

Office workers' health during the pandemic lockdown in the Netherlands

Marco Ortiz ^a, Philomena Bluysen ^b.

^a Chair Indoor Environment, Faculty of Architecture and the Built Environment, Delft University of Technology, the Netherlands, M.A.OrtizSanchez@tudelft.nl.

^b Chair Indoor Environment, Faculty of Architecture and the Built Environment, Delft University of Technology, the Netherlands, P.M.Bluysen@tudelft.nl.

Abstract. The worldwide spread of the Coronavirus disease 2019 forced governments to enact different measures to mitigate the infections. Employers and workers had to adjust by shifting a substantial number of jobs to a “work from home” configuration (WFH). On average, people used to spend around 90% of their time indoors, however, this number may have increased during the pandemic. This study aims to investigate the health status of office workers after nine months of a WFH format during the lockdown. A questionnaire was developed to assess the self-reported during the lockdown of office workers. A link to the questionnaire was sent to the employees of ten offices across the Netherlands, in November of 2020. A total of 502 employees responded to the questionnaire, which included diseases suffered during the last twelve months (i.e. asthma, wheezing, rhinitis, hay fever, anxiety, migraine, etc.). Data were analyzed by performing descriptive statistics of the general characteristics and the health status. The results show that during the lockdown and WFH, conditions such as eczema, depression and anxiety are higher than the average prevalence during non-lockdown situations. This may be due to lifestyle changes, such as reduced social interactions, increased distractions, and increased uncertainty.

Keywords. Health, working from home, lockdown, office workers, questionnaire.

DOI: <https://doi.org/10.34641/clima.2022.428>

1. Introduction

During the COVID-19 pandemic, the WHO advised governments to encourage employees who could to work from home. In the Netherlands, such measures started in March 2020. During non-lockdown situations, people used to spend around 90% of their time indoors, and 60% at home. These percentages may have increased drastically during the COVID pandemic, adding to the fact that people may stay only at home.

Although homes are meant to be healthy and comfortable indoor environments, they are not meant to be workplaces and should still maintain the occupants' wellbeing, even in lockdown situations. Therefore, even during a WFH or lockdown situations, a home should at least provide the right amount of social interaction, appropriate distraction, a healthy and comfortable indoor environmental quality, proper ergonomics, amongst many others. However, homes were not designed for this, which can lead to increased stress, lower productivity, and reduced mental and physical health. There is therefore a need to rethink the design of homes as hybrid living-working workspace and to encourage

organizations to take actions to protect the health of their employees. Indeed, several factors such as specific occupants' particularities, environmental social, psychological, or physiological nature play a role in the health of people.

However, a majority of office workers are forced to reduce their social interactions with co-workers or other people, while also insecurities and stress may increase due to the situation itself. These factors seem to contribute to a detriment of the mental health of workers.

This study, therefore, aims at revealing whether certain health conditions were exacerbated during the lockdown in the Netherlands.

2. Methods

2.1 questionnaire

A total of ten companies agreed to distribute an online questionnaire to their employees (1). The companies included engineering firms, consultancies, and university faculties.

The online questionnaire was developed to assess seven characteristics of the respondents: demographics, lifestyle, IEQ preferences, psychosocial comfort preferences, IEQ comfort perception, control and satisfaction, and health, as seen in Table 1. The questionnaire was adapted from previously-validated questionnaires assessing similar constructs in other scenarios, such as homes, offices, and hospitals. The questionnaire was approved by the ethics committee of the TU Delft.

A first version was developed in English, which was then piloted, and adjusted based on the results of the test. The adjusted version was piloted again and then translated into Dutch. The Dutch version was also piloted, and the final version of the questionnaire was available to participants in the two languages.

To distribute the questionnaire, office workers first received an informative email from their company a week before the official distribution of the link. The participants were informed of the contents of the questionnaire, and that participation was voluntary, and that the data would remain anonymous and confidential and would only be used for the research.

The questionnaire was developed and distributed with the Qualtrics XM platform and employees were given two weeks to fill it out. A reminder was sent one week after the launch of the first invitation.

2.2 data analysis

After the closure of the questionnaire, the data was downloaded from the online platform and analyzed with IBM SPSS 27.

Because each organization had a single, designated anonymous link, each data for the individual organization was first downloaded. In order to make sure that the ten datasets could be pooled together, χ^2 and one-way ANOVA tests were conducted for categorical and numerical variables respectively, to ensure that no statistically significant differences existed between the companies. Once the tests were performed, and the results indicated that there were no differences, the datasets were merged.

To analyze the data of the employees, descriptive statistics were performed, including means, standard deviations, minimum and maximum values.

Tab. 1 – Questionnaire sections and subdivisions.

