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Occupational Burnout and Stress in the Context of the Attitude towards Shiftwork and Work Satisfaction amongst Nurses

Ewa Wilczek-Rużyczka[1], Irena Iskra-Golec[2]

[1] Cracow University of Andrzej Frycz Modrzewski, Faculty of Psychology and Humanities, Cracow, Poland; [2] Jagiellonian University, Faculty of Management and Social Communication, Cracow, Poland

Address for correspondence: Ewa Wilczek-Rużyczka, Cracow University of Andrzej Frycz Modrzewski, Faculty of Psychology and Humanities, ul. Herlinga-Grudzińskiego 1, 30-705 Kraków, Poland, ewaroz0@poczta.onet.pl

Abstract

Introduction. An effort-reward imbalance during shiftwork may result in occupational burnout of nurses. The aim of this study is to analyze the relationship between occupational burnout and stress in the context of the attitude towards shiftwork and work satisfaction.

The material and methods. The study comprises 250 nurses aged between 22 and 54 with an average of 12 years' work experience. The following research methods were used: Burnout Inventory (MBI), Effort – Reward Imbalance, Attitude Towards Shiftwork Scale (ATSS) and Manual for Minnesota Satisfaction Questionnaire.

The results. The effort invested in work turned out to be the only significant predictor of emotional exhaustion. It is responsible for up to 31% of the variance in emotional exhaustion in a group of both low work satisfaction and negative attitude towards shiftwork.

The conclusion. The study shows that more attention needs to be paid to the effort invested in work and to the reward, as well as to the balance between the reward and effort in a group of low work satisfaction and negative attitude towards the shiftwork system.

Key words: **occupational burnout, occupational stress, shiftwork, job satisfaction, nurses**

Słowa kluczowe: **wypalenie zawodowe, praca zmianowa, satysfakcja z pracy, pielęgniarki, stres zawodowy**

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Introduction

Maslach [1] defined professional burnout as a syndrome of emotional exhaustion (EEX), depersonalization (DEP) and a lowered sense of personal achievement (PAR), which may appear in case of people working with others in a specific way. Maslach's point of view assumed that excessive and long-lasting emotional engagement, together with the impossibility to fulfil emotional demands of other people lead to fatigue and burnout. According to Wilczek-Rużyczka [2, 3], the main causes of the burnout syndrome include environmental factors, professional stress, and personal characteristics of the subject. The causes may be divided into three groups: (1) individual (low self-esteem, uncertainty, defensiveness, dependence, passivity), (2) interpersonal (relations with a carer – the type of carer's services, relations with co-workers, and supervisors), and (3) environmental (the environment and the working methods, responsibility, professional development) [4].

The Effort-Reward Imbalance (ERI) model has been widely reviewed in connection with occupational health research, due to the fact that it carries reasonable predicative power as far as adverse health and wellbeing are concerned. According to this model, the reciprocal relationship between the effort put into work and the reward gained out

of it is the factor determining work related benefits. The lack of reciprocity between costs and gains (high efforts/low rewards) define a state of emotional distress. The model represents a framework around the job situation [5]. The effort-reward imbalance was predictive of two dimensions of burnout: the emotional exhaustion and depersonalization among nurses [6]. In another study the effort-reward interactions were associated with job satisfaction and sickness absenteeism, but not with exhaustion and psychosomatic complaints. Both effort and reward show additive effects in the explanation of exhaustion [7].

Bennett et al. [8] and Nachreiner [9] come into conclusion that using various variables in assessing the attitude towards shiftwork can only be of limited effectiveness. According to them, it results from the fact that inconsistency in numerous studies on the issue can be observed. Sergean [10] points out that a variety of interactions between personal, social and organizational factors that affect the attitude towards shiftwork, may be the main cause of such a state of affairs. However, in the same study the problems with measurement itself have been stressed. Nachreiner [9] notices that there is a strong tendency to measure the attitude towards shiftwork either by means of interviewing the subjects with open questions, or using a single item indicator.

Fatigue at work and occupational burnout are two interrelated, but distinct phenomena [11]. Tiredness is connected with the shift-work system and limited time of rest. Moreover, insufficient amount of sleep performs an indirect role between stress and burnout [11].

The aim of this study was to analyze the relationship between occupational burnout and stress in the context of the attitude towards shiftwork and work satisfaction. The following research hypotheses were stated: (1) Occupational stress consisting of three components, i.e. effort, reward and the balance between the reward and effort constitutes a predictor of occupational burnout in the dimension of emotional exhaustion and depersonalization as well as the sense of self-achievement among nurses; and (2) work satisfaction and the attitude towards shiftwork are related to the increasing occupational burnout caused by occupational stress.

