ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2019, 15 (4), 299–306

УДК 331.101.6:316.334.22 https://doi.org/10.33573/ujoh2019.04.299

ASSOCIATION BETWEEN WORK UNIT PREVALENCE OF POOR WORK ABILITY AND SOCIAL CAPITAL – A CROSS-SECTIONAL ANALYSIS OF 63 PUBLIC SECTOR WORK UNITS

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Purpose. The aim of the study was to explore the association between work unit prevalence of poor work ability and social capital within a public sector population.

Methods. 836 subjects belonging to 63 well defined work units (mean response rate per work unit: 84.8 %) in seven public sector organizations took part in a cross-sectional questionnaire study. Associations between poor work ability (Work Ability Index < 37), physical workload, need for recovery and social capital were explored on work unit level using bivariate correlations and multiple linear regression analysis.

Results. Significant correlations were found between work ability, work unit social capital (r: -0.311) and high need for recovery (r: 0.501). In the multivariate analysis need for recovery (standardized β 0.521) and workplace social capital (standardized β -0.321) were significantly associated with work ability at work unit level.

Conclusions. The findings of our study are suggestive for an important role of need for recovery and workplace social capital in maintaining work ability in the public sector. Factors that decrease need for recovery and increase workplace social capital need to be considered for improving work ability.

Key words: work ability, need for recovery, workplace social capital, physical workload, public sector

Introduction

Due to the economic and political tendency to raise the retirement age, people will have to work longer. Organizations will have to deal with the challenges of an ageing workforce, and by extension with the challenges of maintaining employability in a continuously changing working environment. Within the context of a longer working life and sustainable employability, the concept of promoting and maintaining work ability takes a predominant place.

Work ability is the balance between the demands at work and the individual resources of the employees. When work and individual resources fit well together, work ability is good [1, 2]. Long term follow-up studies have indicated that work ability is predictive for future work disability: moderate and poor work ability have been shown to be highly predictive for early retirement and disability pension [3–7].

Recent research has suggested that workplace social capital could be an important factor for the psychosocial work environment [8]. Workplace social capital can be described as the collaborative capabilities of an organization, based on trust and justice [9] and applies to every group of employees that work together, ranging from the entire organization to the work unit or team. On work unit level the concept of workplace social capital can be operationalized as a characteristic of the work unit consisting of three dimensions: collaboration, trust, and justice [10]. Recent research showed workplace social capital to be an important factor related to health and mental disorders [11–17].

Physical workload has been demonstrated to be an important factor in the development of musculoskeletal complaints [18]; the latter being the most important cause for early exit for health reasons. As it was shown that physical workload had an important influence on work ability and early retirement [19–23], this factor should be taken into account when studying relationships with work ability.

Need for recovery is considered to be a sensitive indicator of reduced well-being [24]. The concept of need for recovery is concordant with the cognitive activation theory of stress. In this theory stress response is defined as an alarm in a homeostatic

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2019, 15 (4), 299–306

system, producing neurophysiological activation. The activation can be reduced by coping mechanisms, triggered by the same alarm. If the coping mechanisms are inadequate to reduce the activation level, a certain aroused activation level remains. If sustained this may lead to adverse health effects [25]. In an occupational setting, fatigue experienced during or after a day's work can lead to long term adverse health effects, when there is insufficient time to recover from this fatigue in between two work periods [26]. Increased need for recovery was shown to be a predictor for psychosomatic complaints, emotional exhaustion and duration of future sickness absence [27–29].

Need for recovery is influenced by a number of psychosocial factors (both occupational and non-occupational) [30] and can be considered as an effect measure of psychosocial factors. Recently, a significant negative correlation was found between need for recovery and the single-item version of the Work Ability Index [31]. Taking the need for recovery into account as a confounding variable, enables to control for the effect of psychosocial factors on work ability.

In an earlier study a highly significant correlation was found between workplace social capital and prevalence of poor work ability [10]. The small amount of work units (n=11) in this study did not allow to perform multivariate analyses. Other factors that could influence work ability are physical workload, need for recovery and age. Therefore, the aim of the current study was to explore the association between work unit prevalence of poor work ability and social capital within a larger amount of work units in a public sector population, controlling for physical workload, need for recovery and age.

Methods

The study has been approved by the Ethics Committee Progecov-Securex (Commissie voor Medische Ethiek OG 211, Ghent, Belgium).

