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Health-Related Absence from Work Among Blue- and White-Collar Workers: The Role of Physical and Sensory Limitations and Social Support

¹*İkram Yusuf Yarbaşı**, *Mehmet Emirhan Kula***, *Nagehan Öner****, *Murat Taş*****, *Gülşen Hatice Gedik******

*Assoc. Prof. Dr., Erzurum Technical University, Faculty of Economics and Administrative Sciences, ikram.yarbasi@erzurum.edu.tr **

*Assoc. Prof. Dr., Erzurum Technical University, Faculty of Economics and Administrative Sciences, emirhan.kula@erzurum.edu.tr ***

*Independent Researcher, nagehanoner82@gmail.com ****

*Prof. Dr. San Antonio College, mtas@alamo.edu *****

*PhD Student, Erzurum Technical University, gulsen.gedik11@erzurum.edu.tr ******

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Abstract: This study examines health-related work absences in Türkiye by focusing on physical and sensory limitations and social support. Using TURKSTAT 2022 Turkey Health Survey data, the sample was limited to 9,069 employed individuals aged 15 and over. The blue-collar/white-collar distinction was established through ISCO-08 main occupational groups; physical and sensory limitations and social support were calculated as composite indices. Since the occurrence and duration of health-related absences may follow distinct dynamics, a two-stage hurdle model was adopted: binary logistic regression in the first stage and zero-truncated negative binomial regression in the second. Findings show that physical limitations and chronic disease burden significantly increase both the probability of absence and the number of absence days. Sensory limitations have a weaker and specification-dependent association, whereas social support is not statistically significant in the main models. No evidence indicates that the association between limitations and absenteeism differs between blue-collar and white-collar workers. The findings suggest that workplace health protection practices should not be limited to physically demanding jobs but should prioritize chronic disease management and support for physical functioning.

Keywords: *Blue-collar/white-collar, physical limitation, sensory limitation, social support, absenteeism, disability model*

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Introduction

Today's increasingly difficult living conditions and rapidly changing working conditions bring about several negative consequences for employees in both their social and professional lives. While changing conditions and rapidly developing technology offer significant opportunities to individuals and organizations, they can also strain employees' physical and functional capacities, leading to various health problems. Difficult working conditions can increase both the workload and the level of physical fatigue among employees; furthermore, health-related limitations such as work accidents, chronic diseases, mobility restrictions, and difficulties with vision and hearing can directly affect working life.

All these undesirable situations can lead employees to neglect their work and be absent from work over time. This situation can increase the need for human resources, which is of great importance to today's organizations, and cause businesses to suffer in both the short and long term. Indeed, absenteeism is considered an almost universal problem due to its direct costs and potentially devastating short- and long-term effects (Martocchio & Harrison, 1993). Estimates reported in the absenteeism literature also show that absence from work creates substantial organizational costs in different national contexts (Harrison & Martocchio, 1998; Ramsey et al., 2008, p. 97).

Preventing absences due to health reasons largely depends on accurately identifying the physical limitations (such as mobility, transportation, accessibility, and building access difficulties) and sensory limitations (such as visual, auditory, speech, and communication difficulties) faced by employees, and developing social support mechanisms to facilitate coping with these limitations. The World Health Organization's International Classification of Functioning, Disability and Health (ICF) framework emphasizes that an individual's health status should be assessed not only by the disease itself, but also by the functional limitations it causes and environmental/social factors (World Health Organization [WHO], 2001). Based on this framework, the concept of social support is crucial for employees to cope with physical and sensory limitations, thereby minimizing their absence from work. International literature indicates that sensory limitations, such as visual and hearing impairments, reduce workforce participation and increase absenteeism due to health reasons (Svinndal et al., 2018; Shakarchi et al., 2020; Brucker et al., 2016). Similarly, functional limitations due to chronic diseases have also been shown to increase absenteeism (Vuong et al., 2015). However, whether these relationships differ between blue-collar and white-collar workers, and the role of social support in these relationships, particularly in the Turkish context, has been addressed in a limited number of studies. This study aims to examine the physical and sensory limitations that employees may experience, the health-related absences from work that these limitations may cause, and the role of social support and collar type in these relationships. The study begins with a literature review to establish the conceptual framework and research hypotheses, followed by a section on data, methods, and findings based on the TÜİK 2022 Turkey Health Survey. It is believed that this study will contribute to the national literature by simultaneously addressing both collar differentiation and the two-stage (probability and duration) nature of health-related absences from work.

Literature Review

Blue-Collar and White-Collar Distinction

To briefly touch upon the collar distinction that is the subject of the research analysis, blue-collar workers were considered in the past as the party that actually performed the work from the productivity-oriented perspective of business management; with the structural transformations that business management has undergone over time, the concept of white-collar has begun to come to the forefront (Eriş et al., 2020, p. 260). While blue-collar workers are employed in production-oriented businesses and in physically demanding jobs in industry, white-collar workers are found in the service sector and in desk jobs requiring mental strength

(Somuncu, 2020, p. 178). While blue-collar workers in jobs requiring technical and physical skills significantly support the production force, white-collar workers contribute more to the economy through knowledge-based jobs that require expertise. For both blue-collar and white-collar workers, sustaining physical, functional, and social well-being is crucial for the long-term success of businesses.

In this study, the blue-collar-white-collar distinction is objectively established based on the International Standard Classification of Occupations (ISCO-08) rather than a subjective classification (International Labor Organization [ILO], 2012). Accordingly, managers, professionals, technicians, office workers, and service and sales workers are classified as white-collar. In contrast, skilled agricultural workers, artisans, plant and machinery operators, and those working in unskilled jobs are classified as blue-collar. Details regarding this coding are presented in the Methodology section.

