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HOME OFFICE AND ERGONOMICS

Abstract

Due to the Covid-19 epidemiological situation in the 2020 year, many employers have introduced home work. In Hungary, the employment of law enforcement agencies, including the professional disaster management body, has been opened by compliance with teleworking home office-type work - without jeopardizing fundamental tasks, which only the narrow stock has been used. In this research, the authors investigated the effects of Home Office, in particular with regard to psychosocial and health aspects and present proposals in each element.

Keywords: teleworking, psychosocial factors, ergonomics, sedentary work, health hazards

OTTHONI MUNKAVÉGZÉS ÉS ERGONÓMIA

Absztrakt

A 2020-as évben bekövetkezett Covid-19 járványügyi helyzet miatt számos munkáltató vezette be az otthoni munkavégzést. Magyarországon a rendvédelmi szervek, ezen belül a hivatásos katasztrófavédelmi szerv állományának is a jogszabályok betartásával megnyílt a lehetőség a távmunkavégzés Home Office típusú munkavégzésére - az alapvető feladatok ellátásának veszélyeztetése nélkül – amit csak a szűk állomány vett igénybe. E kutatásban a szerzők a Home Office hatásait vizsgálták, különös tekintettel a pszichoszociális és az egészségügyi szempontokat illetően és javaslatokat jelenítenek meg ezek egyes elemiben.

Kulcsszavak: távmunka, pszichoszociális tényezők, ergonómia, ülőmunka, egészségügyi kockázatok



1. INTRODUCTION

Home Office regulation is also briefly dealt with in Hungarian legislation. Section 87 of Act I of 2012 on the Labor Code deals with the issue of telework. According to Section 196 (1): *"Teleworking is an activity carried out regularly in a place separate from the employer's premises, which is carried out by means of a computer device and the results of which are transmitted electronically."* In Home Office, employees carry out those tasks at home that they previously performed at their workplace in an established community. Furthermore, the usual everyday interpersonal relationships are concentrated exclusively in the online space, which in the long run can have a number of negative consequences. The aim of this paper to demonstrate the basics and the effects of Home Office conditions and some ergonomic issues.

Though getting to work, regardless of the means of transport (car, public transport, individual), has previously been regarded as an unnecessary activity, through it people have been affected by a number of effects that have acted as new information, even such an event as a traffic accident, which may later come up as a topic in conversations at work or with friends. On social networks, we can come across a number of humorous images that show that the employee's route was moving between the kitchen and the study / living room, which was initially funny but later diverted the employee's general mood in a negative direction.

A further challenge for single people is that daily contact with colleagues can only be achieved through telephone conversations or instant messaging (chat). With the cessation of personal interactions, which occurred not only with colleagues but also with friends, a sense of loneliness emerged, which, in addition to deteriorating work performance, can also have a detrimental effect on the private life of an individual. The extra time spent in online space can upset the employee's realistic view of specific situations, and the idealized world seen on social networks can further aggravate pre-existing negative thinking.

In the case of people with families, we can observe the exact opposite, since teaching is also done online, and parents have to deal with a number of problems accordingly. They also need to provide their child with the computer and the broadband internet access they need to learn



with, which not every parent may be able to afford. In addition, they need a proper computer at home that allows them to do the job as efficiently as in the workplace. On its own it would be enough for an increased stressful situation, but it was found that students - especially the younger ones - could not cope with learning alone, so the parent had to help. Based on this, the question arises, how can a parent do their work and help their child at the same time? Neither employers nor schools are likely to be prepared to address this.

Psychosocial factors greatly influence an employee's work performance, as events that occur and take place in private life also affect the quality of work.

The used methods for this paper were the basic analysis of the Home Office environment using some domestic and international literatures, studies.

2. RESULTS

2.1 Ergonomy

In addition, the issue of ergonomics deserves special attention. „*The word ergonomics — “the science of work” is derived from the Greek ergon (work) and nomos (laws). Ergonomics (or human factors) is the scientific discipline concerned with the understanding of the interactions among human and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.*” [1] It is important to address the issue of ergonomics, as it also has a significant impact on a person's health and mental state.

