

Work-Related Factors Influencing Presenteeism in Croatia during COVID-19: A Logistic Regression Approach

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Abstract

This article analyses the work-related factors that impact the occurrence of presenteeism in Croatia during the COVID-19 pandemic. The main objective is to examine the connection between key variables and the prevalence of presenteeism among employees in Croatia. The study used logistic regression analysis to examine data from the 2021 European Working Condition Telephone Survey (EWCTS), encompassing a sample of 491 employees from Croatia. The study investigated work-related factors such as job demands, working hours, supervisory responsibilities, telework, and cooperation with coworkers. The analysis also takes into account demographic control variables, including age, gender, and educational level. The findings suggest that there is a significant relationship between work stressors and presenteeism. Employees who lack good collaboration with colleagues are more prone to attending work even when they are unwell. Age was also determined to be a significant factor. The study indicates that work-related factors have an impact on presenteeism in Croatia. To mitigate the adverse effects of presenteeism, firms should adopt strategies to enhance working conditions and foster a conducive work atmosphere. The results offer valuable perspectives for future research and practical strategies to reduce presenteeism and improve employee wellbeing.

Introduction

The COVID-19 pandemic profoundly affected work and society. Several restrictions were characteristic, especially for phases with high infection rates. The pandemic has led to far-reaching changes in the everyday working lives of employees. Comprehensive measures were also taken in Croatia, which had a major impact on social and economic life. These measures included school and workplace closures as well as various stay-at-home regulations.

The pandemic has also had an impact on the mental health of the Croatian population. A study from 2020 showed that women and younger people in particular exhibited symptoms such as depression or stress (Margetić et al., 2021, p. 4). Presenteeism, the phenomenon of working despite illness, can be influenced by a variety of different factors. The COVID-19 pandemic plays a special role here due to the various measures and the resulting changes in working conditions. The resulting uncertainties can lead employees to work despite illness (Kinman & Grant, 2021, p. 1). Even before the COVID-19 pandemic, a study by Miraglia and Johns (2016) showed that of all possible influencing factors, work-related factors is the factor group that has a major influence on the occurrence of presenteeism (Miraglia & Johns, 2016, p. 33f).

For Croatia, there are only a few studies that deal with the topic of factors influencing presenteeism. Those studies that have dealt with the topic of presenteeism have largely focused on employees from the healthcare sector. For example Brborović et al. showed that nurses who came to work despite being ill had significantly higher stress levels compared to nurses who did not show presenteeism (Brborović et al., 2016, p. 5). A previous study looked at the possible consequences of presenteeism in healthcare and investigated whether presenteeism among nurses in Croatia has an impact on patient safety. The results of the study showed that presenteeism, therefore if nurses show up despite illness, had no impact on patient safety (Brborović et al., 2014, p. 151). A follow-up study, which also looked at the relationship between presenteeism among nurses in Croatia and patient safety, was able to prove that presenteeism is associated with a culture of high patient safety. This suggests that when patient safety is high, nurses are more likely to come to work sick (Brborović & Brborović, 2017, p. 187). Another study of workers in Croatia looked at the question of whether there is a difference between workers who perform manual tasks and workers who mainly perform sedentary tasks. Employees from shipyards, the postal service and the police were surveyed. Both groups showed high levels of presenteeism. No significant difference could be calculated between these groups (Lalić & Hromin, 2012).

The primary aim of this article is to investigate the influence of work-related factors on the occurrence of presenteeism in Croatia. This is especially against the background of the ongoing COVID-19 pandemic at the time. As mentioned above, there are only a few studies on this topic in Croatia. At the same time, it shows that presenteeism rates are higher in Croatia than in other

European countries (Eurofund, 2024). Given the limited research on presenteeism in Croatia and the special circumstances of the COVID-19 pandemic, the study aims to identify the work-related factors that favour the occurrence of presenteeism among employees in Croatia. This research provides both empirical and practical contributions. This study addresses a research gap by examining the influence of work-related factors on presenteeism in Croatia, especially in the context of the COVID-19 pandemic. The study tries to offer essential recommendations for corporations and policymakers on how targeted workplace interventions might alleviate the adverse impacts of presenteeism. This study assists in both safeguarding employee health and improving workplace productivity.

Literature Review

Presenteeism

To date, there is no uniform definition for presenteeism in the existing literature to which researchers can refer. In general, presenteeism is described as behaviour as "behaviour of working in the state of ill-health" (Ruhle et al., 2020, p. 7). Presenteeism is understood as the opposite of absenteeism: Absenteeism describes the behaviour in which employees take sick leave in the event of an existing illness. Compared to presenteeism, the subject of research on absenteeism can look back on a longer research history (Gosselin et al., 2013, p. 75).

Presenteeism is researched differently in different research traditions. In the US research context, for example, the focus is often placed on the loss of productivity and an attempt is made to calculate the resulting loss in financial losses to reduce the resulting costs. This contrasts with the European research tradition, which attempts to understand the behaviour of employees in the decision-making process for presenteeism. The aim here is to identify the factors responsible and derive recommendations for action (Lohaus & Habermann, 2018, p. 14).

The relevance of this research topic is reflected in the consequences of presenteeism: First and foremost, presenteeism is shown to have an impact on the future health status of employees (Bergström et al., 2009, p. 633; Gustafsson & Marklund, 2011, p. 160; Skagen & Collins, 2016, p. 22). At the same time, other studies show that presenteeism can also have beneficial effects on employees, although the study situation on this issue is still less mature (Ruhle et al., 2020, p. 8). The group of

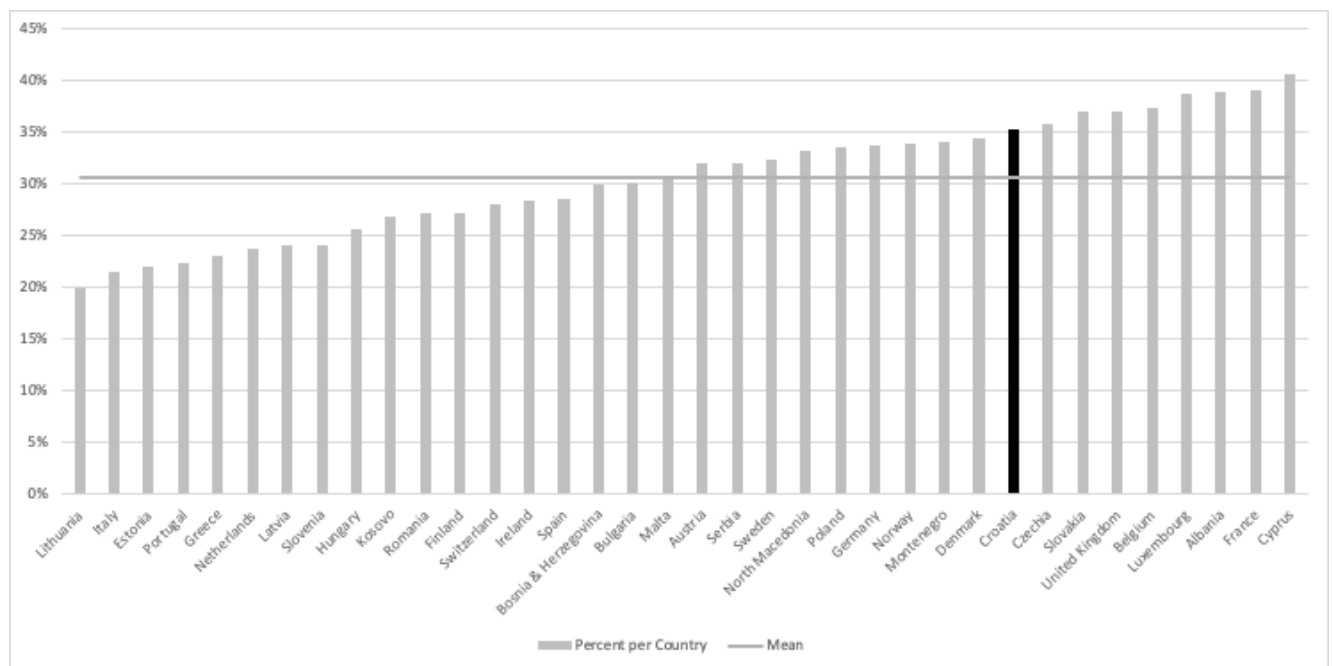
employees suffering from mental illnesses is particularly emphasized in this question. For example, participation in working life can have a "therapeutic" effect in the presence of a mental illness (Karanika-Murray & Biron, 2020; Patel et al., 2023, p. 840; Ruhle et al., 2020, p. 8).

