Original article DOI: 10.2478/aiht-2021-72-3559

Work from home and musculoskeletal pain in telecommunications workers during COVID-19 pandemic: a pilot study

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[Received in May 2021; Similarity Check in May 2021; Accepted in September 2021]

One of the side-effects of the COVID-19 pandemic is a global change in work ergonomic patterns as millions of people replaced their usual work environment with home to limit the spread of the severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) infection. The aim of our cross-sectional pilot study was to identify musculoskeletal pain that may have resulted from this change and included 232 telecommunications company workers of both genders [121 (52.2 %) men aged 23–62 (median 41; interquartile range 33–46 yrs.) and 111 (47.8 %) women aged 23–53 (median 40; interquartile range 33–44)] who had been working from home for eight months (from 16 March to 4 December 2020) before they joined the study. The participants were asked to fill in our web-based questionnaire by self-assessing their experience of hand, lower back, and upper back/neck pain while working at home and by describing their work setting and physical activity. Compared to previous work at the office, 90 (39.1 %) participants reported stronger pain in the lower back, 105 (45.7 %) in the upper back/neck, and 63 (27.2 %) in their hands. Only one third did not report any musculoskeletal problems related to work from home. Significantly fewer men than women reported hand, lower back, and upper back/neck pain (p=0.033, p=0.001 and p=0.013, respectively). Sixty-nine workers (29.9 %) reported to work in a separate room, 75 (32.4 %) worked in a separate section of a room with other household members, whereas 87 (37.7 %) had no separate work space, 30 of whom most often worked in the dining room. Ninety-five participants (40.9 %) had no office desk to work at, and only 75 (32.3 %) used an ergonomic chair. Of those who shared their household with others (N=164), 116 (70.7 %) complained about constant or occasional disturbances. Over a half of all participants (52 %) said that they worked longer hours from home than at work, predominantly women (p=0.05). Only 69 participants (29.9 %) were taking frequent breaks, predominantly older ones (p=0.006). Our findings clearly point to a need to inform home workers how to make more ergonomic use of non-ergonomic equipment, use breaks, and exercise and to inform employers how to better organise working hours to meet the needs of work from home.

KEY WORDS: back pain; ergonomics; gender; hand pain; neck pain; physical activity; work space; work with computers

The COVID-19 epidemic has changed our lives and our working habits. From its start, workers were referred to working from home to limit the spread of infection with the severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) (1). This change in working environment has, in turn, brought major changes in work ergonomics and added to the current challenges to health at work, most notably in terms of preventing/minimising musculoskeletal pain. According to the European Agency for Safety and Health at Work (EU-OSHA), work-related musculoskeletal disorders (MSDs) are still among the most common work-related health issues in Europe (2). Physical risk factors for their development include repetitive movements and awkward postures. To minimise the risks at the workplace, employers are required to meet minimum safety and health standards for work with computers in accordance to Croatian and EU regulations (3, 4). Accordingly, EU-OSHA has recommended that employers should allow and help their workers use their office equipment for work at home (5).

Lockdowns have also brought new challenges to occupational health and safety at work specialists in addressing the issues resulting from the "new normal". But to address them with appropriate guidelines and measures, they first need to get to know what these specific issues are, especially in our country in which such information is still

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scarce. This is why we have developed a questionnaire intended for those who work from home. The aims of our pilot study were the following: 1) to see whether telecommunications company workers had more severe musculoskeletal pain than before they started working from home, 2) to establish whether the pain was related to work conditions at home, and 3) to recommend preventive measures on the national level.

PARTICIPANTS AND METHODS

This cross-sectional pilot study included 232 telecommunications company workers of both genders [121 (52.2 %) men aged between 23 and 62 (median 41; interquartile range 33–46 yrs.) and 111 (47.8 %) women aged between 23 and 53 (median 40; interquartile range 33–44)] who had been working from home for eight months (from 16 March to 4 December 2020) before they joined the study.

The questionnaire

The questionnaire "Work from home and musculoskeletal pain in COVID-19 pandemic" was designed by the authors of this study as a web-based, self-reporting survey intended to evaluate working conditions, physical activity, and hand, lower back, and upper back/neck pain experienced by responders who work at home. We used it in this study for the first time and distributed the link to the workers by email through their company's Safety at Work Unit.

Some dimensions or sections in the questionnaire are there to establish facts (as opposed to subjective assessment), and the questions reflect that intention. With some fact-establishing questions the choice of one answer over another starts a new set of questions to minimise respondent's interpretation error or skipping the question (missing values). All answers were saved automatically over the web to avoid input errors (either by respondents or investigators).

