Psychosocial job characteristics, social support, and sense of coherence as determinants of mental health among nurses

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Key words: *mental health; nurses; psychosocial job characteristics; social support; sense of coherence.*

Summary. *Objective. Employment in human service occupations as nursing is reported to display high risk for mental health, and occupational stress has been found to be one of the major work-related health problems. The objective of the study was to explore the associations between psychosocial job characteristics, social support, and internal resources as determinants of mental health status in a sample of Kaunas district nurses.*

Material and methods. A survey was conducted among the nurses of Kaunas district community in 2008–2009. A total of 638 nurses were randomly selected, and 372 filled in the questionnaire (response rate, 58.3%). Mental distress was measured using the Goldberg 12-item General Health Questionnaire and psychosocial job characteristics using the Swedish version of the Karasek Demand-Control questionnaire. Sense of coherence was measured by the three-item version questionnaire. The logistic regression was performed.

Results. Less than one-third (23.0%) of nurses had symptoms of mental distress; 31.9% of nurses had weak sense of coherence. High job demands were associated with mental distress after adjustment for age, smoking, alcohol consumption, physical activity, job control, social support, sense of coherence, family crisis, self-rated health as compared to one year ago (OR=2.15; 95% CI, 1.07–4.30), low job control (OR=1.22; 95% CI, 0.64–2.31), job strain-low social support at work (OR=3.78; 95% CI, 2.08–6.87).

Conclusions. Mental distress among the nurses of Kaunas district was associated with adverse psychosocial job characteristics. Job strain-low social support at work was the strongest risk factor for mental distress among nurses. Strong sense of coherence as personal characteristic served as a buffer, protecting nurses against the development of mental health problems.

Introduction

The World Health Organization (WHO) defines mental health as a state of wellbeing in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community (1). Mental health is a term used to describe either a level of cognitive or emotional wellbeing or an absence of a mental disorder and may include an individual's ability to enjoy life and procure a balance between life activities and efforts to achieve psychological resilience (the ability to bounce back from adversity). It is estimated that approximately 450 million people worldwide have mental health problems (WHO). State strategy for mental health was developed in Lithuania for 2005–2010 (2).

The determinants of mental health include social connections, family life, and work stress (3).

From the public health perspective worldwide, it was defined that some professions and their occupational characteristics are suggested to have associations with mental distress. Employment in human service occupations (e.g. health care, education, social work) is reported to display high risk for mental health, and the occupational stress has been found to be one of the major work-related health problems (4). The study in the United Kingdom among general practice staff (practice managers, nurses, receptionists, and other primary care workers) found the prevalence of mental distress to be 23% using the Goldberg 12-item General Health Questionnaire (GHQ-12) (5).

In 2005, more than 20% of workers from the EU believed that their health is at risk because of work-related stress (6). Studies have shown that nursing is a strenuous work and that occupational stress is prevalent among nurses. A strong negative relation has

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been found between nurses' occupational stress, job satisfaction and nursing quality (7).

Numerous studies in different parts of the world indicate that stressful conditions among nurses are universal. As the Lithuanian health care system undergoes health care reform, the organizational changes induce additional workload and stress to nurses. The inadequate work conditions are one of the main factors driving migration of nurses. Because of insufficient staffing levels, nurses become frustrated about their inability to complete their work to their professional satisfaction (8). They experience difficulties in meeting patient's needs. On the other hand, stressors related to the organizational structure and institutional culture matter rather than stress from nursing tasks (7).

The demand-control theory, which is a synthesis of the psychophysiological stress theory and the sociological alienation theory, represents a reaction against individualization of job stress and is also an effort to fill the need for theories of working conditions (9). The psychosocial work characteristics were measured in a number of studies using the Job Content Questionnaire developed by Karasek and Theorell (9), and significant associations between low job control, high demands, job strain, and ischemic heart disease (10–12), mental health problems (4, 13), pain (14), musculoskeletal disorders (15) were showed.

