

Effort–reward imbalance and burnout among nurses

Arnold B. Bakker PhD

Department of Social and Organizational Psychology, Utrecht University,
Utrecht, The Netherlands

Christel H. Killmer PhD

Institute of Medical Sociology, University of Dusseldorf, Dusseldorf, Germany

Johannes Siegrist PhD

Institute of Medical Sociology, University of Dusseldorf, Dusseldorf, Germany

and Wilmar B. Schaufeli PhD

Department of Social and Organizational Psychology, Utrecht University,
Utrecht, The Netherlands

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This study among a sample of 204 German nurses tested the hypothesis that an imbalance of high extrinsic efforts spent (i.e. job demands) and low extrinsic rewards obtained (e.g. poor promotion prospects) are associated with the burnout syndrome: the depletion of nurses' emotional resources. The results of a series of analyses of variances confirmed this hypothesis, by showing that those nurses who experienced an effort–reward imbalance (ERI) reported higher levels on two of the three core dimensions of burnout (i.e. emotional exhaustion and depersonalization) than those who did not experience such an imbalance. Moreover — as additionally hypothesized — significant interaction effects indicated that burnout (i.e. emotional exhaustion and reduced personal accomplishment) was particularly prevalent among those nurses who experienced ERI and put relatively high intrinsic effort into their jobs, as reflected by their strong tendency to be personally in control over job conditions.

Keywords: effort–reward imbalance, burnout, nursing, job satisfaction

This study is based on data from Christel Killmer's doctoral dissertation research. Especially the idea of analysing the connections between effort–reward imbalance and burnout among nurses, the hypotheses, the data and some descriptive as well as some analytic results are part of this dissertation.

Correspondence: Arnold B. Bakker, Utrecht University, Department of Social and Organizational Psychology, Heidelberglaan 1, P O Box 80 140, 3508 TC Utrecht, The Netherlands. E-mail: A.Bakker@fss.uu.nl

INTRODUCTION

A major appeal of human service work is the challenge of dealing with difficult situations, such as helping people experiencing major life problems. Such work can be quite rewarding, for instance when patients recover because of the professional's efforts. However, the relationship between caregivers and their recipients may also be experienced as stressful, as will be the case when, for instance, a nurse is repeatedly confronted with difficult

and demanding patients who are not appreciative of the efforts made to nurse and assist them. In such a situation a chronic disequilibrium is expected to develop whereby caregivers continuously have to put more into the relationships with their recipients than they receive back in return. In the long run, the stressful experience resulting from this disequilibrium may augment the risk of physical and mental health. More specifically, states of exhaustion and burnout are likely to be experienced.

Burnout is defined as a psychological syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that occurs among individuals who work with other people, in particular in conflicting or otherwise critical situations (Maslach & Schaufeli 1993, Maslach 1993). Nurses are considered to be particularly susceptible to burnout. Their jobs are typically stressful and emotionally demanding, since nurses are repeatedly confronted with people's needs, problems and suffering. Indeed, several studies have shown that burnout is positively correlated with the amount of time nurses spend with their patients (Cronin-Stubbs & Brophy 1985), with the intensity of the emotional demands made by their patients (Lewinson *et al.* 1981), and with exposure to patients with a poor prognosis (Hare *et al.* 1988).

To explain the links between stressful working conditions and burnout, theoretical models are needed. One such model, the dual-level social exchange model (Schaufeli *et al.* 1996), was extensively studied with respect to burnout in several service occupations. This model claims that social exchange processes at the interpersonal as well as at the organizational level trigger burnout as a result of lack of reciprocity. According to equity theory (Walster *et al.* 1978), people have a characteristic tendency to pursue reciprocity in interpersonal relationships. Reciprocity exists when a person's investments and outcomes in a relationship are proportional to the investments and outcomes of the other party in that relationship (Adams 1965), or when a person's own investments equal his or her own outcomes (Pritchard 1969).

