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Sick Leave and Its Determinants in Professional Soldiers of the Slovenian Armed Forces

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Aim To assess whether demographic characteristics, self-rated health status, coping behaviors, satisfaction with important interpersonal relationships, financial situation, and current overall quality of life are determinants of sick leave duration in professional soldiers of the Slovenian Armed Forces.

Methods In 2008, 448 military personnel on active duty in the Slovenian Armed Forces were invited to participate in the study and 390 returned the completed questionnaires (response rate 87%). The questionnaires used were the self-rated health scale, sick leave scale, life satisfaction scale, Folkman-Lazarus' Ways of Coping Questionnaire, and a demographic data questionnaire. To partition the variance across a wide variety of indicators of participants' experiences, ordinal modeling procedures were used.

Results A multivariate ordinal regression model, explaining 24% of sick leave variance, showed that the following variables significantly predicted longer sick leave duration: female sex (estimate, 1.185; 95% confidence interval [CI], 0.579-1.791), poorer self-rated health (estimate, 3.243; 95% CI, 1.755-4.731), lower satisfaction with relationships with coworkers (estimate, 1.333; 95% CI, 0.399-2.267), and lower education (estimate, 1.577; 95% CI, 0.717-2.436). The impact of age and coping mechanisms was not significant.

Conclusion Longer sick leave duration was found in women and respondents less satisfied with their relationships with coworkers, and these are the groups to which special attention should be awarded when planning supervision, work procedures, and gender equality policy of the Armed Forces. A good way of increasing the quality of interpersonal relationships at work would be to teach such skills in teaching programs for commanding officers.

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Self-rated health represents a person's comprehensive and subjective assessment of his or her health, which incorporates the subjective feeling of health together with biological, psychological, and socio-economic dimensions (1,2), any present illness, symptoms, and the functional status (3). The term is frequently used in population research and social epidemiology as an indicator of a typical health behavior of the individual (4,5). Self-rated health is associated with physical fitness (3) and predicts morbidity and mortality (6-11).

In middle-aged healthy individuals, self-rated health has several predictors: physical and psycho-social working conditions (12), economic situation, psychological status, and lifestyle (13). Among work-related factors the most important is stress, which has been shown to increase the likelihood of taking a sick leave (14-17). It has also been shown that the number of days of sick leave increased as self-reported health decreased (13,18). Sick leave duration has been found to have a negative correlation with self-rated health even over a period of 10 years (19).

In Sweden, long-term sick leave (>90 days) was taken mostly by women in the public sector, and it was caused by depression-related illness and work-related stress (20). However, the impact of job-related stress as a reason for disability remains unexplained. It is unclear whether this impairment is a result of prolonged stress exposure or a pre-existing susceptibility factor. In a study of white-collar workers' absenteeism, there was no association between employee's psychological distress, type of employee, and productivity (21). However, in blue-collar workers high psychological distress resulted in an 18% increase in absenteeism rates (21). A study of 54 264 full-time employees from different levels of the corporate hierarchy showed that elevated psychological distress was associated with increasing absenteeism (22).

Subjective health assessment is a valid health status indicator for middle-aged people (23) and can be used to study the relationship between stress, burnout, and organizational conditions at work. The validity of self-rated health can be confirmed by objective assessment methods, for example, by the number of visits to the physician, absenteeism from work, and mortality. In 2008, Erikksson analyzed the connection between sick leave and self-rated health in the Swedish population using the EQ-5D Questionnaire for Health Assessment (24).

In Slovenia, only one epidemiological study on self-rated health was conducted, and it studied the factors leading to poor health ratings (25). Only a few studies have assessed the effects of threats, fears, or various other psychological difficulties on subjective health, and these have shown that subjective health was influenced by perceived threat and stress, a source of which can also be a chronic illness (26).

In our previous study, we explored key psychological factors in the members of the Slovenian armed forces who reported poorer bio-psycho-social well-being and more burnout, and therefore had reduced working effectiveness and motivation (27). The present analysis specifically analyzed the predicting factors of absence from work due to illness in professional soldiers of the Slovenian Armed Forces.

METHODS

Participants

In the beginning of 2008, the professional Slovenian Armed Forces had 5908 members. We invited all soldiers billeted in barracks in the central part of Slovenia to participate in the study. A total of 448 soldiers voluntarily agreed to participate and 390 returned the completed questionnaires (87% response rate), 342 of whom (88%) were men. The study protocol was approved by the Ethics Commission of the Ministry of Health of Slovenia.