Looking at the presenteeism values based on the data from the European Working Conditions Telephone Survey (EWCTS) from 2021, it can be seen that employees from Croatia have higher presenteeism rates than the average of all participating countries (Figure 1).

Several studies have attempted to identify the various influencing factors that promote the occurrence of presenteeism. Presenteeism is seen as a phenomenon that is influenced by a variety of factors (Caverley et al.,

2007, p. 315). Based on these studies, four groups can be identified that are emphasized in the investigations: Contextual factors, organizational factors, work-related factors and personal factors. Among other things, contextual factors refer to the welfare state orientation or the respective economic situation of a country under investigation. In the case of organizational factors, characteristics such as the size of the company, the structure of the employment contract or the perceived fairness in an organization are examined. The personal factors focus primarily on characteristics such as gender, age and level of education. Of all these factors, the group of work-related factors, in particular, is described as having the greatest influence on the occurrence of presenteeism (Miraglia & Johns, 2016 cited in Lohaus 2018, p. 110).

Figure 1
Presenteeism per country 2021



Source: Eurofund, 2024

Work-Related Factors

As already mentioned, work-related factors have the greatest explanatory power when it comes to influencing the occurrence of presenteeism.

Some studies have investigated the connection between specific working conditions and the occurrence of presenteeism. These include physical demands that involve physical exertion, such as lifting heavy loads or performing tasks in tiring positions. Job demands not only

refer to physical demands but also to social aspects that have an impact on the well-being of employees. Specific job demands do not have to be negative per se, but the specific working conditions can be perceived as a stress factor that can arise when performing the job requirements (Demerouti et al., 2009, p. 52). Here the authors refer to the work of Hobfoll who sees certain working conditions as a possible reason for the strain on resources. Confronted with this situation, people try to apply strategies that can be used to adapt to the specific situation (Hobfoll, 2001). Also in the meta-analysis by

Miraglia & Johns showed a connection between physical demands and presenteeism (Miraglia & Johns, 2016, p. 25).

The performance of a supervisory role is seen in the studies as a possible influencing factor in the occurrence of presenteeism. In their study of Danish employees, Hansen and Andersen were able to prove that holding a leadership role has a positive influence on the occurrence of presenteeism (Hansen & Andersen, 2008, p. 963). In this context, Johns shows that this circumstance can be caused by a specific understanding of the corporate culture, which is also expressed in long working hours, among other things (Johns, 2010, p. 528) as well as being under greater time pressure (Hansen & Andersen, 2008, p. 957).

Also Arnold & de Pinto found a correlation between holding a management role and presenteeism. Together with the group that worked more than 45 hours per week, there were fewer sick days and more days on which these employees worked sick. The authors describe this group as "career-oriented", which can be characterized by the fact that they have more autonomy over their working hours and at the same time have a greater area of responsibility (Arnold & de Pinto, 2015, p. 486).

In general, the organization of working hours is also seen in studies as a possible influencing factor on presenteeism. The issue of working hours and how employees perceive them is investigated in different ways. On the one hand, studies show that long working hours are associated with the occurrence of presenteeism. This is shown by studies from Denmark, Japan and Taiwan (Hansen & Andersen, 2008, p. 962; Ishimaru & Fujino, 2021, p. 4f; Lu & Cooper, 2022). Miraglia and Johns were also able to prove this connection in their meta-analysis (2016, p. 25). Another study, which approached the topic of presenteeism from a time demand perspective using the EWCS from 2010, was able to show that all variables associated with time demand (e.g. overtime, working in free time) have a significant influence on the occurrence of presenteeism. This was the case for employees, but especially for the self-employed (Nordenmark et al., 2019, p. 227). Studies that have dealt with the question of the influence of part-time work on the occurrence of presenteeism have not been able to prove a connection (Aronsson & Gustafsson, 2005, p. 962; Robertson et al., 2012). In contrast, some studies have been able to prove a connection between full-time work and presenteeism (Bockerman & Laukkanen, 2010, p. 45; Cho et al., 2016, p. 49).

The degree of control and autonomy provides information on the extent to which employees can influence work processes. The starting point is the assumption that people who have the power to influence the organization of work processes feel less pressure to come to work sick and are therefore not associated with presenteeism (Miraglia & Johns, 2016, p. 12). Similarly, since the degree of necessary work speed and the perception of set deadlines influence the likelihood of presenteeism, according to existing studies: For example, research by Caverley shows that deadlines are one of the top reasons why employees choose to go to work sick (Caverley et al., 2007, p. 315).

Colleagues can reduce the occurrence of presenteeism if there is good cooperation who can perform certain tasks in the event of sick leave. The presence of a supportive work environment, which includes cooperation with colleagues, has a reducing effect on the likelihood of presenteeism occurring (Goto et al., 2020, p. 567; Janssens et al., 2015, p. 336).

The possibility of telework can promote the occurrence of presenteeism: If employees who can telework are faced with the situation of becoming ill, a telework option is sometimes seen as a way of continuing to work even when ill. For example, one study found that telework may increase the risk of working while ill (Steidelmüller et al., 2020, p. 1004). A study by Gerich shows that teleworking is often used to cope with an increased workload. In this respect, it is not telework per se, but the design of the working conditions that increases the likelihood of presenteeism occurring (Gerich, 2022, p. 247).

In addition to the work-related factors, socio-demographic control variables are to be included in the analysis of the existing figures, which will be introduced into a further model in a second step (see explanations in the methods chapter of this article). On the one hand, gender is taken into account as a socio-demographic variable. The research situation on the gender variable is ambiguous. On the one hand, some studies have been able to demonstrate the influence of gender on the probability of presenteeism occurring (Aronsson et al., 2000; Aronsson & Gustafsson, 2005; Cho et al., 2016; Gustafsson Sendén et al., 2016; Leineweber et al., 2011).

