Health and Telework: New Challenges after COVID-19 Pandemic

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ARTICLE INFO	ABSTRACT
Received: 9 Oct. 2020 Accepted: 21 Nov. 2020	The COVID-19 pandemic represented a big challenge not only for the health systems but also for the working world that has been characterized by the spread of telework. The aim of this review is to resume the knowledge about the effects of telework on the health and safety of teleworkers, and to point out these implications in the light of the growing development and diffusion of it after COVID-19 pandemic. A literature research on the main scientific research engines (Pubmed, Scopus, Google Scholar, Cochrane Review) has been performed. No restrictions were applied for language or publication type. All the articles not concerned with the health effects of telework have been excluded. That kind of work arrangement can take advantages to both employers and workers by improving productivity and work-life balance. However, it has some potential disadvantages, represented by the possible negative implications on worker's health. The main hazards for the health of teleworkers are: the unavailability of ergonomic work equipment and a dedicated working area, the risk of overwork, and psychosocial implications of working from home. Performing telework can affect both physical and psychosocial health but some authors also described potential health benefits. **Keywords:** telework, health, telecommuting, work-from-home, remote work, COVID-19 pandemic

INTRODUCTION

The COVID-19 pandemic, at the beginning of 2020, represented a big challenge not only for the health systems but also for the working world. On the one hand, it stressed the maintenance of health systems, but on the other, it represented a driving force for the modernization of work as a whole. An example of that is represented by the spread of telework or telecommuting, made possible also by the current level of development and diffusion of telecommunication systems, especially in industrialized countries. The adoption of this kind of working organization, in fact, is fundamental during the actual pandemic, in order to allow social distancing in workplaces (Cahapay, 2020). Indeed, many clusters of infection have been reported in plants where the employees worked in close proximity, with physical exertion and fast work paces (Cohen, 2020).

Even if this concept dates back to the 70s, when the oil crisis has led to rethinking the work arrangements (increasingly dependent on the movement of workers to the workplace), there is still no consensus on its exact definition. That is also demonstrated by the many kinds of terms applied to it: telework, telecommuting, remote work, work-from-home, smart working, e-work etc. The 2002 European Framework Agreement on Telework, defined it as *"A form of organizing and/or performing work, using information technology, in the context of an employment contract/relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis."* The International Labor Office (ILO) also defined a "teleworker" as *"any ICT-using employee working outside of the main office on at least one occasion each month to perform work-related tasks"* (Eurofound and the ILO, 2017).

In recent years, the adoption of teleworking has been increasingly implemented all over the world. In the US, according to the analysis of data from the US Census Bureau, the non-self-employed population of teleworkers grew by 102% from 2005 to 2014, counting 3.7 million employees, especially in the public sector (Lister and Harnish, 2011). In Europe, the European Working condition Survey of 2015, reported that around one-fifth of workers did some form of telework or Information and Communications Technologies (ICT)-based mobile work, with many differences between the Member States. Italy recorded just 8% of workers doing telework/ICT-based mobile work, Germany the 11%, France the 23%, whereas in the Northern Countries those rates were higher, with Denmark counting the 36% of teleworkers. Those differences are probably due to the different Country's affinity for technology, the availability and quality of ICT infrastructure, management culture, and companies' involvement.

Table 1. Benefits and disadvantages of telework for the company and for workers

WORKERS		COMPANY	
ADVANTAGES	DISADVANTAGES	ADVANTAGES	DISADVANTAGES
Reduction of the time dedicated to commute	Less visibility and career opportunities	Increased productivity	Difficulty in managing distant workers
Work according to own availability and Biorhythms	Isolation, reduction of external relational life	Reduction of costs and company size	Cultural reorganization of business processes
More free time	Invasion of the private sphere	Increased employee motivation	Several employment contracts to manage
Control by objectives	Greater difficulties in participating in trade union activities	Reduction in the number and role of middle managers	Conflict with the middle leaders
Increased closeness to family and friends	Unsecured safety and work standards	Lower costs for the rental of properties	Higher expenses for telecommunication equipment and training
Free choice of where to live	Reduction of the spatial distinction between home and office	Greater organizational flexibility	Discussion of the business organization

Looking at the demographic characteristics of teleworkers in Europe, it emerges that male employees are generally more likely to do telework than females. Those gender differences can be due to the different sectors (e.g., real estate and finance) and occupations that most implemented the use of telework, whose workforce is mainly represented by men. In general, teleworkers are younger than their office-based counterparts, often they have a high educational qualification, and they live in urban areas (Welz and Wolf, 2010). One fifth of workers that telecommute is self-employed while the rest are employees (Eurofound, 2020).

