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GENDER DIFFERENCES IN SELF-RATED HEALTH AND SICKNESS ABSENCE COSTS: DETERMINANTS AND ECONOMIC IMPACTS

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Highlights
- Men with better self-perceived health take sick leave less frequently.
- Women report poorer self-rated health and higher sickness absence than men.
- Self-rated health determines sickness absence among European workers.
- Work environment factors influence sickness absence and its cost.

Abstract
Objectives: The present study sought to investigate the relationship between self-rated health, work environment and sickness absence. **Material and Methods:** The analysis was based on a fixed effects model (FEM). The analysis used data from Eurostat and the sixth and seventh waves of the European Working Conditions Surveys (EWCS) and European Working Conditions Telephone Survey (EWCTS). The study covered the period from 2015 to 2023. It included individuals aged 16–64 years across 24 European countries. **Results:** The findings have confirmed a statistically significant association between self-perceived health status and sickness absence across genders, indicating that individuals with a more favorable perception of their health were less likely to take sick leave. The analysis also confirmed the validity of creating gender-specific models. However, a statistically significant relationship between employee sickness absence costs and work-environment factors has not been confirmed across all variables. **Conclusions:** The study highlights the importance of self-rated health as a determinant of sickness absence and recommends further research in this area, taking into account factors related to gender, type of illness, and other socio-demographic factors, in order to improve employee health management strategies and reduce sick leave. The authors suggest that incorporating self-rated health into preventive programs and policy recommendations may help minimize sickness absence costs. Int J Occup Med Environ Health. 2026;39(5)

Key words:
sickness absence, self-rated health, work environment, econometric modelling, gender inequalities, European perspective

INTRODUCTION

Employee health and sickness absence are critical concerns in contemporary work environments [1]. An individual's health status undeniably influences absenteeism behavior, a complex phenomenon that reflects work incapacity due to an employee's medical condition or injury [2]. Understanding the determinants of self-rated health (SRH) and its relationship to sickness absenteeism is essential for enhancing both work productivity and employee well-being. Amid increasing attention to workplace health, research has demonstrated that health perceptions and the frequency of sick leave can vary significantly by

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gender. This study investigates the interrelated factors that influence SRH and sickness absenteeism costs, emphasizing gender-specific patterns across European countries. The disparities in health perceptions and consequent absenteeism rates between men and women often arise from complex interactions among biological, social, and occupational factors [3]. Gender roles, work-related stressors, and job demands shape health assessments and work engagement. For instance, women frequently report poorer health and higher sickness absence, despite objective health indicators being similar or even superior to those of men [4,5]. Understanding these differences is crucial for identifying the unique challenges faced by different genders and for tailoring gender-specific interventions accordingly. Furthermore, the economic implications of sick leave are substantial, impacting not only individual productivity and income but also leading to increased costs for employers and the economy as a whole.

The extensive variation in the determinants of employee absenteeism behavior has naturally led to the development of various model solutions [6], among which the Nicholson model [7] was one of the earliest. In this model, Nicholson delineated motivational factors, which are influenced by both contextual and event-related variables. He examined motivational factors because he assumed that the natural behavior for employees is to come to work. In response to this model, Steers and Rodes [8] proposed a framework that delineated 3 categories of factors: organizational practices, absenteeism culture, and employee attitudes, values, and goals Johns [9], in contrast, expanded Nicholson's model to incorporate the concept of presenteeism, or attending work while ill.

However, Nielsen et al. [10] presented a conceptually simpler model, pointing out that absences are not seen as a simple reflection of a person's health or illness, but as a form of behavior that reflects both health and broader life circumstances. They thus distinguish the factors of health, self-perceived health, and well-being as a separate group of factors apart from work and non-work factors [11,12]. For this reason, their model served as the starting point for this study. As presented in the Nielsen model, SRH influences absenteeism decisions. It is a crucial, internationally validated, and reliable global measure of both illness and mortality [13–15] and has received increasing attention in the discussion on absenteeism behavior [1].