Methods

The research was carried out in Southern Poland on a group of 250 nurses aged between 22 and 54 (the average age of 34) with the average of 12 years' work experience. The participants were selected on a random basis, but each of them was required to have some experience in shiftwork and to give consent to take part in the study. Most of the nurses, i.e. 178, work on hospital wards; 157 of them in a day-night shiftwork system and the remaining 72 work in medical centers on a daytime basis. The sample group consisted of 170 nurses with secondary level education and 80 with tertiary level education. In order to obtain more detailed analysis of the relationship between the variables, the analysis was also carried out with the division (by median) into groups of nurses with either low or high occupational satisfaction, and with negative or positive attitude towards shiftwork. As a result, four groups have been created based on an effort-reward imbalance and the relationship of thereof with the three dimensions of occupational burnout: (1) group I – a group dissatisfied with work and with a negative attitude towards day-night shiftwork, (2) group II – a group dissatisfied with work and with a positive attitude towards day-night shiftwork, (3) group III – a group satisfied with work and with a negative attitude towards day-night shiftwork, and (4) group IV – a group satisfied with work and with a positive attitude towards day-night shiftwork.

The following research methods were used:

1. Maslach Burnout Inventory (MBI).
2. The Polish version of Effort-Reward Imbalance (ERI).
3. The Polish version of Attitude Towards Shiftwork Scale (ATSS).
4. Manual for Minnesota Satisfaction Questionnaire.

Maslach Burnout Inventory (MBI) consists of 22 items which define situations and emotions [12]. All of them are used in a description of the three dimensions of burnout: emotional exhaustion (EEX – 9 items; Cronbach's alpha 0.89), depersonalization (DEP – 5 items; Cronbach's alpha 0.71) and the loss of the sense of personal achievement (PAR – 8 items; Cronbach's alpha 0.83). All of the items are measured on a 7 point-rated scale, on which 0 is "never" and 6 is "daily".

According to the theoretical model, the Effort-Reward Imbalance questionnaire by Siegrist et al. [5] (adapted to the Polish conditions by Pająk) [13] was used for the assessment of occupational stress. The aim of the questionnaire was to measure two variables: the effort put into work (6 questions) and the reward gained out of it (11 items). The answers were placed on a 5 point-rated scale. The higher the result, the more effort had to be put into work and the less satisfactory reward was gained. The lack of balance between effort and reward (ERI) was calculated from the proportion of the variables, scale length correction (value 0.2–5.0) included [14]. If effort is not balanced with reward, the ERI rate is greater than 1. The transaction between high costs and small reward greater than 1.5 is assessed as a high risk factor as far as well-being, physical and psychological health are concerned [15]. On the other hand, if the reward compensates for the effort, the rate is lower than 1. It is a kind of balance interpreted as the lack of occupational stress. In the above mentioned research, the Cronbach's alpha rate, or the scale of efforts and rewards, equals 0.80.

The Attitude Towards Shiftwork Scale (ATSS) in the Polish version [16,17] measures an evaluative component of the attitude towards shiftwork and consists of 16 statements (11 of them scored) concerning positive and negative aspects of working in shifts. For each item two choices, "agree" or "disagree", were available. The statements were chosen as representative for "general problems of shiftwork". The scale has a single factor structure, the reliability of 0.88, and a reasonable total item correlation (0.48 to 0.66) [9].

A short form of the Minnesota Satisfaction Questionnaire [18] with 20 items was used for the examination of

satisfaction with professional life. The self-administered questionnaire was distributed to all people in their workplaces. Responses of 4 (satisfied) or 5 (very satisfied) were classified as "satisfied"; those of 1 (very dissatisfied) or 2 (dissatisfied) as "dissatisfied". The internal consistency of the questionnaire (0.85), was obtained using Cronbach's alpha coefficient.

Statistical analysis

To verify the study hypotheses, Pearson's product moment correlation and the multiple regression analysis (stepwise method) were implemented to evaluate the data obtained from the research carried out on the groups of nurses. All calculations were carried out with SPSS for Windows package, with the threshold of statistical significance set at $p = 0.01$.

Results

As no statistically valid differences were observed in case of any of the analyzed variables between the group of nurses working on day–night shifts and those working on day shifts only, all the analyses were performed on both groups as a whole. However, one has to be aware, that the day–night shift workers outnumbered those working day shifts only (157 to 93). It should be also mentioned, that the day shift workers were also researched on the Attitude Towards Shiftwork Scale.

The mean value of occupational burnout, as can be seen from **Table I**, is 18.89 and can be assessed as of average degree. Depersonalization reaches the value of 6.78 and the loss of the sense of personal achievement amounts to 33.97. The statistical analysis of the Effort-Reward Imbalance data brings us to a conclusion that the researched group of nurses is suffering from occupational stress.

