have a person with whom we could share the problems and that could guide us in the best way to solve them. I think it would be an improvement.” P11

3.1.3 Psychosocial conditions

a) Relationship with colleagues and supervisor. Interviewees recognised that the relationships among colleagues changed over time. Values of companionship, team spirit, and friendship were replaced by a climate of mistrust and competitiveness, triggered by changes in the regularity of services and clients, and the growing request of outsourcing. Only few interviewees revealed being able to talk and ask for advice from colleagues. For those interviewees, colleagues are perceived as a source of social support, which improves their work experiences and facilitates work organisation.

“When a colleague is going to take a route that we know, we always advise him/her. “Be careful that there is a client that opens later. You’d better get to another client earlier.” (...) This hastens a lot of work...” P12

Nowadays it is more difficult for drivers to be with their company and professional colleagues. The irregularity of the schedules and the pressure of the family to go home as soon as possible decrease the chances of meeting with other colleagues after work. Also, the removal of physical barriers that force the driver to stop, such as border customs, have resulted in diminished opportunities to meet colleagues during the work day.

“In the past there were borders that were physical barriers forcing trucks to move slowly and so people joined in the same place. Today is nonstop driving. No one stops, not even to help anyone.” P6

Due to the financial crisis of 2008, drivers also changed their routines in order to cut their daily expenses, like avoiding going to restaurants, and bringing food from home.

“Now life is more expensive, people don’t often go to restaurants. Before we always found three or four colleagues having lunch or dinner. Now you can go from south to north without seeing a single colleague having lunch in a restaurant.” P9

These changes can contribute to the feeling of loneliness reported by half of the interviewees, negatively affecting their mental health (Shattell et al., 2010). To overcome isolation, drivers adopt different strategies (e.g., playing on technological devices, phone calls).

To promote team spirit among workers, the company and some more tenured workers organise events. However, interviewees considered that they are not always receptive to these initiatives, because either they prefer to spend that time with family or friends, or because these events are held at the headquarters and they do not wish to return to their workplace on weekends.

“I don’t know if most drivers would join. If I was supposed to go with the family, I would probably join but I still have doubts because “I’m already here all week, why should I go back here to meet my colleagues?”. ” P11

The relationship with the supervisor was not very often mentioned. However, all interviewees considered that there is a great distance between drivers and supervisors. This generates some antagonism between the two parts, leading them to believe that drivers and supervisors have different goals. Some interviewees revealed feeling unmotivated because they often perceive insensitivity and lack of humanism by their leaders.

“Some people think that we are pawns - pawns like in a chess game - and maybe we can't be in a better mood because of it.” P10

b) Relationship with family. This topic emerged spontaneously in the interviews, unleashing very strong emotional reactions amongst the interviewees (e.g., tears) and revealing that this is a very delicate subject. Demanding and irregular work schedules routinely interfere with family life. Thus, according to interviewees, *“balancing family and work is the main puzzle”* (P1), and a crucial part of this balance is the partner support. The spouse or partner should be understanding and sympathetic to the driver's absence, and support other family members while the driver is not at home (e.g., take the children to school). Interviewees also showed sorrow and nostalgia for the moments they lost during their children's growth.

“I have a 25-year-old son, I look at him and I do not remember anything of what he did when he was little. I wasn't there to see.” P6

c) Clients. Clients emerged as one of the most important dimensions in the interviewees' speech. On the one hand, interviewees recognised that clients are a crucial part of business. This customer orientation is documented in organisational politics and procedures that focus on clients' satisfaction and also in the specific training offered to workers. On the other hand, clients are perceived as an entity that hinders drivers' jobs, particularly the fulfilment of schedules. All interviewees stated that waiting times at the client's premises (to load or unload the truck) are one of the biggest obstacles to effective performance, and that it triggers high levels of stress and anxiety.

“As we have limited time, we get stressed. We see that the hours to load are passing, we realise that we will not arrive to the destination on time and we get stressed.” P8

For most interviewees the solution would be to limit waiting times in the contract between the company and the client, or even in the law, or making the client pay for the cost/hour of the vehicle parking.

“I think there should be a norm establishing a maximum of two hours of tolerance, for both the client and the company.” P7

According to document analysis, some commercial contracts have a clause defining a two-hour limit for loading and unloading operations. If this limit is exceeded, the client must bear the associated costs. However, according to some interviewees, the company does not require compliance with this clause for fear of losing clients to a competing company.

d) Cognitive demands, skills, and knowledge. Interviewees highlighted the relevance of skills such as responsibility, seriousness, and professionalism, allied to commitment and dedication. Interestingly, long-tenured drivers mentioned the need to be careful and to adopt a preventive driving, emphasizing professional experience as a crucial requirement for good performance.

“We have many colleagues who are 60 years old, or already over 60 (...) and they are the best professionals. Experience makes a lot of difference.” P2

Driving is a cognitively demanding task and interviewees recognised that they have to be alert to multiple stimuli of the road environment. Drivers focused on the challenges they already face or will face when they are older regarding cognitive, perceptual, and motor skills.