Equity theory claims that a lack of reciprocity or perceived inequity provokes psychological distress (Walster *et al.* 1978). Drawing upon this theory, Buunk & Schaufeli (1993) have argued that in human services professions — such as nursing — psychological distress may take the form of burnout. Perceived inequity in service occupations precipitates emotional exhaustion by depleting a person's psychological resources, while at the same time lowering a person's self-esteem (Schaufeli & Janczur 1994). One way of dealing with this negative state is to decrease one's investments in the relationships with patients. That is, by responding to them in a depersonalized (i.e. derogatory, callous, and cynical) way instead of expressing genuine empathic concern. Several studies have provided empirical evidence for the dual-level social exchange model, by showing positive associations

between perceptions of inequity and burnout (particularly emotional exhaustion and depersonalization) among human service professionals, including nurses (Van Yperen *et al.* 1992), general practitioners (Van Dierendonck *et al.* 1994), and teachers (Van Horn *et al.* 1999).

Drawing upon the notion of a psychological contract (Rousseau & Parkes 1993), Schaufeli *et al.* (1996) have argued that social exchange processes similar to those observed in interpersonal relationships govern the relationship of the employee with his or her organization. The psychological contract is defined in terms of expectations held by employees about the nature of their exchange with the organization. According to the dual-level social exchange model, these expectations may concern concrete issues such as workload, autonomy or support from supervisors or colleagues. The basic idea is that unmet expectations result in a violation of the psychological contract and initiate a sense of inequity. Cross-sectional as well as longitudinal research has provided evidence for the contention that such a lack of reciprocity at the organizational level can also result in burnout (Schaufeli *et al.* 1996, Van Dierendonck *et al.* 1996).

The model of effort-reward imbalance (ERI, Siegrist 1996) provides a different theoretical approach toward explaining the adverse health effects produced by a lack of reciprocity at work. In this model, the work role in adult life is considered a basic tool to link important emotional and motivational needs of a person, such as self-esteem and self-efficacy, with the social opportunity structure. The availability of an occupational status is associated with recurrent options of contributing and performing (job tasks), of being rewarded and esteemed (salary, income), and of belonging to some significant group (e.g. colleagues). Yet, these potentially beneficial effects of the work-role on self-regulation are conditional on a basic prerequisite of exchange in social life, that is, reciprocity. Effort at work is spent as part of a socially organized exchange process, to which society at large contributes in terms of rewards. These rewards are distributed to the working population by three transmitter systems: money, esteem and status control.

The model of effort-reward imbalance claims that a lack of reciprocity between costs and gains, i.e. a high cost-low gain condition, defines a state of emotional distress with special propensity to autonomic arousal and associated strain reactions. This holds especially true if poor reward is experienced in terms of poor job stability, forced occupational change, downward mobility, or lack of promotion prospects (low occupational control). Therefore, having a demanding, but unstable job, achieving at a high level without being offered any promotion prospects, are examples of a particularly stressful working context. In this model, two sources of high effort at work are defined, an extrinsic source, the demands on the job, and an intrinsic source, the motivations of the individual worker

in a demanding situation. In this latter regard, the concept of 'need for control' was introduced, defining a personal pattern of coping with the demands at work (see Method section). It is likely that persons with high need for control spend high costs in terms of energy mobilization and job involvement, even under conditions of relatively low gain.

Despite some similarities between the two models of dual-level social exchange and effort-reward imbalance, they clearly differ with respect to the delineation of reciprocity. Whereas perceived inequity in exchange relationships at the interpersonal or organizational level is the critical component in the first model, the second model puts its emphasis on a mismatch between effort and reward as part of a socially organized exchange process. Therefore, it is interesting to know whether the two models may be associated with similar health effects. So far, the model of effort-reward imbalance was mainly studied using cardiovascular risk and disease as criteria (for overviews, see Siegrist 1996, Bosma *et al* 1998). More recently, additional outcomes such as physical symptoms (Peter *et al* 1998) and sickness absence behaviour (Peter & Siegrist 1997) were analysed.

THE STUDY

The present study is based on a doctoral dissertation by one of the co-authors (Killmer 1999), and reports on associations between effort-reward imbalance and burnout. More specifically, the following hypotheses are tested:

- 1 The imbalance between extrinsic effort and reward (ERI) is significantly associated with all three dimensions of burnout, i.e. emotional exhaustion, depersonalization, and reduced personal accomplishment.
- 2 A high level of intrinsic effort (high need for control) is significantly associated with all three dimensions of burnout.
- 3 The combination of imbalance between extrinsic effort and reward (ERI) and high intrinsic effort (need for control) produces an interaction effect on all three dimensions of burnout. In other words, we expect intrinsic effort to moderate the relationship between ERI and burnout.