Study design and study population

This was a cross-sectional questionnaire study. All subjects were asked to fill out a standardized self-completed questionnaire.

The target population consisted of 986 subjects, working in 63 work units of seven public sector organizations, and included administrative workers, library workers, professional fire fighters, police officers, teachers, technical personnel, cleaning personnel, social service, child care, cleaning at home, nursing personnel, nursing at home, kitchen personnel and harbour personnel. Eventually, 836 subjects took part in the study (overall response rate 84.8 %). The mean number of workers per work unit was 13.2, with a range of 5–41 workers. Mean response rate per work unit was 83.8% (range 57.7–100).

Work ability

Work ability was assessed by the Work Ability Index (WAI) questionnaire. The WAI questionnaire has proven to be an instrument with good internal and predictive validity [32] and test-retest reliability [33], applicable for the assessment of work ability in occupational health research and daily occupational health practice. The WAI covers seven items, each of which is evaluated with the use of one or more questions: current work ability compared with the lifetime best, work ability in relation to the demands of the job, number of current diseases diagnosed by a physician, estimated work impairment due to diseases, sick leave during the past 12 months, own prognosis of work ability two years from now and mental resources (referring to the worker's life in general, both at work and during leisure time). The WAI is calculated by adding up the estimated points for each item, resulting in a WAI score ranging from 7 to 49 (the higher the score, the better the work ability). Work ability is considered to be «poor» if the WAI score ranges from 7 to 27, «moderate» in the range of 28 to 36, «good» in the range of 37 to 43 and «excellent» if the WAI score ranges from 44 to 49 [34].

In the current study work ability was assessed by the short version of the WAI as used in the Nurses' Early Exit Study (NEXT study) [35]. Scoring for the short WAI is analogous to the scoring for the long version of the WAI [34].

Due to the very low prevalence of workers with a «poor» WAI score (27 or less) (2.2 %), it was decided to dichotomize the WAI score into a group comprising the workers with «poor» and «moderate» WAI score (< 37) and a group of workers with «good» and «excellent» WAI score (≥ 37). WAI score lower than 37 was defined as poor work ability.

Physical workload

Physical workload was assessed by a four item physical workload scale, comprising sustained physical efforts, repetitive work, lifting heavy weights and

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2019, 15 (4), 299–306

working in awkward positions. For each separate item, a frequency-based answer could be given (four possibilities: never, sometimes, often and always), resulting in a score from 0 to 3 per item. The physical workload scale was computed by summing up the scores of the four constituent items and transformed into a 0–10 scale. The highest score was concordant with the highest physical workload. Cronbach's α of the scale was 0.82, with inter-item correlations ranging from 0.48 to 0.61. The reliability figures were similar to those reported in earlier studies [10, 36].

Workplace social capital

Workplace social capital was assessed with a scale comprising six questions, derived from the subscales «vertical trust», «justice» and «social community at work» of the COPSOQ II [8]. Recent research corroborated the social capital scales included in COPSOQ II to be valid measures [37]. Each subscale was asked for in two questions offering five response options. The dimension was transformed into a 0–10 scale; the higher the score, the higher workplace social capital. Cronbach's α of the scale was 0.74 (inter-item correlations 0.11–0.66), which was comparable to reliability reported earlier [10].

Need for recovery

Need for recovery after work was assessed by «The Need for Recovery Scale», which has proven to be a reliable instrument [38, 39]. «The Need for Recovery Scale» questionnaire comprises 11 dichotomous (yes/no) items [40]. The need for recovery scale was computed by summing up the scores of the 11 constituent items, resulting in a score ranging from 0 to 11, which was transformed to a 0 to 100 scale [29, 39]. Higher scores indicate a higher degree of need for recovery after work. Cronbach's α of the scale was 0.85 (inter-item correlations 0.17–0.64), which was comparable to reliabilities reported earlier [26, 28, 30, 36, 38, 41]. Receiver operating characteristic analyses for long term health effects (psychic and psychosomatic complaints) showed that a need for recovery score higher than 45 is equivalent to a high need for recovery [42].

Considered confounding variable

Age was asked for as a continuous variable. The subjects were divided into two age groups: older workers (45 years or older) and younger workers (younger than 45 years), according to the WHO definition of older workers [43]. The proportion of older workers was taken into account as confounding variable.

Statistical analyses

All data analyses were performed using IBM SPSS Statistics, version 22 [44].