The introductory part of the questionnaire informs the participants about the aims of research. Follow five sections totalling 50 questions (items), depending on the answer chosen in the previous questions. First the responders answer questions about their age and gender. The second section seeks to establish the characteristics of their workspace, whether it is shared with other household members (if any) or separated and how. The third section looks into the ergonomic properties of their work space related to furniture and equipment (office desk, adjustable office chair, monitor, desktop, laptop, and mouse), employers help in supplying them, and responders' perception of air quality, noise, and lighting. The fourth section of the questionnaire looks into the organisation of work at home [whether the household members (if any) disturb workers at work, how often they take breaks, how they schedule tasks, and how long their working hours are], exercising patterns (whether and how often they exercise over the working week, does this happen during breaks, is it organised in groups, does it take place in a gym or at home), and musculoskeletal pain (hands, lower back, upper back and neck). The fifth section looks into responders' perception of their own mood while they work, whether they keep informal contacts with colleagues, whether they are pleased with their diet, how they manage to separate work from private life, and whether they would continue to work from home, given the option.

The questions about the age, frequency of exercising over the week, and the number of household members (where applicable) are requiring numeric answer. There are two questions asking participants to describe their mood and why they cannot separate work from private life (where applicable), while the rest are multiple-choice questions.

At the end, responders are asked to acknowledge their informed consent to participate in the study by selecting the statement of voluntary and anonymous participation.

Questionnaire validation

Responses were evaluated qualitatively for content validity [focusing on construct validity, clarity of instructions, linguistic aspects of the items, representativeness of the item pool, and adequacy of response format (6, 7)] by five occupational health / work safety experts using the consensus method (6).

Dimensions (whether those establishing facts or requiring subjective assessment) were validated with the standard internal consistency test, i.e. Cronbach's alpha (CA), which establishes scale reliability when the dimensions consist of multiple variables (questions, items) (see Table 1 for the dimension Disturbances). Basically, CA is null (0) when the content does not correlate entirely. Correlation is excellent when CA is 1.

Dimensions consisting of two or three fact-establishing and subjective assessment variables (questions) were correlated with Spearman's correlation (e.g. "satisfaction" significantly correlated with the question "How does it feel to work at home?" and "Can you separate time for work from time for private life").

Dimensions addressing subjective assessment of health issues were constructed in accordance with standard clinical health-related questions routinely asked of patients by occupational health specialists. Questions about a specific

Table 1 Psychometric properties of the dimension Disturbance

Indicators to measure a dimension	Disturbance
No. of items	5
Cronbach's alpha coefficient	0.937
Standardised Cronbach's alpha coefficient	0.938
Arithmetic mean of items	1.225
Average correlation between items	0.751
Arithmetic mean of the dimension	6.1250
Standard deviation of the dimension	3.48986

phenomenon or our questions about pain aimed to discover whether the phenomenon was stronger (+), the same (=), weaker (-), or there was none (0) are important and independent, and their grouping is not clinically justified.

Statistical analysis

For data analysis we used descriptive statistics. Depending on the data distribution, we used appropriate non-parametric tests as follows: the chi-squared test for categorical values, Kruskal-Wallis test for continuous data, and Spearman's rank correlation for variables and reports of stronger musculoskeletal pain. P values below 0.05 were considered statistically significant. All results were run on SPSS for Windows, version 25 (SPSS Inc., Chicago, IL, USA).

RESULTS

Even though one woman chose not to give her age, we can safely say that the median age did significantly differ between the genders. Two participants skipped the questions on lower back and upper back/neck pain, and one participant skipped the answer specifying work space.

Table 2 shows self-reported changes in severity of work-related lower back, neck, and hand pain in our participants compared to previous work at the office. Of the 150 participants (65.1 %) who reported lower back pain, 39.1 % considered it more severe than at the office. Similarly, of the 157 (68.9 %) who reported upper back/neck pain, 45.7 % considered it more severe. Hand pain was reported by 115 (49.6 %) participants, and again, 27.2 % considered it more severe at home.

Table 3 summarises the use of ergonomic chair and mouse at home.

Company laptop was used by 90.1 % of participants, a company monitor to complement the laptop or a desktop computer by 40.4 %, and a desktop computer by only 3.2 % of participants.

Sixty-eight workers lived alone, and among those who shared their household with others (N=164), 116 (70.7 %) reported being disturbed at work from home (Table 4).

Over a half (52.2 %) of all participants estimated that they worked longer hours than in the office, significantly more women than men (Figure 4).

In comparison with earlier work at the office, 69 (29.9 %) of all participants reported taking breaks more often when they worked from home, men significantly more than women (P=0.003; Figure 5).

Only 33 (14.2 %) reported exercising during breaks, of whom 29 worked on the lower back, 25 on the neck, and 15 on hands.