Self-rated health is a concise, readily administered measure of general health status. In the majority of studies, it is assessed through a single question: "In general, how do you rate your own state of health?" with response options comprising "very good," "good," "fair," "bad," and "very bad" [3]. Studies examining the impact or relationship between employees' sickness absenteeism and their health (understood as health status or SRH) are typically conducted from perspectives such as occupational groups [13], residents of individual countries [17], or specific diseases [18].

Although there is a substantial body of research on sickness absence and SRH, significant research gaps remain in understanding how subjective perceptions of health, in combination with the work environment, influence the patterns of sickness absenteeism costs among employees of different genders. Previous studies have typically focused on national contexts, specific occupational groups, or treated SRH as a uniform predictor of absenteeism, without distinguishing its varied effects or situating it within broader economic and organizational frameworks. Thus, by examining the underlying determinants and relationships between gender, SRH, and the costs of sickness absence, this article fills a research gap. By linking absenteeism costs to workplace factors and SRH, this study also advances the authors' understanding of this area. By incorporating this expanded perspective of health perceptions in the workplace, it can provide valuable insights for shaping policies that promote equitable work environments, recognizing and accounting for these differences. Furthermore, it suggests that addressing gender

differences in SRH and the costs of sick leave is both a matter of social justice and crucial for increasing productivity and the sustainable development of organizations. Consequently, the following specific research questions (RQ) were formulated:

– RQ1. Does SRH influence employee sickness absence costs?
– RQ2. How does the influence of environmental factors/work conditions shape employee sickness absence costs?

Thus, the study proposes the hypothesis that there is an inverse relationship between SRH and sickness absenteeism costs attributed to illness.

MATERIAL AND METHODS

The analysis was based on statistical data of working people aged 16–64 years obtained from Statistical Office of the European Union (Eurostat) and European Foundation for the Improvement of Living and Working Conditions (Eurofound) – sixth and seventh waves of the European Working Conditions Surveys (EWCS). Thus, no ethical committee approval was required, as the study is based exclusively on publicly available, aggregated secondary data. The research was conducted on 24 countries: Austria, Belgium, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

The study was divided into 2 stages. In the first stage, the cost of employee sickness absenteeism was calculated, which was then used as the dependent variable in a panel econometric model during the second stage of the study. The cost of sickness absenteeism was defined as the total cost of working days lost due to illness or disability and calculated based on the cost-of-illness method [19]. The human capital approach (HCA), which utilizes gross domestic product (GDP) per working person as a measure of production loss volume, was used to determine the cost of sickness absence. The use of productivity measures to estimate sickness absence costs considers diminishing marginal labor productivity. In line with the position presented by the European Commission for the EU-15 countries [20], an adjustment relating to the decline in labor productivity ($\beta = 0.65$) was incorporated. This approach corresponds to the labor share parameter used in the Cobb-Douglas production function [4]. Disregarding it would result in an overestimation of indirect costs [5]. The following formula is used to calculate the cost of absenteeism:

$$ABS_COST = \frac{GDP_{wp}}{N_{workdays}} \times \beta \quad (1)$$

$$GDP_{wp} = \frac{GDP_{year}}{N_{empl}} \quad (2)$$

where:

ABS_COST – cost of sickness absenteeism,

GDP_{wp} – GDP per working person,

$N_{workdays}$ – the number of working days per year,

N_{empl} – the number of working-age employees.

The dataset on the cost of absenteeism for women and men will be available upon request.

The research objectives outlined in the study, along with the research questions and hypothesis, were addressed using a fixed effects regression model for the period spanning 2015–2023. The use of such modeling was dictated by the solutions used in the literature [6–8]. The starting point for selecting variables for the modeling was Nielsen's sickness absence model. Table 1 presents the definitions of all variables [10,26]. The estimated sickness absence costs (ABS_COST) were used as the dependent variable in the regression models. The SRH was represented in the dataset by the self-perceived health (SPH) variables (SPH_GOOD

Table 1. Description of variables used in the study based on statistical data of working people aged 16–64 years obtained from Statistical Office of the European Union (Eurostat) and European Foundation for the Improvement of Living and Working Conditions (Eurofound), 2015–2023