Health-Related Limitations and Absence from Work

According to the World Health Organization's (WHO) definition of health, "health is not merely the absence of disease and disability, but a state of complete physical, mental, and social well-being" (Callahan, 1973, p. 77). Based on this broad definition, the International Classification of Functioning, Disability and Health (ICF) framework addresses an individual's functionality in terms of bodily functions/structures, activities, and participation dimensions, defining limitation not only as a consequence of the disease itself but also as a phenomenon arising from interaction with the environment (WHO, 2001). In this study, two types of limitations are distinguished within this framework: physical limitations related to mobility and access, and sensory limitations related to vision, hearing, and communication.

Physical Limitation

Physical limitation refers to the difficulties an individual experiences in daily and occupational activities such as walking, climbing stairs, carrying or holding things, leaving the house, using transportation, and accessing buildings. Accidents, injuries, and physically unsuitable working environments that employees may encounter are significant factors that disrupt employees' ability to continue working. Indeed, Leigh (1991) concluded that work attendance decreases in environments where occupational safety cannot be ensured. Similarly, Vuong et al. (2015) showed that functional limitations from seven common chronic diseases significantly increased absenteeism and income loss among full-time employees. Bertera (1993) demonstrated that health promotion programs implemented in a large-scale workplace positively affected excused absenteeism after two years of observation, thus showing that interventions aimed at maintaining physical health can have positive results on attendance. In the national literature, Bayram (2019) also found that unhealthy and unsafe work environments reduce employee productivity and increase absenteeism and job dissatisfaction rates, while healthy and safe work environments positively affect physical, social, and mental health.

Sensory Limitation

Sensory limitation encompasses difficulties experienced by individuals in their visual, auditory, speech, and communication functions. Although it has been less addressed in the literature on working life than physical limitation, international studies indicate that sensory limitation can be a significant determinant of labor force participation and employment retention. In their study of working-age individuals with hearing loss in Norway, Svinndal et al. (2018) found that the degree of hearing loss was associated with low job competence and fatigue, and that sick leave was particularly linked to fatigue levels. In their study conducted on older adults in the USA, Shakarchi et al. (2020) reported that disability-related cessation of employment was higher among individuals with hearing loss and dual sensory loss. Brucker et al. (2016), in their research on working-age disabled individuals in the USA, found that sensory and functional limitations reduce the likelihood of employment, and this effect becomes even more pronounced when there is an additional limitation in daily living activities. These findings

show that sensory limitations may have a different, but not insignificant, association with the processes of entering and continuing employment than physical limitations.

Social Support

Providing the necessary support and assistance to qualified employees with a certain level of work potential when exposed to difficult conditions has become a necessity of working life. In the literature review, the concept of social support, which refers to the assistance obtained from the environment, is examined in terms of dimensions such as emotional, material, and informational support (Ardahan, 2006). Based on these classifications, the concept of social support can be defined more comprehensively as the emotional, informational, social, and instrumental help and support that a person in a difficult situation or under stress receives from their environment (Duru, 2008, p. 17). Two main models have been proposed regarding the association of social support with health and well-being: the buffering model and the direct effect model. In the first model, social support is only beneficial under high-stress conditions; that is, individuals with a high perceived level of social support are less affected by stressful events in terms of health. In the second model, social support is beneficial regardless of the individual's life stress and has positive associations with physical and mental health (Drageset, 2021, p. 138). In both cases, the social support factor can have positive implications for employees. Yıldırım (1997) stated that an individual's family, family environment, friends, colleagues, neighbors, and the community in which they live constitute the individual's sources of social support; and that the social support system is a powerful factor in solving, preventing, and coping with difficult situations related to an individual's social and psychological problems (pp. 81-82). In a more recent meta-analysis, Yeo et al. (2025), drawing on findings from 604 studies, found that perceived types of social support (informational, instrumental, emotional, and combinations thereof) were associated with better mental health, better job performance, better physical health, and lower risk-taking behaviors. Okorley and Amoah-Mensah (2026) also found that co-worker support was associated with employees' wellbeing and that employees' wellbeing played an intermediary role in the relationship between co-worker support and innovative work behaviour. This finding is important for the present study because it supports the idea that support-based relational resources may operate through employee wellbeing, although the social support indicators used here refer to general social support rather than workplace-specific supervisor or co-worker support. These findings suggest that resilience to physical and sensory limitations faced by workers, regardless of collar color, can be enhanced through social support.

Inter-Conceptual Relationships and Research Hypotheses

Studies examining the relationship between social support and absenteeism generally show that social support reduces absenteeism. Saijo et al. (2017), in their research on public employees in Japan, determined that social support from colleagues and managers had a reducing effect on absenteeism. Ramsey et al. (2008), in their research examining absenteeism from a socio-psychological perspective in Barbados, concluded that absenteeism rates increased when employees felt they were not treated fairly or did not receive sufficient support in the workplace. Kayapalı Yıldırım et al. (2025) similarly showed that absenteeism is negatively associated with organizational communication and organizational identification, indicating that relational and communicative resources within organizations may contribute to reducing employees' withdrawal from work. Similarly, Özbezek et al. (2021), in their research on healthcare workers, found a significant relationship between perceived social support and burnout levels, while Iraz et al. (2021) found a positive relationship between perceived social support and psychological well-being. Another important determinant of work attendance is job commitment. Blau (1985), in a study involving 82 nurses, found that job commitment was significantly negatively correlated with excused personal absenteeism; Hackett (1989), through meta-analysis, revealed a significant but weak relationship between job satisfaction and