Method

Participants and procedure

Participants in this study were 207 female nurses. Most of these nurses were younger than 30 years (60.4%). They were recruited from the day and night shifts at a university hospital in Germany, and volunteered by completing a paper-and-pencil questionnaire (see below). Three nurses did not fill out a substantial number of items, and therefore their data were excluded from further analyses. Eighty-three per cent of the sample worked full-time.

Experience in nursing ranged from 3 to 39 years, with an average of 10.5 years and a median of 8 years. Apart from the fact that younger nurses more often were willing to participate in this study, we could not detect any selection bias which might argue against a representative sample of female nurses working on shift-work.

Measures

The model of effort-reward imbalance was measured by Likert-type and categorical items.

Intrinsic effort was assessed by a well-tested questionnaire measuring 'need for control', a critical personal style of coping with work demands (Matschinger *et al* 1986). The questionnaire contains 44 dichotomous items describing excessive job involvement, positive and negative feelings, and attitudes related to work commitment as measured by six uni-dimensional scales. By means of confirmatory factor-analyses, two latent factors have repeatedly been found, namely 'vigor' and 'immersion' (Siegrist 1996). According to the theoretical assumption, the latter factor defines a critical style of coping with demands reflecting frustrated but continued efforts and associated negative feelings. A high score on the scales measuring immersion indicates a critical stage of intrinsic effort. This high score is defined as follows: upper tertile of the 29 items defining the total factor-score of immersion based on the following four sub-scales: (a) need for approval, (b) competitiveness and latent hostility; (c) impatience and disproportional irritability, and (d) personal inability to withdraw from work obligations. This critically elevated coping style resulting from high levels of need for control (immersion) was shown to predict premature manifestation of cardiovascular events (Siegrist *et al* 1990). The internal consistency of factor-based scales of 'need for control' was analysed in a number of prospective and cross-sectional studies where Cronbach's alpha ranges from 0.70 to 0.85. Participants were divided into two groups: an at-risk group (upper 33%) and a not-at-risk group (remaining 67%) (Siegrist & Peter 1996).

Extrinsic effort was assessed following Siegrist & Peter's (1996) guidelines. An index of five items measuring work pressure, responsibility, control and patient-induced distress was constructed. This scale had a moderate internal consistency: Cronbach's alpha = 0.53. Note that this coefficient is probably somewhat inflated by the limited variance in item-scores, as a result of dichotomized response-categories.

Occupational rewards were measured by nine items asking about (in)adequacy of salary (economic reward), and about appreciation and support from superiors and colleagues (esteem reward). Unfortunately, the original items measuring occupational status control (poor promotion prospects, status inconsistency, forced mobility, job insecurity) were not included in the current version of the questionnaire. Thus, our measures of occupational

rewards do not fully reflect the potential stressfulness inherent in low-gain conditions of nursing (see Discussion). A reliability analysis indicated that this scale had a moderate internal consistency, Cronbach's alpha = 0.63.

Effort-reward imbalance (ERI) was measured by calculating the ratio between the extrinsic effort index (E) and the reversed reward index (R): $E/(R * c)$, whereby c is a correction factor (the number of items in the nominator divided by the number of items in the denominator — in the present study: $5/9 = 0.5555$). As a result a value of 1.0 indicates effort-reward balance, whereas values beyond 1.0 indicate a critical condition of high cost-low gain. Therefore, all values beyond 1.0 were recoded into category 1 (at risk population), and all values below or equal to 1.0 were recoded into category 0 (population not at risk).

Burnout was measured with a slightly modified German translation (see Enzmann & Kleiber 1989) of the Maslach Burnout Inventory (MBI, Maslach & Jackson 1986). The MBI consists of three sub-scales: emotional exhaustion (nine items; Cronbach's alpha = 0.85), depersonalization (five items; Cronbach's alpha = 0.71), and personal accomplishment (eight items; Cronbach's alpha = 0.77). The items are scored on a seven-point rating scale, ranging from 'never' (0) to 'every day' (6). High levels of emotional exhaustion and depersonalization, and low levels of personal accomplishment, are indicative of burnout.

Analyses

To examine the relationship between (a) ERI and burnout, (b) intrinsic effort and burnout, and (c) the interaction-term and burnout, three separate analyses of variance (ANOVAs) were carried out with ERI and intrinsic effort as the independent variables, and the three burnout dimensions as the dependent variables. All data analyses were performed using the statistical package for the social sciences (SPSS).