Variable	Abbreviation	Description	Data source
Self-perceived health			
good or very good	SPH_GOOD	self-perceived health by sex, age and labor status rated as good or very good	Eurostat
bad or very bad	SPH_BAD	self-perceived health by sex, age and labor status rated as bad or very bad	Eurostat
Decision influence	INF_DEC	employed persons being able to influence decisions that affect their work by sex and age	Eurofound – EWCS 2015, EWCTS 2021
Weekly hours worked (M)	HRS_WRK	average usual weekly hours worked in the main job by professional status, full-time/part-time employment and economic activity (NACE Rev. 2) (2008–2026)	Eurofound – EWCS 2015, EWCTS 2021
Job satisfaction	JOB_SATISF	subjective job satisfaction by sex, age, educational attainment and domain	Eurostat
Financial satisfaction	FIN_SATISF	financial satisfaction by sex, age, educational attainment and domain	Eurostat
Weekend work	WRK_WKND	work on weekends by professional status and occupation (managers; professionals, technicians and associate professionals; clerical support workers; service and sales workers; skilled agricultural, forestry, and fishery workers; craft and related trades workers; plant and machine operators and assemblers; elementary occupations; armed forces)	Eurofound – EWCS2015, EWCTS 2021
Absenteeism cost	ABS_COST	cost of absenteeism due to absence from work (illness or disability)	own calculation based on Eurostat data

EWCS – European Working Conditions Surveys; EWCTS – European Working Conditions Telephone Survey; NACE Rev. 2 – Statistical Classification of Economic Activities in the European Community, Revision 2 (Nomenclature statistique des activités économiques dans la Communauté européenne).
The study included data from 24 European countries: Austria, Belgium, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

and SPH_BAD). This is a measure frequently used in epidemiological studies to assess the health status of a population [9]. It plays an increasingly important role in clinical and screening studies, providing a general picture of how various aspects of physical and psychosocial health are perceived, in accordance with the WHO's definition of health [10]. Moreover, the working-conditions variables obtained from Eurofound, namely influence over decision-making (INF_DEC), weekly working hours (HRS_WRK), and working during weekends (WRK_WKND), were available only for the EWCS 2015 and European Working Conditions Telephone Survey (EWCTS) 2021 survey waves. To construct an annual panel dataset for the period covered by the analysis, a carry-forward procedure was applied. Values from the 2015 wave were carried forward to the subsequent years until the next available survey wave, while values from the 2021 wave were carried forward for the remaining years of the panel. Consequently, changes in these variables reflect differences between available survey waves rather than fully observed annual changes.

Based on the panel sample, which comprises 24 countries and 9 observations over time (2015–2023), a preliminary pooled panel type estimation was conducted [11,12]. The analysis was conducted separately according to gender [13–15]. Preliminary research was carried out while maintaining stationary variables [16]. The stationarity of the variables was checked with the Levin, Lin and Chu (LLC) test [17,18]. The stationarity results are available upon request. Variables that proved to be non-stationary were transformed using first differences (INF_DEC). After an initial analysis of panel tests, an appropriate estimation procedure was developed. The main idea behind

Table 2. Diagnostic tests for panel data model verification in models 1 and 2 based on statistical data of working people aged 16–64 years obtained from Statistical Office of the European Union (Eurostat) and European Foundation for the Improvement of Living and Working Conditions (Eurofound), 2015–2023

Hypothesis	Model 1 (females)	Model 2 (males)
H0: the OLS model, H1: the FE model	$F(21, 94) = 132.381$ with $p = 2.07 \times 10^{-6}$	$F(22, 110) = 65.338$ with $p = 6.12 \times 10^{-53}$
H0: the OLS model, H1: the RE model (Breusch-Pagan test)	$LM = 201.645$ with $p = 9.14 \times 10^{-46}$	$LM = 176.841$ with $p = 2.37 \times 10^{-40}$
H0: the RE model, H1: the FE model (Hausman test)	$H = 44.416$ with $p = 6.11 \times 10^{-8}$	$H = 34.676$ with $p = 4.98 \times 10^{-6}$