The third dimension of the Demand-Control model – social support – serves as a buffer protecting workers' health against job strain. It reflects the organizational climate as well as personal characteristics when seeking support from managers and colleagues. It was confirmed that lack of social support in a workplace, characterized by high levels of stress, might increase the risk of myocardial infarction and stroke (16). Examined in combination, registered nurses with low job control, high job demands, and low work related social support ("iso-strain" jobs) had the greatest functional declines in quality of life (17). Low locus of job control and social support were associated with job dissatisfaction (18). The Demand-Control-Support questionnaire was used in the investigation of psychosocial stress in different occupations and showed good internal consistency in the studies among nurses (5, 17, 19). The relationship between different work-related sources of social support (coworker, patient, and supervisor) and burnout as a consequence of continuing mental and emotional demands in the workplace among nurses was found (20).

In the Salutogenic Model, Aaron Antonovsky suggested that sense of coherence is the key determinant in the maintenance of health. He theorized that individuals with strong sense of coherence have the ability to define life events as less stressful (comprehensibility), mobilize resources to deal with encountered stressors (manageability) and possess the motivation, desire, and commitment to cope (meaningfulness). Sense of coherence has been studied in relation to three work environment dimensions and self-reported health and burnout (21). The effect of social support on mental health is mediated through the promotion of internal resources and coping abilities (22).

The investigations on psychosocial risk factors at work among nurses in Lithuania are scarce. Value priorities and their relations with quality of life in the Baby Boomer generation of Lithuanian nurses were investigated in a cross-sectional survey (23). The associations between psychological job demands and stress outcomes among primary health care nurses were confirmed (24). High prevalence of burnout among nurses in cardiac surgery centers was found (25). The study among general practitioners in Lithuania found that high job demands could be assigned as a significant predictor for psychosocial stress, measured by the Reeder scale (26).

Our study was the first among Lithuanian nurses, using the Demand-Control-Support questionnaire, widely used in the international research area. It will be possible to compare our results with those of other studies on job stress among nurses in other countries. It is the first study in Lithuania, investigating the protective effect of social support at work and the level of sense of coherence in the associations between job stress and mental health among nurses.

In this study, we explored the associations of psychosocial job characteristics, social support, and internal resources as determinants of mental health status in a sample of Kaunas district nurses.

Study population and methods

A survey was conducted in a sample of the Kaunas district community nurses in 2008–2009. According to the Lithuanian Health Information Centre, 4458 community nurses were registered in the Kaunas district in 2007. The sample size of 370 nurses was calculated with the 95% confidence level. A total of 638 nurses were randomly selected and invited to participate in the event organized by Kaunas University of Medicine; 372 (response rate, 58.3%) community nurses participated and filled in the anonymous questionnaire, containing the information on psychosocial factors at work and health determinants.

Instruments

Mental distress was measured using the Goldberg

12-item General Health Questionnaire (GHQ-12) (27). The GHQ is a well-established scale for the evaluation of mental distress in population samples because of its excellent screening performance and the briefness of the scale. In relation to diagnosed mental disorders, the GHQ has shown good clinical validity. Though GHQ performed better in identifying mood and anxiety disorders specifically than in identifying any psychiatric disorder more generally. The GHQ-12 with the cutoff point at 3/1 has a good sensitivity and specificity in relation to externally attributed mood and anxiety disorders (28).

The GHQ-12 covers feelings of strain, depression, inability to cope, anxiety-based insomnia, lack of confidence and esteem, and other symptoms of mental distress. The GHQ-12 was translated into Lithuanian, cultural adaptation was performed, it was tested in a sample of 1020 nurses (29). Individuals with a GHQ-12 score of ≥3 were classified as GHQ cases or mental distress (internal consistency according to Cronbach's alpha was 0.83).