Results

Absolute level of burnout

An indication of the absolute level of burnout in the nurse sample under consideration was obtained by

comparing the nurses' MBI scores with those of approximately 900 female German human service professionals (e.g. nurses, physicians, psychologists, social workers) who served as a provisional normative sample, and with those of a comparison sample of approximately 300 nurses (Kleiber *et al.* 1998) (we are grateful to Dirk Enzmann for providing these data). Table 1 presents the mean burnout scores for the three samples. As can easily be seen from this table, the sample in the current study was clearly more burned-out than the normative sample. More specifically, the sample under consideration reported significantly more feelings of emotional exhaustion than the normative sample, $t(1103) = 4.47$, $P < 0.001$, higher levels of depersonalization, $t(1115) = 6.09$, $P < 0.001$, and lower levels of personal accomplishment, $t(1080) = 4.86$, $P < 0.001$.

The comparison between the present sample and the comparison sample of nurses showed that these findings cannot simply be ascribed to sample differences regarding profession. Indeed, the sample under consideration also reported more emotional exhaustion than the group of some 300 nurses, $t(502) = 2.67$, $P < 0.01$, higher levels of depersonalization, $t(504) = 2.93$, $P < 0.01$, and lower levels of personal accomplishment, $t(490) = 2.55$, $P < 0.001$ (see mean burnout scores in Table 1).

Effort-reward imbalance and burnout

Emotional exhaustion. Consistent with hypothesis 1, the ANOVA showed a significant main effect of ERI on emotional exhaustion, $F(1, 200) = 35.33$, $P < 0.001$. Nurses who experienced an imbalance between efforts spent at work and rewards obtained felt more emotionally drained than those who did not (no imbalance $M = 19.29$, imbalance $M = 26.74$). In addition, in line with hypothesis 2, there was a significant positive impact of intrinsic effort on emotional exhaustion, $F(1, 200) = 6.97$, $P < 0.01$. Thus, nurses with a strong tendency to be personally in control over job conditions (high need for approval, competitiveness, disproportionate irritability, and inability to withdraw from work), were more likely to be emotionally exhausted than their counterparts (low intrinsic effort $M = 20.99$, high intrinsic effort $M = 25.14$).

Table 1 Burnout among German nurses in the present study, among a normative sample of female German human service professionals, and among a comparison sample of German nurses

Burnout component	Present sample ($n = 204$)		Normative sample ($n = 878-913$)		Comparison sample ($n = 288-302$)	
	M	SD	M	SD	M	SD
Emotional exhaustion	22.21 _a	9.59	18.90 _b	9.38	19.88 _b	9.61
Depersonalization	8.01 _a	5.61	5.71 _b	4.70	6.54 _c	5.46
Personal accomplishment	33.25 _a	7.34	35.98 _b	6.81	34.98 _b	7.46

Note: means for each burnout component with unequal subscripts differ significantly at the $P < 0.05$ level.

Table 2 Effort–reward imbalance, intrinsic effort and burnout among nurses ($n = 204$)

Burnout component	Effort–reward imbalance	
	No	Yes
Emotional exhaustion		
Low intrinsic effort	19 04 _a (9 65)	24 35 _a (9 52)
High intrinsic effort	19 98 _a (9 49)	31 44 _b (9 32)
Depersonalization		
Low intrinsic effort	6 53 _a (5 73)	8 77 _b (5 63)
High intrinsic effort	8 65 _{ab} (5 32)	10 72 _b (5 40)
Personal accomplishment		
Low intrinsic effort	33 40 _a (7 42)	34 02 _a (7 37)
High intrinsic effort	34 17 _a (7 12)	30 15 _b (7 22)

Note Standard deviations are put between brackets Means that do not share the same subscript differ significantly at the $P < 0.05$ level The number of participants per cell is as follows No ERI low IE $n = 91$ and high IE $n = 33$, ERI, low IE $n = 53$ and high IE $n = 27$

Consistent with hypothesis 3, the results showed clear evidence for an ERI \times intrinsic effort interaction effect, $F(1, 200) = 5.09$, $P < 0.05$ (see Table 2). Simple contrast-analyses revealed that ERI had particularly a large impact on emotional exhaustion under conditions of high intrinsic effort that is when the nurses had a strong tendency to be personally in control over job conditions, $F(1, 200) = 5.40$, $P < 0.05$. In contrast, for those nurses who were characterized by low intrinsic effort, the impact of ERI on emotional exhaustion was not significant, $F(1, 200) = 3.30$, $P > 0.05$. These latter findings provide clear empirical evidence for hypothesis 3, claiming that intrinsic effort moderates the relationship between ERI and burnout