FE – fixed effects model; OLS – ordinary least squares; RE – random effects model.
Source: own elaboration using gretl (Gnu Regression, Econometrics and Time-series Library).
The study included data from 24 European countries: Austria, Belgium, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

the study was to determine whether SRH status, together with working conditions, shape employee's sickness absence costs. Accordingly, the initial analysis tested models separately for women and men, which differed in their approach to the SRH variable (SPH_GOOD and SPH_BAD). Currently, the model specifications are symmetrical, which was the main premise of the modeling and subsequent comparisons between the genders:

$$ABS_{it(women)} = \alpha_i + \beta_1 INF_DEC_{it} + \beta_2 HRS_WRK_{it} + \beta_3 SPH_BAD_{it} + \beta_4 JOB_SATISF_{it} + \beta_5 FINAN_SATISF_{it} + \beta_6 WRK_WKND_{it} + \varepsilon_{it} \quad (3)$$

$$ABS_{it(men)} = \alpha_i + \beta_1 INF_DEC_{it} + \beta_2 HRS_WRK_{it} + \beta_3 SPH_BAD_{it} + \beta_4 JOB_SATISF_{it} + \beta_5 FINAN_SATISF_{it} + \beta_6 WRK_WKND_{it} + \varepsilon_{it} \quad (4)$$

where:
ABS – sickness absenteeism,
α_i – the fixed effect for the i-th country,
$\beta_1 \ldots \beta_6$ – structural parameters of the model,
ε – composite error term,
i – observation,
t – time.

The final selection of variables that influence the cost of employee sickness absence was determined using the variance inflation factor, partial correlation coefficients, Student's t-tests, R^2, statistics used to compare econometric models – Akaike information criterion (AIC) and Hannan-Quinn criterion (HQC). To ensure the reliability of statistical inference, robust heteroskedasticity and autocorrelation consistent (HAC) standard errors were used, which correct for any detected heteroscedasticity and autocorrelation in the random component. The study was conducted in 2 variants based on gender.

Following the verification of relevant tests (Table 2), a fixed effects model (FEM) was used for model estimation. The modeling was performed, assuming standard errors clustered by units to preserve the appropriate properties of the estimator. Since studies on the factors that determine the costs of absenteeism indicate significant differences in the approaches of women and men, the authors decided to conduct their study by gender. This approach is consistent with the literature on the subject [13–15].

RESULTS

The descriptive statistics indicate differences between women and men in the analyzed variables (Table 3). Men report slightly higher levels of good SRH (SPH_GOOD), while women more frequently declare poor health, although both indicators show considerable variability, especially for SPH_BAD [19,20]. Men also exhibit higher average values in terms of INF_DEC and HRS_WRK.

Table 3. Descriptive statistics of the analyzed variables, based on statistical data of working people aged 16–64 years obtained from Statistical Office of the European Union (Eurostat) and European Foundation for the Improvement of Living and Working Conditions (Eurofound), 2015–2023

Variable	M		Me		Coefficient of variation		Min.		Max	
	female	male	female	male	female	male	female	male	female	male
Self-perceived health										
good or very good	78.35	80.64	79.5	81.65	0.11	0.09	53.40	61.60	93.90	94.50
bad or very bad	1.21	0.99	0.70	0.70	1.47	1.17	0	0	17.00	8.20
Decision influence	46.28	50.24	45.85	50.8	0.17	0.16	29.80	30.40	61.80	67.00
Weekly hours worked (M)	35.70	39.99	36.75	40.2	0.10	0.04	24.70	35.10	39.80	44.40
Job satisfaction	7.31	7.32	7.30	7.30	0.05	0.05	6.20	6.10	8.10	8.10
Financial satisfaction	6.31	6.41	6.30	6.50	0.13	0.13	4.40	4.30	7.70	7.70
Weekend work	21.26	21.77	20.15	19.5	0.38	0.40	4.10	3.70	38.20	48.20
Absenteeism cost (PPP)	2.28×10^{10}	1.88×10^{10}	1.22×10^{10}	7.99×10^{9}	1.53	1.99	2.44×10^{8}	8.40×10^{8}	1.91×10^{11}	2.47×10^{11}

PPP – purchasing power parity.
The study included data from 24 European countries: Austria, Belgium, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

Job satisfaction (JOB_SATISF) and financial satisfaction (FIN_SATISF) are very similar for both genders, with low variability, suggesting a relatively uniform perception in this area. In contrast, WRK_WKND shows high variability, particularly among men, indicating more diverse experiences related to non-standard working hours. The most pronounced differences are observed in ABS_COST, which are higher and significantly more varied among women, reflecting considerable heterogeneity across countries. Overall, the results suggest that while JOB_SATISF and FIN_SATISF from work are similar for both genders, differences emerge in perceptions of SRH, HRS_WRK, and the ABS_COST.