Other studies were unable to demonstrate any difference between men and women when gender was taken into account (Gosselin et al., 2013; Gustafsson & Marklund, 2011). The study situation about the age of the

respondents revealed inconsistent results. The study by Aronsson & Gustafsson (2005) an increased probability in the 16-35 age group. Another study by Leineweber et al. (2011) was able to demonstrate an increased probability of occurrence for the 35-54 age group. Similarly, also Cho et al. (2016) show an increased probability of presenteeism for those aged 30 or older.

Finally, reference should be made to the influence of the respective level of education. No clear findings can be found here either. For example, a study by Preisendörfer (2010) showed that the probability of presenteeism decreases with increasing years of education. In a similar way Gustafsson & Marklund (2011) showed that the frequency of presenteeism among Swedish employees without a university degree is linked to presenteeism. A similar conclusion was reached by Cho et al. (2016) who found a correlation with presenteeism for Korean employees without a high school or university degree.

COVID-19 Pandemic

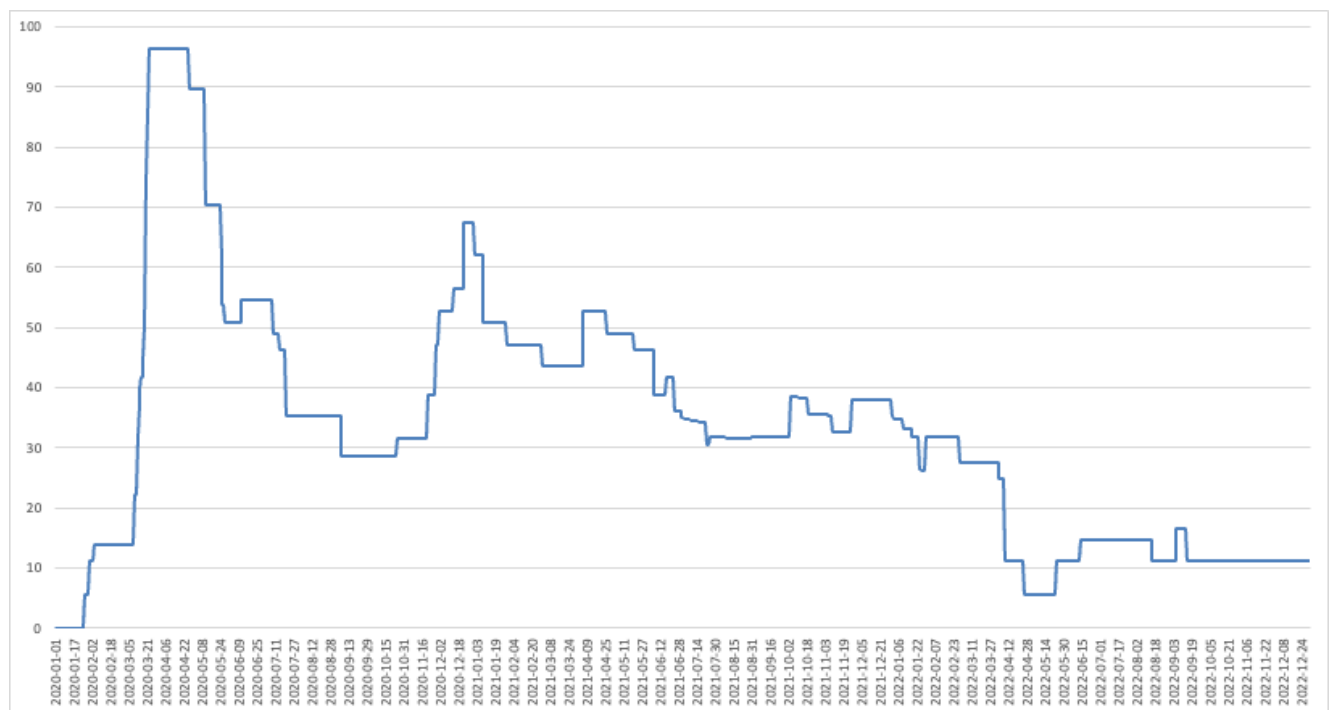
The COVID-19 pandemic is seen as an important contextual factor in the context of presenteeism, which

has an influence on the willingness to show up at work despite illness. During the course of the pandemic, different phases were observed, each of which had a different impact on social life. One of the measures used to measure the severity of the measures taken is the Stringency Index (Figure 2). The measures taken are calculated into an index with 100 index points as the maximum. Measures taken into account include school closures, workplace closures, public information campaigns and the testing policy. The higher the index value, the tougher and stricter the measures for the country in question (Hale et al., 2021).

For Croatia, the phase at the beginning of the pandemic until the summer of 2020 and the phase from the beginning of 2021 until late summer of 2021 were the phases in which the toughest measures to combat the pandemic were taken in Croatia. It can therefore be assumed that employees in Croatia were most affected by the measures taken during these two phases, partly due to any restrictions on work operations.

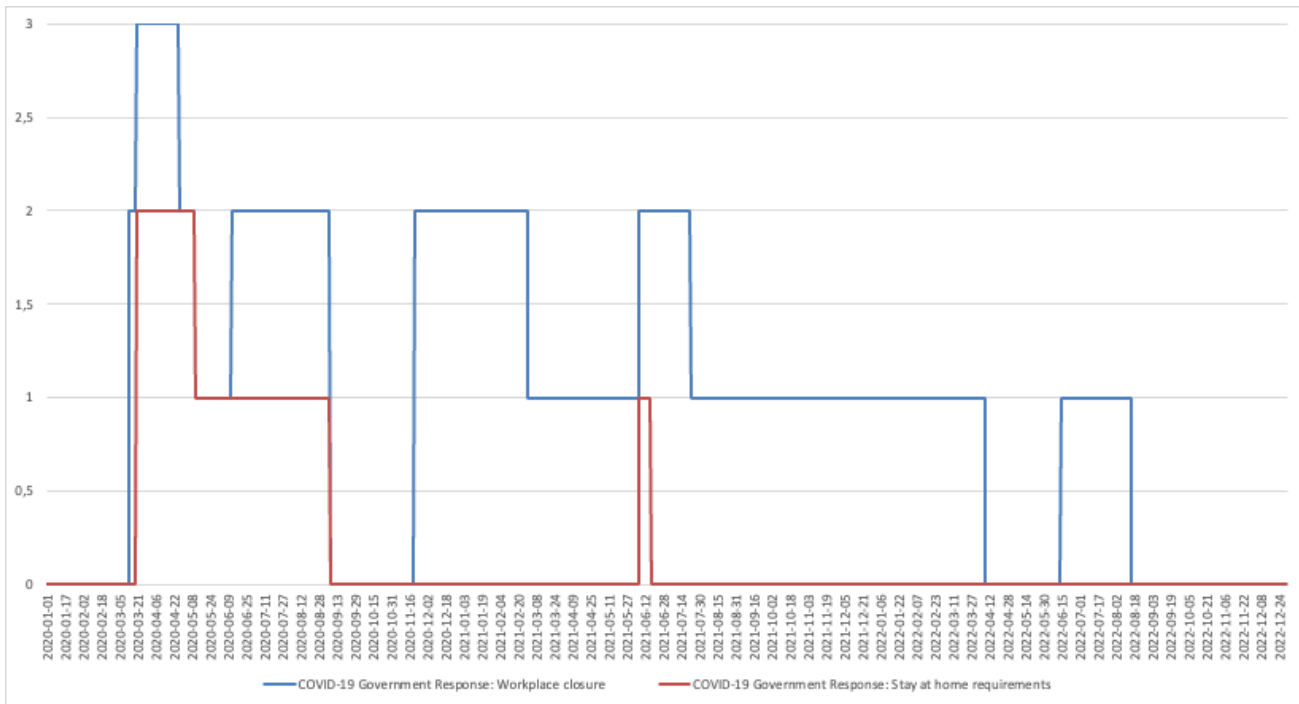
Of particular interest is the consideration of workplace closures and stay-at-home regulations for Croatia during the pandemic presented in Figure 3.

