The art of balance: addressing occupational stress and well-being in emergency department nurses

Wijn, A.N. de

General discussion

The current dissertation revolves around occupational strain and the well-being of emergency department (ED) nurses. The research described in this dissertation is divided in two parts. In the first part (chapter 2 and 3), we aimed to assess the prevalence of stress-related outcomes and levels of well-being in ED nurses and pinpoint the most prominent job factors related to these outcomes. In the second part (chapter 4, 5 and 6), we aimed to assess how job factors and (consequently) well-being of ED nurses can effectively be improved. The research described in this dissertation mainly revolves around a 2.5-year intervention implementation project in 15 EDs in the Netherlands. The overall effectiveness of this project as well as effective elements regarding the approach (organization-directed versus a multilevel approach), the process of implementation (number and fit of actions, communication during the project and employee participation) and the context (Psychosocial Safety Climate) were evaluated. In this chapter the main findings of the studies will be discussed. This chapter ends with the limitations and strengths of the current research, theoretical and practical implications, and recommendations for future research.

Summary and discussion of the main findings

Prevalence and predictors of occupational stress and well-being in ED nurses

In chapter 2 it was shown that Dutch ED nurses are at risk of developing stress-related symptoms: 39.6% scored above the cut-off for emotional exhaustion (a key indicator of burnout), 14.4% reported sleep problems, and 15.7% symptoms of post-traumatic stress disorder (PTSD) on a (sub)clinical level. In addition, there was high turnover intention, whilst the majority of ED nurses also reported high levels of work engagement and job satisfaction. Overall, these results confirm the general image of the ED being a burdening as well as highly rewarding and satisfying place to work (Johnston et al., 2016).

The prevalence of stress-related outcomes in Dutch ED nurses is in line with international findings and far greater than found in the working population in general. This is problematic for a number of reasons. First of all, if left untreated these symptoms may develop into more long-lasting outcomes including psychological illnesses such as anxiety disorders and depression. In addition, nurses that experience high stress levels are hampered in their ability to provide good patient care and more likely to make medical errors (Hall et al., 2016). Finally, stress-related outcomes may increase the rates of absenteeism, presenteeism (which is related to less productivity and reduced patient safety) and turnover in the organization (Brborovic

et al., 2017; Roberts & Grubb, 2014). Regarding the latter, the results from chapter 2 showed that at the start of the current intervention project, one out of three ED nurses considered to find a job outside the hospital in the next three years.

Our findings suggest that the working environment plays an important role in the occurrence of stress-related outcomes in ED nurses (chapter 2 and 3). In line with the Job Demands-Resources (JD-R) model (Demerouti et al., 2001), we found evidence for an energy depletion process predicted by exposure to job demands (i.e. the health impairment pathway). For example, job demands rather than job resources were related to emotional exhaustion, with a prominent role for worktime demands and aggression/conflict situations (chapter 2). Furthermore, frequent exposure to patient-related stressful situations (emotionally demanding situations, aggression/conflict situations and critical events) was directly associated with emotional exhaustion and symptoms of PTSD in ED nurses (chapter 3).

In chapter 3, it was shown that ED nurses are exposed to both low intensity and high intensity demands and that these have differential effects on their health and well-being. For example, emotionally demanding situations and aggression/conflict situations with patients and/or their accompanies were most strongly related to emotional exhaustion, a key indicator of burnout (chapter 3). As burnout complaints develop due to exposure to chronic job stressors, this finding suggests that these demands are (generally) considered low intense by ED nurses but continuous exposure may result in stress-related outcomes over time. On the other hand, critical events (including resuscitation and exposure to suffering and death) were most strongly related to symptoms of PTSD. Although the cumulative exposure to critical events makes ED nurses especially prone to the development of PTSD symptoms (chapter 3), these symptoms can already occur after a single stressful event. As such, these results suggest that the work environment of ED nurses possess risks to the development of immediate stress-reactions as well as delayed stress-related outcomes that may first appear after a long time of exposure to the job demand.

