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ORIGINAL PAPER

Krystyna Kowalczuk
Elżbieta Krajewska-Kułak

INFLUENCE OF SELECTED SOCIODEMOGRAPHIC FACTORS ON PSYCHOSOCIAL WORKLOAD OF NURSES AND ASSOCIATION OF THIS BURDEN WITH ABSENTEEISM AT WORK

WPŁYW WYBRANYCH CZYNNIKÓW SPOŁECZNO-DEMOGRAFICZNYCH NA OBCIĄŻENIA PSYCHOSPOŁECZNE W PRACY PIELĘGNIAREK I ZWIĄZEK TYCH OBCIĄŻEŃ Z ABSENCJĄ W PRACY

Medical University of Bialystok / Uniwersytet Medyczny w Białymstoku, Białystok, Poland
Department of Integrated Medical Care / Zakład Zintegrowanej Opieki Medycznej

Abstract

Background: The aim of this study has been to determine if sociodemographic factors: age, sex and duration of employment as well as the presence of chronic comorbidities exert significant effect on subjective assessment of psychosocial working conditions of nurses. Moreover, we analyzed whether the abovementioned variables influenced the level of absenteeism at work during a year preceding the study. **Material and Methods:** The study, conducted between December 2012 and January 2013, included 789 nurses employed at public and private healthcare institutions in Białystok. The participants were surveyed by means of the "Psychosocial Working Conditions" questionnaire. **Results:** Women accounted for significantly higher scores of the Desired Changes Scale and significantly lower values of the Well-being Scale as compared to men. Respondents' age and duration of employment correlated significantly with the scores of the Demands and Desired Changes Scales. Moreover, we documented significant inverse correlations between the age and tenure and the scores of the Social Support and Well-being Scales. Furthermore, duration of employment was inversely correlated with the results of the Control Scale. The respondents with chronic conditions showed significantly higher scores of the Desired Changes Scale and significantly lower values of the Control and Well-being Scales. We found an inverse correlation between the number of sick leave days and the value of the Well-being Scale, which was also the case with a subset of nurses without chronic conditions. **Conclusions:** Similar to other professional groups, a nursing team management requires the use of human resources management techniques and identification of a person being responsible for coordination of the group and diagnosis of its psychosocial needs. Med Pr 2015;66(5)

Key words: job satisfaction, occupational medicine, quality of care, psychology of work, human resources management, stress

Streszczenie

Wstęp: Celem niniejszego badania było ustalenie, czy czynniki społeczno-demograficzne – wiek, płeć i staż pracy – oraz współistniejące schorzenia przewlekłe istotnie wpływają na subiektywną ocenę psychospołecznych warunków pracy przez pielęgniarki oraz czy wszystkie wyżej wymienione zmienne wpłynęły na długość absencji chorobowej w roku poprzedzającym badanie. **Materiał i metody:** Badaniem, prowadzonym od grudnia 2012 r. do stycznia 2013 r., objęto 789 pielęgniarek i pielęgniarzy zatrudnionych w publicznych i niepublicznych placówkach opieki zdrowotnej na terenie Białegostoku. Wszyscy respondenci wypełniali kwestionariusz Psychospołeczne Warunki Pracy. **Wyniki:** Kobiety uzyskiwały znamiennie wyższe wartości na skali pożądanych zmian oraz istotnie niższe wartości na skali dobrostanu niż mężczyźni. Wiek i staż pracy ankietowanych były znamiennie dodatnio skorelowane z wartościami skali wymagań i pożądanych zmian. Stwierdzono też istotne odwrotne korelacje między wiekiem i stażem pracy a wartościami na skali wparcia społecznego i dobrostanu. Ponadto staż pracy korelował odwrotnie z wartościami na skali kontroli. Respondenci chorujący przewlekle uzyskiwali znamiennie wyższe wartości skali pożądanych zmian oraz istotnie niższe skali kontroli i dobrostanu. Liczba dni absencji chorobowej była odwrotnie skorelowana z wartościami skali dobrostanu, także wśród pielęgniarek wolnych od schorzeń przewlekłych. **Wnioski:** Zarządzanie pracą pielęgniarek, podobnie jak w przypadku innych grup zawodowych, wymaga wprowadzenia technik z zakresu zarządzania zasobami ludzkimi oraz identyfikowania osoby odpowiedzialnej za koordynację pracy zespołu i diagnozę potrzeb psychospołecznych jego członków. Med. Pr. 2015;66(5)