Eighty participants (34.5 %) who exercised regularly regardless of the breaks mostly reported exercising three times a week. Of the remaining 152 (65.5 %) who did not exercise regularly, 70 reported that they could not bring themselves to start exercising, 30 complained of lack of space, and 38 of lack of time to exercise. Those who did not exercise also had a significantly higher incidence of lower back (P=0.021) and upper back/neck pain (P=0.024) than those who exercised regularly.

Complaints of more severe work-related musculoskeletal pain at home than in the office turned out to correlate (Spearman's ρ) with not having ergonomic chair at home or an office desk and with disturbance by other household members, longer working hours at home, women and no (regular) exercise (Table 6).

Table 2 Severity of musculoskeletal pain related to work from home

	Lower back pain		Upper back/neck pain		Hand pain	
	N	%	N	%	N	%
Stronger than in the office	90	39.1	105	45.7	63	27.2
Same as in the office	53	23.1	44	19.1	47	20.3
Weaker than in the office	7	3.0	8	3.5	5	2.1
No pain	80	34.8	73	31.7	117	50.4
Total	230	100.0	230	100.0	232	100.0

Significantly fewer women than men reported no pain in any analysed body part (Figures 1–3).

Of the 231 participants who specified their work space at home, 69 (29.9 %) reported to work in a separate room, 75 (32.4 %) in a separate section of shared space, and 87 (37.7 %) in a shared space with other tenants (Table 2).

At their workplace at home, 40.9 % did not use an office desk, of whom 65.3 % used a kitchen or a dining table, 20 % a living room table, and the remaining 14.7 % some kind of makeshift table (such as a chest of drawers) instead.

Table 3 Workplaces at home shared with other household members (N=87)

Shared workplace	N	%
Dining room	30	34.5
Nursery/children's bedroom	2	2.3
Living room	35	40.2
Kitchen	13	14.9
Bedroom	7	8.0
Total	**87**	**100.0**

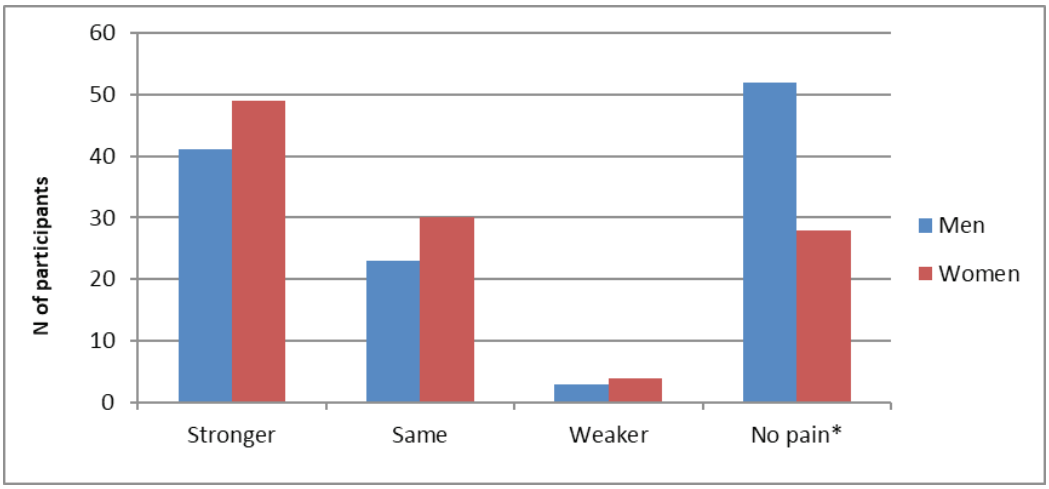

Figure 1 Severity of lower back pain related to work from home by gender; * significant difference (P=0.033)