Instruments and measures

The instruments used in this study were the background questionnaire, self-rated health scale, and Folkman-Lazarus' Ways of Coping Questionnaire.

The background questionnaire created for this study included demographic data (age, sex, education, and years of service) (27). The self-rated health scale was used for rating respondents' past health using a self-administered questionnaire, separately for each year from 2005-2007, and also for assessing their current health in separate categories: mental and physical health, financial situation, and current life situation. The scale had 5 answers: 1 – excellent; 2 – good; 3 – medium; 4 – poor; and 5 – very poor.

As part of the self-rated health questionnaire, participants completed the Self-Rated Sick Leave Scale in 2008, with reference to 2007. In accordance with the traditional approaches (22), the respondents indicated how many days they had spent on sick leave due to illness in 2007. We believed that

the respondents would not be able to precisely recollect the information from more than a year ago and would tend to choose an average number. Therefore, we decided to use categories of health-related absenteeism rather than inquire about a specific number of days of sick-leave. These categories were: 1 – no sick leave (0 days); 2 – 1 to 5 days; 3 – 6 to 10 days; 4 – 11 to 30 days; 5 – 31 to 60 days; 6 – 61 to 90 days; 7 – over 90 days (long-term sick leave).

Since we used anonymous questionnaires to ensure confidentiality, it was not possible to track personal sick leave certificates. However, we tested possible discrepancies between our sample and the objective data on the number of days of sick leave in 2007 for the entire Armed Forces personnel. No significant differences were found between the objective and self-reported data ($M_{obj} = 7.31$, $M_{sub} = 6.01$, $t = -1.87$; $P = 0.062$).

The Folkman-Lazarus Ways of Coping Questionnaire (WCQ) (28) measures coping processes and strategies. Coping strategies include all cognitive and behavioral attempts to deal with a specific external or internal situation that is assessed by an individual as exhausting and as outmatching his or her strength. The questionnaire consists of 66 items describing stressful situations, and respondents are asked to describe to what extent they reacted to each situation using the following scale: 0 – not at all, 1 – weakly, 2 – strongly, 3 – very strongly. Not all items are scored. According to the authors, there are 8 main ways of coping with stress: confrontation, which is an aggressive effort to alter the situation, suggesting some degree of hostility and risk-taking; distancing, which is a cognitive effort to detach oneself and to minimize the significance of the situation; self-control, which is an effort to regulate one's feelings and actions; seeking social support, which is an effort to seek information, tangible support, and emotional support from others; accepting responsibility, which means acknowledging one's own role in the problem, with a concomitant theme of trying to put things right; escape-avoidance, which is wishful thinking and behavioral efforts to escape or avoid the problem; problem solving, which includes deliberate problem-focused efforts to alter the situation, coupled with an analytical approach to solving the problem; and positive reappraisal, which is an effort to create positive meaning by focusing on personal growth, which may also have a religious dimension. The scale has adequate construction validity and includes action-based as well as emotion-based coping strategies. Its moderate internal consistency reliability ranges from 0.56 to 0.85 for different subscales (28).

Statistical analysis

The mean values and frequencies of all questionnaire results were calculated. Since different items on the WCQ have different maximum values, weighted mean values were calculated for each coping strategy.

Statistical analyses were carried out using the SPSS statistical package, version 17.0 (SPSS Inc., Chicago, IL, USA). The χ^2 test was used to find possible sex differences, and correlation coefficients were calculated to find the nature of correlations between variables. A multivariate ordinal regression was performed to find the determinants of sick leave duration. Differences at the level of $P < 0.05$ were considered significant.

RESULTS

Sociodemographic characteristics

Of the 390 respondents, 342 (88%) were men, which is similar to the proportion of men in the entire Slovenian Armed Forces (86% men; P. Papler, personal communication, 2008). Men were slightly younger than women, but the difference was not significant (30.7 ± 7.7 vs 31.1 ± 7.02 years; $Z = -0.66$, $P = 0.510$). Respondents had the following educational levels: vocational school (21%), high school (62%), college (2%), and university or higher (15%); and the following ranks: 234 (60%) privates, 105 (27%) non-commissioned officers, and 51 (13%) officers. The proportions of respondents according to rank are similar to those in the entire Armed Forces (47% privates, 30% non-commissioned officers, and 23% officers; P. Papler, personal communication, 2008).