Słowa kluczowe: satysfakcja z pracy, medycyna pracy, jakość opieki, psychologia pracy, zarządzanie zasobami ludzkimi, stres

Corresponding author / Autorka do korespondencji: Krystyna Kowalczuk, Medical University of Bialystok, Department of Integrated Medical Care, M. Skłodowskiej-Curie 7A, 15-096 Białystok, Poland, e-mail: kkowalczuk@op.pl
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INTRODUCTION

According to the definition proposed by the International Labor Organization, psychosocial workload results from interactions between the objectives of work and organization thereof, management of the working process, competencies and individual needs of a worker. This definition may be simplified due to operational reasons, and thus psychosocial workload may also be defined as an outcome of interaction between work-related stressors and individual predispositions of a worker.

However, despite numerous attempts, we still lack one universal classification of occupational stressors. This reflects the complexity of occupational stress and the variety of instruments used for its measurement on the one hand, and dynamic changes taking place in the working environment on the other. The latter changes may be associated with both the progress of civilization (e.g., implementation of novel technologies) and economic conditions (e.g., the necessity to cut personal costs) [1–3].

The second component of the interaction resulting in psychosocial workload i.e., predispositions of a worker, is not easy to define, either. Personality is a well-established measure of overcoming stress, and a factor determining the ways of coping the latter [4–6]. However, the term "personality" is difficult to define. An array of specialized psychological instruments e.g., the measures of state and trait anxiety, depressiveness or coherence, is used to determine one's personality for the purpose of empirical studies. However, no single universal instrument for determination of personality-related predispositions, as a factor counterbalancing the consequences of exposure to psychosocial workload, has been developed to date. In turn, the scales characterizing specific personality components have limited application in everyday practice of human resources management, as their outcomes cannot usually be interpreted by individuals without appropriate psychological background [7]. Therefore, research on sociodemographic variables that could be helpful in identification of individuals at increased risk of excess psychosocial workload and its harmful consequences still seems to be the most reasonable attitude to the problem in question.

Apart from the threats specific for majority of other professional groups, such as personnel shortages or too low salaries, employment in healthcare sector is associated with exposure to a number of additional psychosocial stressors. The latter includes necessity of dealing with patients (frequently suffering from incurable conditions), stress associated with exposure to biological factors, contact with demanding family members or shift work, among others. Due to character of their work, nurses constitute the group of medical personnel who is particularly exposed to the abovementioned factors [8,9]. The fact that this is a universal phenomenon, non-inherent specifically to the Polish healthcare system, was confirmed by a number of previous studies, conducted both in Poland and abroad [7–12]. However, although the abovementioned studies documented the extent of nurses' exposure to psychosocial workload, still little is known on personality-related determinants of the latter and its consequences [13].

Therefore, the aim of this study has been to determine if sociodemographic factors, such as age, sex and duration of employment as well as the presence of chronic comorbidities exert significant effect on subjective assessment of psychosocial working conditions of nurses. We hypothesized that identification of sociodemographic variables determining lower level of satisfaction with psychosocial working conditions (measured with a validated instrument) may allow us to characterize the risk groups of nursing personnel that require appropriate intervention of specialists in psychology and/or occupational medicine. Moreover, we analyzed whether the effects of the abovementioned variables were reflected by the level of absenteeism at work during a year preceding the study.

MATERIAL AND METHODS

The study, conducted between December 2012 and January 2013, included nurses employed at public and private healthcare institutions in Białystok (Eastern Poland). The study included all the nurses registered at the Local Nursing and Midwifery Council. The only inclusion criterion was a written informed consent to participate in the study. The protocol of the study was approved by the Local Bioethics Committee at the Medical University of Bialystok.

The study included a total of 789 nurses, out of which 721 were women and 69 were men. The age of the participants ranged between 20 and 58 years old (mean: 41.13±9.12 years of age). The duration of employment at a given institution and at a current position amounted to 16.79±10.35 years and 14.59±10.25 years, respectively. The vast majority of the respondents (N = 765; 96.9%) were employed at public healthcare institutions.