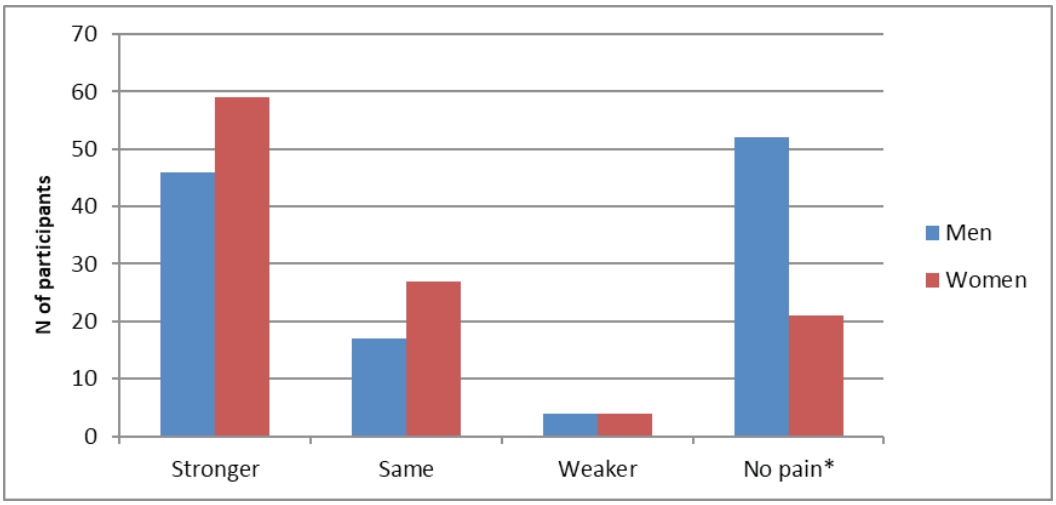

Figure 2 Severity of upper back and neck pain related to work from home by gender; * significant difference (P=0.001)

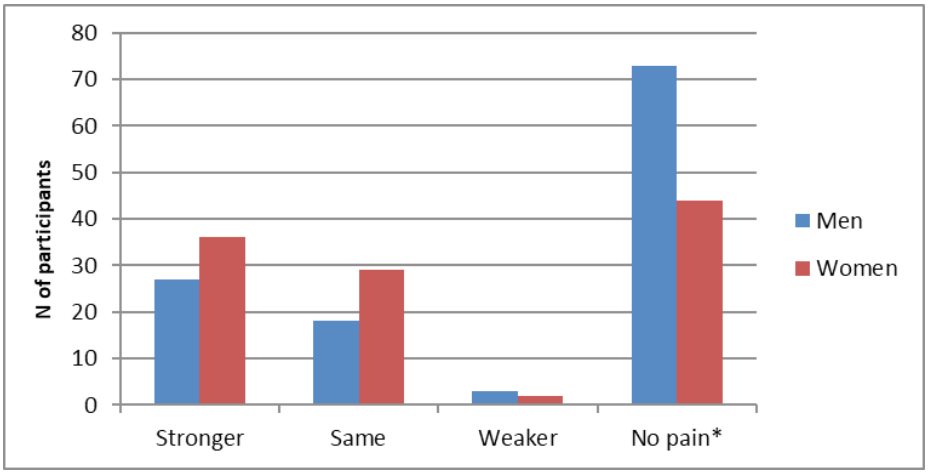

Figure 3 Severity of hand pain related to work from home by gender; * significant difference (P=0.013)

Table 4 Distribution of participants having an ergonomic office chair and computer mouse for work from home

Responses	Ergonomic chair N (%)		Ergonomic mouse N (%)	
Yes, but not provided by the employer	65	(28.0)	40	(17.2)
Yes, provided by the employer	10	(4.3)	38	(16.4)
No	157	(67.7)	154	(66.4)
Total	232	(100.0)	232	(100.0)

Among the participants who reported stronger musculoskeletal pain than in the office, women exercised less often over breaks than men (P=0.021 for lower and upper back/neck pain and P=0.035 for hand pain), and more of them had no separate work space (P=0.007).

Further analysis showed a significant correlation between age and stronger hand pain at home (0.134; P=0.042) or taking breaks more often at home than at the office (-0.174; P=0.008). Older participants also reported working longer hours at home than at the office, but we found no significant age difference between them and the group reporting not to work longer hours.

Regardless of the above results showing deterioration in musculoskeletal pain associated with working from home, 71.6 % participants said that they would like to continue working from home once the pandemic is over.

DISCUSSION

The prevalence of musculoskeletal pain is significant in people working with computers (8). This prevalence is also influenced by gender, especially the neck pain, which is more prevalent in women (9). De Kok et al. (2) reported 42 % and 45 % prevalence of lower back pain and 39 % and 44 % prevalence of neck pain in men and women working with computers at the office, respectively. The prevalence of stronger pain in the lower back, upper back/neck, and hands (39.1 %, 45.7 %, and 27.2 %, respectively) reported by our participants for work from home as opposed to work at the office (Table 2) exceeds reports published in similar studies. One study from Turkey (10), carried out during a lockdown, also reported significant worsening of lower back pain in people who worked from home in comparison with those who continued to work at their regular workplaces, but it was much lower (about 4 %) than in our study (39.1 %). However, unlike the participants who worked from home in the Turkish study (teachers, academics, and students), our participants work for a telecommunications company, and their jobs involve work on computers all the time, which is why we believe our prevalence of lower back pain worsening is much higher. Similar to our findings, another study in Italy (11) reported worsening of neck pain in 50 % of participants.

Our findings also point to significantly higher prevalence of worsened musculoskeletal pain in women than men (Figures 1–3). Similar was observed among female office workstation users who were working from home during the COVID-19 pandemic and had more physical and mental issues (12).