Although the JD-R model implies that the impact of job demands can be reduced by the presence of adequate job resources, limited support was found for the buffering hypothesis in the current research. In chapter 2, none of the job resources appeared to play an important role in the occurrence of stress-related outcomes, with the exception of a small buffering

effect for staffing levels. In chapter 3 a buffering effect of within worktime recovery (i.e., opportunities for breaks) was found but only regarding the impact of emotionally demanding situations on PTSD symptoms. Furthermore, in contrast to previous research (Adriaenssens et al., 2015; Escribà-Agüir & Pérez-Hoyos, 2007; Garcia-Izquierdo & Rios-Risquez, 2012; Schneider & Weigl, 2018), we found no protective effect of autonomy and social support. In general, studies assessing the JD-R model have found inconsistent results for the buffering hypothesis (Van Veldhoven et al., 2019). A possible reason concerns an imperfect fit of job resources to the job demands. For example, it has been suggested that job resources are mainly able to buffer job demands if they are of similar nature (i.e., emotional, cognitive, or physical), which is described by the Demands-Induced Strain Compensation (DISC) model (de Jonge & Dormann, 2003). In the current research, a screening survey was used, which enables studying many job factors, and is an important asset in pinpointing potential psychosocial risk factors for interventions to target. However, more detailed instruments, for example those differentiating between emotional and instrumental support, may provide better insight in the buffering role of job resources in the ED setting. Another explanation concerns the limited variability and both high (e.g. social support) and low (e.g. within worktime recovery) availability of certain job resources in the current setting, which makes it statistically more difficult to find a buffering effect. A final explanation concerns the possibility that the importance of job resources may only become visible under a reasonable amount of job demands. Considering that the ED working environment consists of a number of high job demands, the effect of job resources in this setting may only be limited.

Nevertheless, in line with the Effort-Recovery (ER-) model (Meijman & Mulder, 1998) we did find an important buffering role for recovery. In chapter 3 it was shown that within worktime recovery could buffer the effect of emotional demanding situations on PTSD symptoms. In addition, for ED nurses that reported more recovery experiences during leisure time, the relationship between patient-related stressful situations and stress-related outcomes, was weakened. As such, regular breaks during worktime and the ability to relax, psychologically detach, master new skills and having control over ones` leisure time, can be considered important assets in terms of ED nurses` well-being. These findings are in line with the literature on the nursing population in general showing that regular (micro) breaks and the ability to psychological detach from work can reduce the impact of job demands on stress-related outcomes (Wendsche et al., 2017). Considering the low levels and little variability of within

worktime recovery (chapter 3), suggesting that ED nurses regularly skip breaks, this could be an important target for interventions.

Finally, the JD-R model implies that job resources, alone or in combination with challenging demands, also have a direct motivational role resulting in positive outcomes on the individual (e.g. higher job and life satisfaction) and organizational level (e.g. higher productivity, better patient care, less turnover and absenteeism) (Bakker & Demerouti, 2017). In line with this, the current results showed that work engagement was predicted by job resources rather than job demands, with the most prominent role for developmental opportunities (chapter 2). With few studies focusing on the positive outcomes of work in the ED setting, and hardly any considering developmental opportunities, this finding provides important insights in how work engagement in this setting can be stimulated.

Nevertheless, it must be noted that the level of work engagement amongst ED nurses was (very) high and it has recently been suggested that this can also have a negative impact on employee well-being due to its relationship with overcommitment (Leiter, 2019). This could be especially the case in the ED setting which includes high job demands and involves working with people, in which the output of the work is directly visible. As such, it is likely that work engagement in this setting can lead to overinvestment, triggering the energy depletion process of the JD-R model and thus increasing employees' risk of developing stress-related outcomes. Still, further research is necessary regarding the relationship between work engagement and symptoms of energy depletion, such as burnout, in order to conclude whether and at what levels work engagement may be considered a negative rather than a positive outcome (Leiter, 2019).

Stress management interventions

After gaining a better understanding of the ED working environment and the predominant job factors related to (occupational) well-being of ED nurses, chapter 4, 5 and 6 focused on how stress-related outcomes in ED nurses can be prevented/reduced and well-being promoted. Using meta-analytic techniques, we investigated the overall effectiveness of stress management interventions for nurses reported in the literature and aimed to identify factors relating to greater intervention success (chapter 4). Next, we conducted and evaluated the effectiveness of a 2.5-year intervention implementation project in 15 EDs (chapter 5 and 6). The project

was based on the `psychosocial risk management assessment` (PRIMA) by Leka and Cox (2010) and integrated principles of participatory action research to empower EDs in designing and implementing their own interventions. The EDs were compared retrospectively based upon their approach (multilevel versus solely organization-directed), the implementation process (number and fit of actions, communication and employee involvement) and whether or not they participated in the psychosocial safety climate (PSC) intervention offered halfway in the project.