Participating nurses answered the three-item questionnaire on sense of coherence that has been evaluated in the representative sample of the Lithuanian population (30). Based on the theoretical reasoning underlying Antonovsky's original instrument, this measure consists of three questions, each corresponding to one of the dimensions (i.e. manageability, meaningfulness, and comprehensibility). Previous studies of the three-item measure have shown satisfactory test-retest reliability (κ=0.61), and factor analyses have shown that the items constitute a single factor similar to that of the original sense of coherence measure (31). The index according to the methodology of simplified measurement of sense of coherence was evaluated so that three points or more constituted the category with weak sense of coherence.

The Demand-Control model shows how health impairment may be influenced by two dimensions at work: job demands and job control or resources. Job demands include the physical, social, and organizational elements of the work activity. Job control includes an employee's ability to control various aspects of his/her job. In short, the Demand-Control model has two main dimensions: psychological and physical demands at work, and the worker's decision latitude or degree of control over those demands (9).

Psychosocial job characteristics were measured with the Swedish version of the Karasek Demand-Control questionnaire. The questionnaire was previously translated into Lithuanian, and it consists of 6 items for the assessment of job control, psychological demands (5 items), supervisor support and co-worker support (6 items) (12). Each question had four response categories for frequency ranging from "never" to "always." The scoring was directed in such a way that a high score meant greater demand, more decision latitude, and higher levels of social support. The internal reliability was 0.70 for job demand, 0.61 for control, and 0.68 for social support according to Cronbach's alpha. High and low categories for job demand, job control, and social support were determined by a cutoff point corresponding to the median of the total score for each of these constrains. Scores below the median were assessed as "low." Job strain was derived from the ratio between psychological job demands to control.

The statistical software SPSS 14.0 was used in the statistical analysis. To investigate the associations between job demands, control, support, and mental distress, both correlations and logistic regression analysis were carried out. Job demands and control were analyzed separately and in their combined form as job strain ratio. The logistic regression was used for the calculations of the adjusted odds ratios (OR) and 95% confidence intervals (CI). Logistic regression is well suited for modeling categorical data and calculates odds ratios for the likehood of being a case of mental distress for each explanatory variable used in the model. Mental health was used as a dependent variable, and job demands, control, job strain, and stressful life events (divorce, death or incurable disease of a close family member, severe financial crisis in the family) during the prevoius 12 months as independent variables. Age, smoking, alcohol consumption, and leisure-time physical activity were evaluated as potential confounders. The mediating effect of social support at work on psychosocial job characteristics was evaluated by including into the final model. The effect of weak sense of coherence on mental distress was measured in the final model. The study was approved by the institutional bioethics review committee of Kaunas University of Medicine.

Results

Twenty-three percent of respondents were classified as sufferers from mental distress according to the GHQ method of assessment.

Figure shows the pattern of the associations between four dimensions of the job content instrument and mental distress (GHQ caseness). There was an inverse association between the level of job control and GHQ caseness (χ_c=3.06, P=0.08) and between the level of social support and GHQ caseness (χ_c=34.99, P<0.001). However, there was a positive association between job demands and GHQ caseness