Only 29.7 % of our participants reported to have worked in a separate room at home, and as many as 37.9 % did not even have a separate working space but worked in the kitchen or the dining room (Table 3). For comparison, Bloom (13) reported that nearly half of his participants had a separate work room (a studio or office room, not a bedroom) to work in.

The working conditions at the telecom company that employs our participants completely meet the requirements of the 1990 Council Directive 90/270/EEC on the minimum safety and health requirements for work with display screen equipment, which includes ergonomic requirements (4). This raises concern about our finding that at home 40.9 % of workers from this company did not have an office desk to work at but had to make do with the kitchen, dining, and other makeshift tables. Another cause for concern is that 67.7 % of our participants did not use an ergonomic chair (Table 4), even though the employer offered this option to those who did not have their own ergonomic chair, but only 10 participants took it. The reason that many participants gave for not taking this option was the lack of space at home. The employer also followed the EU-OSHA recommendations and supplied laptops, monitors, and ergonomic mice to those who wanted to work with them.

Our findings raise concern about how few participants realised the importance of ergonomically designed workplace and equipment, as our analysis showed a significant association between worsened hand pain and lack of office desk at home, confirming the findings published by Alyami et al. (14).

As various recommendations go, taking frequent breaks from working with a computer is highly recommended (3, 15), as well as practicing exercises intended to ease the load on the spine, neck, upper extremities, and the eyes (16). In our study, significantly more men were taking more breaks from work at home than women (Figure 5), but only a small minority used them for physical exercise.

Table 5 Being disturbed at work from home (N=164)

Disturbances	N	%
Yes, all the time	4	2.4
Yes, occasionally	112	68.3
No	48	29.3
Total	164	100.0

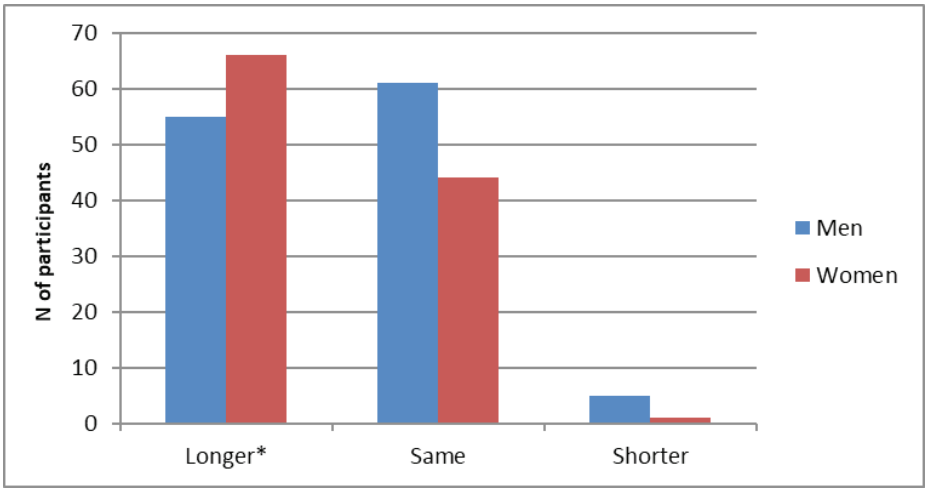

Figure 4 Self-reported working hours at home vs the office by gender; * significant difference (P=0.05)

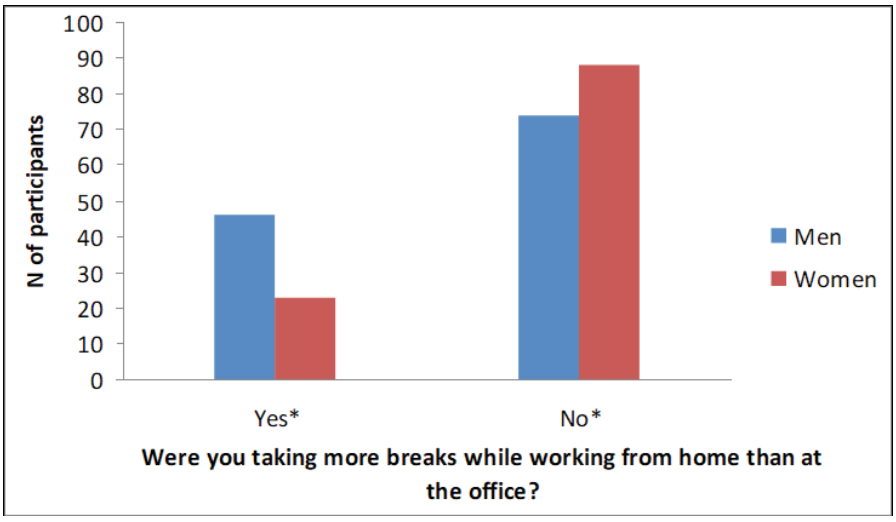

Figure 5 Taking more breaks while working from home than at the office by gender; * significant difference (P=0.003)