“We are getting old and we no longer have the same vision, the reflexes. We have the experience to guide us and it compensates for that failure of the body. But the body is not the same anymore.” P6

Interviewees noticed the limitations associated with the natural ageing process and proposed professional experience as compensation for these functional losses. This idea concurs with the selection, optimization, and compensation (SOC) model of Baltes and Baltes (1990),

which claims that individuals can use SOC strategies to maintain effective functioning and well-being when experiencing a mismatch between their demands and resources.

Compensation encompasses substituting for the loss of resources (e.g., difficulty adapting to darkness, decreased ability to discriminate colours) by acquiring and using new resources or reactivating unused resources (e.g., previous knowledge of the route) (Baltes and Baltes, 1990).

3.2 Health

3.2.1 Perceived health

All interviewees considered enjoying good health and that the health problems they may have are temporary and not affecting their current performance. Older interviewees identified health problems that, in their opinion, are directly related to their profession such as knee and back pain. For those, the pain arises mainly at the end of the driving time, due to their static posture, but it is bearable. They also attributed their health changes to the natural ageing process and to the prolonged exposure to high physical demands.

“I notice, for example, that if I drive for four and a half hours in a row, when I get out of the truck and start walking, my knees hurt. I walk a little bit and the pain stops.” P4

Drivers believed that, in general, they have been losing accuracy in their vision, showing eyestrain and less precision, due to high visual demands in the driving task. These perceptions concur with previous research revealing that older drivers show decreased visual acuity, dark adaptation and contrast sensitivity, reduced tolerance to glare, and slower eye movements (McGwin et al., 2000).

“My vision... I don’t know if it was because I worked a lot at night, but there are times when the sun comes, during the sunrise, and it costs me a lot. (...) When summer comes and there is a fog on the road, it makes it very difficult.” P2

In line with previous research (e.g., Passey et al., 2014), drivers reported not having full control over their eating routines and the quality of food, which can affect their health. There were no mentions of obesity problems, but four interviewees reported having high cholesterol levels.

“The food is often not the best in terms of quality, schedules, everything. And sometimes we don’t even have lunch.” P6

Physical exercise is very important for drivers to stay physically and psychologically healthy. Interviewees seek to exercise both in their free time, engaging in different activities outside work, and in their rest periods.

“I like to play sports. I like to do mountain biking at the weekends, in the hills, in the nature. I like spearfishing, diving. That’s where I forget all this. We are tired and need to recharge.” P3

Few interviewees mentioned the importance of the occupational physician in the evaluation of drivers’ health and well-being. Physicians identify symptoms of potential health problems, work-related or not, and refer the driver to the National Health Service (NHS) doctor.

“Today occupational medicine is always on top of the event. My problem was discovered by the company’s doctor. (...) The doctor here (...) said I had to see the urologist.” P1

3.2.2 Work-related accidents

Only four interviewees described work-related accidents in which they were involved: three happened on clients’ premises while they were loading or unloading the truck, and the other

was a road accident. The road accident was, according to the interviewee, due to having fallen asleep behind the wheel. For interviewees, drowsiness is one of the consequences of monotony in the driving task.

"It was a hot day. (...) But I couldn't stop. I was carrying letters, I think. (...) I saw the highway moving. (...) Somewhere, near my house, I got off the road, I don't remember anything else. (...) I hit a post, slowly. That anxiety to get home. I was exhausted, I felt exhausted." P3

Partial sleep deprivation and prolonged wakefulness trigger drowsiness, which has been consistently identified in the literature as a major risk factor for road accidents (Dinges, 1995). Interviewees mostly used the term "fatigue" to refer to the effects of working for too long without an adequate rest time. Drivers seemed to accept fatigue as an inherent part of their profession due to the disruption of their circadian rhythm caused by irregular schedules. These four work-related accidents are in line with the document analysis. The organisational statistics revealed an average of 52 accidents per year: about 89% occurred at clients' premises, 6% at the company's premises, and 5% while travelling. The injuries of the accidents are mainly traumatism (32.5%) and bruises (26.9%) on the back (28.3%) and lower limbs (21.2%), which is consistent with interviewees' complaints. Concerning accidents' severity, 53% required the driver to be absent up to 10 days and 7% for more than 100 days. Most accidents occurred in the morning (51.5%) and the others in the afternoon (42.2%).

3.3 Retirement intentions

According to document analysis, in Portugal the legal age to retire varies according to the evolution of the average life expectancy is at 65 years old (Decree-Law no. 167-E/2013), currently being 66 years old and three months (Ordinance no. 67/2016). This implied a change in the Regulation of the Legal Qualification to Drive, increasing the maximum age for

driving heavy vehicles from 65 to 67 years old as long as drivers maintain their physical, mental and psychological ability³ (Ordinance no. 40/2016).

However, all interviewees considered the legal retirement age as inappropriate for their profession and wanted to retire earlier. Regarding the physical and psychological demands, drivers believed the ideal age for retirement would be between 57 and 62 years old.

Retirement is, for all interviewees, an opportunity to practice their hobbies and enjoy their free time while experiencing good health.