Variables were treated as work unit characteristics: work unit prevalence of poor work ability, mean work unit social capital value (mean of the individual values of all the workers working in that work unit), work unit prevalence of high need for recovery, mean work unit physical workload (mean of the individual physical workload scale values of all the workers working in that work unit) and work unit proportion of older workers.

The considered variables were described by mean, distribution range and standard deviation.

To evaluate the correlation between all considered variables Pearson's correlation coefficients were calculated.

Multiple linear regression analysis was carried out using work unit prevalence of poor work ability as dependent variable. Following independent variables were entered in the regression model: work unit proportion of older workers; mean work unit physical workload; mean work unit social capital value and work unit prevalence of high need for recovery. Regression coefficients (β), standardized regression coefficients and p values were computed.

Results

Table 1 summarizes the descriptives of the considered variables on work unit level.

The correlation matrix of all the considered variables is shown in Table 2. The highest and most significant correlation was found between prevalence of poor work ability and prevalence of high need for recovery. A reversed significant correlation was found between prevalence of poor work ability and work unit social capital. There was also a significant positive correlation between work unit physical work load and prevalence of high need for recovery.

The results of the multiple linear regression analysis for the 63 considered work units are given in Table 3. Both workplace social capital and need for recovery were significantly associated with work ability on work unit level. An increasing prevalence of high need for recovery was strongly associated with an increasing

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2019, 15 (4), 299–306

Table 1

Descriptives of the considered work unit variables: work unit prevalence (%) of poor work ability; mean work unit social capital (mean WUSC); work unit prevalence (%) of high need for recovery; mean work unit physical workload; work unit proportion of workers ≥ 45 yr (% older workers)

	n	mean	range	SD
% poor work ability	63	12.9	0.0–57.1	12.8
mean WUSC scale (0–10)	63	6.8	4.1–8.2	0.9
% high need for recovery	63	25.5	0.0–80.0	17.6
mean physical workload scale (0–10)	63	3.5	1.0–7.4	1.7
% older workers	63	45.2	0.0–93.3	23.0

Table 2

Matrix of Pearson's correlation coefficients for prevalence of poor work ability (% poor WA), work unit social capital (WU SC), prevalence of high need for recovery (% HNFR), work unit physical work load (WU PWL) and proportion of older workers (% OW) for the 63 work units

	% poor WA	WU SC	% NFR	WU PWL	% OW
% poor WA	1				
WU SC	-0.311*	1			
% HNFR	0.501**	0.056	1		
WU PWL	0.219	-0.249	0.318*	1	
% OW	0.246	-0.229	0.092	0.123	1

$*p < 0.05$, $**p < 0.01$

prevalence of poor work ability. Mean workplace social capital was inversely related to work unit prevalence of poor work ability: an increasing mean work unit social capital was associated with a decreasing prevalence of poor work ability.

Discussion

Both univariate and multivariate analyses showed similar results: a reversed significant relationship between prevalence of poor work ability and work unit social capital, and a strong positive relationship between prevalence of poor work ability and prevalence of high need for recovery.

The results of the multiple regression analysis in the current study confirmed earlier findings of the univariate analysis in public nursing homes between social capital and work ability [10], and allows to extrapolate the earlier findings to a wider array of jobs in the public sector: a significant negative relationship exists between work unit social capital and prevalence of poor work ability.

The percentage of high need for recovery was the most significantly associated factor with prevalence of poor work ability. This finding is completely compatible with the findings of the two earlier studies, where a significant relationship was found between need for recovery and work ability in construction workers [45] and meat processing workers [46].

Mean work unit physical workload was not significantly associated with prevalence of poor work ability, both in univariate and multivariate analysis.

Table 3

Multiple linear regression model (n = 63) with regression coefficients (β) and p-values for the association of mean work unit social capital, work unit prevalence of high need for recovery, mean work unit physical workload, and work unit proportion of older workers with work unit prevalence of poor work ability

	β	Standardized β	p
mean WUSC (0-10)	-4.655	-0.321	0.005
% high need for recovery	0.377	0.521	< 0.001
mean physical workload (0-10)	-0.321	-0.043	0.709
% older workers	0.072	0.130	0.228

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2019, 15 (4), 299–306

However, a significant correlation was found with prevalence of high need for recovery. This finding is concordant with results of earlier studies [27, 30, 47], was a significant relationship was found between physical work load and need for recovery on individual level.

This was a cross-sectional study, making it difficult to point out causal relationships. Longitudinal studies should be carried out to clarify the causal relationships.