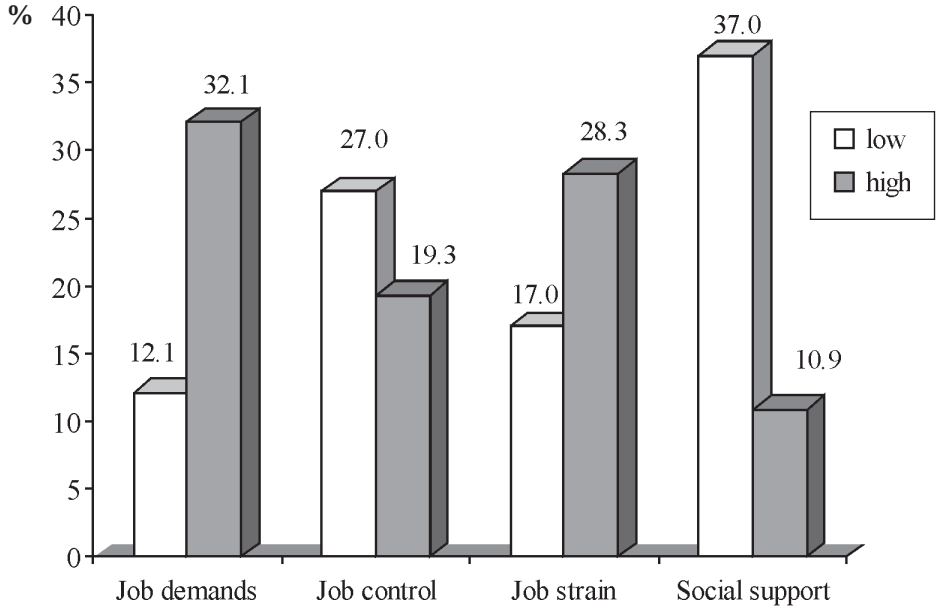

Fig. **Percentage of GHQ cases in each work characteristic band**

(χ_c=20.78, P<0.001) and job strain and GHQ caseness (χ_c=6.58, P<0.01).

Table 1 presents sense of coherence in relation to mental distress, low physical activity, and self-rated health. Less than one-third (31.9%) of nurses had weak sense of coherence. In the subgroup of strong sense of coherence, there were no cases of mental distress, poor self-rated health. Statistically significant differences were found between sense of coherence subgroups and low physical activity, health as compared to one year ago.

To gain further understanding of the complex associations between mental distress levels and job strain instruments, a logistic regression analysis explored the relationship between GHQ caseness and work characteristics allowing influence of other independent variables. Table 2 shows the results of the analysis. Age of 45–54 years was 2.63 times more likely to be a GHQ case compared with reference group (age, 55–70 years). After adjustment for smoking, alcohol consumption, and physical activity, it remained statistically significant, but in the final model a tendency expressed in adjusted OR (1.53; 95% CI, 0.62–3.80) remained. Smoking remained significant after all adjustments, while low physical activity lost the statistical significance in the final model. High job demands were twice as likely to be GHQ case compared those with low job demands. Low job control showed a tendency for GHQ caseness. Social support showed mediating effect in the associations between psychosocial job characteristics and mental distress and low social support was 2.5 times more likely to be a GHQ case compared with high social support after all adjustments. Weak sense of coherence was a strong predictor of GHQ caseness with OR of 4.1 (95% CI, 2.24–7.56) in the final model, though the adjusted OR for high demands and job strain did not loose the statistical significance after adjustment for sense of coherence (OR=2.74; 95% CI, 1.53–4.90 for high demands, OR=1.95; 95% CI, 1.14–3.40 for job strain (data not shown in the tables). Self-rated health as compared one year ago and family crisis remained significant predictors of mental distress with adjusted OR of 2.5. Sense of coherence negatively correlated with social support (Pearson correlation, –0.282, P<0.01).

Table 1. **Sense of coherence in relation to mental distress, low physical activity, and self-rated health**

Sense of coherence	% (N)	Mental distress % (N)	Low physical activity, % (N)	Worse health now as compared to one year ago, % (N)
Strong	13.8 (51)	0	45.1 (23)	17.6 (9)
Average	54.3 (201)	14.7 (29)	54.2 (109)	22.1 (44)
Weak	31.9 (118)	45.8 (54)	70.3 (83)	40.7 (48)
		P<0.001	P=0.002	P<0.001