Figure 2
 COVID-19 Government Response: Stringency Index (Croatia)



Source: Oxford COVID-19 Government Response Tracker (Hale et al., 2021)

Figure 3
 COVID-19 Government Response: Workplace closure and stay-at-home requirements (Croatia)



Source: Oxford COVID-19 Government Response Tracker (Hale et al., 2021)

These figures reflect those in the chart on the Stringency Index. Especially at the beginning of the pandemic, workplace closures and stay-at-home requirements were the strictest (0 = lowest value with no requirements; 3 = strictest value). The survey phase took place at a time when the requirements for workplace closures were somewhat stricter. Except for a brief phase in the middle of 2021, the stay-at-home regulations were not in force.

Hypotheses

The aim of this analysis is to investigate the differences in the influence of work-related factors on the occurrence of presenteeism. The data set of the European Working Condition Telephone Survey (EWCTS) from 2021 was used to calculate the probability of occurrence.

The following hypotheses were derived for the statistical analysis based on the studies presented above:

- H1: There is a statistically significant relationship between work stressors (work demands, working high speed, working under tight deadlines, working in free time, working on short notice, and having a leadership role) and presenteeism.
- H2: There is a statistically significant relationship between working time (weekly working hours, and part-time/full-time) and presenteeism.

- H3: There is a statistically significant relationship between work autonomy and presenteeism.
- H4: There is a statistically significant relationship between the degree of good cooperation with colleagues and presenteeism.
- H5: There is a statistically significant relationship between telework and presenteeism.

Furthermore, three control variables are also used to calculate a further model. These three variables are gender, age and education.

Method

Instruments

Data from the European Working Condition Telephone Survey (EWCTS) for 2021 was used for this article. The EWCTS has been examining working conditions in various European countries at regular five-year intervals since 2005. The planned data collection in 2020 had to be cancelled after seven weeks due to the COVID-19 pandemic. In 2021, the survey was conducted by telephone instead of in person in 36 participating countries. The survey took place between March and November 2021. The data set for Croatia comprises 1800 participants. The EWCTS utilizes rigorous sampling methods to guarantee representation across diverse

sectors and demographics; however, the sample's representativeness may be affected by the timing of the survey (e.g. labour market disruptions and working conditions) and its methodology. Telephone surveys can present possible bias, since persons lacking access may have been excluded.

Dependent Variable (Presenteeism)

Respondents were asked "Over the past 12 months did you work when you were sick?" or, if the employment relationship had lasted less than twelve months, "Since you started your job, have you worked when you were sick?". The dependent variable was dichotomized (1=yes, 0=no presenteeism); the items "I was not sick", "Don't know" and "Refused" were therefore excluded from the analysis.

Independent Variables

The questionnaire comprises a series of thematically different questions. Variables for which a reference to work-related factors could be established were used for the analysis of the calculation.

An index consisting of seven variables was calculated for the variable "work demands", with the calculated alpha value tending to have a poor value ($\alpha=0.535$). For these seven variables, the respondents were asked about the working conditions they are exposed to in their work (tiring positions, lifting or moving people, carrying or moving heavy loads, repetitive hand or arm movements, dealing with people, emotionally disturbing situations, working with devices). The scale for all seven items ranges from 1 to 7.

The item on whether a respondent is currently in a supervisor position was asked with the following question: "Do you have people under your supervision, for whom pay increases, bonuses or promotion depend directly on you?" (1=Yes, 2=No, 3=Don't know).

The working hours of the employment relationship were surveyed on the one hand by asking about the number of hours per week and the possible existence of part-time employment: the respondents were asked about their usual working hours per week: "How many hours do you usually work per week in your main paid job?" (in hours per week). The existence of a part-time or full-time position was indicated by means of "In your (main) job, do you work part time or full time?" (1=part time, 2=full time, 3=don't know, 4=refused).

An index of three variables was calculated for the variable "work autonomy" ($\alpha=0.765$). For these three variables, the employee's autonomy in relation to the autonomous division of work tasks, the autonomous choice of working methods and the autonomy of work speed were surveyed. The scale for all three items ranges from 1 to 5. The measurement instrument from Breaugh (1985) was used.

Another variable is that of "Working in free time": "Over the last 12 months (in your main job), how often have you worked in your free time to meet work demands?" or, if the employment relationship has lasted less than 12 months, "Since you started your (main) job, how often have you worked in your free time to meet work demands?". The items were reduced and summarized as 1="At least weekly", 2="Monthly" and 3="Less often or never".

Employees were also asked whether they had to come into work at short notice: "Over the last 12 months (in your main job), how often have you been requested to come into work at short notice" or, if the employment relationship had lasted less than 12 months, "Since you started your (main) job, how often have you been requested to come into work at short notice?". The items were reduced and summarized to 1="At least weekly", 2="Monthly" and 3="less often or never".

The question of how much employees are confronted with a fast pace of work and tight deadlines was also of interest. In this regard, the interviewees were asked "And does your (main) job involve working at very high speed?" and "And does your (main) job involve working to tight deadlines?". The items were reduced and summarized to 1="Never or rarely", 2="Sometimes" and 3="Often or always".

Important with regard to cooperation with colleagues, the interviewees were asked, "To what extent do you agree or disagree with the following statements: There is good cooperation between you and your colleagues?" (strongly agree, tend to agree, neither agree or disagree, tend to disagree, strongly disagree, not applicable, don't know, refused). The items were subsequently summarized as 1="Agree", 2="Neither agree nor disagree" and 3="Disagree". There were no responses in the "disagree" item, so this item was not included in the analysis.