The participants were surveyed by means of the Psychosocial Working Conditions (PWC) questionnaire developed by Widerszal-Bazyl and Cieślak [14]. The instrument measures the level of stress associated with psychosocial characteristics of work derived from its 3 dimensions included in the Karasek's model of job stress [4,5]: demands, control and social support. The questionnaire includes 5 theoretical scales:

- Demands Scale (DS),
- Control Scale (CS),
- Social Support Scale (SS),
- Well-being Scale (D),
- Desired Changes Scale (DC).

The 2 latter scales represent adaptation of the scales included in the occupational stress questionnaire [14]. Based on exploratory factor analyses, 1–3 components were identified within each of the theoretical scales, as more detailed empirical subscales of the PWC: intellectual demands (DS1), psychophysical demands (DS2), conflict and overload (DS3), behavioral control (CS1), cognitive control (CS2), support from superiors (SS1), support from co-workers (SS2), physical well-being (WB1), mental well-being (WB2), and desired changes (DC1). Overall, the questionnaire includes 118 questions, out of which 103 questions associated with specific scales and subscales, and 15 questions regarding the sociodemographic characteristics of respondents.

After encoding the answers (some scales need to be reversed), the scores of individual questions forming theoretical scales and empirical subscales of the PWC are summed up, and the mean scores are calculated. The scores may range from 1–5 points, with higher values corresponding to higher levels of demands, social support, well-being, desired changes and control. These raw scores may be transformed into standardized values on the basis of the norms available for 8 various professional groups, including nurses. Validation studies confirmed satisfactory psychometric characteristics of the PWC. Internal consistency of the instrument estimated on the basis of the Cronbach's α coefficients ranged from 0.82 to 0.94 for the theoretical scales, and from 0.62 to 0.93 for the empirical subscales, and the test-retest correlation coefficients of the scales and subscales amounted to 0.66–0.76 and 0.61–0.75, respectively [15,16].

This study was based on the raw values of the PWC scales and subscales. Apart from determining their basic statistical characteristics, we compared the scores of male and female nurses, as well as the results of nurses affected by chronic conditions and free from disorders of this type. Moreover, we analyzed the power and direction of relationships between the scores of individual scales and subscales and the age of the respondents, duration of their employment at a given institution and at a current position and the number of sick leave days within a year preceding the study; all these parameters were determined by means of a survey using a pro-form developed solely for the purposes of this study. Furthermore, we analyzed the effect of age, sex, tenure and presence of chronic conditions on the number of sick leave days.

Normal distribution of continuous variables was verified by means of a Shapiro-Wilk test. Depending on a distribution, statistical characteristics of the continuous variables were presented as arithmetic means and their standard deviations – as medians, upper and lower quartiles. The intergroup comparisons of the values of continuous variables were conducted by means of a Mann-Whitney U test, and power and direction of associations between the pairs of the variables were determined on the basis of the Spearman's coefficients of rank correlation (R). All the calculations were carried out by means of the Statistica 10 (StatSoft) package, and the threshold of statistical significance for all the tests was set at $p \leq 0.05$.

RESULTS

Statistical characteristics of the raw scores of scales and subscales included in the PWC are presented in the Table 1.

Respondents' sex was shown to exert significant effect on the scores of the Well-being (WB) and Desired Changes (DC) Scales as well as on the values of psychophysical demands (DS2) and physical well-being (WB1) subscales. Women accounted for significantly higher scores of the Desired Changes Scale (DC) and psychophysical demands (DS2) subscale, and showed significantly lower values of the Well-being Scale (WB) scale and physical well-being (D1) subscale (Table 2) as compared to men.

Moreover, a number of significant correlations were documented between the respondents' age, duration of their employment and the scores of scales and subscales included in the PWC. Age, duration of employment at a present institution and at a current position correlated significantly with the scores of the Demands (DS) and Desired Changes (DC) Scales as well as with the values of psychophysical demands (DS2) subscale. Moreover, we documented significant inverse correlations between the respondents' age and duration of employment and the

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Table 1. Raw values of scales and subscales included in the Psychosocial Working Conditions Questionnaire
Tabela 1. Wyniki surowe skal i podskal kwestionariusza Psychospołeczne Warunki Pracy