Table 2. **Logistic regression model to predict GHQ caseness**

Variable	%	Crude OR	95% CI	Adjusted OR*	95% CI	Adjusted OR**	95% CI
Age 24–34	9.9	2.04	0.73–5.70	2.47	0.85–7.19	2.26	0.70–7.34
Age 35–44	34.9	1.58	0.70–3.61	1.46	0.61–3.46	1.16	0.43–3.09
Age 45–54	37.4	2.63	1.19–5.83	2.79	1.21–6.43	1.53	0.62–3.80
Age 55–70 (reference)	17.8						
Smoking	18.9	2.10	1.19–3.71	2.05	1.11–3.77	2.43	1.16–5.11
Occasional alcohol consumption	62.7	1.17	0.69–1.98	0.81	0.46–1.44	0.86	0.44–1.65
Weekly alcohol consumption	3.2	1.92	0.54–6.86	1.84	0.48–7.11	1.70	0.35–8.16
Low physical activity	58.1	1.97	1.17–3.33	2.02	1.17–3.48	1.54	0.82–2.91
High job demands	53.5	3.43	1.98–5.92	3.58	2.01–6.39	2.15	1.07–4.30
Low job control	42.7	1.55	0.95–2.53	1.54	0.91–2.61	1.22	0.64–2.31
Job strain	50.0	1.92	1.16–3.17	1.78	1.06–2.99	1.35[a]	0.69–2.63
Low social support	44.4	4.77	2.77–8.22	4.92	2.78–8.73	2.50	1.24–5.07
Family crisis	44.1	2.97	1.78–4.95	3.30	1.91–5.70	2.51	1.35–4.68
Worse health as compared to last year	27.4	2.92	1.75–4.89	3.38	1.93–5.93	2.53	1.35–4.72
Weak sense of coherence	31.9	6.37	3.75–10.83	5.76	3.33–9.99	4.11	2.24–7.56
Job strain-low social support	32.3	4.02	2.41–6.70	3.91	2.30–6.63	3.78[aa]	2.08–6.87

*Adjusted for age, smoking, alcohol consumption, physical activity.

**Adjusted for age, smoking, alcohol consumption, physical activity, job demands, job control, social support, family crisis, self-rated health as compared to one year ago, sense of coherence.

[a]Adjusted for age, smoking, alcohol consumption, physical activity, social support, family crisis, self-rated health as compared to one year ago, sense of coherence.

[aa]Adjusted for age, smoking, alcohol consumption, physical activity, family crisis, self-rated health as compared to one year ago, sense of coherence.

Job demands/control ratio calculated as job strain dimension was significantly associated with GHQ caseness; it did not loose the statistical significance when adjusted separately for sense of coherence. However, the adjustment for family crisis and social support separately decreased OR for job strain to statistically insignificant (OR=1.65; 95% CI, 0.96–2.83 after adjustment for family crisis and OR=1.17; 95% CI, 0.62–2.19 after adjustment for social support).

We calculated the dimension of job strain-low social support (iso-strain category, totally there were 120 cases (32.3%)) and included it into logistic regression analysis. Odds ratio of mental distress for job strain-low social support was 3.91 (95% CI, 2.30–6.63) after adjustment for age, smoking, alcohol consumption, and physical activity. After adjustment for age, smoking, alcohol consumption, physical activity, family crisis, self-rated health as compared to one year ago, sense of coherence, it remained statistically significant (OR=3.78; 95% CI, 2.08–6.87).

Discussion

A healthy psychosocial work environment comprises the human environment, surroundings, conditions and circumstances in which the nurses live and work and includes a mutual relationship with other health care professionals and patients and is followed by good health. We investigated the associations between adverse psychosocial job characteristics, social support, and sense of coherence as determinants of mental health in a random sample of Kaunas district nurses. The study showed that nearly a quarter (23.0%) of the respondents could be classified, according to the GHQ-12, as suffers from mental distress. Our findings coincide with the study on bullying among Kaunas district nurses, where the

prevalence of GHQ caseness was found to be 25.5% (29). Such a high degree of mental distress is an important finding, because it can lead to health problems in the short and medium term (32). The study in the United Kingdom, using the same GHQ-12 instrument, indicated that the prevalence of mental distress was 23% among nurses (5). Equivocal results indicate mental distress as a predictor of job dissatisfaction in nurses, which in turn allows predicting absenteeism, burnout, turnover, and intent to quit (33).