Table 1 resumes the benefits and the disadvantages of telework both for the company and for workers.

The aim of this short review is to resume the knowledge about the effects of telework on the health and safety of teleworkers, in the light of the growing development and diffusion of that form of work arrangement after COVID-19 pandemic.

METHODS

A literature research on the main scientific research engines (Pubmed, Scopus, Google Scholar, Cochrane Review) has been performed. No restrictions were applied for language or publication type. All the articles not concerned with the health effects of telework have been excluded. Articles published prior to 1990, editorial articles and individual contributions (i.e., conferences' speech), have been also excluded.

The search strategy used a combination of controlled vocabulary and free text terms based on the following keywords: telework, telecommuting, worker's health, remote work, work-from-home, occupational health, effects, impacts. The search has been made from September 1, 2020 to September 31, 2020.

RESULTS

Health Hazards Linked to Telework

Most part of the jobs that can be performed out of the employer's premises requires a telecommunication system, mainly represented by personal computers, tablets or smartphone. In Europe, the Display Screen Directive 90/270/EEC, firstly tried to rule the minimum safety and health requirements for work with display screen equipment, giving the member countries the general guidelines for the protection of workers' health. It is known, in fact, that exposure to the Visual Display Terminal (VDT), can affect many aspects of workers' health, mainly causing visual discomfort and musculoskeletal pain (Aarås et al., 2000). Neck/shoulders pain and, overall, low back pain, are the main musculoskeletal symptoms reported (Riccò et al., 2016) but they can be relieved from the use of ergonomic workstations and from worker training and information programs (Ketola et al., 2002).

Another threat to workers' health, outside the usual workplace, can be represented by the microclimate. The place where the worker telecommutes, could not have air conditioning or circulating systems that can ensure good local atmospheric conditions. That can represent a problem for the employer's responsibilities on worker's health care. The exposure to low perceived air quality and humidity can lead to sensory irritation symptoms in the eyes and airways (in particular for workers suffering from asthma or chronic obstructive pulmonary diseases), low work performance, skin problems, headache, tiredness, and low sleep quality (Wolkoff, 2018). Those symptoms can refer to the so-called "sick building syndrome", and, for people working from home, to its counterpart "sick home syndrome" (Runeson-Broberg and Norbäck, 2013).

Other hazards for the health of teleworkers are represented by psychosocial ones. They derive from the intrinsic nature of telework which, for example, does not allow any direct social-work interaction with colleagues or superiors. This condition can, in fact, generate feelings of loneliness, isolation, poor mental health (e.g., anxiety, depression, stress, etc.) (Mann and Holdsworth, 2003). In addition, work-family interaction as well as work-life balance (i.e., the equilibrium between time allocated for work and other aspects of life such as personal interests, self-care, family and social or leisure activities), can contribute to influencing mental health (in a positive or negative way) (Gálvez et al., 2011).

In the most part of developed countries, the employer must ensure the supply of suitable and ergonomic work equipment, the safety and comfort (e.g., in terms of lightning, cleaning, microclimate etc.) of workplaces and the health surveillance of employees (e.g., periodic vision tests and functional evaluation of the spine). Those obligations serve to ensure the

worker the highest possible level of health and safety at work. Private homes could not ensure those measures, thus exposing teleworkers to the above-mentioned hazards.

Health Implications of Telework

Performing telework, which implies the continuous use of ICTs and VDTs, can affect several aspects of personal health (Nakazawa et al., 2002). The health problems associated with telework can be, therefore, grouped into two big categories: physical and psychosocial. Some authors also described potential health benefits of telework.