absenteeism. Koçak and Yıldız (2017) classified absenteeism into three groups: individual reasons (health problems, age, family responsibilities), workplace-related reasons (stress, workload, working conditions), and social reasons (cultural norms, family structure). In a study conducted in Turkey, Şenel (2014) examined the reasons for absenteeism and its costs among blue-collar workers in the automotive sector; they determined that the cost of absenteeism over one year was 76,000 TL. Based on these findings in the literature, physical and sensory limitations, the focus of this study, may lead employees to be absent from work for health reasons, and social support may mitigate this negative association. Furthermore, whether these relationships differ between blue-collar and white-collar workers remains insufficiently clarified in recent literature. In light of this information, considering that absence from work due to health reasons has two different processes, whether the individual is absent from work (extensive margin) and the number of days of absence from work among those who are absent (intensive margin), the hypotheses of the research were formulated as follows:

Extensive Margin: Probability of Work Absence

H₁: As the level of physical limitation increases, the probability of absence from work due to health reasons increases.

H₂: As the level of sensory limitation increases, the probability of absence from work due to health reasons increases.

H₃: As the level of social support increases, the probability of absence from work due to health reasons decreases.

H₄: The effect of physical limitation on the probability of absence from work differs between white-collar and blue-collar workers.

H₅: The effect of sensory limitation on the likelihood of absenteeism differs between white-collar and blue-collar workers.

H₆: The effect of social support on the likelihood of absenteeism differs between white-collar and blue-collar workers.

H₇: The likelihood of absenteeism due to health reasons increases as the burden of chronic disease increases.

Intensive Margin: Number of Absentee Days

H₈: Worsening of physical health indicators (increased physical limitations and chronic disease burden) increases the number of days absent from work due to health reasons.

Methodology

Data Set and Sample

In line with the purpose of the research, the analysis sample was limited to actively working individuals aged 15 and over. In this context, based on the employment status variable, individuals working for wages, salaries, or daily wages, employers, self-employed individuals, and unpaid family workers were included in the analysis sample. Thus, the aim was to examine individuals who are in the labor market and at risk of being absent from work due to health problems.

In the study, the distinction between blue-collar and white-collar workers was created through the ISCO-08 occupational code, which corresponds to the job performed by the individual and their duties and responsibilities in the workplace. First, the main occupational group was determined by taking the first digit of the ISCO-08 code; employees in ISCO-08 main groups 1, 2, 3, 4, and 5 were defined as white-collar, and employees in main groups 6, 7, 8, and 9 were defined as blue-collar. In this classification, managers, professional workers, technicians and auxiliary professionals, office workers, and service and sales workers were considered white-collar. In contrast, skilled agricultural, forestry, and fisheries workers, artisans, plant and machinery operators, assemblers, and those working in unskilled jobs were included in the blue-collar category. The inclusion of the main group 5, which includes service and sales workers, in the white-collar category was preferred because this group's labor process

is mostly related to elements such as customer relations, communication skills, and service delivery; therefore, the service interaction and communicative labor dimension is more prominent than purely physically labor-intensive jobs. The main group 0, representing armed forces personnel, was excluded from the sample because it is not directly comparable to blue-collar and white-collar workers in the civilian labor market with respect to occupational risk, institutional structure, and employment regime.

In the study, three main indices were developed to explain employees' absences from work due to health problems: physical limitations, sensory limitations, and social support. The primary goal in creating these indices is to incorporate individuals' limitations across different areas and their level of social support into the model using holistic indicators rather than individual variables. This reduces multicollinearity from numerous related variables in the same model and aims to represent the physical, sensory, and social support dimensions in a more interpretable way. Observations with at least four valid variables in the physical limitation index, at least three in the sensory limitation index, and at least two in the social support index were included in the analysis. All indices were standardized on a 0-1 scale; higher values in the physical and sensory limitation indices indicate a higher level of limitation, while higher values in the social support index indicate a higher level of social support. In this respect, the coefficients of the indices have been made directly interpretable in the econometric model: positive coefficients for the physical and sensory limitation indices indicate that an increase in the relevant level of limitation increases the probability of absenteeism. In contrast, negative coefficients on the social support index indicate that higher levels of social support reduce the probability of absenteeism. The variables used, and their coding methods, are summarized in Table 1.

Table 1. Variables and Coding Methods Used in the Study

Variable	Definition and coding
<i>Dependent Variables</i>	
Health-related work absence	Binary variable indicating whether the individual took time off work for health reasons in the past 12 months (1 = yes, 0 = no).
Number of days absent	Number of days of work absence for health reasons (count variable); defined only for those with any absence in the intensive-margin model.
<i>Key Explanatory Variables</i>	
Physical limitation index	Mean, rescaled to the 0-1 range, of seven items reflecting difficulties in bodily mobility, carrying, and spatial access (walking 500 meters, climbing 12 steps, carrying/holding, leaving home, using transport vehicles, building access) (higher value = greater limitation; also used in binary and three-level forms).
Sensory limitation index	Mean, rescaled to the 0-1 range, of five items reflecting difficulties in seeing, hearing (in quiet/noisy settings), speaking, and communicating in one's native language (higher value = greater sensory limitation; also used in binary and three-level forms).
Social support index	Mean, rescaled to the 0-1 range, of the number of close persons who can be trusted, concern shown by those around, and neighbor support, coded in the same direction (higher value = greater social support).
Collar type	Binary variable based on the ISCO-08 major occupational group: 0 = white collar (major groups 1-5), 1 = blue collar