Most respondents rated their health as good or excellent (Table 1). Women rated their health slightly worse than men, but the difference was not significant ($\chi^2 = 7.33$; $P = 0.103$). The majority of respondents had had up to 10 days of sick leave in 2007. Women spent significantly more time on sick leave ($\chi^2 = 21.08$; $P = 0.001$).

Most respondents rated their economic standard of living as moderate and were satisfied with their overall quality of life; no sex differences were found for either economic standard ($\chi^2 = 4.43$, $P = 0.351$) or overall quality of life ($\chi^2 = 3.97$, $P = 0.410$). Respondents assigned the highest satisfaction ratings to their relationship with their parents and the lowest to their relationship with coworkers. No sex differences were found according to

TABLE 1. Self-rated health, self-rated sick leave duration, and satisfaction with important factors of life in a sample of 390 active-duty Slovenian Armed Forces soldiers

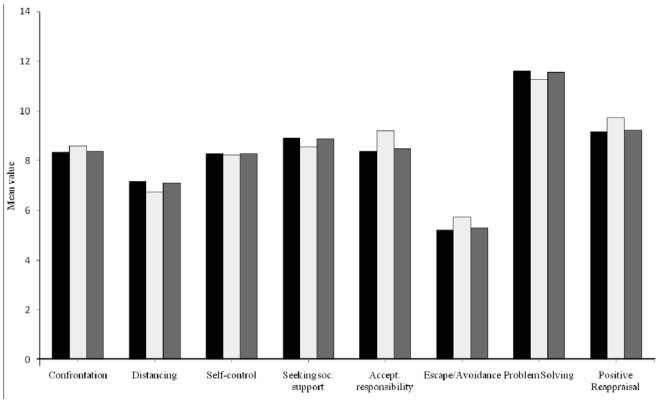
Self-rated number of days of sick leave:	No (%) of respondents		
	male	female	all
none	200 (60.4)	16 (34.0)	216 (57.1)
up to 5 d	75 (22.7)	11 (23.4)	86 (22.8)
up to 10 d	33 (10.0)	10 (21.3)	43 (11.4)
up to 30 d	18 (5.4)	6 (12.8)	24 (6.3)
up to 60 d	2 (0.6)	2 (4.3)	4 (1.1)
up to 90 d	3 (0.9)	2 (4.3)	5 (1.3)
over 90 d	0 (0.0)	0 (0.0)	0 (0.0)
Self-rated health:			
very poor	5 (1.5)	2 (4.3)	7 (1.8)
poor	12 (3.6)	2 (4.3)	14 (3.7)
medium	48 (14.2)	8 (17.4)	56 (14.6)
good	137 (40.6)	22 (47.8)	159 (41.5)
excellent	135 (40.1)	12 (26.2)	147 (38.4)
Satisfaction with financial situation:			
insufficient	39 (11.4)	2 (4.2)	41 (10.6)
sufficient	65 (19.2)	7 (14.6)	72 (18.6)
moderate	136 (40.1)	25 (52.1)	161 (41.6)
very good	70 (20.6)	11 (22.9)	81 (20.9)
excellent	29 (8.6)	3 (6.3)	32 (8.3)
Satisfaction with current overall quality of life:			
very unsatisfied	8 (2.4)	0 (0.0)	8 (2.1)
unsatisfied	16 (4.7)	5 (10.4)	21 (5.4)
moderate	122 (35.9)	15 (31.3)	137 (35.3)
satisfied	142 (41.8)	21 (43.8)	163 (42.0)
very satisfied	52 (15.3)	7 (14.6)	59 (15.2)
Satisfaction with relationship with partner:			
very poor	26 (8.0)	7 (15.6)	33 (8.9)
poor	22 (6.7)	3 (6.7)	25 (6.7)
medium	60 (18.3)	10 (22.2)	70 (18.8)
good	102 (31.2)	11 (24.4)	113 (30.4)
excellent	117 (35.8)	14 (31.1)	131 (35.2)
Satisfaction with relationship with parents:			
very poor	5 (2.8)	0 (0.0)	5 (2.6)
poor	8 (4.5)	0 (0.0)	8 (4.2)
medium	14 (8.0)	1 (6.3)	15 (7.8)
good	73 (41.5)	7 (43.8)	80 (41.7)
excellent	76 (43.2)	8 (50.0)	84 (43.8)
Satisfaction with relationships with coworkers:			
very poor	13 (3.8)	2 (4.2)	15 (3.9)
poor	38 (11.2)	5 (10.4)	43 (11.1)
medium	132 (38.8)	22 (45.8)	154 (39.7)
good	110 (32.4)	16 (33.3)	126 (32.5)
excellent	47 (13.8)	3 (6.3)	50 (12.9)