Scale Skala	Me	Q25	Q75	Min.	Max Maks.	M	SD
DS	3.50	3.24	3.76	1.40	4.56	3.49	0.39
DS1	3.22	2.89	3.67	1.11	4.89	3.29	0.54
DS2	4.33	4.00	4.56	1.44	5.00	4.26	0.49
DS3	2.67	2.33	3.17	1.00	4.67	2.71	0.63
CS	3.05	2.80	3.30	1.85	4.40	3.06	0.43
CS1	2.40	2.10	2.80	1.20	4.40	2.45	0.54
CS2	3.70	3.30	4.00	1.33	5.00	3.66	0.52
SS	3.00	2.63	3.44	1.00	5.00	3.01	0.70
SS1	3.00	2.31	3.38	1.00	5.00	2.84	0.82
SS2	3.25	2.75	3.63	1.00	5.00	3.19	0.73
WB	3.64	3.23	4.05	1.64	5.00	3.62	0.54
WB1	3.73	3.27	4.18	1.64	5.00	3.71	0.63
WB2	3.55	3.18	3.91	1.64	5.00	3.53	0.53
DC	3.63	3.16	4.05	1.00	5.00	3.61	0.65

Me – median / mediana, Q25 – lower quartile / kwartyl dolny, Q75 – upper quartile / kwartyl górny, min. – minimal value / wartość minimalna, max – maximal value / maks. – wartość maksymalna, M – mean / średnia, SD – standard deviation / odchylenie standardowe.
DS – demands scale / skala wymagań, DS1 – intellectual demands / wymagania intelektualne, DS2 – psychophysical demands / wymagania psychofizyczne, DS3 – conflict and overload / wymagania wynikające z konfliktowości roli i przeciążenia, CS – control scale / skala kontroli, CS1 – behavioral control / kontrola behawioralna, CS2 – cognitive control / kontrola poznawcza, SS – social support scale / skala wsparcia społecznego, SS1 – support from superiors / wsparcie od przełożonych, SS2 – support from co-workers / wsparcie od współpracowników, WB – well-being scale / skala dobrostanu, WB1 – physical well-being / samopoczucie fizyczne, WB2 – mental well-being / samopoczucie psychiczne, DC – desired changes scale / skala pożądanych zmian.

Table 2. Raw values of scales and subscales included in the Psychosocial Working Conditions Questionnaire stratified according to respondents' sex
Tabela 2. Wyniki surowe skal i podskal kwestionariusza Psychospołeczne Warunki Pracy według płci respondentów

Scale Skala	Women Kobiety (N = 721) [Me (Q25–Q75)]	Men Mężczyźni (N = 68) [Me (Q25–Q75)]	p
DS	3.50 (3.47–3.53)	3.38 (3.22–3.54)	0.090
DS1	3.30 (3.26–3.34)	3.18 (2.92–3.45)	0.248
DS2	4.26 (4.23–4.30)	4.08 (3.86–4.29)	0.041
DS3	2.72 (2.67–2.76)	2.60 (2.40–2.80)	0.320
CS	3.06 (3.03–3.09)	3.13 (2.94–3.31)	0.414
CS1	2.46 (2.42–2.50)	2.59 (2.36–2.81)	0.201
CS2	3.66 (3.63–3.71)	3.67 (3.46–3.88)	0.864
SS	3.01 (2.96–3.06)	3.23 (2.92–3.54)	0.093
SS1	2.83 (2.78–2.89)	3.06 (2.71–3.41)	0.148
SS2	3.18 (3.13–3.24)	3.40 (3.08–3.72)	0.113
WB	3.61 (3.57–3.65)	3.87 (3.66–4.08)	0.011
WB1	3.69 (3.65–3.74)	4.08 (3.82–4.33)	0.001
WB2	3.52 (3.48–3.56)	3.66 (3.46–3.86)	0.161
DC	3.62 (3.57–3.67)	3.36 (3.16–3.56)	0.034

Abbreviations as in Table 1 / Skróty jak w tabeli 1.

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scores of the Social Support (SS) and Well-being (WB) Scales as well as with the values of behavioral control (CS1), support from superiors (SS1), support from co-workers (SS2) and physical well-being (WB1) subscales.

Furthermore, duration of employment, both at a present institution and at a current position turned out to be significantly correlated with the score of the subscale characterizing demands resulting from the conflict of role and overload (DS3), and was inversely correlated with the results of the Control Scale (CS). Additionally, duration of employment at a given institution showed an inverse correlation with the score of mental well-being subscale (WB2). The values of the Spearman's coefficients, albeit statistically significant, were low and ranged from 0.07 to 0.23 (Table 3).