Out of the three occupational stress-related factors ("the reward", " the effort" and "the balance between reward and effort") included in the regression model, the only significant predictor of emotional exhaustion is the effort invested in work. It enables us to predict to the highest degree (up to 31%) the results of emotional exhaustion in groups of both low work satisfaction and a negative attitude towards shiftwork (**Table II**). In the remaining groups the percentage of the explained variance of the variables is hovering at about 20%.

Table I. *Results (mean and standard deviation) of score in the sample group*

Score	Number	Mean	Standard deviation
Maslach Burnout Inventory (MBI)	250		
emotional exhaustion (EEX)		18.89	9.62
depersonalization (DEP)		6.78	4.58
loss of sense of personal achievements (PAR)		33.97	7.34
Effort–Reward Imbalance (ERI)	250		
effort		12.28	4.93
reward		16.99	9.22
Attitude Towards Shiftwork Scale (ATSS)	250	9.33	7.12
Manual for Minnesota Satisfaction Questionnaire	250	63.83	12.62

Source: Own elaboration.

Table II. *Statistically significant results of the stepping regression analysis of the relationship between occupational burnout in the dimension of emotional exhaustion among nurses (dependent variable) and occupational stress in different groups regarding work satisfaction and attitude towards shiftwork*

Group	R	R-squared	Adjusted R-squared	Non-standardized Coefficients	Standard Error	Standardized Beta Coefficients	T	Relevance
I	.563[a]	.317	.308	6.803	1.184	.563	5.745	.000
II	.437[a]	.191	.175	4.857	1.388	.437	3.500	.001
III	.449[a]	.201	.186	4.683	1.294	.449	3.619	.001
IV	.456[a]	.208	.193	5.334	1.416	.456	3.767	.000

[a] Predictors: (Constant), efforts
I – a group dissatisfied with work and with a negative attitude towards day-night shiftwork
II – a group dissatisfied with work and with a positive attitude towards day-night shiftwork
III – a group satisfied with work and with a negative attitude towards day-night shiftwork
IV – a group satisfied with work and with a positive attitude towards day-night shiftwork

Source: Own elaboration.

For the sense of depersonalization, the key predictor turned out to be the reward and the balance between reward and effort, excluding the group with low work satisfaction and a negative attitude towards shiftwork (**Table III**). Those variables can explain variations in the results (between 15% and 23% for depersonalization).

The analysis does not show any significant relationship between the assumed predictors within the third dimension of occupational burnout, i.e. the sense of self-achievement.

Work satisfaction and the attitude towards shiftwork related to occupational burnout (**Table IV**).

It can be seen from **Table V**, that the widely observed relations between the levels of occupational burnout dimensions and the independent variables, such as age, and especially the length of service, are in a direct proportion (i.e. the longer professional experience and more advanced age, the higher occupational burnout rate) for groups I and II, while for group IV (satisfied with work and with positive attitude towards day-night shiftwork), the relationship between age, length of service and depersonalization is also visible, but it is inversely proportional. Therefore, it should be assumed that being satisfied with work protects from burnout as the years of work go by.

Discussion

We can see from the results of this study, that out of the three occupational stress-related factors such as "reward", "effort" and "the balance between reward and effort" included in the regression model, the only significant predictor of emotional exhaustion is the one connected with the efforts invested in work. It enables to predict to the highest degree that for the results of emotional exhaustion and a relatively high sense of depersonalization the key predictors are the reward and the balance between the reward and effort in a group of low work satisfaction and negative attitude towards shiftwork. Work satisfaction and the attitude towards shiftwork are related to occupational burnout. The only significant predictor of emotional exhaustion was effort related to work, which is responsible for up to 31% of the variance in the dependent variable at an extremely high significance level. The analysis did not show any significant relationship between the hypothesized prognostic factors and personal accomplishments.

It should be emphasized that the lack of balance between effort and reward is a key factor for the development of the burnout syndrome among nurses. Due to this reason, the intervention programs founded for supporting

Table III. *Statistically significant results of a stepping regression analysis of the relationship between occupational burnout in the dimension of depersonalization among nurses (dependent variable) and occupational stress in different groups regarding work satisfaction and the attitude towards shiftwork*

Group	R	R-squared	Adjusted R-squared	Non-standardized Coefficients	Standard terror	Standardized Beta Coefficients	t	Relevance
II	.383[b]	.146	.130	1.287	.431	.383	2.986	.004
III	.292[a]	.085	.068	1.459	.662	.292	2.204	.032
IV	.474[b]	.225	.210	1.464	.370	.474	3.957	.000

[a] Predictors: (Constant), awards
[b] Predictors: (Constant), balance
II – a group dissatisfied with work and with a positive attitude towards day-night shiftwork
III – a group satisfied with work and with a negative attitude towards day-night shiftwork
IV – a group satisfied with work and with a positive attitude towards day-night shiftwork

Source: Own elaboration.