their satisfaction with the most important relationships, namely, with their partner ($\chi^2 = 3.73$, $P = 0.443$), parents ($\chi^2 = 1.41$, $P = 0.842$), or coworkers ($\chi^2 = 2.44$, $P = 0.655$).

Coping strategies

The most common coping strategies were problem solving, positive reappraisal of the situation, seeking social assistance, and accepting responsibility (Table 1). Escape/avoidance and distancing strategies were less frequently reported. No significant sex differences were found according to the use of coping strategies (Figure 1).

Figure 1.



The use of coping strategies among active-duty Slovenian soldiers based on the The Folkman-Lazarus Ways of Coping Questionnaire. Closed bars – men; light gray – women; dark gray – all. The range of the coping scales is from 0 to 18.

Correlations between self-rated health, sick leave, psychological and demographic variables

The correlation coefficient between self-rated health and sick leave was negative and moderately high (Table 2). Self-rated health correlated with the escape/avoidance coping strategy and with all the satisfaction variables. Sick leave duration correlated with age and education, two coping strategies (confrontation and escape/avoidance), and satisfaction with relationships with coworkers. Age and education moderately correlated with some of the coping strategies (distancing, escape/avoidance, and planned problem solving). Age correlated with satisfaction with financial situation and relationship with partner. Education level correlated only with satisfaction with overall life situation. Different coping strategies were in general highly inter-correlated, as were satisfaction variables.

TABLE 2. Correlations between self-rated health, self-rated sick leave duration, psychological and demographic variables in a sample of 390 active-duty Slovenian Armed Forces soldiers

				Coping strategies						Satisfaction						
	Sick leave	Age	Education	confrontation	distancing	self-control	seeking social support	accepting responsibility	escape/avoidance	planned problem solving	positive reappraisal	current life quality	financial situation	relation with partner	relation with parents	relation with coworkers
Self-rated health	-0.28†	0.01	0.04	-0.06	0.01	-0.07	-0.03	-0.08	-0.11†	0.07	0.00	0.17†	0.09*	0.14†	0.18†	0.18†
Sick leave	1.00	-0.09*	-0.15†	0.10*	0.02	0.00	-0.02	0.06	0.10*	-0.04	-0.02	-0.08	-0.04	-0.07	0.02	-0.15†
Age		1.00	0.29†	-0.15†	-0.14†	-0.03	0.07	0.00	-0.22†	0.08*	0.00	0.06	0.13†	0.18†	0.02	0.01
Education			1.00	-0.06	-0.17†	-0.00	0.10*	0.06	-0.12†	0.11†	0.06	0.12†	0.07	0.05	0.07	-0.02
Confrontation				1.00	0.19†	0.25†	0.23†	0.28†	0.29†	0.22†	0.32†	0.02	-0.05	-0.03	-0.02	0.03
Distancing					1.00	0.24†	0.07	0.17†	0.37†	-0.02	0.14†	-0.04	-0.08*	-0.08	-0.07	0.06
Self-control						1.00	0.28†	0.35†	0.23†	0.23†	0.29†	-0.03	-0.05	-0.07	-0.06	0.06
Seeking social support							1.00	0.29†	0.03	0.30†	0.35†	0.04	0.06	-0.01	-0.02	0.03
Accepting responsibility								1.00	0.19†	0.28†	0.37†	-0.04	-0.05	-0.08*	-0.05	0.04
Escape/avoidance									1.00	-0.16†	0.11†	-0.11†	-0.06	-0.19†	-0.14*	-0.03
Planned problem solving										1.00	0.40†	0.07	0.04	0.08	0.06	0.08
Positive reappraisal											1.00	0.10*	0.05	0.08*	0.04	0.08*
Current life quality												1.00	0.42†	0.38†	0.31†	0.28†
Financial situation													1.00	0.26†	0.16*	0.23†
Relationship with partner														1.00	0.54†	0.11*
Relationship with parents															1.00	0.17†

*$P < 0.05$.
†$P < 0.01$.