“[I would like to retire] at 60, 62 years old. I would like to have more time with my family, to watch my soccer games; I have lost so many matches of the Champions League... I would like to reach that age and enjoy life while healthy and functional, to see my grandchildren and be closer to them.” P4

Work ability was one of the main reported concerns related with retirement timing. Although interviewees considered that currently they are in good health, they recognise that in the future their health may deteriorate and they may not be able to perform their job. On the one hand, work itself can contribute to poorer health due to physical demands, prolonged driving time, stress and psychological pressure, and lack of work-family balance. On the other hand, the ageing process can lead to the loss of important functional capacities that will affect their performance, namely slower reaction times and a reduced ability to assess situations accurately.

“I think the human being starts to be ‘disabled’ and this [profession] needs more reaction. (...) At 62 years old it was a good time to go to retirement.” P1

When facing the possibility of not being able to perform their job as truck drivers until retirement, and if they need to remain at work (e.g., because they do not meet the legal requirements for early retirement), interviewees stated that there were other tasks they could

³The ability is evaluated through periodic medical exams (e.g., visual, auditive) and psychological assessments (e.g., personality, cognitive).

do in the company. Some interviewees mentioned that being a courier would be a good option for them, since they could continue to drive but with less demanding schedules. However, if they were not able to drive, interviewees also mentioned that they could work in Sales or HR departments, or in traffic operations, since they had experience about routes, clients, and schedules. Despite the existing cases of relocation, this practice is discretionary and applied on an individual basis.

4. Implications

To be competitive and sustainable, and until the general access to automated vehicles, organisations have to attract young drivers and to encourage older drivers to stay active and productive for longer. According to the health-work framework (Volkoff and Molinié, 2011), organisations should intervene in the interface between work and health and consider workers' life-cycle in their practices. This company should adopt a strategy to improve drivers' working conditions and to accommodate age-related changes on functional capacities (Work axis) in order to promote health, reduce physical and psychological demands, and extend the working life (Health axis).

The first proposal is to create a unit to accompany drivers, provide psychosocial support, and facilitate work-family balance, reducing stress and anxiety, and improving well-being and mental health (e.g., assistance in personal situations involving health, family, legal, and financial issues). This unit should also help drivers to plan their careers by defining professional goals and strategies to accomplish it (e.g., identifying individual skills and mapping job requirements to manage careers inside the company).

Secondly, and based on drivers' feedback, it is important to strengthen the existing mentoring programme, including an assessment of the skills and interests of mentors and mentees.

Mentoring allows workers to share experiences related to work activity (e.g., information

about clients and routes), health protection (e.g., defensive driving, loading strategies), and work-life balance (e.g., individual and collective strategies to manage schedules with personal responsibilities, besides the role of family). Through coaching and counselling, mentoring provides resources to deal with job difficulties, which will allay job-related stress and improve well-being (Sosik and Godshalk, 2000).

Thirdly, training policies should include drivers' awareness of the risks associated with their profession, their identification, and communication. Drivers underestimate the occupational risks to which they are exposed, particularly the physical ones, as they are perceived as natural in their function. For this reason, the company should invest in drivers' training, making them aware of the negative impact of these risks in their health and informing them of the measures that can be taken to prevent them. In addition to an improvement in the overall health of drivers, this training may contribute to a reduction in the number and severity of work-related accidents.

Also, the lack of control over drivers' schedules, related with waiting times on clients' premises is an important factor for both work-family balance and health that needs to be addressed at a macro-level. Changes in contracts – by introducing time limits and impute costs to non-compliant clients – can represent a disadvantage in relation to competing companies. Thus, truck drivers' unions can have a relevant role in a sectorial level regulation. Taken together, these proposals will benefit drivers' health since they will be able to perform their job safely and in a healthy way, and maintain their work ability for longer. By improving perceived health, these practices can help to decrease turnover and retirement intentions.

4.1 Limitations and future research

A case study is a small part of a much wider view. This places limitations on the conclusions that can be drawn and makes it impossible to generalise results. Also, it was not possible to

obtain a random sample of drivers for the interviews due to irregular schedules of these professionals. However, an effort was made to obtain a sample with characteristics similar to the company's drivers, in terms of gender, age, and tenure at the company. More research is required to investigate the long-term implications of working conditions on truck drivers' health and retirement intentions. Research should focus on both objective and subjective measures of drivers' health. Future studies should also examine in greater depth the influence of clients on truck drivers' well-being and performance. This topic has been addressed in passenger transport but received little attention in freight transport (e.g., Keller, 2002). Given the results of this study, it would be interesting to explore the impact of the relationship between clients and truck drivers for both parts.

5. Conclusions

This study examined the impact of truck drivers' working conditions on their perceived health and, consequently, in their retirement intentions. Findings revealed that physical and psychological demands, in combination with individual ageing, can negatively influence truck drivers' health in the long term and contribute to the desire for early retirement. This company can promote a healthy workplace for drivers by creating a unit that provides psychosocial support and assists in career planning, improving the mentoring programme, and offering training about preventing occupational risks. These issues are of strategic importance for drivers, for the company, and for society.

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