With regard to telework, the following categorization was adopted from the questionnaire: 1="Never/rarely"

2="Sometimes", 3="Often/always". The variable "Gender" was defined as "Would you describe yourself as a man, a woman or would you describe yourself in another way?". 1="Men" and 2="Women" were included in the analysis. The variable "Age" was queried using the question "Would you mind telling me how old you are?". The age was specified in "Age in years". The variable "Education" was asked by means of "What is the highest level of education or training you have successfully completed (usually by obtaining a certificate or diploma)?". The answers were categorized according to the logic of ISCED 2011. For the analysis, the groups were summarized as 2="Secondary education" and 3="Tertiary education"; the respondents selected for the analysis did not include any answers for 1="Primary education".

Data Analysis

A logistic regression was used to calculate the probability of occurrence. The variables included were first recoded and prepared for the calculation of the logistic regression. A linear regression was then calculated to check for collinearity and Mahalanobis, whereby both requirements were met. Outliers and missing variables were also excluded from the analysis. In the end, 491 people were included in the analysis.

Two models were calculated using logistic regression. The first model (M1) includes all work-related independent variables. The second model (M2) is an extension of the first model by controlling for

socio-demographic data such as gender, age and education. Although the socio-demographic data fall under the category of person-related factors, these variables were nevertheless used as control variables for the calculation of M2. The SPSS statistics program was used for the calculation.

Results

Preliminary Analyses

The Table 1 describes the descriptive statistics of the variables considered. The data reveals that approximately 32% of the respondents included in the survey exhibited presenteeism. The work demands index has a rating of 2.66 on a seven-point scale. The index has a documented Cronbach's α coefficient of 0.535, which falls below the desired level of effectiveness. Most respondents are not in a managerial role. The respondents have an average workweek of approximately 41 hours, with a minority working part-time. The average score for job autonomy was 3.31 on a five-point scale, with a Cronbach α coefficient of 0.765. The respondents exhibited a tendency to engage in less work during their leisure time and also reported a lower occurrence of short-term job assignments with minimal notice. Employees who worked quickly and faced strict time limits were more likely to report this occurrence. A substantial quantity of additional time characterizes collaboration with colleagues as favourable. Regarding telework opportunities, the majority of the respondents never or rarely telework.

Table 1

Descriptive analysis (means, standard deviations and Cronbach's α ; n = 491)

	Range	Mean	SD	Cronbach's α
Presenteeism (Yes/No)	0-1	0.3212	0.46741	-
Work demands (Index)	1-7	2.6632	0.66212	0.535
Working high speed	1-3	2.2343	0.77252	-
Working tight deadlines	1-3	2.0727	0.80154	-
Working in free time	1-3	2.5273	0.73570	-
Short notice	1-3	2.8788	0.38369	-
Supervisor (Yes/No)	1-2	1.8606	0.34671	-
Usual working hours per week	1-168	40.8848	7.39302	-
Part time (Yes/No)	1-2	1.9495	0.21921	-
Work autonomy (Index)	1-5	3.3141	0.94859	0.765
Good cooperation	1-2	1.0566	0.23124	-
Telework	1-3	1.5947	0.80603	-
Gender	1-2	1.6000	0.49039	-
Age	16-74	39.41	11.791	-
Education	2-3	2.5091	0.50042	-

Source: Author's own calculations based on EWCTS 2021

Regarding socio-demographic data, the female population accounted for 60% while the male population accounted for 40%. The average age of the selected respondents was approximately 40 years old, and they were fairly evenly divided between those with secondary and tertiary degrees.

Factors Influencing Presenteeism

A logistic regression was conducted to determine which independent variables (work demands, supervisor role, usual working hours per week, part-time/full-time, work autonomy, working in free time, short notice, working high speed, working tight deadlines, good cooperation with colleagues and telework) are predictors of

presenteeism in Croatia in 2021. Data screening led to the elimination of several outliers, as presented within the methods chapter.

Regression results indicated that the overall model fit improved compared to the zero model (-2 Log likelihood = 529.481; zero model: -2 Log likelihood = 621.502) and was statistically reliable in distinguishing between presenteeism [$\chi^2_{(16)} = 88.906, p < 0.001$]. The model correctly classified 70.5% of the cases. Regression coefficients are presented in Table 2.

Wald statistics indicated that work demands, working tight deadlines, lack of good cooperation with colleagues and telework predict presenteeism.

Table 2
Logistic Regression (Model 1 - control variables excluded)

	B	Wald	df	p	Odds Ratio
Work demands (Index)	0.368**	4.268	1	0.039	1.445
Working high speed					
1 = Never or rarely	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Sometimes	0.044	0.017	1	0.897	1.045
3 = Often or always	0.613*	3.408	1	0.065	1.846
Working tight deadlines					
1 = Never or rarely	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Sometimes	-0.292	0.950	1	0.330	0.747
3 = Often or always	0.563*	3.703	1	0.054	1.755
Working in free time					
1 = At least weekly	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Monthly	-0.343	0.907	1	0.341	0.710
3 = Less often or never	-0.500	2.281	1	0.131	0.607
Working short notice					
1 = At least weekly	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Monthly	-0.075	0.008	1	0.927	0.928
3 = Less often or never	-0.180	0.058	1	0.809	0.835
Supervisor Role					
1 = Yes	Ref.	Ref.	Ref.	Ref.	Ref.
2 = No	-0.242	0.616	1	0.433	0.785
Usual working hours per week	0.029	2.377	1	0.123	1.029
Part time					
1 = Yes	Ref.	Ref.	Ref.	Ref.	Ref.
2 = No	1.024	1.540	1	0.215	2.784
Work autonomy (Index)	-0.119	0.989	1	0.320	0.888
Good cooperation with colleagues					
1 = Agree	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Neither agree nor disagree	1.189***	6.684	1	0.010	3.282
Telework					
1 = Never/rarely	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Sometimes	0.010	0.001	1	0.975	1.010
3 = Often/always	0.467*	2.772	1	0.096	1.595

Notes: Dependent dichotomous variable: Presenteeism; *statistically significant at the 0.1 level (two-tailed); **statistically significant at the 0.05 level (two-tailed); ***statistically significant at the 0.01 level (two-tailed); n = 491; Nagelkerke R² = 0.231.

Source: Author's own calculations based on EWCTS 2021

Table 3*Logistic regression (Model 2 – control variables included)*

	B	Wald	df	p	Odds Ratio
Work demands (Index)	0.329*	3.350	1	0.067	1.389
Working high speed					
1 = Never or rarely	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Sometimes	0.048	0.020	1	0.887	1.050
3 = Often or always	0.613*	3.226	1	0.072	1.845
Working tight deadlines					
1 = Never or rarely	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Sometimes	-0.264	0.751	1	0.386	0.768
3 = Often or always	0.596**	3.885	1	0.049	1.815
Working in free time					
1 = At least weekly	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Monthly	-0.355	0.953	1	0.329	0.701
3 = Less often or never	-0.545	2.620	1	0.106	0.580
Working Short notice					
1 = At least weekly	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Monthly	0.045	0.003	1	0.956	1.046
3 = Less often or never	-0.090	0.014	1	0.905	0.914
Supervisor role					
1 = Yes	Ref.	Ref.	Ref.	Ref.	Ref.
2 = No	-0.227	0.530	1	0.466	0.797
Usual working hours per week	0.031	2.584	1	0.108	1.032
Part time					
1 = Yes	Ref.	Ref.	Ref.	Ref.	Ref.
2 = No	1.069	1.649	1	0.199	2.911
Work autonomy (Index)	-0.103	0.721	1	0.396	0.902
Good cooperation with colleagues					
1 = Agree	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Neither agree nor disagree	1.195***	6.668	1	0.010	3.302
Telework					
1 = Never/rarely	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Sometimes	0.103	0.099	1	0.753	1.108
3 = Often/always	0.597	3.917	1	0.480	1.816
Gender					
1 = Male	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Female	0.188	0.653	1	0.419	1.207
Age	0.021**	4.838	1	0.028	1.021
Education					
2 = Secondary Education	Ref.	Ref.	Ref.	Ref.	Ref.
3 = Tertiary Education	-0.262	1.027	1	0.311	0.769