Our results indicated that high job demands was a strong predictor of GHQ caseness among three dimensions of the Job Content Questionnaire (adjusted OR in the final model was 2.15; 95% CI, 1.07–4.30) (Table 2). Crude OR for job strain as the ratio of job demands to control was 1.92 (95% CI, 1.16–3.17), though it lost statistical significance after adjustment for social support. Low job control showed a tendency for the associations with mental distress, indicating the importance of high job demands in the specific occupation of community nurses. Nevertheless, the studies on psychosocial job characteristics and ischemic heart disease and myocardial infarction found that low job control was more related to the outcome than high job demands (11, 12). Lauder et al. (3) stated that "relative excess" of demand is associated with outcomes such as emotional exhaustion, depersonalization, psychosomatic complaints, absenteeism and increases in cardiovascular risk factors and disease expression in the long term. The congruence between demand and control forms learning mechanism. This may have an impact on worker's wellbeing, with active congruence associated with high levels of motivation, job challenge learning, job involvement, and job satisfaction. The study among Quebec (Canada) nurses found that high job demands were associated with higher levels of mental distress than low job control (32), and the study in 21 Finnish public hospitals indicated that high job demands in women and low job control in men were strongly associated with prognosis as was high job strain, suggesting that these components may be the core elements in work-related psychosocial predictors of prognosis in psychological distress (28). A population-based nested case-control study of 14 166 psychiatric patients diagnosed with depressive and anxiety disorders in Denmark found that low job control was associated with an increased risk of anxiety disorders in men, but not in women (34). The cross-sectional study among general practitioners in Lithuania indicated that low ability to use skills and low decision latitude as the components of low job control dimension showed only a tendency for the associations with psychosocial distress in the logistic regression model, while the adjusted OR for high job demands was 4.13 (95% CI, 2.10–8.10) (26). The logistic regression analysis supported the conclusion that occupational variations in stress were mainly explained by the three dimensions of the job content instrument. However, it cannot be concluded that job strain dimensions are the only influence on mental health status; for example, the analysis also showed that family crisis and perceived change in health status were also powerful predictors of mental distress.

Social support, representing the impact of social resources at work, was found in our study to be an independent predictor of mental distress, though OR for low social support reduced almost twice in the final model, but it remained statistically significant (adjusted OR=2.50; 95% CI, 1.24–5.07). Unfair treatment by supervisor increases the risk of poor mental health (3), while clinical nursing supervision as the way to support nurses in coping with their working situation has an influence on nurses' experiences of wellbeing and in relation to their psychosocial work environment (35). Lack of social support from colleagues and supervisors was a risk factor of myocardial infarction and stroke (16). In our study, social support at work mediated the associations between job strain and mental distress (OR of job strain adjusted for social support decreased to 1.17; 95% CI, 0.62–2.19; data not shown in tables), thus indicating a strong effect of social support on protecting nurses from mental health problems. Nurses in the iso-strain category (job strain-low social support) were at highest risk for the development of mental distress. The development of strong interpersonal bond between workers, often described as "friendly atmosphere," is perceived to smooth out potential sources of inter-personal strife and confer a degree of protection from other stresses (5).

A new paradigm for health research, explaining why people stay healthy in spite of extreme circumstances has been developed by Antonovsky (36). Antonovsky introduced the salutogenic model based on two concepts: general resistance resources and sense of coherence. The general resistance resources are both of external and internal character and help people manage their lives. The ability to use one's general resistance resources is based on one's sense of coherence. The perception of coherence is based on cognitive, behavioral, and motivational factors. Sense of coherence is strongly developed if a person sees the world as comprehensible, manageable, and meaningful. In our study, weak sense of coherence was found to be a strong predictor of mental health

(adjusted OR in the final model was 4.11; 95% CI, 2.24–7.56). It is interesting to note that there were no GHQ cases in the subgroup of strong sense of coherence, though the adjusted OR for high demands and job strain did not loose the statistical significance after adjustment for sense of coherence. Sense of coherence was found to modify the effect of adverse psychosocial job characteristics on mental distress. Low social support at work showed mediating effect between psychosocial job characteristics and mental distress. The combined dimension of job strain-low social support (iso-strain) remained statistically significant after all adjustments in the final model. Our findings indicated that week sense of coherence was associated with lower levels of social support at work. Probably, nurses with stronger sense of coherence were capable in seeking more social support.