Depersonalization In accordance with hypothesis 1, the ERI \times intrinsic effort ANOVA showed a significant main effect of ERI on depersonalization, $F(1, 200) = 8.97$, $P < 0.005$. Nurses who experienced an effort–reward imbalance reported more cynical attitudes towards their patients than nurses who did not experience such an imbalance (no imbalance $M = 7.09$, imbalance $M = 9.43$). In addition, there was a clear main effect of intrinsic effort, $F(1, 200) = 5.97$, $P < 0.01$. Thus, nurses with a strong tendency to be personally in control over job conditions felt more depersonalized ($M = 9.58$) than others ($M = 7.35$). However, the predicted ERI \times intrinsic effort interaction did not approach significance for the depersonalization measure, $F < 1$, ns. Accordingly, in contrast with hypotheses 1 and 2, hypothesis 3 was not confirmed.

Personal accomplishment The means on the personal accomplishment measure also acted in the

predicted way (see Table 2) The ANOVA results revealed a significant ERI \times intrinsic effort interaction for personal accomplishment, $F(1, 200) = 4.16$, $P < 0.05$. Simple contrasts showed that the effect of ERI on feelings of personal accomplishment approached significance if nurses exhibited a high level of intrinsic effort, $F(1, 200) = 3.72$, $P < 0.055$. For nurses who exhibited a low level of intrinsic effort, the association between ERI and personal accomplishment reduced to non-significance, $F < 1$, ns. These findings are consistent with hypothesis 3, and with the interaction effect found for the emotional exhaustion measure. However, there were no main effects of ERI and of intrinsic effort on personal accomplishment, F 's < 1 , ns

DISCUSSION

The objective of the present study was to investigate associations between the experience of work stress among nurses, as measured by the model of effort–reward imbalance (Siegrist 1996) and burnout. We hypothesized that effort–reward imbalance would be positively associated with emotional exhaustion and depersonalization, and negatively with personal accomplishment. Moreover, we predicted that the impact of imbalance of extrinsic effort and reward (ERI) on burnout is moderated by intrinsic effort, i.e. the tendency of experiencing high levels of job involvement, latent hostility, and need for approval.

Findings based on a sample of female nurses working in a German university hospital indicated that ERI was indeed predictive of two core dimensions of burnout: emotional exhaustion and depersonalization. In addition, a significant interaction between ERI and intrinsic effort revealed that levels of emotional exhaustion were elevated among those nurses who experienced an imbalance and who had a strong tendency to be personally in control over job conditions. Moreover, nurses' feelings of personal accomplishment were lowest among those who experienced a mismatch between demands and rewards, and who put a lot of intrinsic effort into their jobs.

This latter finding is of particular interest as it highlights the perceptual and motivational dynamics underlying the coping style 'need for control': it is likely that persons with a high need for control spend high costs in terms of energy mobilization and job involvement, even under conditions of relatively low gain. This may be explained partly by the characteristics of their perceptual and attributional style, a tendency to underestimate demands and to set task goals for themselves that are too high with regard to their capabilities. By doing so, the self-gratifying experience of 'being in control' of a challenging situation may be transformed into an experience of failure and feeling of reduced personal accomplishment. In a similar argument, Ward & Eisler (1987) showed that

persons scoring high on type A behaviour — a construct explicitly related to the coping style 'high need for control' — tend to set task goals for themselves that are too high with regard to their capabilities so that the goal is not attained, which, in turn, leads to dissatisfaction and distress.

Taken together, these findings provide evidence in favour of the usefulness of the effort-reward imbalance model as applied to nursing. However, two predicted effects were not found: the positive relationship between ERI and reduced personal accomplishment, and the moderator effect of intrinsic effort on the ERI-depersonalization relationship. These results agree with many other studies indicating that emotional exhaustion and depersonalization are primarily related to job stressors, whereas reduced personal accomplishment is more strongly related to lack of resources (i.e. lack of social support; see, for a review, Lee & Ashforth 1996). In this context, one may conclude that distress (exhaustion) and poor self-esteem (reduced personal accomplishment), rather than feelings of depersonalization, result from work goals that are set too high.