Notes: Dependent dichotomous variable: Presenteeism; *statistically significant at the 0.1 level (two-tailed); **statistically significant at the 0.05 level (two-tailed); ***statistically significant at the 0.01 level (two-tailed); n = 491; Nagelkerke R² = 0.247

Source: Author's own calculations based on EWCTS 2021

A second logistic regression was conducted included the same variables as in M1 to determine which independent variables (work demands, supervisor role, usual working hours per week, part-time/full-time, work autonomy, working in free time, short notice, working high speed, working tight deadlines, good cooperation with

colleagues and telework) as well as control variables (gender, age and education) are predictors of presenteeism in Croatia in 2021. Data screening led to the elimination of several outliers, as presented within the methods chapter. Regression results indicated that the overall model fit of the predictors was questionable

(-2 Log likelihood = 522.624; zero model: -2 Log likelihood = 621.502) but was statistically reliable in distinguishing between presenteeism [$\chi^2_{(19)} = 95.763$, $p < 0.001$]. The model correctly classified 72.9% of the cases. Regression coefficients are presented in Table 3. Wald statistics indicated that work demands, working tight deadlines, lack of good cooperation with colleagues, and age predict presenteeism.

Discussion

This study of employees in Croatia using EWCTS data from 2021 showed, based on the calculations for M1, that specific work demands placed on employees lead to a statistically significant increase in the probability of presenteeism (OR=1.445). This result suggests that the more demanding the specific work requirements placed on employees, the more likely presenteeism is to occur. This study is therefore consistent with the findings of Demerouti et al. (2009).

Working under tight deadlines shows an equally increased statistically significant probability of occurrence: The result from M1 suggests that employees in Croatia have a higher probability of occurrence compared to employees who never or rarely work under tight deadlines (OR=1.755). Employees who are confronted with tight deadlines are more likely to work sick in order to complete their workload. This result is also consistent with the study by Caverley et al. (2007) in which tight deadlines were cited as one of the main reasons for presenteeism. Frequent working high speed also increases the probability of presenteeism (OR=1.846). In this study, good cooperation with the respective work colleagues also proved to be an important predictor of the probability of presenteeism occurring. The result from Model 1 shows with statistical significance that the lack of good cooperation with colleagues increases the probability of presenteeism (OR=3.282).

With regard to telework, the results show that people who telework often or always are more likely to go to work sick (OR=1.595) which is in line with Steidelmüller et al. (2020).

In M2, the previously used variables were supplemented by control variables in a further model: gender, age, and level of education. The results of this model reveal differences compared to M1. The specific working demands remain statistically significant, showing that the probability of presenteeism is rises with more

demands (OR=1.445). Similar to M1, M2 shows that working high speed (OR=1.845) and the presence of tight deadlines (OR=1.815) has a statistically significant effect on the likelihood of presenteeism. M2 also shows that cooperation with colleagues has a preventive effect against presenteeism. Employees who state that they have neither good nor poor cooperation with their colleagues have a statistically significant higher risk compared to the reference group who have good cooperation with their colleagues (OR=3.302). The addition of socio-demographic variables shows that the age of employees has a statistically significant influence on the probability of presenteeism occurring (OR=1.021). This result differs from the results cited above in that age groups were compared with each other there, which were able to calculate an influence of age in the groups 16-35 and 30 years and over (Aronsson & Gustafsson, 2005; Cho et al., 2016; Leineweber et al., 2011).

No effect on the probability of presenteeism could be calculated for other variables. Thus, there was no difference in having a supervising role on the probability of risk. Similarly, working hours or the existence of part-time work had no influence on the probability of occurrence. Contrary to the assumption that the extent of control over one's own work processes (work autonomy) has an influence, no influence could be calculated on the basis of the available data. Additionally, working at short notice does not have a statistically significant influence on the probability of presenteeism. Telework only showed a statistically significant influence on the risk of occurrence in M1. The influence disappeared when the socio-demographic variables were added. When looking at the socio-demographic variables, a statistically significant result could only be calculated for age. The explanatory value, measured by Nagelkerke R^2 , was 23.1% for M1 and slightly higher at 24.7% for M2.

Conclusion

Given the limited research of employees in Croatia, this article provides insights into the factors influencing the occurrence of presenteeism. The aim of this article was to investigate the influence of work-related factors on the likelihood of presenteeism for Croatia. Data from the European Working Condition Telephone Survey from 2021 was used for this purpose. During the survey phase from March to November 2021, Croatia, like other countries, found itself in a situation that was confronted with accompanying preventive measures in the wake of the COVID-19 pandemic. The strength of the measures was less comprehensive than in 2020. This was particularly the case in mid-2021.

The results of this study show that presenteeism for employees in Croatia is influenced by work stressors. The more extensive the conditions (such as carrying heavy loads, repetitive movements), the more frequently employees are confronted with deadlines or have to work under high speed, the more likely it is that an employee will go to work when sick.

In contrast, good cooperation with colleagues is an important factor. Employees with neither good nor poor cooperation with colleagues who could fill in in the event of illness show a higher risk of coming to work sick compared to employees who have good cooperation. Finally, the addition of socio-demographic variables shows that age is a predictor of attendance at work despite illness.

This study only looked at the work-related factors that influence the occurrence of presenteeism in Croatia. However, as mentioned in the introduction, there are a number of other factors in addition to work-related factors that can influence the likelihood of presenteeism occurring. In order to better understand the phenomenon of presenteeism for the Croatian case, subsequent studies should also examine the influence of other factors (such as organizational factors). Some items have a small number of cases. Future studies could try to increase the number of cases through longer or more intensive surveys. Another possibility would be to include further regions or countries in the analysis in a pooling procedure in order to obtain larger numbers of cases for an analysis.

As shown above, the survey took place during the COVID-19 pandemic. In this respect, the special nature of an existing pandemic must be taken into account when generalizing the results. Future studies should look at further data sets for Croatia - especially those collected after the COVID-19 pandemic - in order to be able to track

the influence of the factors examined without the influence of preventive measures at the time of the COVID-19 pandemic. This study was done during the period of workplace closures and adaptations to remote work, both of which could have influenced the responses. Furthermore, the dependence on telephone interviews may have marginalized specific demographics. Consequently, these findings must be regarded with caution, and their applicability to other contexts or timeframes is restricted.