	(major groups 6-9). Armed forces personnel (major group 0) were excluded from the sample.
Health Control Variables	
Number of chronic conditions	Count variable indicating how many chronic disease groups (asthma, hypertension, diabetes, heart disease, etc.) the individual has (0-12).
Self-rated general health	1 = good/very good; 2 = fair; 3 = poor/very poor.
Long-standing illness/health problem	Indicates whether the individual has an illness or health problem that has lasted, or is expected to last, six months or longer (yes/no).
Injury/occupational accident	Indicates whether the individual had an injury or occupational accident in the past 12 months (yes/no).
Demographic, Socioeconomic, and Labor Control Variables	
Sex, age group, education level, marital status, income level	Respectively male/female; ages 15-34, 35-54, 55+; low/secondary-high school/higher education; never married/married/divorced/widowed; low/middle/high income group.
Employment status, job permanence, working arrangement	Respectively wage-salary-casual worker/employer-self-employed/unpaid family worker; permanent/temporary-fixed-term; full-time/part-time.
Sector	Three-category variable based on the two-digit NACE Rev.2 main activity code: agriculture, industry, services.

Note: The physical and sensory limitation indices range from 0 (no limitation) to 1 (highest limitation); the social support index ranges from 0 to 1, with higher values indicating greater social support.

Research Model

Figure 1 shows the study's conceptual model within a two-stage hurdle structure. Physical limitations, sensory limitations, social support, and chronic disease burden affect the likelihood of work absence (extensive margin) in the first stage. At the same time, collar type is included in the model as a moderating variable for these relationships. If an employee has a health-related work absence, physical health indicators affect the number of days of absence (intensive margin) in the second stage.

Method

Modeling Approach

Absence from work due to health reasons involves two processes: first, whether the individual is absent from work, and second, if so, how many days the absence lasts. Because these two processes have different dynamics and the number-of-days variable is largely concentrated at zero, a two-stage hurdle model was adopted in the study. The hurdle model allows for the modeling of the process that produces zero observations by separating it from the process that produces positive observations (Mullahy, 1986). The general form of the model is as follows:

$$P(Y_i = 0) = f_1(0) \quad (1)$$

$$P(Y_i = y) = [1 - f_1(0)] \cdot f_2(y) / [1 - f_2(0)], \quad y = 1, 2, \dots \quad (2)$$

In Equations 1 and 2, f_1 represents the process of work absence (extensive margin), and f_2 represents the process of the number of days of absence (intensive margin). This structure allows the first stage to model the probability of work absence across the entire sample. In contrast, the second stage models the number of days of absence only for those who were absent.