The modeling was carried out in 2 gender-specific variants. Table 4 presents the results of the estimation of the models' parameters. In both models, all the signs of the estimated parameters are the same and consistent with economic theory. The relatively high R^2 values obtained for least squares dummy variables (LSDV) (0.966 and 0.982) result from the inclusion of country fixed effects, rather than overfitting of the structural model. The results of the analysis indicate clear gender differences in the factors determining the ABS_COST. In the case of men, HRS_WRK and WRK_WKND have a negative impact on sickness ABS_COST, while a poor SRH increases these costs. In contrast, INF_DEC, JOB_SATISF and FIN_SATISF do not show a statistically significant effect.

For women, the results indicate that WRK_WKND significantly reduces ABS_COST, while poor SRH increases these costs. Other variables, including INF_DEC, JOB_SATISF and FIN_SATISF, remain statistically insignificant.

In summary, the results suggest that factors related to the work environment and self-perceived health affect absenteeism differently for men and women, which also confirms the validity of using gender-specific analysis.

DISCUSSION

The study represents a much broader and more occupationally differentiated perspective than those conducted on Canadian [21], German [22], Swedish [23], or Brazilian [24] populations. The concept of SRH encompasses a wide spectrum of health-related aspects, including physical, psycho-

Table 4. Estimation of the females and males models' parameters results based on statistical data of working people aged 16–64 years obtained from Statistical Office of the European Union (Eurostat) and European Foundation for the Improvement of Living and Working Conditions (Eurofound), 2015–2023

Variable	Model 1 (females)[a]				Model 2 (males)[b]			
	coefficient	SD	t-Student	p	coefficient	SD	t-Student	p
Constant	32.6245	13.7250	2.377	0.0270**	57.0640	18.2688	3.997	0.0006***
Decision influence	0.000839992	0.00349710	0.2402	0.8125	–0.0042	0.00716	–0.5892	0.5617
Weekly hours worked (M)	0.0550626	2.80617	0.01962	0.9845	–8.1699	4.29329	–1.907	0.0696*
Self-perceived health (bad or very bad)	0.0856292	0.0355497	2.409	0.0253**	0.04896	0.0217980	2.246	0.0351**
Job satisfaction	–4.24188	3.04383	–1.394	0.1780	–1.91671	2.52371	–0.7595	0.4556
Financial satisfaction	–0.226489	0.685957	–0.3302	0.7445	57.0640	18.2688	3.997	0.0006***
Weekend work	–0.275583	0.0931126	–2.960	0.0075***	–0.0042	0.00716	–0.5892	0.5617

Source: own elaboration using gretl (Gnu Regression, Econometrics and Time-series Library).
The study included data from 24 European countries: Austria, Belgium, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.
* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.
[a] Fixed effects model, time series length = 8, dependent variable (Y): L_ABS_COST, robust standard errors (robust heteroskedasticity and autocorrelation consistent [HAC]); least squares dummy variable (LSDV) $R^2 = 0.9822$, Akaike's information criterion (AIC) = 3.020814, Hannan-Quinn criterion (HQC) = 34.91020, joint test on named regressors: $F(6, 21) = 7.19758$, $p = 0.00130701$.
[b] Fixed effects model, time series length = 8, dependent variable (Y): l_ABS_COST, robust standard errors (robust HAC); LSDV $R^2 = 0.965784$, AIC = 55.22165, HQC = 89.80392, joint test on named regressors: $F(6, 22) = 9.82531$, $p = 2.62 \times 10^{-5}$.