Person-directed versus organization-directed approach

The results of the meta-analysis showed that there is a main focus on person-directed interventions in the scientific literature, whereas few organization-directed or multilevel (organization-directed complemented by a person-directed intervention) interventions were found. This is in line with meta-analyses regarding stress management interventions for the general working population (Richardson & Rothstein, 2008; Van der Klink et al., 2001) and can be explained as organization-directed and multilevel interventions are more time and cost intensive, more disruptive to organizations status quo and more likely lead to resistance in the organization (Heaney & Van Ryn, 1990). Still, it is questionable whether the strong focus on studying person-directed interventions, will lead to finding a sustainable solution regarding stress-related outcomes in the nursing population. First of all, person-directed interventions insinuate that stress and stress-related outcomes occur due to inefficient coping of the individual (Heaney & Van Ryn, 1990). However, in many high demand work settings, including the hospital, the high prevalence of stress-related outcomes amongst employees suggests that the source of the problem lies within the working environment rather than employees` coping strategies (Heaney & Van Ryn, 1990). As such, person-directed interventions in these settings are more likely to treat the symptoms rather than the causes of stress. Indeed, the results of the current meta-analysis showed that although moderate effects were found directly after a person-directed intervention, the effects were reduced in the small number of studies conducting a follow-up measurement. On another level, considering practical implications, implementing person-directed interventions whilst there are clear indications that the causes of stress are within the working environment, could even be considered unethical. This has already been put forward more than thirty years ago by Heaney and Van Ryn (1990), but the arguments seem particularly applicable to the current situation. First of all, it may incorrectly imply to employees that they themselves are at the source of any stress-related symptoms

that they may experience, which can even lead to adverse effects. For example, inability to cope with a highly demanding environment, even after participation in a person-directed intervention, may very well increase individuals' perceptions of inadequacy and hopelessness (Heaney & Van Ryn, 1990). Second, solely implementing person-directed interventions may also incorrectly increase employees' beliefs that the working environment and organizational policies are outside of their control and thus need to be accepted. That being said, two things must be noted. First of all, there seems to be a mismatch between research and practice regarding this point: Whilst the literature search indicated a main focus on person-directed interventions, the results of the effect evaluation shows that EDs preferred an organization-directed approach to tackle psychosocial risks. In addition, these points of criticism are not meant to suggest that person-directed interventions are unimportant. In fact, the results of the meta-analysis show that (certain) nurses do benefit from them, at least on a short-term basis and mainly on milder stress-related symptoms. The findings merely insinuate that to provide long-term solutions, there is a need for more research on understanding interventions that (also) aim to change working conditions.

Regarding the few studies that aimed to evaluate a solely organization-directed or multilevel approach, small, albeit significant effects on stress-related outcomes in nurses were found (chapter 4). Although this may sound discouraging, there are many reasons for this finding that should be taken into account. First of all, organization-directed interventions have a preventative aim, focusing on improving the working environment and thereby employee well-being. As such, it will take time before changes in the working environment will be visible on indicators of well-being (Nielsen & Noblet, 2018). Indeed, the organization-directed studies included in the meta-analysis first showed significant effects in the long-term follow-up (i.e. after six months). Furthermore, considering the current intervention implementation project in the EDs, which included mainly an organization-directed approach, positive effects were found on job factors, but not yet on indicators of well-being (chapter 6). Possibly not yet, because the project included a time frame of 2.5-years and most actions were first implemented in the second half of the project. Overall, the findings of the meta-analysis (chapter 4) and those of the effect evaluation (chapter 6) suggest that it may take several months or even years before changes in job factors are reflected in improved well-being and reduced stress-related outcomes. Furthermore, several researchers suggest that due to the complexity of these interventions, in which many stakeholders (i.e. management, employees)

can influence the overall results, the effectiveness of these projects also highly depends on the activation of processes (Nielsen & Miraglia, 2016). This is discussed in more detail below.