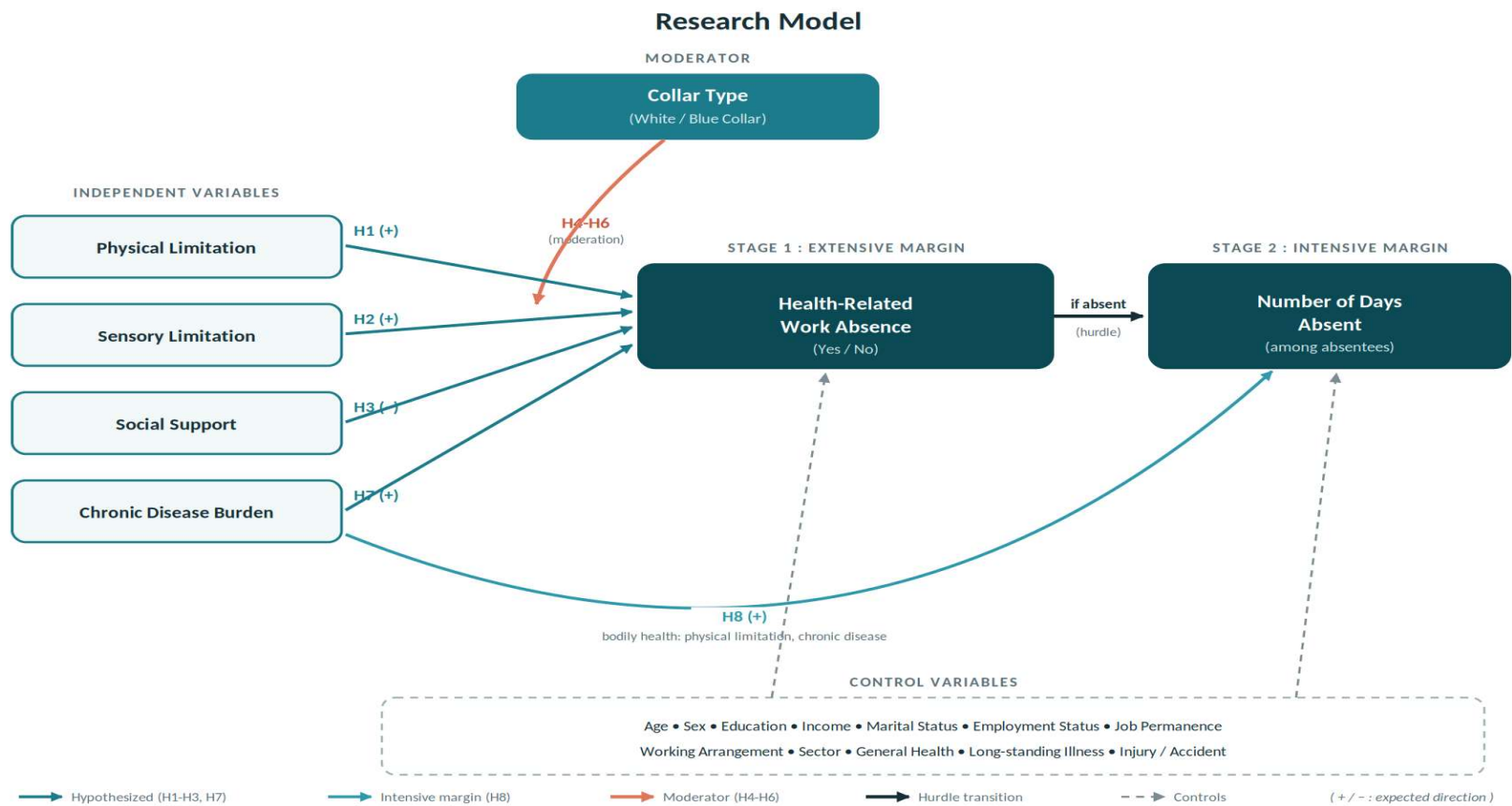


Figure 1. Research model

(Source: Authors' own elaboration)

Extensive Margin: Binary Logistic Regression

In the first stage, the dependent variable is a binary indicator of whether the individual was absent from work for health reasons in the last 12 months. The probability of health-related work absence was modeled with binary logistic regression (Hosmer et al., 2013). The logit link function is:

$$\text{logit}(pi) = \ln[pi / (1 - pi)] = Zi \quad (3)$$

The linear predictor is defined as follows, with respect to the variables used in the study:

$$Zi = \beta_0 + \beta_1 FK_i + \beta_2 DK_i + \beta_3 SD_i + \beta_4 MY_i + \beta_5 KH_i + \beta_6 (FK_i \cdot MY_i) + \beta_7 (DK_i \cdot MY_i) + \beta_8 (SD_i \cdot MY_i) + \sum \gamma_k X_{ki} \quad (4)$$

Here, FK, DK, and SD represent indicators of physical limitations, sensory limitations, and social support, respectively. MY represents the blue-collar variable (reference category: white-collar), KH represents the burden of chronic disease, and X represents the vector of control variables. Due to the base effect, FK and DK are binary (yes/no) in the main specification, while SD is continuous. Interaction coefficients β_6 , β_7 , and β_8 test hypotheses H4-H6; the β_5 coefficient tests hypothesis H7. Probability is obtained using the inverse link function:

$$pi = P(Y_i = 1 | x_i) = e^{Zi} / (1 + e^{Zi}) = 1 / (1 + e^{-Zi}) \quad (5)$$

To ensure the interpretability of the coefficients, mean marginal effects were calculated for each explanatory variable (Long & Freese, 2014):

$$AME_j = (1/n) \sum_i \partial pi / \partial x_{ij} \quad (6)$$

Intensive Margin: Negative Binomial Distribution with Zero Truncation

In the second stage, the dependent variable is the number of days of absence from work due to health reasons, limited to those who were absent from work. The number of days is a count variable. Because its variance significantly exceeds its mean (overdispersion), a negative binomial distribution is used instead of a Poisson distribution (Cameron & Trivedi, 2013). In the negative binomial model, the conditional mean and variance are defined as follows:

$$E(Y_i | x_i) = \mu_i = \exp(x_i' \delta), \quad \text{Var}(Y_i | x_i) = \mu_i + \alpha \mu_i^2 \quad (7)$$

Here, μ represents the conditional mean and α the dispersion parameter; $\alpha > 0$ indicates overdispersion and justifies preferring the negative binomial to the Poisson. Since the second stage is defined only on positive values, the distribution is truncated at zero, and the number of days is modeled with a zero-truncated negative binomial:

$$P(Y_i = y | Y_i > 0) = P(Y_i = y) / [1 - P(Y_i = 0)], \quad y = 1, 2, \dots \quad (8)$$

Estimation and Diagnosis

All models were estimated using the maximum likelihood method with robust standard errors to account for heteroskedasticity. The overall significance of the model was assessed using the Wald chi-square test, the discriminatory power using the area under the ROC curve, and the fit using the Hosmer-Lemeshow goodness-of-fit test. The findings were interpreted relationally; causal inferences were avoided due to the cross-sectional and self-reported nature of the data.

Results and Discussion

This section first presents descriptive statistics for the analysis sample, followed by estimation results and their interpretation for the extensive margin (probability of work absence due to health reasons) and the intensive margin (number of absence days among those who were absent). All models were estimated with robust standard errors to account for heteroskedasticity.

Table 2. Descriptive Statistics for Variables (N = 9,069)