Importantly enough, women were shown to be characterized by significantly older age (41.36±8.99 vs. 35.9 1±10.57 years old; p = 0.001), longer duration of employment at a given institution (17±10.23 vs. 12.48±12.29 years; p = 0.016) and longer duration of employment at the current position (14.79±10.16 vs. 10.05±11.36 years; p = 0.012) than men did.

Therefore, we analyzed associations between these parameters and the values of the PWC scales separately for men and women. Female and male respondents differed in terms of several of the relationships. Contrary to women, men did not show significant correlation between the age and the score of the Desired Changes (DC) Scale, and did account for significant associations between the age and the scores of the Demands (DS) Scale, Control Scale (SC), Well-being Scale (WB), and support from co-workers (SS2) subscale and mental well-being (WB2) subscale.

Moreover, in contrast to female respondents, the correlation between the age of male participants and their scores of the cognitive control (CS2) subscale was inverse. Contrary to females, we did not find significant correlations between the duration of male employment at a given institution and the scores of the Desired Changes (DC) Scale and mental well-being (WB2) subscale, and observed significant associations between the duration of male employment and the scores of the Control Scale (SC) and intellectual demands (DS1) subscale. Moreover, in contrast to female respondents, the correlation between the duration of employment of male participants and the scores of the cognitive control (CS2) subscale was inverse. Finally, women but not men showed significant correlations between the duration of their employment at a given position and the values of the Well-being (WB) Scale, Desired Changes (DC) Scale, conflict and overload subscale (DS3), behavioral control (CS1) subscale and support from co-workers (SS2) subscale. In turn, women lacked a significant correlation between the duration of their employment at a given position and the score of the cognitive control (CS2) subscale (Table 3).

A total of 147 (18.6%) participants declared to have been affected by at least one chronic condition. The prevalence of chronic conditions turned out to be significantly higher among women (N = 143/721, 19.8%) than among men (N = 4/69, 5.8%; p = 0.004). The respondents with chronic conditions accounted for significantly higher scores of the Desired Changes Scale (DC) and psychophysical demands (DS2) subscale, and showed significantly lower values of the Control Scale (SC), Well-being Scale (WB) and behavioral control (CS1), physical (WB1) and mental well-being (WB2) subscales (Table 4).

The number of sick leave days our participants used within a year preceding the study ranged from 0 to 182 (median – 0, lower quartile – 0, upper quartile – 5 days). We found a significant correlation between the number of sick leave days and the score of support from the superiors subscale (SS1), along with inverse correlations between the number of sick leave days and the values of the Well-being Scale (WB), and physical (WB1) and mental (WB2) well-being subscales (Table 5). In turn, the number of sick leave days was not associated with respondents' age (R = 0.008, p = 0.819), sex (women: median – 0, lower quartile – 0, upper quartile – 5 days; men: median – 0, lower quartile – 0, upper quartile – 0 days; p = 0.639), duration of employment at a present institution (R = 0.007, p = 0.839) and at a current position (R = –0.005, p = 0.896). The individuals with chronic conditions were significantly longer on a sick leave than the remaining respondents did (chronically diseased – median: 2.5, lower quartile: 0, upper quartile: 10 days; chronic disease-free – median: 0, lower quartile: 0, upper quartile: 4 days; p < 0.001).

Taking into account the abovementioned significant relationships between the presence of chronic conditions and the scores of some scales and subscales of the PWC as well as the significant associations between the latter and the number of sick leave days, we verified if subjectively assessed psychosocial working conditions exerted any effect on the absenteeism at work among respondents free from any chronic diseases. This latter group also accounted for significant inverse correlations between the scores of the Well-being Scale (WB), the subscales of physical (WB1) and mental (WB2) well-being and the number of sick leave days (Table 5).