Finally, in contrast to what many scholars suggest (Holman et al., 2018; Lamontagne et al., 2007; McVicar, 2016; Roberts & Grubb, 2014; Semmer, 2006), a multilevel intervention was not more effective than a solely organization-directed approach. This was neither the case in the meta-analysis (chapter 4) nor in the current intervention project (chapter 6) in which we could compare both approaches. One reason for this finding may be that in multilevel interventions not all employees are equally exposed to the person-directed part of the intervention. For example, in the current intervention implementation project we found limited use of person-directed interventions that were offered by those EDs adopting a multilevel approach. This may imply that there is still stigma around mental health issues in this setting (Knaak et al., 2017) and a change of culture is necessary for these type of interventions to be successfully adopted by the employees. Second, the person-directed part implemented by the EDs was often limited (e.g. education on burnout or a preventive consultation with an occupational health professional, instead of therapy sessions with a trained psychologist or coach). Considering that a large amount of ED nurses experienced stress-related symptoms (chapter 2), it is likely that multilevel interventions will only be more effective when also including professional help to treat existing stress-related problem in this population.

The process of intervention implementation

To gain more insight in the effectiveness of organization-directed interventions and how this could be improved we followed recommendations of Nielsen and Miraglia (2016) and used a realist approach. As such, we aimed to understand not only the effectiveness of interventions on improving job factors and well-being, but also how these effects were achieved (i.e. the implementation process) and under what circumstances (i.e. the role of Psychosocial Safety Climate). The few organization-directed studies (with or without a person-directed intervention) included in the meta-analysis provided limited insight regarding these factors. Mainly, the results showed that all organization-directed and multilevel interventions for nurses included some form of employee involvement (chapter 4). With only one study conducting a thorough process evaluation, it remained difficult to understand why (often) small effects were obtained and how this could be improved in the future.

The design of the current intervention project provided a unique opportunity to assess and even compare the effects of process variables. In line with the broader literature on organization-directed interventions, the results showed that implementing more fitting actions to the identified psychosocial risk factors, better communication during the project and/or more employee involvement, predicted a more effective project in terms of improved job factors and in some cases even employee well-being (chapter 6). However, activity (the number of actions implemented during the intervention project) was generally not related to greater effectiveness (chapter 6). This finding is in line with theoretical propositions regarding this type of interventions, which imply that the effectiveness of these projects relates strongly to the process by which actions are designed and implemented (Kristensen, 2005; Nielsen & Miraglia, 2016; Nielsen & Randall, 2013). As such, the current results provide further evidence of the important role these processes play in whether or not the project leads to the desired outcomes.

The role of the context

Finally, although research regarding the importance of process variables is growing (Havermans et al., 2016), we know little regarding the necessary circumstances to trigger these (Nielsen & Miraglia, 2016). In the current study we assessed the role of the organizational context (i.e. Psychosocial Safety Climate), regarding its direct and indirect (i.e. by activating process variables during the intervention project) effects on improving the working environment and employee well-being. In chapter 5 it was shown that a more favorable Psychosocial Safety Climate (PSC) plays an important facilitating role in stimulating communication on (the progress of) the intervention project and increasing employee participation. Second, in chapter 6 it was shown that PSC can successfully be increased by means of an intervention, but the follow-up time was too limited to assess any effects of the improved PSC on changes in job factors or employee well-being. Overall, the current results suggest that assessing and if unfavorable optimizing PSC is a good starting point for a successful intervention project in terms of a more favorable process by which actions are implemented. Nevertheless, it must be noted that PSC could not predict the number or fit of the actions nor positive appraisals of employees towards the intervention project. Based upon the interviews with ED management and employees, it is likely that other contextual factors, including available staffing, financial resources to take actions but also sufficient mental resources to deal with change, are necessary to activate these processes.

Although not the focus of the current research project, there is reason to believe that improvement in job factors will eventually also benefit relevant organizational outcomes, such as staff turnover and quality of care. For example, in the RN4Cast study including 12 European countries, 500 hospitals and more than 33,000 nurses (Sermeus, 2015), a favorable working environment – measured by nurse participation in hospital affairs, the priority of the organization on quality of care, positive leadership and supervisor support, adequate staffing and resources, and positive collaboration between physicians and nurses (Lake et al., 2002) - was related to less intention-to-leave amongst nurses (Sermeus, 2015; Aiken et al., 2012). Furthermore, in hospitals with better working environments nurses were half as likely to report poor to fair quality of patient care or give their hospitals poor or failing grades on patient safety (Aiken et al., 2012).