Beyond this, future studies should also take into account other factors that may be of interest in capturing the phenomenon of presenteeism. These include organizational factors (e.g. the influence of different forms of employment contracts) or perceived organizational justice. Future research should also contemplate larger and more representative samples, focusing on specific demographic groups or employing longitudinal study designs.

To date, there have been very few studies on the phenomenon of presenteeism in Croatia. Those studies that have been found for Croatia have mainly dealt with employees in the healthcare sector. This article examines those work-related factors that make presenteeism likely to occur, without limiting itself to a specific area of the working sectors in Croatia.

Based on these studies, companies can take a step towards preventing presenteeism. As can be seen in the analysis, some variables have an influence on the occurrence of presenteeism. Targeted measures that focus on those variables that have an influence on the probability of occurrence can reduce the occurrence and the associated consequences. This is primarily aimed at the specific design of the working conditions experienced, as well as taking into account other work stressors, which can subsequently lead to an increased perception of stress among employees.

References

- Arnold, D., & de Pinto, M. (2015). How are Work-related Characteristics Linked to Sickness Absence and Presenteeism? Theory and Data. *Schmollers Jahrbuch*, 135(4), 465–498. DOI: <https://doi.org/10.3790/schm.135.4.465>
- Aronsson, G., & Gustafsson, K. (2005). Sickness Presenteeism: Prevalence, Attendance-Pressure Factors, and an Outline of a Model for Research. *Journal of Occupational and Environmental Medicine*, 47(9), 958–966. DOI: <https://doi.org/10.1097/01.jom.0000177219.75677.17>
- Aronsson, G., Gustafsson, K., & Dallner, M. (2000). Sick but yet at work. An empirical study of sickness presenteeism. *Journal of Epidemiology & Community Health*, 54(7), 502–509. DOI: <https://doi.org/10.1136/jech.54.7.502>

- Bergström, G., Bodin, L., Hagberg, J., Aronsson, G., & Josephson, M. (2009). Sickness Presenteeism Today, Sickness Absenteeism Tomorrow? A Prospective Study on Sickness Presenteeism and Future Sickness Absenteeism. *Journal of Occupational & Environmental Medicine*, 51(6), 629–638. DOI: <https://doi.org/10.1097/JOM.0b013e3181a8281b>
- Bockerman, P., & Laukkanen, E. (2010). What makes you work while you are sick? Evidence from a survey of workers. *The European Journal of Public Health*, 20(1), 43–46. DOI: <https://doi.org/10.1093/eurpub/ckp076>
- Brborović, H., & Brborović, O. (2017). Patient safety culture shapes presenteeism and absenteeism: a cross-sectional study among Croatian healthcare workers. *Archives of Industrial Hygiene and Toxicology*, 68(3), 185–189. DOI: <https://doi.org/10.1515/aiht-2017-68-2957>
- Brborović, H., Brborović, O., Brumen, V., Pavleković, G., & Mustajbegović, J. (2014). Are nurse presenteeism and patient safety culture associated: a cross-sectional study. *Archives of Industrial Hygiene and Toxicology*, 65(2), 149–156. DOI: <https://doi.org/10.2478/10004-1254-65-2014-2462>
- Brborović, H., Brborović, O., & Mustajbegović, J. (2016). Looking for the Possible Association Between Stress, Presenteeism and Absenteeism Among Croatian Nurses: A Cross-Sectional Study. *Iranian Journal of Psychiatry and Behavioral Sciences, In Press*(In Press). DOI: <https://doi.org/10.17795/ijpbs-4587>
- Breaugh, J. A. (1985). The Measurement of Work Autonomy. *Human Relations*, 38(6), 551–570. DOI: <https://doi.org/10.1177/001872678503800604>
- Caverley, N., Barton Cunningham, J., & MacGregor, J. N. (2007). Sickness presenteeism, sickness absenteeism, and health following restructuring in a public service organization. In *Journal of Management Studies* (Vol. 44, Issue 2, pp. 304–319). DOI: <https://doi.org/10.1111/j.1467-6486.2007.00690.x>
- Cho, Y.-S., Park, J. B., Lee, K.-J., Min, K.-B., & Baek, C.-I. (2016). The association between Korean workers' presenteeism and psychosocial factors within workplaces. *Annals of Occupational and Environmental Medicine*, 28(1), 41. DOI: <https://doi.org/10.1186/s40557-016-0124-1>
- Demerouti, E., Le Blanc, P. M., Bakker, A. B., Schaufeli, W. B., & Hox, J. (2009). Present but sick: a three-wave study on job demands, presenteeism and burnout. *Career Development International*, 14(1), 50–68. DOI: <https://doi.org/10.1108/13620430910933574>
- Eurofund. (2024). European Working Conditions Telephone Survey, 2021. In *UK Data Service. SN: 8098: Vol. 3rd Edition*. UK Data Service. SN: 9026.
- Gerich, J. (2022). Home-Based Telework and Presenteeism. *Journal of Occupational & Environmental Medicine*, 64(3), 243–249. DOI: <https://doi.org/10.1097/JOM.0000000000002414>
- Gosselin, E., Lemyre, L., & Corneil, W. (2013). Presenteeism and absenteeism: Differentiated understanding of related phenomena. *Journal of Occupational Health Psychology*, 18(1), 75–86. DOI: <https://doi.org/10.1037/a0030932>
- Goto, E., Ishikawa, H., Okuhara, T., Ueno, H., Okada, H., Fujino, Y., & Kiuchi, T. (2020). Presenteeism among workers: health-related factors, work-related factors and health literacy. *Occupational Medicine*, 70(8), 564–569. DOI: <https://doi.org/10.1093/occmed/kqaa168>
- Gustafsson, K., & Marklund, S. (2011). Consequences of sickness presence and sickness absence on health and work ability: A Swedish prospective cohort study. *International Journal of Occupational Medicine and Environmental Health*, 24(2). DOI: <https://doi.org/10.2478/s13382-011-0013-3>
- Gustafsson Sendén, M., Schenck-Gustafsson, K., & Fridner, A. (2016). Gender differences in Reasons for Sickness Presenteeism - a study among GPs in a Swedish health care organization. *Annals of Occupational and Environmental Medicine*, 28(1), 50. DOI: <https://doi.org/10.1186/s40557-016-0136-x>
- Hale, T., Angrist, N., Goldszmidt, R., Kira, B., Petherick, A., Phillips, T., Webster, S., Cameron-Blake, E., Hallas, L., Majumdar, S., & Tatlow, H. (2021). A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker). *Nature Human Behaviour*, 5(4), 529–538. DOI: <https://doi.org/10.1038/s41562-021-01079-8>
- Hansen, C. D., & Andersen, J. H. (2008). Going ill to work – What personal circumstances, attitudes and work-related factors are associated with sickness presenteeism? *Social Science & Medicine*, 67(6), 956–964. DOI: <https://doi.org/10.1016/j.socscimed.2008.05.022>
- Hobfoll, S. E. (2001). The Influence of Culture, Community, and the Nested-Self in the Stress Process: Advancing Conservation of Resources Theory. *Applied Psychology*, 50(3), 337–421. DOI: <https://doi.org/10.1111/1464-0597.00062>
- Ishimaru, T., & Fujino, Y. (2021). Association between work style and presenteeism in the Japanese service sector. *Journal of Occupational Health*, 63(1). DOI: <https://doi.org/10.1002/1348-9585.12211>
- Janssens, H., Clays, E., de Clercq, B., de Bacquer, D., Casini, A., Kittel, F., & Braeckman, L. (2015). Association between psychosocial characteristics of work and presenteeism: A cross-sectional study. *International Journal of Occupational Medicine and Environmental Health*, 29(2), 331–344. DOI: <https://doi.org/10.13075/ijomeh.1896.00588>
- Johns, G. (2010). Presenteeism in the workplace: A review and research agenda. *Journal of Organizational Behavior*, 31(4), 519–542. DOI: <https://doi.org/10.1002/job.630>