Physical Problems

It has been widely demonstrated that using personal computers at work, especially if carried out on non-ergonomic workstations, increase the risk of musculoskeletal disorders (MSDs), particularly upper limb disorders, lower limb disorders and back pain (Hoe et al, 2012; Jensen et al., 2002; Wahlström, 2005). The factors that are linked with this risk are: awkward postures, repetitive movements and long period of continuous work (teleworkers can't socialize and thus don't allow to take health breaks, that can be useful for musculoskeletal relaxation (Skov et al., 1996). Teleworking is linked with an increased rate of physical inactivity and sedentarism both well-known determinants for health (Kurland and Bailey, 1999). In fact, they can contribute to the burden of chronic diseases, like diabetes, cardiovascular diseases (CVDs), obesity and hypertension (González et al., 2017).

Psychosocial Problems

The main mental problems linked to the experience of telework are sleeping disorders, work-related stress (Thomée et al., 2007). Social isolation is another possible consequence of telework, and a negative loop has been suggested (Morahan-Martin and Schumacher, 2003).

Work-related stress (WRS) is a complex phenomenon and develops when multiple psychosocial risk factors coexist and interact. Psychosocial risks arise from the interaction from work content, work organization, technological and environmental conditions, and workers' skills, resources, and needs. The factors that most influence the perception of stress are: excessive workloads, a lack of decisional autonomy, a lack of support by colleagues or superiors, relational conflicts in the workplace, a low consideration of one's role within the company, and a lack of involvement in the changes of company organization (De Sio et al., 2018). Some of these (high workloads, low involvement, low role's consideration, lack of support) can be experienced by teleworkers, thus causing work-related stress. Occupational stress is linked with several health problems including anxiety, depression, suicide attempts, sleep disorders, back pain, chronic fatigue, digestive problems, autoimmune diseases, impaired immune function, cardiovascular diseases, hypertension, and peptic ulcers (Schneiderman et al., 2005).

Health Benefits

The benefits of teleworking have been described by many authors but they're mostly practical than health related. Increased flexibility and better work-life balance (Mann et al., 2000) are often accompanied by increased productivity (Montreuil and Lippel, 2003). Other benefits include reduced commuting time, increased opportunity for workers to focus on their work tasks away from the distractions of the office, a more flexible schedule for workers and the freedom to work from an alternative location, away from the premise of the employer. In addition, part-time and occasional teleworking may reduce forms of violence and harassment requiring face-to-face contact (ILO, 2020).

Other aspects that may have non-negligible importance in terms of public health are those relating to transports, air quality (inside as well as outside), consumption of energy and materials, etc. that will benefit from the fewer workers forced to travel to work.

DISCUSSION

Telework is a kind of work arrangement that especially after COVID-19 Pandemic, will be more and more adopted worldwide. Telecommuting has many positive aspects both for workers and for employers. The former appreciate that it improves their work-life balance, increase their free time, and give them more autonomy and flexibility. The latter can reduce business costs and have more productivity by the employees. In addition, this kind of work arrangement can be suitable for a variety of works and for people of different ages, gender, and health status (i.e., people with motor disabilities).

In light of the increasing spread of teleworking, which will probably continue to grow even after the end of the COVID-19 pandemic, it is essential to put in place preventive measures against the health risks deriving from this form of work organization.

In terms of occupational health and safety issues for teleworkers, as previously discussed, the two most recognized issues are psychosocial and posture ergonomics risks. Working from home during the COVID-19 pandemic is an abnormal condition, that forces workers at home for a prolonged period, under difficult external circumstances. That is causing high levels of anxiety due to the health, social and economic implications of the crisis (ILO, 2020).

The International Labour Office, in its *ad hoc* document drawn up in 2020, during the COVID-19 pandemic, it provided a series of useful recommendations to prevent the health risks deriving from telework (**Table 2**).

CONCLUSION

There are very few works exploring the relationships between telework and its health effects. Occupational doctors worldwide will face emerging workers' health problems linked to telework, this short review intends to contribute to stimulating research in this area, that will be more and more important in the future.

Table 2. Occupational Safety and Health Policies for teleworkers

- Inform the employers about the health and safety risks and hazards, the home office environment, equipment, ergonomics, and stress as well as other mental health issues.
- Provide OSH and ergonomic protocols specifically designed for teleworkers.
- Train managers and teleworkers on the importance of taking sufficient rest breaks during the workday, as well as clarifying that such breaks won't have negative career consequences.
- Promote physical health, including exercise, and encourage workers to maintain healthy eating habits.
- Provide psychological support for workers to share their fears and worries confidentially (helplines, counseling, support groups).
- Provide to workers appliances compatible with ergonomic standards.

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