logical, and social dimensions, as evaluated by individuals themselves [25]. This comprehensive self-assessment provides a holistic representation of individuals' SRH. Such perceptions significantly influence both health-related behaviors and attitudes [26]. Gender plays a crucial role in determining daily behaviors, actions, expectations, and experiences related to health and care, including dietary habits, perceived stress levels, and physical activity, thereby influencing susceptibility to various diseases [27]. Consequently, subjective health assessments have been demonstrated to differ between males and females. Self-rated health is a key determinant of health behaviors, which subsequently form the foundation for health maintenance and can positively contribute to morbidity, which is further influenced by genetic factors and gender [28]. Thus, the findings confirmed a statistically significant relationship between SRH and employee absenteeism costs for both men and women (RQ1), which aligns with the findings of Caverley et al. [21] and Coledam [24]. Specifically, Coledam confirmed that a single question on SRH serves as an effective tool for monitoring and preventing absenteeism among teachers [24].

The current study showed a statistically significant correlation between SRH (using the SPH_BAD variable) and sickness absence cost in both models. Women are more likely to rate their health as bad or very bad, which is consistent with previous research [19,29,30]. Additionally, as conducted by Baum et al. [31] and Barford et al. [32] women live longer than men, despite paradoxically reporting more illness than men. Furthermore, in a study related to self-perceived health from the perspective of the COVID-19 lockdown period, Garcia-Campanario et al. [33] also confirmed that men perceived their overall health better than women. This was confirmed by Hildt-Ciupinska [27], who found that most men in Poland rated their health well and declared that they took care of it.

In conclusion, the model estimates indicate that lower SRH ratings correlate with higher sickness absence costs. This empirically supports the hypothesis that there is a relation-

ship between SRH and workplace absence costs attributed to illness, a finding congruent with Aronsson et al. [34] and Caverley et al. [21]. Moreover, SRH status is considered the most feasible, comprehensive, and informative measure of health status in population studies [24,35].

In models 1 and 2, one of the examined connections was between ABS_COST and FIN_SATISF. The literature suggests a negative relationship – higher higher financial satisfaction should lead to less frequent sick leave. Thus, the results are consistent with economic rationale; however, this variable was statistically insignificant in both models. The negative relationship between FIN_SATISF and ABS_COST is also consistent with Herzberg's 2-factor theory, in which remuneration and job security are treated as hygiene factors, the lack of which can lead to dissatisfaction that may contribute to employees taking sick leave [36]. Furthermore, research on presenteeism and paid sick leave suggests that financial conditions shape workers' decisions about whether to stay at work while ill or take sickness absence [37]. Moreover, the size of the salary is inherently linked to responsibility, which can lead to burnout, chronic stress, and, consequently, more frequent absenteeism [38].

Regarding the modeling results for JOB_SATISF, this variable was statistically insignificant in both models. However, the results of the joint test on named regressors indicate that this variable is significant when considered in the context of the entire set of analyzed variables. This suggests that general measures of satisfaction may be less important than more specific job characteristics or health-related factors in explaining differences in sickness absence costs; this conclusion is also supported by previous empirical studies [39,40]. Nevertheless, the sign of the estimated model parameter aligns with previous studies [41–43], suggesting an inverse relationship between job satisfaction and sickness absenteeism [36].

Furthermore, the results indicate that having INF_DEC in the workplace is statistically insignificant in both models. However, analyzing the signs of the estimates the authors observe that having INF_DEC decreases ABS_COST among men but increases among women. In the case of men, this suggests that greater autonomy at work may reduce sickness absence costs, potentially by increasing control over work and motivation. Men with significant decision-making power tend to exhibit presenteeism, as societal norms value "reliability" and discourage taking time off, leading to less frequent sick leave usage. Lidwall and Marklund [44] and Casini [45] came to similar conclusions, while Laaksonen et al. [46] highlighted that the nature of an individual's occupation and workplace plays a crucial role in shaping gender differences in the duration of sick leave. These findings are also consistent with those of Aronsson et al. [47], who confirmed that a high level of control over one's work is the most significant factor in promoting health and reducing sick leave. Conversely, Väänänen et al. [48] stated that the negative impact of work on the family predicts a higher frequency of sick leave among women compared to men, which is consistent with the results obtained in the authors' model for women. The positive relationship observed among women may also be linked to greater responsibilities and psychological stress, which could lead to more frequent use of sick leave and, consequently, rising costs. Therefore, these findings should be interpreted with due caution as the variable proved to be statistically insignificant.