Table 6 Spearman's rank correlations between variables and reports of stronger musculoskeletal pain

Variables	Lower back	p	Upper back/neck	p	Hands	p
Office chair	-0.257	**0.000**	-0.312	**0.000**	-0.218	**0.001**
Office desk	-0.118	0.073	-0.212	**0.001**	-0.182	**0.005**
Disturbance by household members	0.157	**0.047**	0.306	**0.000**	0.308	**0.000**
Longer working hours	0.249	**0.000**	0.219	**0.001**	0.257	**0.000**
Male gender	-0.161	**0.014**	-0.220	**0.001**	-0.193	**0.003**
No (regular) exercise	0.163	0.13	0.172	**0.009**	0.134	**0.041**

Bolded values are considered significant (p<0.05)

Our findings also suggest that women work longer hours at home, take breaks less often, and get disturbed more often than men, which may reflect household distribution of work based on the traditional gender roles, but this will require more investigation.

In terms of physical exercise as a way to prevent or minimise musculoskeletal pain (17), only 34.5 % of our participants reported exercising regularly, most often three times a week. Of the remaining participants, one third admitted to "having trouble getting started". Our study has found a correlation between not exercising regularly and stronger lower or upper back/neck pain. It has also highlighted the issue that women prevail in this correlation: they reported having stronger pain, exercising less, and taking fewer breaks than men. In other words, women seem to take less care to prevent or minimise their musculoskeletal pain.

Older participants, in turn, reported taking breaks more often, most likely to alleviate musculoskeletal pain, which they reported more often, hand pain in particular. In

accordance with the need to take breaks regardless of the age, one earlier study showed the strongest association between working more than two hours without taking a break and neck complaints (18).

At home, most workers face a great challenge of how to organise their work without disturbances. In our study, 164 (70.7 %) of the participants shared their household with other members. Of them, 116 (70.7 %) reported being disturbed by their household members all the time or occasionally (Table 5). This may also be the reason why over a half of all our participants worked longer hours at home than at the office, women in particular (Figure 4). One earlier Croatian study (19) reported that even in the office women worked longer hours on a computer than men, which suggests that work from home had only exasperated the problem.

We believe that the increase in musculoskeletal pain at home in our study is partly owed to disturbances by household members and longer hours. Longer hours have already been recognised as a risk factor for teleworking (20), and the musculoskeletal pain is known to be associated with anxiety, poor sleep, and general fatigue (2). However, the association with psychosocial issues is less clear, as most of research is focused on biomechanical effects on soft tissues and tolerance thereof (21). One of the rare studies that did look into psychosocial issues has pointed to the association between musculoskeletal pain and job tenure of correction officers as those specifically exposed to psychosocial stressors (22).

As expected, our findings suggest that poorer working conditions at home (work space and ergonomic considerations) present a risk for the development of musculoskeletal pain, as nearly 40 % of our participants experienced stronger work-related pain. In fact, they confirm Schott's summary of the big Lenovo-sponsored study that "Working From Home is a Literal Pain in the Neck" (23). But our study has also confirmed that the development of musculoskeletal pain has other causes than poor ergonomic design of the workplace and includes gender, age, organisation, disturbance by household members, and longer hours.

Even so, most of our participants (71.6 %) expressed a wish to continue working from home and seem to have accepted it as a new workplace. Considering, however, that this new workplace entails new health and safety risks, especially those related to the development and/or worsening of musculoskeletal pain, we believe that new safety recommendations and preventive measures are required and that the approach to the issue should be multidisciplinary and integrated to improve workers' condition and minimise work-related pain (24). We have therefore come up with a few suggestions in this respect. As the employer cannot completely control the design and ergonomic properties of the workplace at home over legal considerations related to private property and privacy, it can only offer to inspect the new workplace and provide ergonomic desk and chair, but, more importantly, it can teach the workers how to improve their "imperfect" working conditions and make them ergonomically acceptable.

This kind of education should also highlight the importance of frequent breaks and promote brief exercises for workers, preferably organised for groups and coached online while social distancing requirements still apply.

Even though the employer cannot do much about disturbance by other household members, it can insist that workers do not work longer than they would at the office, which includes time spent on communication by phone or email.

CONCLUSION

Our questionnaire has proved itself to be a welcome instrument for collecting relevant information to assess working conditions at home. Considering that this study with participants from a telecommunication company has been our first, trial run, there is plenty of room for improvement, but, generally, we can conclude that the working conditions at home can be satisfactory, provided that the above preventive measures are in place. Further research should address gaps to be filled to get a complete picture of our findings and improve occupational safety and health assessment of work at home.