Variable	Statistics
Panel A. Dependent Variables	
Health-related work absence	No: 7,827 (86.3%); Yes: 1,242 (13.7%)
Number of days absent (full sample)	M = 3.19; SD = 18.55; Min-Max = 0-365
Number of days absent (absentees only)	M = 23.33; SD = 45.22; Min-Max = 1-365
Panel B. Key Explanatory Variables	
Physical limitation index	M = 0.016; SD = 0.053; Min-Max = 0-0.762
Physical limitation (binary)	Yes: 13.4%; No: 86.6%
Sensory limitation index	M = 0.025; SD = 0.055; Min-Max = 0-0.667
Sensory limitation (binary)	Yes: 24.8%; No: 75.2%
Social support index	M = 0.616; SD = 0.169; Min-Max = 0-1
Collar type	White collar: 60.5%; Blue collar: 39.5%
Panel C. Health Control Variables	
Number of chronic conditions	M = 0.925; SD = 1.46; Min-Max = 0-12
General health status	Good/very good: 74.7%; Fair: 22.7%; Poor/very poor: 2.6%
Long-standing illness	Yes: 42.8%; No: 57.2%
Injury/occupational accident	Yes: 2.0%; No: 98.0%
Panel D. Demographic, Socioeconomic, and Labor Variables	
Sex	Male: 69.8%; Female: 30.2%
Age group	15-34: 36.7%; 35-54: 54.1%; 55+: 9.2%
Education level	Low: 40.6%; Secondary/high school: 25.2%; Higher education: 34.2%
Marital status	Never married: 22.5%; Married: 71.9%; Divorced: 4.9%; Widowed: 0.7%
Income level	Low: 6.0%; Middle: 24.2%; High: 69.8%
Employment status	Wage/salary/casual: 81.8%; Employer/self- employed: 15.0%; Unpaid family worker: 3.2%
Job permanence	Permanent: 91.7%; Temporary/fixed-term: 8.3%
Working arrangement	Full-time: 95.1%; Part-time: 4.9%
Sector	Agriculture: 9.8%; Industry: 30.1%; Services: 60.2%

Note: For continuous variables, the mean and standard deviation (SD) are reported; for categorical variables, the percentage of observations is reported. The physical and sensory limitation indices and the social support index range from 0 to 1.

Table 2 shows the descriptive statistics for the analysis sample (N = 9,069). 13.7% of the sample (1,242 individuals) reported taking a leave of absence due to health reasons in the past twelve months. The average number of days of absence was 23.3, with a significantly right-skewed distribution. A key point regarding the main explanatory variables is the concentration of limitation indicators at the base: only 13.4% of employees reported any physical limitation, and 24.8% reported any sensory limitation, resulting in relatively low mean index scores. This pattern is consistent with the expected “healthy worker selection” in an actively working sample and justifies the binary (yes/no) treatment of the limitation variables. The social support index, however, is relatively high and has a more symmetrical distribution (mean 0.616). 60.5% of the sample consisted of white-collar workers and 39.5% of blue-collar workers.

Extensive Margin: Probability of Work Absence

Table 3 shows the results of the binary logistic regression on the probability of work absence due to health reasons, using the binary (yes/no) specification that best reflects the observed variability of the limitation indicators. Sensitivity analyses performed with continuous index and three-level (mild/moderate-severe) alternative specifications yielded results largely consistent with the baseline findings. The model as a whole was statistically significant ($p < 0.001$). The model's discriminatory power is acceptable (area under the ROC curve = 0.722), and the Hosmer-Lemeshow test indicates that the model is consistent with the observed values ($p = 0.137$).

Table 3. Extensive Margin: Probability of Work Absence Due to Health Reasons (Binary Logistic Regression)

Variable	β (Robust SE)
Limitations and Social Support	
Physical limitation: Yes (ref: no)	0.439*** (0.122)
Sensory limitation: Yes (ref: no)	0.173* (0.097)
Social support index (continuous)	0.169 (0.246)
Collar Interactions ($\times$ blue collar)	
Physical: Yes $\times$ Blue collar	0.060 (0.178)
Sensory: Yes $\times$ Blue collar	0.144 (0.154)
Social support $\times$ Blue collar	0.519 (0.411)
Collar Main Effect	
Blue collar (main effect, ref: white)	-0.242 (0.271)
Control Variables	
Female (ref: male)	-0.127* (0.075)
Age 35-54 (ref: 15-34)	-0.414*** (0.078)
Age 55 and over	-0.891*** (0.148)
Secondary/high school (ref: low education)	0.243*** (0.089)
Higher education	0.367*** (0.094)
Married (ref: never married)	0.092 (0.089)
Divorced	0.372** (0.160)
Widowed	0.130 (0.435)
Middle income (ref: low income)	0.431** (0.187)
High income	0.753*** (0.181)
Employer/self-employed (ref: wage earner)	-0.427*** (0.105)
Unpaid family worker	-1.534*** (0.388)
Temporary/fixed-term job (ref: permanent)	-0.101 (0.147)
Part-time (ref: full-time)	-0.070 (0.186)
Industry (ref: agriculture)	0.541*** (0.169)
Services	0.365** (0.169)
General health: fair (ref: good/very good)	0.134 (0.089)
General health: poor/very poor	0.467** (0.192)
Long-standing illness: yes (ref: no)	0.407*** (0.093)
Number of chronic conditions	0.203*** (0.029)
History of injury/occupational accident (ref: no)	-2.321*** (0.182)
Constant	

Constant	-1.266*** (0.329)
Model Fit	
Number of observations (N)	9,069
Log-likelihood	-3,253.3
McFadden R ²	0.102
Area under the ROC curve (AUC)	0.722
Hosmer-Lemeshow p	0.137

*Note: The dependent variable is health-related work absence (1 = yes). Cells report logistic regression coefficients, with robust standard errors in parentheses. The exponentiated coefficient $\exp(\beta)$ gives the odds ratio. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.*