Section	Assessment
Demographics	Age, gender, education, mood
Lifestyle	Physical activity and consumption of alcohol or smoke
IEQ comfort preferences	Ventilation, temperature, lights, sounds, smells,
Psychosocial comfort preferences	Storage, hygiene, amenities, privacy, presence of others, size of the room
IEQ Comfort perception	Perception and rating of 19 items dealing with air quality, acoustical quality, thermal quality, and visual quality at the workspace
Control and satisfaction	Control of specific items in the workspace to adjust their comfort and satisfaction therewith
Health	Health status in the last year and symptoms in the workspace felt at least once in the last three weeks.

3. Results

3.1 general characteristics

A total of 1729 office workers received the invitation email with the link to the questionnaire, out of which 502 responded to it, representing a response rate of 29%. General characteristics are presented in Table 2.

About two-thirds of the respondents were male (63%), with a mean age of 42 years. In terms of lifestyle behaviors, around 36% of them reported to be smokers, 83% of them consume alcohol, and 85% of them report engaging in physical activity at least once during the week. In terms of the WFH situation, a total of 78% of respondents worked remotely as opposed to 22% who kept working in their office.

3.2 health status

In terms of health conditions, the least prevalent conditions were bronchitis (2%), diabetes and heart conditions (3%), respiratory problems (4%), and dermatitis (5%) (see Tab. 3.).

Conversely, the most prevalent conditions were hay fever (31%), rhinitis (28%), eczema (18%), and anxiety (17%). A total of 16% of the respondents reported having suffered from COVID-19.

Finally, conditions such as migraine, depression, and other psychiatric problems had prevalences of 13%, 10%, and 6% respectively.

Tab. 2 – Results of general characteristics.

Characteristics	Frequency (percentage)
gender	
Male	298 (63)
Female	166 (35)
Prefer not to answer	7 (2)
Age	
Mean (SD)	42 (12)
Min-max	20-68
Level of education	
Master, PHD, Specialization	224 (45)
University	154 (31)
Professional	57 (11)
Secondary School	31 (6)
Primary school	35 (7)
None	1 (0)
Smoking	178 (36)
Alcohol	416 (83)
Physical activity	396 (85)
Lockdown workspace	
Home	343 (78)
Office	94 (22)

Tab.3 - Health status.

Condition	Frequency (Percentage)
Asthma	22 (6)
Bronchitis	6 (2)
Wheezing of chest	22 (6)
Other respiratory problems	15 (4)
Hay fever	124 (31)
Rhinitis	113 (28)
Eczema	73 (18)
Dermatitis	18 (5)
Other skin conditions	47 (12)
High lipids	33 (8)
Diabetes	11 (3)
High blood pressure	41 (10)
Other heart conditions	10 (3)
Migraine	54 (13)
Depression	41 (10)
Anxiety	68 (17)
Psychiatric problems	24 (6)
Other conditions	48 (12)
COVID-19	57 (16)

4. Discussion

Although the most prevalent conditions in this study were hay fever and rhinitis, they are actually within the average range for European countries and even lower than previously reported in the Netherlands.

Diseases that need to be paid attention to seem to be eczema, depression, and anxiety. In this study, 18% of the employees suffered from eczema. In a meta-analysis review performed by Thyssen et al. (2010), it was reported that the average prevalence of eczema sufferers between 1964 and 2007 has steadily been 4% (2). In other professions, such as healthcare professionals, who need to sanitize their hands more often, in a Dutch study of 2013 it was reported that the prevalence was 12% while that of Dutch construction workers was 8%, a profession in which manual labor is high (3, 4). Indeed, several causes could be attributed to the high rate of eczema during the lockdown. The first reason can be due to the fact that people wash their hands more constantly and they use disinfecting gel more frequently than during non-COVID-19 times (5, 6). The second reason can be that lockdown and pandemic situations increase stress. When stress increases, the immune system can weaken, resulting in aggravation of skin diseases such as atopic dermatitis, including eczema (7-9).

17% of the people in this study claimed to have suffered from anxiety during the lockdown months. Some studies have suggested that the average rate for anxiety in the UK is 5% (10) while in the Netherlands, in a 2008 study, the rate was 6% (11).

In another study, it was found that anxiety, depression, and stress amongst university staff workers in Spain during at WFH formats was 21%, 34%, and 28% respectively (12). Which is comparable to the anxiety rate of this study but not to the depression rate of 10%. However, in previous studies conducted amongst hospital workers (13) and amongst office workers in the Netherlands (14) in pre-pandemic times, during non-WFH situations, the rates of depression were found to be 2% and 4% respectively, suggesting that depression may have also increased.

The increase in stress, depression, and anxiety due to a WFH format and the lockdown in general, may be due to several factors, such as less social interaction, decreased physical activity, work-life imbalance, imbalanced or changed rest and sleep patterns, poor working facilities (i.e. desks, chairs), poor ergonomics (15).