Further variables that were statistically significant were HRS_WRK in the case of men, and WRK_WKND in the case of both genders. The results indicate that as as weekly working hours increase, the number of absences due to illness decreases – and, consequently, so do the associated costs. According to Miraglia and Johns [49], this suggests that high job demands may reduce absences due to illness [60]. Highly motivated employees come to work even when ill; thus, presenteeism replaces sick leave, which Grøtting and Øvergård [50] describe as a paradoxical result. Moreover, individuals who opt for non-stan-

dard schedules, such as weekends, differ from the general employee population and are often more committed to their work. The literature indicates that poor organizational commitment generates higher absenteeism [51,52]. Finally, working on weekends may be related to the shift-based nature of the work. Grøtting and Øvergård [50] showed that individual adjustment of shift schedules had a direct negative impact on the number of absences [63]. All in all, it is worth noting that, given that the p-value for the HRS_WRK variable was 0.0696, the results should be interpreted with great caution in terms of statistical significance and their impact on the ABS_COST.

CONCLUSIONS

This study provides evidence of an association between SRH, individual factors determining work environment, and absenteeism costs among European workers. It contributes to the literature on absenteeism costs by providing a comprehensive analysis of the relationships between SRH, selected aspects of work environment, and sickness absence costs in a multinational European context. A key finding is that the relationship between SRH and sickness absence cost is gender-specific. Specifically, SRH significantly influences the pattern of productivity loss caused by employee sick leave among men, while among women, productivity loss is more strongly associated with perceptions of poor health. This indicates that SRH should be treated as a heterogeneous factor that determines behaviors related to sick leave.

Furthermore, by combining subjective health assessments with selected characteristics of the work environment and expressing absenteeism in terms of costs, this analysis links individual perceptions of health to broader economic impacts. This approach enables a more comprehensive understanding of absenteeism by situating individual health perceptions within the context of macroeconomic productivity. It also highlights the potential of SRH as an indicator that can be used not only to assess employee well-being, but also the economic burden associated with the health of the workforce.

The results also indicate that certain work-related factors affect women and men differently. From a practical standpoint, the study's findings support the use of self-reported health as a simple "early warning" indicator to monitor employee well-being and identify groups at risk of increased absenteeism, which could lead to lost productivity. The results also suggest that preventive measures and workplace policies should consider gender differences in the factors that determine the cost of absenteeism.

Further research in this area will focus on developing policy guidelines for incorporating health self-assessments into preventive programs, rehabilitation interventions, and work programs to minimize sick leave. Moreover, longitudinal studies could elucidate how temporal variations in SRH influence absenteeism patterns.

Limitations of the study include is the use of aggregated country-level (macro) data rather than individual microdata, which limits the ability to draw causal conclusions. Thus, future research should address this limitation by using micro-level data. Moreover, for some variables, their significance level – which falls between 0.05 and 0.1 – requires caution when interpreting their impact on the dependent variable. Another limitation of the estimation is the use of fixed-effects models, which, while accounting for time-invariant differences between countries, do not account for potential reverse causality between absenteeism costs at the national level and the reported SRH indicator. To investigate this, longitudinal microdata would be needed. This will therefore be the subject of future research. Another limitation concerns the temporal structure of the working-conditions variables derived from Eurofound data. Since INF_DEC, HRS_WRK, and WRK_WKND were available only for 2 survey waves and annual values were obtained using a carry-forward procedure, the within-country variation used by the fixed-effects estimator is limited. Although

this approach avoids creating artificial linear trends between survey waves, the estimated effects of these variables should be interpreted with caution, as they do not capture fully observed year-to-year changes. Furthermore, although the scope of the analysis covered the COVID-19 pandemic, no dummy variables relating to that period were included. However, in future research, the author plans to analyze the extent of the pandemic's potential impact on patterns of sick leave among employees. Despite these limitations, the present study provides valuable insights into the complex relationship between subjective health perceptions and the costs of absenteeism in the workplace.

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