Table 3. Spearman's coefficients of rank correlation (R) between the raw values of scales and subscales included in the Psychosocial Working Conditions Questionnaire, respondents' age and their seniority
Tabela 3. Współczynniki korelacji rang Spearmana (R) między wynikami surowymi skal i podskal kwestionariusza Psychospołeczne Warunki Pracy a wiekiem respondentów i ich stażem zatrudnienia

Scale Skala	Age [years]* Wiek [w latach]*			Employment at an institution [years]* Staż pracy w instytucji [w latach]*			Employment at a position [years]* Staż pracy na stanowisku [w latach]*		
	total ogółem	women kobiety	men mężczyźni	total ogółem	women kobiety	men mężczyźni	total ogółem	women kobiety	men mężczyźni
DS	0.08 (0.022)	0.07 (0.080)	0.36 (0.046)	0.11 (0.002)	0.09 (0.016)	0.50 (0.003)	0.10 (0.007)	0.08 (0.043)	0.40 (0.025)
DS1	0.04 (0.288)	0.03 (0.459)	0.22 (0.219)	0.05 (0.157)	0.04 (0.349)	0.37 (0.036)	–0.03 (0.496)	–0.04 (0.311)	0.24 (0.193)
DS2	0.13 (0.001)	0.10 (0.009)	0.44 (0.012)	0.14 (< 0.001)	0.10 (0.006)	0.52 (0.002)	0.12 (0.001)	0.09 (0.012)	0.44 (0.012)
DS3	0.02 (0.631)	0.01 (0.889)	0.25 (0.163)	0.07 (0.043)	0.06 (0.091)	0.26 (0.148)	0.12 (0.001)	0.10 (0.006)	0.23 (0.221)
CS	–0.07 (0.075)	–0.04 (0.289)	–0.49 (0.005)	–0.08 (0.022)	–0.06 (0.122)	–0.48 (0.005)	–0.15 (< 0.001)	–0.13 (0.001)	–0.42 (0.020)
CS1	–0.15 (< 0.001)	–0.14 (< 0.001)	–0.36 (0.044)	–0.15 (< 0.001)	–0.13 (< 0.001)	–0.37 (0.039)	–0.21 (< 0.001)	–0.19 (< 0.001)	–0.34 (0.059)
CS2	0.05 (0.161)	0.08 (0.040)	–0.47 (0.006)	0.01 (0.699)	0.04 (0.274)	–0.46 (0.007)	–0.03 (0.477)	–0.02 (0.688)	–0.36 (0.046)
SS	–0.14 (< 0.001)	–0.11 (0.003)	–0.58 (0.001)	–0.19 (< 0.001)	–0.17 (< 0.001)	–0.56 (0.001)	–0.20 (< 0.001)	–0.18 (< 0.001)	–0.42 (0.018)
SS1	–0.16 (< 0.001)	–0.14 (< 0.001)	–0.55 (0.001)	–0.20 (< 0.001)	–0.17 (< 0.001)	–0.55 (0.001)	–0.23 (< 0.001)	–0.21 (< 0.001)	–0.41 (0.023)
SS2	–0.09 (0.017)	–0.06 (0.119)	–0.50 (0.004)	–0.15 (< 0.001)	–0.12 (0.001)	–0.46 (0.008)	–0.13 (0.001)	–0.10 (0.008)	–0.35 (0.051)
WB	–0.09 (0.013)	–0.07 (0.074)	–0.41 (0.018)	–0.13 (< 0.001)	–0.12 (0.001)	–0.38 (0.001)	–0.11 (0.003)	–0.09 (0.018)	–0.30 (0.097)
WB1	–0.12 (0.001)	–0.09 (0.012)	–0.37 (0.037)	–0.17 (< 0.001)	–0.15 (< 0.001)	–0.37 (0.037)	–0.15 (< 0.001)	–0.12 (0.001)	–0.40 (0.024)
WB2	–0.04 (0.276)	–0.02 (0.565)	–0.36 (0.045)	–0.08 (0.031)	–0.07 (0.080)	–0.30 (0.097)	–0.05 (0.163)	–0.04 (0.342)	–0.19 (0.319)
DC	0.11 (0.002)	0.11 (0.005)	0.13 (0.483)	0.11 (0.002)	0.10 (0.011)	0.26 (0.157)	0.14 (< 0.001)	0.13 (0.001)	0.13 (0.480)

* p-values are presented in parentheses / w nawiasach podano wartości p.
Abbreviations as in Table 1 / Skróty jak w tabeli 1.