Another study proposed that the decreased mental health of people during the pandemic can be attributed to factors such as changes in nutrition, less communication with co-workers, increased distractions while WFH, presence of children, and indoor environmental quality (16).

5. Conclusion

The results of this questionnaire show that eczema, anxiety and depression have a higher prevalence than during non-lockdown or non-WFH situations. These increases may be due to increased stress and/or due to several factors that can range from distractions in the home office to reduced social interaction, sleep changes, or poorer nutrition. All of these situations can increase stress, which in its turn can exacerbate anxiety, depression, and eczema. In the case of eczema, besides increased stress, overzealous hand disinfection may also be a cause of its increase. The results show that employers and organizations need to take care of the mental health of their employees during WFH and lockdown situations and that the design of homes and the role of homes have to be rethought so that they can offer a healthy and comfortable hybrid working-living environment.

6. Acknowledgment

The authors would like to thank the following organizations and their employees for distributing and participating in this study: UNStudio, BBA-DGMR, Heijmans, Valstar-Simonis, Techniplan, ISSO, DGBC, IGG, ABE faculty TU Delft, and IDE faculty TU Delft.

7. References

- [1] Ortiz M, Bluysen P. Profiling office workers based on their self-reported preferences of indoor environmental quality and psychosocial comfort at their workplace during COVID-19. *Building and Environment*. *Under review*. 2022.
- [2] Thyssen JP, Johansen JD, Linneberg A, Menné T. The epidemiology of hand eczema in the general population—prevalence and main findings. *Contact dermatitis*. 2010;62(2):75-87.
- [3] van der Meer EW, Boot CR, van der Gulden JW, Jungbauer FH, Coenraads PJ, Anema JR. Hand eczema among healthcare professionals in the Netherlands: prevalence, absenteeism, and presenteeism. *Contact dermatitis*. 2013;69(3):164-71.
- [4] Coenraads P, Nater J, Jansen H, Lantinga H. Prevalence of eczema and other dermatoses of the hands and forearms in construction workers in the Netherlands. *Clinical and experimental dermatology*. 1984;9(2):149-58.
- [5] Patruno C, Fabbrocini G, Stingeni L, Napolitano M. The role of occupational dermatology in the COVID-19 outbreak. *Contact dermatitis*. 2020.
- [6] Singh M, Pawar M, Bothra A, Choudhary N. Overzealous hand hygiene during the COVID 19 pandemic causing an increased incidence of hand eczema among general population. *Journal of the American Academy of Dermatology*. 2020;83(1):e37.
- [7] Newaj R, editor Lockdown skin. *The Specialist Forum*; 2020: New Media.
- [8] Böhm D, Stock Gissendanner S, Finkeldey F, John S, Werfel T, Diepgen T, et al. Severe occupational hand eczema, job stress and cumulative sickness absence. *Occupational medicine*. 2014;64(7):509-15.
- [9] Garcovich S, Bersani F, Chiricozzi A, De Simone C. Mass quarantine measures in the time of COVID-19 pandemic: psychosocial implications for chronic skin conditions and a call for qualitative studies. *Journal of the European Academy of Dermatology and Venereology*. 2020.
- [10] Smith LE, Amlot R, Lambert H, Oliver I, Robin C, Yardley L, et al. Factors associated with self-reported anxiety, depression, and general health during the UK lockdown; a cross-sectional survey. *MedRxiv*. 2020.
- [11] Wit MA, Tuinebreijer WC, Dekker J, Beekman AJT, Gorissen WH, Schrier AC, et al. Depressive and anxiety disorders in different ethnic groups: a population based study among native Dutch, and Turkish, Moroccan and Surinamese migrants in Amsterdam. *Social psychiatry and psychiatric epidemiology*. 2008;43(11):905-12.
- [12] Odriozola-González P, Planchuelo-Gómez Á, Iruetia MJ, de Luis-García R. Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university. *Psychiatry research*. 2020;290:113108.
- [13] Eijkelenboom A, Kim DH, Bluysen PM. First results of self-reported health and comfort of staff in outpatient areas of hospitals in the Netherlands. *Building and Environment*. 2020;177:106871.
- [14] Kim DH, Bluysen PM. Clustering of office workers from the OFFICAIR study in The Netherlands based on their self-reported health and comfort. *Building and Environment*. 2020;176:106860.
- [15] Birimoglu Okuyan C, Begen MA. Working from home during the COVID-19 pandemic, its effects on health, and recommendations: The pandemic and beyond. *Perspectives in Psychiatric Care*.
- [16] Xiao Y, Becerik-Gerber B, Lucas G, Roll SC. Impacts of working from home during COVID-19 pandemic on physical and mental well-being of office workstation users. *Journal of Occupational and Environmental Medicine*. 2021;63(3):181.

Data Statement

Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available.