In conclusion, the findings of our study are suggestive for an important role of need for recovery and workplace social capital in maintaining work ability. Factors that decrease need for recovery and increase workplace social capital need to be considered for improving work ability in a public sector population.

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ЗВ'ЯЗОК МІЖ НИЗЬКОЮ ПРАЦЕЗДАТНІСТЮ В ТРУДОВИХ КОЛЕКТИВАХ ТА СОЦІАЛЬНИМИ ВІДНОСИНАМИ – ПЕРЕХРЕСНИЙ АНАЛІЗ 63 РОБОЧИХ КОЛЕКТИВІВ ГРОМАДСЬКОГО СЕКТОРА

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Мета дослідження – вивчити зв'язок між поширенням низької працездатності в трудових колективах і соціальними відносинами серед населення державного сектора.

Матеріали та методи дослідження. 836 представників визначених робочих колективів (середній показник відповідей на робочий колектив: 84,8 %) з 7 організацій державного сектора взяли участь у перехресному анкетному дослідженні. Зв'язок між низькою працездатністю (індекс працездатності < 37), фізичним навантаженням, потребою у відновленні і соціальними відносинами вивчали на рівні робочих колективів з використанням двовимірних кореляцій і множинного лінійного регресійного аналізу.

Результати. Значна кореляція була встановлена між працездатністю, соціальними відносинами (r: -0,311) і високою потребою у відновленні (r: 0,501). Багатоваріантний аналіз показав, що потреба у відновленні (стандартний показник β 0,521) і соціальні відносини на робочих місцях (стандартний показник β -0,321) значною мірою пов'язані з працездатністю в робочих колективах.

Висновки. Результати дослідження показують важливу роль необхідності відновлення та підтримки соціальних відносин у робочих колективах державного сектора. Необхідно враховувати фактори, які впливають на зменшення потреби у відновленні й на поліпшення соціальних відносин на робочому місці при розгляді підвищення працездатності.

Ключові слова: працездатність, необхідність відновлення, соціальні відносини на робочому місці, фізичне робоче навантаження, громадський сектор

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СВЯЗЬ МЕЖДУ НИЗКОЙ РАБОТОСПОСОБНОСТЬЮ В ТРУДОВЫХ КОЛЛЕКТИВАХ И СОЦИАЛЬНЫМИ ОТНОШЕНИЯМИ – ПЕРЕКРЕСТНЫЙ АНАЛИЗ 63 РАБОЧИХ КОЛЛЕКТИВОВ ОБЩЕСТВЕННОГО СЕКТОРА

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Цель исследования – изучить связь между распространением низкой трудоспособности в трудовых коллективах и социальными отношениями среди населения государственного сектора.

ISSN 2223-6775, Ukrainian Journal of Occupational Health, 2019, 15 (4), 299–306

Материалы и методы исследования. 836 испытуемых, представителей определенных рабочих коллективов (средний показатель ответов на рабочий коллектив: 84,8%) в 7 организациях государственного сектора, приняли участие в перекрестном анкетном исследовании. Связь между низкой работоспособностью (индекс трудоспособности < 37), физической нагрузкой, потребностью в восстановлении и социальными отношениями изучали на уровне рабочих коллективов с использованием двумерных корреляций и множественного линейного регрессионного анализа.
Результаты. Значительная корреляция была установлена между трудоспособностью, социальными отношениями (r: -0,311) и высокой потребностью в восстановлении (r: 0,501). Многовариантный анализ показал, что потребность в восстановлении (стандартный показатель β 0,521) и социальные отношения на рабочих местах (стандартный показатель β -0,321) в значительной степени связаны с работоспособностью в рабочих коллективах.
Выводы. Результаты исследования показывают важную роль необходимости восстановления и поддержки социальных отношений в рабочих коллективах государственного сектора. Необходимо учитывать факторы, которые влияют на уменьшении потребности в восстановлении и на улучшение социальных отношений на рабочем месте при рассмотрении повышения трудоспособности.

Ключевые слова: работоспособность, необходимость восстановления, социальные отношения на рабочем месте, физическая рабочая нагрузка, общественный сектор

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Braeckman L. (ORCID ID 0000-0002-6016-8134) – contributed in analysis and interpretation of data, critically revised the manuscript and provided feedback.

Fundings: No funding was received for this study.

Надійшла: 12 вересня 2019 р.
Прийнята до друку: 21 жовтня 2019 р.

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