The relationship between man, machine and work environment is crucial in ergonomics. When working, the machine must be adapted to the person's physical abilities, so that the conditions of safe working can be met while maintaining the maximum physical and health condition. [2]

Key ergonomics features for sedentary work

Temperature, light

In workplaces, temperature greatly affects comfort. It is possible to influence the temperature optimally in different ways in different seasons. While in warmer weather it may be enough to



open the window or turn on the air conditioner, in winter it is mainly the central heating system that helps to create the ideal temperature conditions.

Air conditioners can provide a temperature of around 20-25 °C in the high heat of summer, as the worker sits for 8 hours in this environment, his body adapts to it. At the end of working hours, the body must suddenly adapt to the large temperature difference, with the outdoor temperature being around 35 °C. This is a huge burden on the whole body. To avoid health problems, it is recommended to set the indoor and outdoor temperature difference between 5-8 °C. Furthermore, if possible and controllable, the temperature can be raised slowly towards the end of working hours so that the worker is not exposed to strong heat when leaving the workplace.

Lighting

Doing daily work with constant artificial light consumes the adaptive ability of the eye and can lead to the weakening of the eye in the long run.

Key requirements for artificial lighting:

- illumination level
- operational safety
- spatial and temporal uniformity, glare - free
- adequate direction and light
- economy
- adequate color effect
- health safety
- favorable aesthetic appearance

It is important to mention glare, a visual condition in which vision is uncomfortable and visual processing performance is reduced. Glare is caused by a relatively high luminance surface in the field of view.

In the case of artificial lighting, the highest luminance that occurs in a room is the luminance of the lamp body, so glare is caused directly or indirectly by the lamps. [3]



Degrees of glare:

- distracting glare: causes discomfort but does not affect the recognisability of objects
- deteriorating glare: visual performance decreases
- glare: high light densities appear in the field of view, which disturb the photochemical processes of vision

Glare can occur in two ways:

- direct glare: triggered by a light source in the field of view
- indirect glare: the disturbing luminance appears on a reflecting surface

If the lighting is adequate, it will cause only slight glare. Eliminating the glare is the most important in places where information / data is less visible or not visible on the work tool in case of glare (e.g. on a monitor). During glare, strong light comes not only from the object itself, but also from its surroundings, which is scattered in different parts of the eye (e.g. lens, retina, cornea), which interferes with the formation of a sharp image. [4]

Color

The color of the light significantly affects the perception of space. If the light is too cold, it creates an unfriendly, brittle feeling. Its effect is too artificial. In contrast, colored light sources can make it difficult to distinguish between color differences and color patterns. Luminaires with a continuous spectrum resembling sunlight have the best color rendering value.

The most important goals of coloring the workspace are:

- in tight spaces, the spatial effect can be optically adjusted by using the appropriate colors
- for places without cold or natural light, warm colors are preferred to reduce the feeling of coldness
- when using a cold color in a warm workplace, the temperature may feel cooler
- helping orientation



- enhancing safety (e.g. prohibition or information signs, coloring of pipelines)

When performing monotonous work, the colors that produce a stimulating effect should be used. (e.g. red, orange, yellow). However, these colors should be handled with care, as they can be unsettling if used excessively.

Hygiene

In the Covid-19 pandemic, compliance with hygiene regulations has become a priority, as many pathogens can adhere to the workbench, keyboard and mouse pad used by the worker. [5] Regular surface disinfection, washing hands and ventilation always contribute to maintaining the health of the worker. In case of Home Office, it is recommended that the workstation has been used only by the worker, thus reducing the risk of infection. At home, employees may pay less attention to the break between work, so time spent in front of the screen can have a detrimental effect on the eyes. To ensure this, the employer can make a prospectus, poster or transcript for the employee, thus ensuring the transfer of information.

Safety

An indispensable source of energy for our daily lives is electricity. Electricity is a source of many hazards.