Additionally, Killmer's (1997) findings add to the robustness of the effect of ERI on burnout, i.e. emotional exhaustion and depersonalization. Using logistic regression analysis instead of ANOVA, dichotomized variables of the three burnout measures revealed a number of significantly elevated odds ratios produced by measures of high effort and low reward at work. As mentioned earlier, the observed effect of ERI on burnout in this study may be underestimated as one of the three dimensions of occupational reward, occupational status control, was not measured. This is particularly critical as previous findings revealed the strongest contribution of low occupational status control to the prediction of impaired health (for an overview, see Siegrist 1996).

An indication of the absolute level of burnout in the nurse sample under consideration was obtained by comparing the nurses' MBI-scores with those of a normative sample of female human service professionals, and with a comparison sample of German nurses. The sample in the current study reported significantly more feelings of emotional exhaustion, higher levels of depersonalization, and lower levels of personal accomplishment than the two other samples. Remember that most nurses in our study were younger than 30 years. Thus, the current findings are in line with earlier studies showing that burnout is observed more often among younger employees than among those aged over 30 or 40 years (see, for a review, Schaufeli & Enzmann 1998). However, apart from the fact that younger nurses more often were willing to participate in this study, we could not detect any selection bias which might argue against a representative sample of female nurses working on shift-work. Thus, we have no evidence to attribute the main findings on the relationship between

ERI and burnout to a systematic selection bias operating in the current study.

Despite these comments, the current study suffers from several limitations. Most importantly, findings are based on data from a cross-sectional study design which precludes any interpretation of potentially causal effects. For instance, we cannot rule out the interpretation that nurses suffering from burnout tend to judge extrinsic efforts and rewards more negatively, or that an unmeasured personal disposition, such as negative affectivity, may underlie the reported associations. Negative affectivity is the disposition to respond negatively to questionnaires and may inflate correlations between self-reported work characteristics and self-reported well-being (Brief *et al.* 1988, Chen & Spector 1991). In this study, no measure of negative affectivity was included.

A further limitation concerns the lack of objective measures of impaired health or impaired functional capacity. Both in terms of theoretical and practical implications of reported findings, it is important to know whether and to what extent high levels of burnout indicate a state of physical or mental vulnerability and disease susceptibility. As indicated in the Introduction section, the model of effort-reward imbalance was successful in predicting manifestation of new cardiovascular events, and in explaining frequency or level of cardiovascular risk factors (see, for an overview, Siegrist 1996). Moreover, effort-reward imbalance was associated with elevated levels of symptom experience in service workers such as bus and subway drivers (Peter *et al.* 1998). Complementary information on subjective and objective health measures would have added substantially to the validity of the reported findings.

Finally, in view of the similarities and dissimilarities between the models of effort-reward imbalance and of dual-level social exchange, a comparative empirical test of the two models is indicated. Such a comparison could not be performed in the framework of the current study. Yet, it would be particularly instructive as both models so far explained different types of outcome measures: the dual-level social exchange model was related to subjective outcomes such as burnout and well-being, whereas the effort-reward imbalance model was primarily related to physiological conditions and clinically relevant physical disease. It may well be that a combination of critical elements from either model improves the explanatory power of work stress-related associations with indicators of impaired health.

Practical implications

Subject to the above-mentioned limitations, the present findings may have important implications for future research and practice. The study emphasizes the importance of effort-reward imbalance for the development of

burnout among nurses. This suggests that intervention programmes aimed at preventing or reducing burnout among nurses, may focus upon restoring the balance between nurses' efforts and their rewards. Balance can be achieved by lowering nurses' efforts or by increasing their rewards. Management may increase nurses' esteem reward, for example, by training supervisors in adopting a coaching leadership style. In such a training, supervisors may learn how to provide instrumental and emotional support to nurses, and to give them adequate feedback about their performance.

In addition, a detailed analysis of nurses' daily tasks may give more insight into those aspects of their tasks that are particularly demanding. One of the conclusions may be that working programmes should be rescheduled, technical support be provided, and the work-place ergonomically redesigned. This may, in turn, lower the work pressure. Hospital management may also consider a limitation of nurses' case load, or a re-allocation of tasks related to patient contacts in nurses' daily programmes. Such interventions may restore the balance between efforts and rewards, and prevent or reduce burnout among nurses.

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