Theoretical implications

The findings of the current research have some important theoretical implications. First of all, in line with other research (Van Veldhoven et al., 2019) the current results confirm the existence of the health-impairment pathway and the motivational pathway of the JD-R model. Nevertheless, the overall explanatory value of job resources for work engagement was limited (chapter 2). This suggests that although job resources play a motivational role, other factors seem to be of greater importance for work engagement in the current setting. Considering the type of work ED nurses perform, these factors may relate to the direct visibility of the output of one's work and the ability to contribute to other people's lives. An interesting model in this respect, is the Job Characteristics Model of Hackman and Oldham (1975) which includes 'task significance' i.e. the importance of the task for the organization or society, as predictor for meaningfulness of work and consequently positive organizational outcomes such as work engagement and job satisfaction. Overall, when aiming to study the motivational pathway and the occurrence of engagement in ED staff, the JD-R model may benefit from an extension including job content related factors.

In many occupational stress theories the topic of balance plays an important role. According to the JD-R model, healthy work environments include a balance in job demands and job resources. In addition, the Effort-Recovery (ER) model suggests that efforts exerted at work will lead to adverse effects if these are not balanced out by sufficient recovery. In the current dissertation new insights were gathered regarding a healthy balance in job factors in the ED setting. First of all, the buffering effect of job resources was very limited. In fact, the results

suggested that in highly demanding settings, a healthy equilibrium may only be found by lowering the job demands. This is an important finding, as most of the organization-directed interventions reported in the literature (see chapter 4), focused on enhancing resources including positive management practices, teamwork, staffing and communication. Only a few focused on reducing stressors, such as establishing lean practices and creating more time for patient care. In addition, it is likely that not only the availability of job resources as suggested by the JD-R model, but also their fit plays an important role in their ability to balance out the effects of job demands. For example, it is possible that buffering effects are more profound when including more detailed resources (i.e. differentiating between instrumental and emotional support rather than assessing social support in general). The Demand-Induced Strain Compensation (DISC) model of de Jonge & Dormann, 2003 may provide further insights assessing whether enhanced fit between the job resource, job demand and outcome, increases buffering effects.

Furthermore, the current results suggest that ED nurses benefit from a healthy balance between patient care and self-care. For example, exposure to patient-related stressful situations was less strongly related to negative outcomes in those nurses that had more within worktime recovery and/or recovery experiences during leisure time. This is in line with the Effort-Recovery model (Meijman & Mulder, 1998), suggesting that psychological and physiological changes in employees due to effort exerted at work can be reversed by taking time for adequate recovery. Still, the Effort-Recovery model merely suggests that recovery is necessary to prevent negative health outcomes and does not provide any directions regarding how often recovery should take place. Some new insights were gained as both recovery during leisure time and recovery within worktime showed were beneficial, suggesting that shorter as well as longer opportunities for recovery are important for employee well-being.

Regarding effective stress management interventions, the current results support the idea that the implementation process plays an important role in the effectiveness of an organization-directed (whether or not including a person-directed intervention) approach (Nielsen & Noblet, 2018). Furthermore, in line with the realist approach we found that a more favorable context in terms of Psychosocial Safety Climate, could trigger important processes related to greater intervention success, including better communication on and employee participation in the project. Overall, the results confirm the idea that intervention effectiveness depends

upon the activation of certain processes, which are triggered under certain circumstances. As such, we agree with Nielsen and Miraglia (2016) that the effectiveness of (especially organization-directed) stress management interventions may be best understood by studying Context-Mechanism-Outcome configurations. Finally, the findings suggest an extension of the theory of Psychosocial Safety Climate, with PSC having an indirect impact on job factors by influencing the way organizations implement actions to preserve or increase employee well-being.