The findings indicate that factors determining the likelihood of work absence are generally health-related. Physical limitations significantly increase the probability, with an odds ratio of approximately 1.55 in those with limitations compared to those without ($p < 0.001$); this supports hypothesis H1. Each unit increase in chronic disease burden also significantly increases the probability (odds ratio ≈ 1.23 ; $p < 0.001$), supporting H7. In contrast, the effect of sensory limitations was only borderline significant ($p = 0.074$), and the effect of social support was not statistically significant in the main binary specification ($p = 0.490$). Therefore, H2 received weak and specification-dependent support in the extensive margin, and H3 was not supported. All three interaction terms related to collar type were found to be insignificant in all three specifications ($p = 0.736$ for physical, $p = 0.349$ for sensory, and $p = 0.207$ for social support); therefore, no findings supporting hypotheses H4, H5, and H6 were obtained. This result should be considered in conjunction with the limited power to detect interaction due to the relatively infrequent nature of the limitation in the sample; the finding should be interpreted not as definitive proof of the absence of moderation, but as indicating that there is no evidence of moderation with the available data. Among the control variables, advanced age reduces the probability, while higher education, higher income, and working in the industrial/service sector increase the probability. In addition, poor general health and long-term illness significantly increase the probability. The injury/occupational accident variable shows a statistically significant negative association with the probability of work absence; given its counterintuitive direction, this finding should be interpreted cautiously and may reflect coding, reporting, or sample-selection issues.

The mean marginal effects calculated to interpret the magnitudes of the coefficients on a probability scale are given in Table 4. In the continuous model, a one-unit increase (from 0 to 1) in the physical limitation index increases the probability of being absent from work by an average of 21.7 points; an increase of the same magnitude in the sensory limitation index increases the probability by 10.6 points. In the binary model, the probability of an employee with a physical limitation being absent from work is, on average, 5.5 percentage points higher than that of employees without a physical limitation. Each one-unit increase in the number of chronic diseases increases the probability by an average of 2.3 points. The social support marginal effect in the continuous-index sensitivity model is weakly positive ($dy/dx = 0.036$; $p = 0.084$), contrary to the expected negative direction; therefore, this result should not be interpreted as supporting H3.

Table 4. Average Marginal Effects (Extensive Margin)

Variable	dy/dx	Std. Error	p
Continuous Model (Indices)			
Physical limitation index	0.217***	(0.069)	0.002
Sensory limitation index	0.106*	(0.062)	0.087
Social support index	0.036*	(0.021)	0.084
Number of chronic conditions	0.023***	(0.003)	0.000

Binary Model (Discrete Effect: Yes/No)			
Physical limitation: Yes	0.055***	(0.014)	0.000
Sensory limitation: Yes	0.025***	(0.009)	0.004

*Note: dy/dx denotes the average change in the probability of work absence associated with a one-unit increase in the variable (a yes/no shift for binary variables). Continuous-model effects were computed by the delta method; binary-model discrete effects by a 200-replication bootstrap. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.*

Intensive Margin: Number of Days of Work Absence

In the second stage, the number of days was modeled only for employees who were absent from work ($n = 1,242$). The fact that the variance in the number of days significantly exceeded the mean (dispersion parameter $\alpha = 2.08$) led to the preference of the negative binomial distribution over the Poisson. Table 5 presents the results of the zero-truncated negative binomial model as incidence rate ratios (IRRs).

Table 5. Intensive Margin: Number of Days of Work Absence (Zero-Truncated Negative Binomial)

Variable	IRR	Std. Error	p
Physical limitation: Yes (ref: no)	1.463***	(0.171)	0.001
Sensory limitation: Yes (ref: no)	0.968	(0.090)	0.729
Social support index	1.115	(0.249)	0.626
Blue collar (ref: white)	1.018	(0.120)	0.877
Age 35-54 (ref: 15-34)	1.066	(0.096)	0.473
Age 55 and over	0.706*	(0.130)	0.058
Secondary/high school (ref: low)	0.938	(0.109)	0.581
Higher education	0.981	(0.126)	0.882
Middle income (ref: low)	0.466***	(0.114)	0.002
High income	0.365***	(0.089)	0.000
Industry (ref: agriculture)	0.654**	(0.131)	0.034
Services	0.883	(0.182)	0.546
General health: fair (ref: good)	1.289**	(0.133)	0.014
General health: poor/very poor	2.369***	(0.472)	0.000
Number of chronic conditions	1.083***	(0.030)	0.004
History of injury/occupational accident (ref: no)	0.674***	(0.101)	0.008
Model Fit			
Number of observations (absentees)	1,242		
Log-likelihood	-4,869.3		
Dispersion parameter (α)	2.084		
AIC	9,774.6		

*Note: The dependent variable is the number of days of health-related work absence; only absentees ($n = 1,242$) are considered. Cells report incidence rate ratios (IRR), with robust standard errors in parentheses. $IRR > 1$ indicates a longer duration. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.*

Findings regarding the intensive margin largely corroborate those for the extensive margin. Employees with physical limitations take approximately 46% more days off work compared to those without ($IRR = 1.46$; $p = 0.001$). Thus, physical limitations are significant in both margins, supporting hypothesis H8. Other physical health indicators that increase the number of days off are the number of chronic diseases ($IRR = 1.08$; $p = 0.004$) and worsening general health perception ($IRR = 1.29$ for fair; $IRR = 2.37$ for poor/very poor; $p < 0.001$). By contrast,