REFERENCES

1. World Healh Organization. Getting your workplace ready for COVID-19 [displayed 27 February 2020]. Available at https://www.who.int/docs/default-source/coronaviruse/getting-workplace-ready-for-covid-19.pdf
2. de Kok J, Vroonhof P, Snijders J, Roullis G, Clarke M, Peereboom K, van Dorst P, Isusi I. Work-related musculoskeletal disorders: prevalence, costs and demographics in the EU. European Risk Observatory Report [displayed 10 September 2021]. Available at https://osha.europa.eu/en/publications/msds-facts-and-figures-overview-prevalence-costs-and-demographics-msds-europe/view
3. Pravilnik o sigurnosti i zaštiti zdravlja pri radu s računalom [Ordinance on safety and health protection when working with a computer, in Croatian]. Narodne novine 69/05, 71/14.
4. COUNCIL DIRECTIVE of 29 May 1990 on the minimum safety and health requirements for work with display screen equipment (fifth individual Directive within the meaning of Article 16 (1) of Directive 87/ 391 /EEC) [displayed 10 September 2021]. Available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31990L0270&from=EN
5. EU-OSHA European Guides. COVID-19: Back to the workplace – Adapting workplaces and protecting workers, 24/04/2020 [displayed 10 September 2021]. Available at https://osha.europa.eu/en/publications/covid-19-back-workplace-adapting-workplaces-and-protecting-workers/view
6. de Von HA, Block ME, Moyle-Wright P, Ernst DM, Hayden SJ, Lazzara DJ, Savoy SM, Kostas-Polston E. A psychometric toolbox for testing validity and reliability. J Nurs Scholarsh 2007;39:155–64. doi: 10.1111/j.1547-5069.2007.00161.x

7. Rossiter JR. Content validity of measures of abstract constructs in management and organizational research. Br J Manage 2008;19:380–8. doi: 10.1111/j.1467-8551.2008.00587.x
8. Grimby-Ekman A, Andresson EM, Hagberg M. Analyzing musculoskeletal neck pain, measured as present pain andperods of pain, whit three different regression models: a cohort stdy. BMC Musculoskelet Disord 2009;10:73. doi: 10.1186/1471-2474-10-73
9. Ekman A, Andresson A, Hagberg M, Hjelm EW. Gender differences in musculoskeletal health of computer and mouse users in the Swedish workforce. Occup Med (Lond) 2000;8:608–13. doi: 10.1093/occmed/50.8.608
10. Toprak Celenay S, Karaaslan Y, Oguzhan M, Ozer Kaya D. Coronaphobia, musculoskeletal pain, and sleep quality in tay-at home and continued-working person during the 3-month Covid-19 pandemic lockdown in Turkey. Chronobiol Int 2020;37:1778–85. doi: 10.1080/07420528.2020.1815759
11. Menna F, Aulicino M, Paoletta M, Liguori S, Iolascon G. Characterization of home working population during COVID-19 emergency: A cross-sectional analysis. Int J Environ Res Public Health 2020;17:6284. doi: 10.3390/ijerph17176284
12. 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. J Occup Environ Med 2021;63:181–90. doi: 10.1097/JOM.0000000000002097
13. Bloom N. How working from home works out. Stanford Institute for Economic Policy Research (SIEPR), June 2020 [displayed 10 September 2021]. Available at https://siepr.stanford.edu/research/publications/how-working-home-works-out
14. Alyami H, Albarrati AM. Comparison of spinal angles in a typing task on a laptop and a desktop computer: A preliminary study. Am J Occup Ther 2016;70:7006350020p1–8. doi: 10.5014/ajot.2016.020743
15. Bouziri H, Smith DRM, Descatha A, Dab W, Jean K. Working from home in the time of COVID-19: how to best preserve occupational health? Occup Environ Med 2020;77:509–10. doi: 10.1136/oemed-2020-106599
16. Munar L. Practical tips to make home-based telework as healthy, safe and effective as possible [displayed 10 September 2021]. Available at https://oshwiki.eu/wiki/Practical_tips_to_make_home-based_telework_as_healthy,_safe_and_effective_as_possible
17. Roos M, Roy JS. Effect of rehabilitation program on performance-related musculoskeletal disorers in student and professional orchestral musicians: a randomized controlled trial. Clin Rehabil 2018;32:1656–65. doi: 10.1177/0269215518785000
18. Kaliniene G, Ustinaviciene R, Skemiene L, Januskevicius V. Associations between neck musculoskeletal complaints and work related factors among public service computer workers in Kaunas. Int J Occup Med Environ Health 2013;26:670–81. doi: 10.2478/s13382-013-0141-z
19. Radulović B, Huršidić Radulović A. Musculoskeletal and eye symptoms in computer users at work. Arh Hig Rada Toksikol 2012;63:215–8. doi: 10.2478/10004-1254-63-2012-2197
20. Montreuil S, Lippel K. Telework and occupational health: a Quebec empirical study and regulatory implication. Safety Sci 2003;41:339–58. doi: 10.1016/S0925-7535(02)00042-5
21. Marras WS, Cutlip RG, Burt SE, Waters TR. National occupational reasrch agenda (NORA) future directions in occupational musculoskeletal disorder health research. Appl Ergon 2009;40:15–22. doi: 10.1016/j.apergo.2008.01.018
22. Warren N, Dussetschleger J, Punnett L, Cherniack MG. Musculoskeletal disorder symptoms in correction officers: why do they increase rapidly whit job tenure? Hum Factors 2015;57:262–75. doi: 10.1177/0018720814547569
23. Schott B. Working from home is a literal pain in the neck, Jul 27, 2020 [displayed 10 September 2021]. Available at https://www.bnnbloomberg.ca/working-from-home-is-a-literal-pain-in-the-neck-1.1471363
24. Tsang SMH, So BCL, Lau RWL, Dai J, Szeto GPY. Comparing the effectiveness of integrating ergonomics and motor control to conventional treatment for pain and functional recovery of work-related neck-shoulder pain: A randomized trial. Eur J Pain 2019;23:1141–52. doi: 10.1002/ejp.1381