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Table 4. Raw values of scales and subscales included in the Psychosocial Working Conditions Questionnaire stratified according to the presence of chronic conditions or lack thereof in the case of respondents
Tabela 4. Wyniki surowe skal i podskal kwestionariusza Psychospołeczne Warunki Pracy w zależności od występowania lub braku schorzeń przewlekłych u respondentów

Scale Skala	Respondents Badani [Me (Q25–Q75)]		p
	chronic disease przewlekle chorzy (N = 147)	chronic disease-free bez chorób przewlekłych (N = 642)	
DS	3.52 (3.32–3.80)	3.48 (3.24–3.75)	0.087
DS1	3.22 (3.00–3.67)	3.22 (2.89–3.67)	0.659
DS2	4.44 (4.11–4.67)	4.33 (4.00–4.56)	0.009
DS3	2.67 (2.33–3.17)	2.67 (2.33–3.00)	0.593
CS	3.00 (2.75–3.20)	3.05 (2.80–3.35)	0.023
CS1	2.30 (2.00–2.60)	2.50 (2.10–2.80)	0.001
CS2	3.70 (3.30–4.00)	3.70 (3.30–4.00)	0.832
SS	3.00 (2.69–3.38)	3.00 (2.63–3.50)	0.497
SS1	2.88 (2.13–3.38)	3.00 (2.38–3.38)	0.152
SS2	3.25 (2.75–3.63)	3.13 (2.75–3.63)	0.953
WB	3.41 (3.14–3.82)	3.68 (3.29–4.09)	< 0.001
WB1	3.45 (3.00–3.91)	3.82 (3.27–4.27)	< 0.001
WB2	3.36 (3.09–3.73)	3.55 (3.27–3.91)	< 0.001
DC	3.79 (3.26–4.16)	3.58 (3.16–4.05)	0.024

Abbreviations as in Table 1 / Skróty jak w tabeli 1.

Table 5. Spearman's coefficients of rank correlation (R) between the raw values of scales and subscales included in the Psychosocial Working Conditions Questionnaire and duration of sick leave in the case of respondents
Tabela 5. Współczynniki korelacji rang Spearmana (R) między wynikami surowymi skal i podskal kwestionariusza Psychospołeczne Warunki Pracy a liczbą dni absencji chorobowej respondentów

Scale Skala	Respondents Badani			
	total ogółem (N = 789)		chronic disease-free bez chorób przewlekłych (N = 642)	
	R	p	R	p
DS	–0.022	0.541	–0.031	0.427
DS1	–0.017	0.644	–0.024	0.536
DS2	0.020	0.578	–0.004	0.920
DS3	–0.030	0.406	–0.028	0.485
CS	0.026	0.469	–0.005	0.890
CS1	0.016	0.657	0.017	0.664
CS2	0.039	0.279	–0.012	0.760
SS	0.068	0.059	0.043	0.279
SS1	0.078	0.030	0.048	0.225
SS2	0.049	0.172	0.038	0.340
WB	–0.115	0.001	–0.107	0.007
WB1	–0.123	0.001	–0.108	0.007
WB2	–0.088	0.013	–0.095	0.017
DC	0.011	0.767	0.019	0.627

Abbreviations as in Table 1 / Skróty jak w tabeli 1.

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DISCUSSION

This study showed that the level of subjective satisfaction of nurses with their work is to a large extent determined by sociodemographic variables. Our female respondents showed lower satisfaction with work, reflected by lower well-being (especially physical one) scores and higher values of desired changes scores. This finding may seem surprising as according to sociologists, despite frequently inferior positions, women usually account for higher levels of satisfaction with work than men do [17]. Thus, our findings imply that in the case of many women, the job of a nurse may be associated with excess physical and psychological workload, and contrary to a well-established stereotype, it may rather be a "masculine" profession. The results of few comparative studies of job satisfaction levels presented by male and female nurses suggest that although this parameter is usually lower among men, this mainly reflects financial conditions, rather than the workload itself [18–21].

Age turned out to be another demographic variable that exerted significant effect of the level of satisfaction with work presented by the surveyed nurses. Older age, and thus longer duration of employment were associated with higher values of demands and desired changes scores and lower level of support, well-being and control scores. The results of previous studies analyzing the effect of age and tenure on the job satisfaction of nurses are inconclusive. While the study of Irish nurses showed that both these factors correlated positively with the level of satisfaction with work [22], the results of recently published survey of Iranian nurses suggest that the level of job satisfaction decreases with age [19].