the injury/occupational accident variable shows a statistically significant negative association with duration (IRR = 0.674; $p = 0.008$), which is counterintuitive and should be interpreted cautiously. Sensory limitations ($p = 0.729$) and social support ($p = 0.626$) did not have a significant association with the number of days off; this is consistent with the limited role of these two dimensions in the intensive margin. Collar type is also insignificant in the intensive margin (IRR = 1.02; $p = 0.877$). Therefore, the pattern that occupational status does not shape the duration of absence persists. A notable finding among socioeconomic variables is that high income significantly reduces the number of days (IRR = 0.37; $p < 0.001$); this relationship should be interpreted with caution, as it may be explained by mechanisms such as type of work, short-term leave opportunities, or differences in self-reporting. Overall, the findings show that both the probability and duration of absence from work due to health reasons are primarily explained by physical health indicators (physical limitation, chronic disease burden, and deteriorating general health). Physical limitation is the most consistent predictor, showing significant results in both margins (H1 and H8 supported). Chronic disease burden is similarly effective in both processes (H7 supported). In contrast, sensory limitation (H2) showed only weak and specification-dependent support in the extensive margin and no support in the intensive margin, while social support (H3) was not statistically significant in the main models. Hypotheses (H4-H6) that the effect of limitations differs according to collar type were not supported in any specification. The fact that the impact of physical limitations is of similar magnitude for white-collar and blue-collar workers indicates that workplace health regulations should not be limited solely to physically demanding jobs.

Conclusion

This study, using data from the TURKSTAT 2022 Turkey Health Survey, examined the health-related absences of blue-collar and white-collar workers within the framework of physical limitations, sensory limitations, and social support, through a two-stage hurdle model.

The findings reveal that both the probability and duration of health-related absences are largely explained by physical health indicators. Workers with physical limitations are significantly more likely to be absent from work (H1 supported); among those who are absent, this group also remains away from work for significantly longer periods (H8 supported). This finding is consistent with Leigh (1991), which shows that attendance decreases in environments where occupational safety cannot be ensured, and Vuong et al. (2015), which shows that functional limitations increase absenteeism. Similarly, the fact that the burden of chronic disease is a significant predictor in both stages (H7 supported) underscores the importance of workplace health protection practices, as emphasized by Bertera (1993) and Bayram (2019). Tulan Tohumcu et al. (2026) further demonstrated that a mobile application-based nudging intervention may support chronic disease management among patients with Type 2 diabetes by improving health-related behavioural and metabolic outcomes. This supports the implication that workplace health policies should not only focus on accident prevention but also incorporate follow-up, self-monitoring, and behavioural support mechanisms for employees with chronic conditions.

The association of sensory limitation with absenteeism was weaker than that of physical limitation and was significant only in some extensive-margin specifications, while no association with the number of days was detected. This finding partially contradicts studies in the international literature that associate visual and hearing impairments with absenteeism (Svinndal et al., 2018; Shakarchi et al., 2020). Possible reasons for this difference include the “healthy worker selection” effect arising from a sample of actively working individuals; the fact that the TÜİK survey measures sensory limitation based on self-reported functional difficulties rather than clinical diagnoses; and the limited number of individuals with severe sensory limitation in the sample. At this point, it is thought that the impact of sensory limitations on working life may manifest as exclusion (a barrier to employment) during the

recruitment phase, and therefore this effect may appear more limited in a sample consisting of individuals already employed; indeed, Brucker et al. (2016) emphasize that the impact of sensory limitations is more pronounced during the employment-entry phase.

Contrary to expectations, the direct association of social support was not significant in the main models (H3 not supported). This result does not align with studies such as Saijo et al. (2017) and Ramsey et al. (2008), which show that social support reduces absenteeism. This difference can be explained by the fact that the social support measure used is general/family-based (number of trusted close people, environmental concern, neighborly help) and does not include workplace-specific support sources (such as manager and colleague support); indeed, Saijo et al. (2017) specifically showed that support from colleagues and managers reduced absenteeism. Tirrel et al. (2025) also emphasized that trust and deliberate connection-building practices are critical for maintaining effective work relations under flexible working arrangements. In this respect, the insignificant social support finding in the present study should not be interpreted as evidence that relational resources are unimportant, but rather as an indication that general social support and workplace-specific support should be measured separately. This finding points to the importance of addressing workplace-specific social support measures in future studies.

No supporting evidence was found for any of the hypotheses (H4-H6) regarding differences in the impact of limitations between blue-collar and white-collar workers. The fact that the impact of physical limitations was of similar magnitude in both collar groups suggests that workplace health protection arrangements should not be limited to physically demanding jobs; ergonomic and health-supporting practices are also important for white-collar workers in office- and service-based jobs. It should be emphasized that this result should be evaluated together with the statistical power limitation resulting from the relatively infrequent observation of limitations in the sample, and that moderation should not be definitively rejected. Since service and sales workers may occupy an intermediate position between manual and non-manual work, future studies may test the robustness of the findings by treating ISCO-08 major group 5 as a separate category.

The study has some limitations. The cross-sectional and self-reported nature of the data limits causal inference; the lack of workplace-specific social support measures and the limited number of individuals with sensory limitations in the sample may affect the generalizability of the findings. In addition, the counterintuitive negative association of the injury/occupational accident variable should be interpreted cautiously and examined in future studies with more detailed occupational accident measures. Future studies are recommended to utilize workplace-specific social support measures, longitudinal data, and clinically diagnosed indicators of sensory/auditory impairment, and to examine the effects of exclusion during the entry-into-employment phase separately from those during the continuation-of-employment phase.

In conclusion, this study reveals that absence from work due to health reasons in Türkiye is primarily explained by physical health indicators (physical limitation and chronic disease burden), whereas sensory limitation and social support play a limited role in this sample. The findings indicate that workplace health policies should be designed to encompass all employee groups, regardless of collar type, and that priority should be given to chronic disease management, occupational accident prevention, and support for physical functioning.

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