Conclusions

Mental distress among the nurses of Kaunas district was associated with adverse psychosocial job characteristics. Social support at work and strong sense of coherence as personal characteristic served as buffers, protecting nurses against the development of mental health problems. Nurses in iso-strain (job strain-low social support) working conditions were at highest risk for the development of mental distress. Therefore, the improvement of work organizational climate in health care institutions is of great importance. According to theoretical prerequisites of Antonovsky (36), sense of coherence is fully developed by the age of 30 and remains rather stable, with only major life events upsetting and altering it. Interventions toward strengthening the sense of coherence should be adopted in adolescents' institutions.

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Psichosocialinės darbo sąlygos, socialinė parama ir vidinė darna – bendruomenės slaugytojų psichinę sveikatą lemiantys veiksniai

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Raktažodžiai: psichinė sveikata, bendruomenės slaugytojos, psichosocialinės darbo sąlygos, socialinė parama, vidinė darna.

Santrauka. *Tyrimo tikslas*. Bendruomenės slaugytojų darbas žmogaus sveikatos tarnyboje siejamas su didesne psichinės sveikatos sutrikimų rizika, o su darbo santykiais susijęs stresas sąlygoja profesinius sveikatos sutrikimus. Ištirti Kauno apskrities bendruomenės slaugytojų psichosocialinės darbo aplinkos, socialinės paramos, vidinės darnos ir psichologinio distreso sąsajas.

Medžiaga ir metodai. 2008–2009 m. atliktas Kauno apskrities bendruomenės slaugytojų tyrimas. Atsitiktinę imtį sudarė 638 tiriamieji, ištirtos 372 slaugytojos (atsako dažnis – 58,3 proc.). Psichinė sveikata vertinta naudojant Bendrąjį sveikatos klausimyną; psichosocialinė darbo aplinka tirta pagal R. Karaseko ir T. Theorell Reikalavimų–kontrolės klausimyno švediškąją versiją. Vidinė darna matuota trumpąja trijų klausimų skale. Atlikta logistinės regresijos analizė.

Rezultatai. 23 proc. tirtų slaugytojų nustatytas distresas, 31,9 proc. – nustatyta silpna vidine darna. Dideli reikalavimai darbe buvo susiję su distresu, logistinės regresijos analizės modelyje pakoregavus pagal amžių, rūkymą, alkoholinių gėrimų vartojimą, fizinį aktyvumą, socialinę paramą, vidinę darną, krizes šeimoje, savo sveikatos subjektyvų vertinimą, palyginus su prieš metus buvusia sveikata (galimybių santykis (GS)=2,15; 95 proc. PI 1,07–4,30). Maža galimybė kontroliuoti savo darbą buvo susijusi su distresu (GS=1,22; 95 proc. PI 0,64–2,31). Įtampa darbe ir žemas socialinės paramos lygis buvo svarbiausias distreso rizikos veiksnys (GS=3,78; 95 proc. PI 2,08–6,87).

Išvados. Kauno apskrities bendruomenės slaugytojų jaučiamas psichologinis distresas susijęs su nepalankiomis psichosocialinėmis darbo sąlygomis. Įtampa darbe ir žemas socialinės paramos lygis buvo svarbiausias distreso rizikos veiksnys. Stipri vidinė darna apsaugojo slaugytojas nuo psichikos sutrikimų.

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