Both the results of this latter study and our findings suggest that the job satisfaction of nurses may be improved due to implementation of promotion policies and incentive schemes, and perhaps also short-term contracts based on the results of periodic assessment. Successful attempts to implement such instruments, widely used within the framework of human resources management of other professional groups, have also been recently described in the case of nursing personnel [23–25]. Our study noticeably showed that longer duration of employment was associated with lower levels of support from superiors and co-workers, being a well-established determinant of higher satisfaction with work among nurses [26–29]. This finding points to a lack of appropriate atmosphere in Polish nursing teams. Therefore, one may ask about a person who should be responsible for teambuilding activities within a group of nurses.

We showed that nurses affected with chronic conditions scored lower on a number of the PWC scales. Not surprisingly, the presence of a chronic disease turned out to be associated with lower levels of subjective physical and psychological well-being. However, it is noteworthy that the respondents suffering from chronic conditions also accounted for lower levels of control and higher desired changes scores. In the case of a nurse, responsible for offering care to persons in need, such combination may be reflected by poorer quality of services or even pose a health or life threat to patients.

During the second stage of the study we verified if the level of job satisfaction was reflected by organizational and economic aspects of work. Therefore, we analyzed an association between the measures of job satisfaction and absenteeism at work. The fact that individuals accounting for lower levels of psychological and physical well-being were more often on sick leave seems to be a logical consequence of being affected with chronic condition. However, it should be noted that respondents declaring higher levels of support from superiors were on a sick leave significantly more often than the remaining nurses. Perhaps this reflected concerns of surveyed nurses regarding continuity of their employment and resultant avoidance of sick leaves. This would pose another potential threat in the context of appropriate nursing process and patient safety.

However, further analysis involving solely a subset of nurses who were free from chronic conditions showed that the latter did not constitute the only determinant of absenteeism at work. We observed that absenteeism at work was also higher among nurses being free from chronic conditions and showing lower levels of well-being. This finding is consistent with the results of majority of previous studies, confirming that greater job satisfaction is associated with lower levels of absenteeism at work [10,30]. Therefore, both our findings and data from literature point to a presence of a specific vicious circle: one's dissatisfaction with working conditions is reflected by higher level of his/her absenteeism, which in turn results in deterioration of working conditions of the remaining personnel; this stimulates reluctance to the colleagues who are too frequently on a sick leave. In turn, poor interpersonal relationships at a workplace constitute an established risk factor for decreased job satisfaction [13].

To summarize, this study showed that sociodemographic characteristics of nurses may predict the level of their satisfaction with work, and thus directly determine the quality of care offered to their patients. We observed that younger, healthy persons and/or males showed higher levels of enthusiasm to their work. However, it should be remembered that youth will never replace experience, and nursing is not (and rather will not be) a masculine domain. Therefore, our findings point to a number of activities that need to be implemented.

Firstly, a policy of human resources management should be implemented at healthcare institutions, at least in terms of the diagnosis of needs, team building activities, periodical assessment and incentive schemes, e.g., promoting longer employment of more experienced individuals. Secondly, an appropriate level of occupational medicine services also needs to be provided; however, the specialists in occupational medicine should not limit their activities solely to granting work permits but also control wellbeing of nursing personnel on the basis of their medical histories and absenteeism at work. All the aforementioned activities should be coordinated by a direct supervisor of the nursing team, as the results of our study unambiguously point to a significant role of such an individual in building nurses' satisfaction with their job.

We are well aware of a number of possible limitations of this study. Firstly, due to cross-sectional character of the analysis we were unable to draw any firm conclusions but only hypothesized ones on potential causative relationships. Secondly, all our hypotheses were based on the results of univariate analyses. Therefore, it cannot be excluded that apart from sex, the level of job satisfaction shown by our nurses was determined solely by their age, defining both the duration of employment and the prevalence of chronic conditions in the study group. Unfortunately, due to its certain characteristics inherent in random selection (small fraction of men, persons being on a sick leave and/or affected by chronic conditions), the statistical power of our sample was too low for multivariate analyses. We considered this fact during interpretation of our findings.

CONCLUSIONS

Similar to other professional groups, management of a nursing team requires the use of human resources management techniques and identification of a person being responsible for coordination of the group and diagnosis of its psychosocial needs.

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