Multivariate regression model of sick leave determinants

The factors that correlated significantly with sick leave duration in bivariate analysis were included in the multivariate ordinal regression model (Table 3). Age and coping strategies did not prove to be significant predictors of sick leave duration, whereas female sex, poorer self-rated health, lower satisfaction with relationships with coworkers, and lower education did. This model explained 24% of sick leave variance.

DISCUSSION

This study identified several factors that predicted sick leave duration among members of the professional Slovenian Armed Forces: female sex, poorer self-rated health, lower satisfaction with relationships with coworkers, and lower education. Ordinal regression modeling explained 24% of sick leave variance. Bivariate analysis found that sick leave duration correlated with self-rated health, age and education, two coping strategies (confrontation and escape/avoidance), and satisfaction with relationships with coworkers.

A generally high self-rated health found in our respondents was expected, since they were younger adults, all employed, and in most cases with similar education, especially since good health is a prerequisite for professional soldiers. Young people were more "resilient" to stress than older ones and transient illnesses and medical conditions did not affect health self-assessment. Nevertheless, several of the participants assessed their health as poor or bad, were using maladaptive strategies to cope with

TABLE 3. Ordinal regression model of sick leave determinants in a sample of 390 active-duty Slovenian Armed Forces soldiers*

Sick leave	Estimate	*P*	95% confidence interval
Threshold			
none	-1.143	0.343	-3.507 to 1.221
up to 5 d	0.181	0.881	-2.180 to 2.542
up to 10 d	1.444	0.229	-0.911 to 3.798
up to 30 d	2.932	0.016	0.544 to 5.320
up to 60 d	3.648	0.004	1.177 to 6.119
Independent variables			
Age	-0.005	0.726	-0.036 to 0.025
Sex:			
male	-1.185	0.000	-1.791 to -0.579
female	0†		
Education:			
vocational	1.577	0.000	0.717 to 2.436
high school	1.193	0.002	0.439 to 1.946
college	2.086	0.026	0.255 to 3.917
university and higher	0†		
Coping:			
confrontation	0.030	0.494	-0.057 to 0.117
escape/avoidance	0.043	0.144	-0.015 to 0.100
Self-related health:			
excellent	-3.243	0.000	-4.731 to -1.755
good	-2.531	0.001	-3.985 to -1.076
medium	-1.902	0.012	-3.387 to -0.417
poor	-1.558	0.070	-3.242 to 0.125
very poor	0†		
Relationship with coworkers:			
very poor	0.986	0.154	-0.369 to 2.340
poor	1.333	0.005	0.399 to 2.267
medium	0.892	0.030	0.087 to 1.698
good	0.803	0.056	-0.019 to 1.626
excellent	0†		

*Link function: logit.
†This parameter is set to zero because it was redundant.

stress, or complained about poor interpersonal relationships, mostly at work. The Slovenian Armed Forces should not overlook these findings and should revise their employment criteria to include some psychological measures, such as Folkman Lazarus Ways of Coping Questionnaire.

The effect of sex on self-assessment was insignificant – there were no significant sex differences in self-assessments of interpersonal relationships or overall satisfaction with life, but the sample of women was small. Nevertheless, women spent significantly more time on sick leave than men.

In our study, people who had better self-rated their health also had better self-rated current overall quality of life and financial situation. Although military organizations are unique by their structure and hierarchy, our findings can be compared with companies and other settings, in which employees with higher socioeconomic status and higher education have reported better self-rated health (8). In some Slovenian corporations it was also found that employees were mostly satisfied with their relationships with colleagues and continuity of employment (29,30).

The association between duration of sick leave and self-rated health was significant, meaning that people who rated their health better had fewer days of sick leave, which was expected. Younger and less well-educated people spent more time on sick leave, but the correlations were weak. Respondents who rated their health lower had more days of sick leave and used the escape/avoidance coping strategy more frequently. Age and education were important for some of the coping strategies (distancing, escape/avoidance, and planned problem solving). Younger and less well educated respondents were more prone to dysfunctional coping. Age was associated with satisfaction with financial situation and relationship with partner, whereas education level was associated only with satisfaction with overall life situation. The interpretation could be that over the years people become more satisfied with their life in general (or perhaps more realistic), including their working life. Pond and Geyer (31) explained this by the fact that mature people often perceive that they have fewer employment opportunities and alternatives and therefore reconcile with their work situation. In our study, older respondents mostly had higher rank, as was the case in the study by Selič et al (27), and were better paid, though individual-level data on wages were not collected. In Slovenia in general, higher educational level and the number of years of service bring greater salaries and promotions among public servants. Also, the Armed Forces offer plenty of opportunity for their employees to achieve higher levels of education and promotion, as well as provide secure jobs with permanent contracts. Given that, satisfaction with overall quality of life may be higher as soldiers get older. Future work should examine this possibility directly.