Rad od kuće i mišićno-koštani bol tijekom epidemije COVID-19 – pilot-istraživanje

Pandemija izazvana širenjem koronavirusa teškog akutnog respiratornog sindroma 2 dovela je do značajnih promjena u globalnoj ergonomiji rada. Naime, tisuće zaposlenika iznenada su uobičajene radne prostore zamijenile kućnim prostorom ne bi li se smanjilo širenje virusa i obuzdala pandemija. Kako bi se opisale mišićno-koštane tegobe u uvjetima rada od kuće te analizirali novonastali uvjeti rada od kuće, ovo presječno pilot-istraživanje obuhvatilo je 232 zaposlenika telekomunikacijske tvrtke: 121 muškarca (52,2 %) u dobi od 23 do 62 godine i 111 žena (47,8 %) u dobi od 23 do 53 godine, koji su radili od kuće osam mjeseci, tj. od 16. 3. 2020. do 4. 12. 2020. Za potrebe ovog istraživanja autori su izradili virtualni upitnik u kojem su ispitanici samostalno procijenili intenzitet bolova u šakama, donjem dijelu leđa te u vratu i gornjem dijelu leđa tijekom rada od kuće, uvjete rada od kuće te razinu vlastite tjelesne aktivnosti. U odnosu na vrijeme prije rada od kuće, 90 ispitanika (39,1 %) prijavilo je jače bolove u donjem dijelu leđa tijekom rada od kuće, pri čemu je pogoršanje bola u vratu i gornjem dijelu leđa prijavilo 105 ispitanika (45,7 %), a bola u šakama njih 63 (27,2 %). Samo trećina zaposlenika nije prijavila mišićno-koštane tegobe tijekom rada od kuće. Muškarci su značajno rjeđe prijavili bol u šakama, donjem dijelu leđa te u vratu i gornjem dijelu leđa ($p=0,033$; $p=0,001$ odnosno $p=0,013$). Posebnu prostoriju za rad od kuće imalo je 69 ispitanika (29,9 %), odvojeni radni prostor njih 75 (32,4 %), a njih 87 (37,7 %) nije imalo radni prostor, pa su najčešće radili u blagovaonici (njih 30). Pisaći radni stol za rad nije imalo 95 ispitanika (40,9 %), a ergonomsku radnu stolicu imalo je njih tek 75 (32,3 %). Od ispitanika koji žive s ukućanima (N=164), njih 116 (70,7 %) smatralo je da ih ukućani ometaju u radu stalno ili povremeno. Više od polovice ispitanika (52 %) smatralo je da radi dulje kod kuće nego na poslu, i to značajno više žene ($p=0,05$). Samo je 69 ispitanika (29,9 %) uzimalo češće predahe, i to značajno češće stariji zaposlenici ($p=0,006$). Naši rezultati upućuju na to da, radi sprječavanja mišićno-koštanih tegoba, zaposlenike treba educirati o metodama i načinima prilagodbe neergonomske opreme, korištenju pauza, potrebi tjelovježbe, a poslodavce treba educirati o potrebi organizacije radnog vremena u novim uvjetima rada od kuće.

KLJUČNE RIJEČI: ergonomija; leđa; rad za računalom; radni prostor; spol; šake; tjelesna aktivnost