Table IV. *Relationship between work satisfaction as well as the attitude towards shiftwork and occupational burnout*

		EEX	DEP	PAR
Work Satisfaction Average	Pearson Correlation	–.365**	–.184**	.367**
	Significance (bilateral)	.000	.004	.000
	N	248	248	248
Attitude Towards Shiftwork Average	Pearson Correlation	–.273**	–.226**	.192**
	Significance (bilateral)	.000	.000	.003
	N	239	239	239

**Correlation is significant at 0.01 (bilateral).

Source: Own elaboration.

Table V. *Intercorrelations between the professional burnout levels and independent variables with consideration of "satisfaction with work and attitude towards day-night shiftwork"*

Group	*Maslach Burnout Inventory (MBI)*		Correlation with independent variables			
			Age	Number of children	Length of service	Length of service in shiftwork
I	EEX	Pearson Correlation	.234*	.172	.292*	.144
		Significance	.049	.146	.013	.263
	DEP	Pearson Correlation	.087	.064	.061	.062
		Significance	.472	.588	.611	.634
	PAR	Pearson Correlation	–.174	–.007	–.259*	–.156
		Significance	.147	.953	.028	.227
II	EEX	Pearson Correlation	.412**	.286*	.293*	.186
		Significance	.003	.036	.035	.200
	DEP	Pearson Correlation	.143	.050	.065	.044
		Significance	.317	.720	.649	.766
	PAR	Pearson Correlation	–.018	.090	–.038	–.014
		Significance	.902	.517	.788	.925
III	EEX	Pearson Correlation	–.249	.031	–.131	.097
		Significance	.079	.826	.349	.533
	DEP	Pearson Correlation	–.452**	–.104	–.346*	–.141
		Significance	.001	.454	.011	.360
	PAR	Pearson Correlation	.158	–.056	.098	.258
		Significance	.269	.689	.485	.091
IV	EEX	Pearson Correlation	–.081	.082	–.005	–.150
		Significance	.565	.546	.970	.288
	DEP	Pearson Correlation	–.372**	–.325*	–.264*	–.099
		Significance	.006	.015	.049	.484
	PAR	Pearson Correlation	.019	–.223	.141	–.001
		Significance	.893	.098	.301	.992

* Correlation is significant at 0.05 (bilateral).
** Correlation is significant at 0.01 (bilateral).
I – a group dissatisfied with work and with a negative attitude towards day-night shiftwork
II – a group dissatisfied with work and with a positive attitude towards day-night shiftwork
III – a group satisfied with work and with a negative attitude towards day-night shiftwork
IV – a group satisfied with work and with a positive attitude towards day-night shiftwork

Source: Own elaboration.

prevention or reduction of professional burnout should focus on achieving a balance between those factors. It can be done by either lowering the effort or by increasing the reward [6].

Occupational stress influenced the emotional exhaustion and depersonalization, but not personal accomplishment. After controlling the length of shifts, fatigue at work was a fully mediated link between stress and emotional exhaustion. The effort-reward imbalance increased fatigue at work, and intensified fatigue was draining forces. Sleep difficulties had a partial indirect effect on depersonalization and together with stress it had the main effect on the emotional exhaustion among surgical nurses [19].

Another research shows that the level of burnout among nurses working in the Regional University Hospital can be assessed as mediocre. The emotional exhaustion can be related to the day–night shift work. Depersonalization, on the other hand, may lead to difficulty in interdisciplinary collaboration. Both of the mentioned factors may result in a final decision to leave the working environment. Finally, a relatively low degree of personal accomplishment can be connected with the decreased social esteem of the nursing profession [20]. Our study does not show any relationship between effort, reward and personal accomplishment although the examined nurses experienced the effort–reward imbalance (physical strain, time pressure, low salary, the lack of recognition and occupational safety). Consequently, they were exposed to occupational stress, and, as presented, with higher levels of emotional exhaustion and were predisposed to cynical attitudes, such as depersonalization, as shown in the previous studies conducted in Europe [5].

Other studies focus the on means of finding a solution to the current problems related to low levels of burnout [21, 22].

Working in shifts, including night shifts, and the constantly increasing length of work during day shifts have been proved to be the burnout factors not only in this case, but also in previous studies [23].

The presented results lead to the conclusion that an intervention which would prevent burnout and the falling job satisfaction to the very low values should be of major concern [24].

Conclusions

1. This study confirms that occupational stress modulates job burnout but solely in terms of emotional exhaustion and depersonalization.
2. As the majority of nurses work in a day-night shiftwork system, the research indicates that more attention needs to be paid to the effort invested in work as well as the reward and the balance between the reward and effort in a group of low work satisfaction and of negative attitude towards the shiftwork system, as these are fundamental predictors of occupational burnout in the dimension of emotional exhaustion and depersonalization.

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