Bivariate analysis showed a strong association between sick leave duration and self-rated health; self-rated health was associated with escape/avoidance coping strategy and all the satisfaction variables, while sick leave duration was associated with age, education, two coping strategies (confrontation and escape/avoidance), and satisfac-

tion with the relationship with coworkers. As multivariate modeling procedures were used to partition the variance across a wide variety of indicators of the participants' experiences, it was possible to identify various characteristics at the individual level, ie, female sex, education, self-rated health, and at the organizational level, ie, relationship with coworkers.

Good interpersonal relationships are an important source of social support in a stressful work environment (32,33). Our respondents with better self-rated health were more satisfied with all three types of interpersonal relationships. However, most of our respondents were most satisfied with their relationship with their parents, which may be interpreted as a lack of independence and personal maturity. Less satisfaction with work-related relationships might be explained as an independent stressor or as a lack of the social support needed at work.

Stress has been reported to contribute to organizational inefficiency, high staff turnover, sickness absenteeism, decreased working performance in both quality and quantity, and decreased job satisfaction (34). Stressful life events at work were found to be associated with feelings of poorer health, depression, and mental strain (35,36). Therefore, the Slovenian Armed Forces should pay special attention to the physical and psychological impact of stress, and the response of an individual who fails to adapt to or demonstrate resilience toward a particular stressor (27).

Currently, there is a lack of definitive evidence for the association between stress, health-related absenteeism, and coping. A total of 275 effects from 153 studies in a meta-analysis by Darr and Johns (37) revealed positive associations between duration of sick leave and work stress, psychological illness, and physical illness. Results from structural equation modeling suggested that the stress-absenteeism connection may be moderated by psychological and physical symptoms. Our results suggest that better self-perception of health and shorter sick leave could be accomplished by improved interpersonal relationships at work. Also, special attention should be paid to women with a rank of private, since lower education was identified as a significant predictor of sick leave duration. This could be achieved by providing additional training to commanding officers or superiors and making them more focused on developing protective coping strategies in soldiers (ie, through participation in non-competitive physical activities, hobbies). This is especially important since research has identified a positive relationship between leadership behavior and job satisfaction, productivity, and organizational commitment (38-40). Some other measures should also be implemented to provide an acceptable and fulfilling working environment for female soldiers, eg, a revision of supervision characteristics and company policy.

Faragher et al (41) provided clear evidence of a connection between satisfaction with work and mental health. On average, employees with a lower level of satisfaction with work are more prone to burnout and have a reduced level of self-esteem and increased rates of anxiety and depression. This confirms the assumption that a lack of satisfaction at the workplace is a risk factor for mental health and perception of current overall quality of life.

An important limitation of our study is the representativeness of our sample. The conclusions reached are more valid for privates than for non-commissioned officers or officers, since our study population comprised 60% of privates, 27% of non-commissioned officers, and 13% of officers, while the respective proportions in the entire Armed Forces were 47%, 30%, and 23%. Also, since the use of component data from regular periodic reviews and patient records was not feasible, we used self-assessment as an indirect measure of health. Furthermore, the reports on the duration of sick leave were not validated through personal sick leave certificates due to requirements for participant anonymity. Finally, we did not obtain information on people who refused to participate in the study, although theoretically there could be important differences between them and the people who were included.

The main determinants of sick leave duration in the study might be divided into those associated with the roles, structures, and organization of the Armed Forces, and those associated with individual characteristics. As only about a quarter of the total variance in sick leave duration was explained, more variables should be analyzed, especially to reveal some as yet unrecognized determinants. In order to decrease the sick leave duration and increase self-reported health of soldiers, the characteristics of supervision, company policy, and work procedures should be studied thoroughly, as well as gender equality policy of the Armed Forces.

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