- Karanika-Murray, M., & Biron, C. (2020). The health-performance framework of presenteeism: Towards understanding an adaptive behaviour. *Human Relations*, 73(2), 242–261. DOI: <https://doi.org/10.1177/0018726719827081>
- Kinman, G., & Grant, C. (2021). Presenteeism during the COVID-19 pandemic: risks and solutions. *Occupational Medicine*, 71(6–7), 243–244. DOI: <https://doi.org/10.1093/occmed/kqaa193>
- Lalić, H., & Hromin, M. (2012). Presenteeism towards absenteeism: manual work versus sedentary work, private versus governmental--a Croatian review. *Collegium Antropologicum*, 36(1), 111–116.
- Leineweber, C., Westerlund, H., Hagberg, J., Svedberg, P., Luukkala, M., & Alexanderson, K. (2011). Sickness Presenteeism Among Swedish Police Officers. *Journal of Occupational Rehabilitation*, 21(1), 17–22. DOI: <https://doi.org/10.1007/s10926-010-9249-1>
- Lohaus, D., & Habermann, W. (2018). Präsentismus. In *Präsentismus*. Springer Berlin Heidelberg. DOI: <https://doi.org/10.1007/978-3-662-55701-3>
- Lu, L., & Cooper, C. L. (2022). Sickness Presenteeism as a Link between Long Working Hours and Employees' Outcomes: Intrinsic and Extrinsic Motivators as Resources. *International Journal of Environmental Research and Public Health*, 19(4), 2179. DOI: <https://doi.org/10.3390/ijerph19042179>
- Margetić, B., Peraica, T., Stojanović, K., & Ivanec, D. (2021). Predictors of emotional distress during the COVID-19 pandemic; a Croatian study. *Personality and Individual Differences*, 175, 110691. DOI: <https://doi.org/10.1016/j.paid.2021.110691>
- Miraglia, M., & Johns, G. (2016). Going to work ill: A meta-analysis of the correlates of presenteeism and a dual-path model. *Journal of Occupational Health Psychology*, 21(3), 261–283. DOI: <https://doi.org/10.1037/ocp0000015>
- Nordenmark, M., Hagqvist, E., & Vinberg, S. (2019). Sickness Presenteeism among the Self-employed and Employed in Northwestern Europe—The Importance of Time Demands. *Safety and Health at Work*, 10(2), 224–228. DOI: <https://doi.org/10.1016/j.shaw.2019.01.003>
- Patel, C., Biron, M., Cooper, S. C., & Budhwar, P. S. (2023). Sick and working: Current challenges and emerging directions for future presenteeism research. *Journal of Organizational Behavior*, 44(6), 839–852. DOI: <https://doi.org/10.1002/job.2727>
- Preisendörfer, P. (2010). Präsentismus. Prävalenz und Bestimmungsfaktoren unterlassener Krankmeldungen bei der Arbeit. *German Journal of Research in Human Resource Management*, 24(4), 401–408.
- Robertson, I., Leach, D., Doerner, N., & Smeed, M. (2012). Poor Health but Not Absent. *Journal of Occupational & Environmental Medicine*, 54(11), 1344–1349. DOI: <https://doi.org/10.1097/JOM.0b013e31825dff4b>
- Ruhle, S. A., Breitsohl, H., Aboagye, E., Baba, V., Biron, C., Correia Leal, C., Dietz, C., Ferreira, A. I., Gerich, J., Johns, G., Karanika-Murray, M., Lohaus, D., Løkke, A., Lopes, S. L., Martinez, L. F., Miraglia, M., Muschalla, B., Poethke, U., Sarwat, N., ... Yang, T. (2020). "To work, or not to work, that is the question" – Recent trends and avenues for research on presenteeism. *European Journal of Work and Organizational Psychology*, 29(3), 344–363. DOI: <https://doi.org/10.1080/1359432X.2019.1704734>
- Skagen, K., & Collins, A. M. (2016). The consequences of sickness presenteeism on health and wellbeing over time: A systematic review. *Social Science & Medicine*, 161, 169–177. DOI: <https://doi.org/10.1016/j.socscimed.2016.06.005>
- Steidelmüller, C., Meyer, S.-C., & Müller, G. (2020). Home-Based Telework and Presenteeism Across Europe. *Journal of Occupational & Environmental Medicine*, 62(12), 998–1005. DOI: <https://doi.org/10.1097/JOM.0000000000001992>

Z delom povezani dejavniki, ki so vplivali na prezentizem na Hrvaškem med COVID-19: Empirični pristop z uporabo logistične regresije

Izvleček

Članek analizira z delom povezane dejavnike, ki vplivajo na pojav prezentizma na Hrvaškem v času pandemije COVID-19. Glavni cilj je preučiti povezavo med ključnimi spremenljivkami in razširjenostjo prezentizma med zaposlenimi na Hrvaškem. V študiji je bila uporabljena logistična regresijska analiza za preučitev podatkov iz evropske telefonske raziskave o delovnih pogojih (EWCTS) iz leta 2021, ki je zajemala vzorec 491 zaposlenih iz Hrvaške. V študiji so bili raziskani dejavniki, povezani z delom, kot so delovne zahteve, delovni čas, nadzorne odgovornosti, delo na daljavo in sodelovanje s sodelavci. Analiza upošteva tudi demografske kontrolne spremenljivke, vključno s starostjo, spolom in stopnjo izobrazbe. Ugotovitve kažejo, da obstaja pomembna povezava med dejavniki stresa pri delu in prezentizmom. Zaposleni, ki jim primanjkuje dobrega sodelovanja s sodelavci, so bolj nagnjeni k prisotnosti na delovnem mestu, tudi ko se ne počutijo dobro. Ugotovljeno je bilo tudi, da je starost pomemben dejavnik. Študija kaže, da z delom povezani dejavniki vplivajo na prezentizem na Hrvaškem. Da bi podjetja ublažila negativne učinke prezentizma, bi morala sprejeti strategije za izboljšanje delovnih pogojev in spodbujanje ugodnega delovnega vzdušja. Rezultati ponujajo dragocene perspektive za prihodnje raziskave in praktične strategije za zmanjšanje prezentizma in izboljšanje dobrega počutja zaposlenih.

Ključne besede: prezentizem, COVID-19, delo, Hrvaška