The main features of its hazard:

- it is present in almost every area of life
- may cause property damage and serious accidents
- risk of fire and explosion

It is of paramount importance that the employee can work with maximum safety even when working from home, i.e. the computer equipment they use and the work environment do not pose a threat to their physical integrity. As employers are unable to carry out regular safety inspections at the worker's home, they sign a declaration with the employee, who hereby undertakes to take full responsibility for the safety of their working environment.

2.2 Long-term effects on health

While at the workplace, in addition to working on a computer, whether leaving the chair for work (printing, meeting in another office or another floor) or for social contact (eating,



smoking), the worker leaves the work area and moves his body. At home these opportunities are greatly reduced. Several studies have reported the long-term effects of sedentary work on the human body. The European Agency for Safety and Health at Work 2020-2022: Healthy Workplaces campaign addresses musculoskeletal problems, including long-term sedentary work with little or no breaks. [6]

There can be several causes of lower back pain, most of all it develops during a sudden movement, lifting heavy weights. Most of the time it has no precedent. However, it can also occur after a longer session or standing.

Lower back pain usually has no consequences, but this simple symptom should not be treated lightly either. If the pain itself lasts continuously for more than a week, or if anybody experiences loss of sensation in any part of the body, it is actually necessary to see a doctor.

For sedentary workers, the primary trigger is an incorrectly selected chair. The worker must work in a chair designed for normal but not prolonged work (including a break) every working day. If a person does little or no exercise in private and / or is overweight, lower back pain may occur sooner and to a greater extent. In addition, age is not a negligible aspect either, because after a certain age (especially in postmenopausal women) the elasticity of the bones decreases and osteoarthritis becomes more and more present.

Health hazards associated with prolonged sitting: [7]

- overweight, obesity
- diabetes
- cardiovascular diseases
- stiff neck
- cancer

Regardless of work, lower back pain can also occur as a result of more severe mental strain. If the employee is exposed to managerial expectations in the workplace that exceed his or her abilities (both physically and mentally), then after the psychiatric symptoms - such as fatigue, impaired concentration, irritability - physical symptoms also appear.



The body weakens, thus losing protection against attacks by pathogens, developing disease. If the stress is constantly present, the frequency of symptoms increases, and may even be accompanied by more serious problems in addition to previous, weaker diseases. Such can be the case with lower back pain, which, if not treated in time, can lead to even more serious illness.

3. SUGGESTIONS

Breaks between work are not only used to allow the worker to eat their lunch relatively quickly and resume her activity afterwards, but also to relax and prepare for the next task. If the dining/resting room is just for sitting down at a table, and is close to a potentially noisy place, then the worker will not be able to break away from work, even for a short period of time. It is therefore essential that the rest area radiates serenity towards the worker. If the colors are applied properly, and live plants are also placed in the room, the designed room will be significantly more suitable for more effective relaxation.

Employee education is important in the operation of a company, as it will make people up-to-date, informed and more experienced. It is important to publish educational materials that can effectively convey the necessary information.

Related to this the next point is the involvement of employees in the process of correcting problems and errors. Some companies forget the fact that employees know the operation of machines and equipment best. If they try to solve an error without their involvement (in the case of management who does not know the processes), it is possible that they will make a bad decision because they do not have a view of the whole activity. Therefore, even if not in every step, it is worth involving employees as they can provide a solution key that is only possible through work experience.

To help them work efficiently and be motivated, it is helpful to praise employees if they have done their job well, and if they make a mistake, they should be informed where they made this mistake. It is especially important in case of recovery after the natural disasters [8] [9].



4. DISCUSSION

Overall, we can see that the state of emergency that developed last year has changed the way of life that has already developed and become familiar to many. Neither employers nor employees were able to prepare comprehensively for everything, so workers faced a number of mental and physiological problems. As we do not know how the current situation will affect our future or what further changes will take place in addition to this, it is already necessary to develop a work program that will prepare workers for the changed working conditions. There are a number of good practices in different companies, but what they all have in common is that they have recognized that working with the right, humane working conditions will also make work more efficient.

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