Practical implications

Taking the results of all studies together, there are a number of important practical implications. First of all, the results suggest that to prevent and/or reduce stress-related outcomes in ED nurses, efforts should focus on lowering job demands, especially worktime demands and aggression/conflict situations. Chapter 2 gives a number of ways this can be achieved including specific pathways for geriatric care to lower work time demands (Manson et al., 2014) and comfortable waiting rooms for patients to reduce aggression/conflict situations (D'Ettorre et al., 2018). In addition, developmental opportunities, including continuous training, are important to keep ED nurses engaged at work. This may be achieved by creating personal development plans, and exploring opportunities such as job rotation with the Intensive Care and ambulance, or possibilities to perform more challenging tasks including providing assistance with anesthesia. Furthermore, some job demands in the ED are more difficult if not impossible to reduce by interventions, including the occurrence of patient-related stressful situations. Although these demands cannot be avoided, the results suggest that recovery at work and during leisure time are important for ED nurses to buffer the impact of these situations on their well-being. Recovery at work may be best stimulated by creating recovery opportunities (i.e. work breaks) and a positive culture of taking breaks during worktime (Nejati et al., 2016; Wendsche et al., 2017). Whereas recovery outside of work starts with having enough leisure time between shifts, and can be further stimulated by training. For example, an intervention focused on education, reflecting on current recovery experiences and setting goals to gain more of these experiences, resulted in more recovery experiences during leisure time (Hahn et al., 2011). In line with this, it is important to realize that ED nurses are both subject to demands that may immediately result in stress-related outcomes (i.e. critical events), and demands of which the impact will first be visible after a long period of exposure. Especially regarding the latter, in which the consequence does not directly

follow the predictor, interventions to prevent these symptoms may be less obvious. This emphasizes the importance of management and employees realizing that taking breaks from work - even though one still feels energetic enough to continue - may avoid a depletion of resources in the long run.

In terms of the most effective way to improve job factors and (consequently) employee well-being, the current results suggest to assess and if unfavorable improve the Psychosocial Safety Climate (PSC). An intervention in which psychosocial risks and possible solutions are discussed amongst employees and (top) management increased PSC in the current study and as such may provide a good starting point (Bronkhorst et al., 2018). Furthermore, special attention is needed regarding the way interventions are implemented including clear communication during and employee participation in the project, and the design and implementation of fitting actions to the existing psychosocial risk factors. The first two, are more easily activated in a favorable PSC as was shown in chapter 5. Still, in highly demanding settings, such as the ED, one may consider less direct ways to involve employees (e.g. by appointing employee representatives) (Abildgaard et al., 2018), to avoid overburdening staff. To stimulate the design of fitting actions, a thorough risk assessment is recommended in which the most prominent psychosocial risks are pinpointed. In addition, based upon the interviews with project leaders, a wider context may be necessary to solve problems regarding job demands and job resources in this setting. This includes having adequate resources (e.g. time and financial resources) to stimulate implementing (fitting) actions. Finally, although improving the work environment may work preventative, additional professional support is recommended to relieve existing stress-related outcomes, such as burnout and PTSD symptoms.

For a future organizational approach towards stress management in hospital settings, relevant input can be derived from the Magnet model. The model is based on research examining characteristics of exemplary hospitals who were able to attract and retain staff despite shortages on the job market (Rodriguez-Garcia, 2020). Key pillars of Magnet hospitals are transformational leadership, staff empowerment, and exemplary professional practice and innovation (Rodriguez-Garcia, 2020). For nurses specifically, it means more professional autonomy including decision making at the bedside and empowerment to make changes to the workplace environment. Although most studies report that Magnet hospitals do better on nursing, patient and organizational outcomes than hospitals without Magnet status, evidence

is still limited. Several literature reviews point out the lack of standardized evaluations tools (Andersson et al., 2018) and poor study quality including mostly observational (Petit dit Dariel, 2015), cross-sectional and retrospective studies (Rodriguez-Garcia, 2020). TheMagnet4Europe study, a four-year project currently conducted in 63 hospitals from UK, Ireland, Belgium, Sweden, Norway and Germany, and 67 magnet status hospitals from the USA aims to provide better insights, but results are not available yet (magnet4europe.eu, 2022).

Overall, we can conclude that the creation of a healthy working environment for ED nurses is an *art of balance*. This includes finding a good balance in job demands and resources, in effort and recovery, but also regarding the implementation of interventions (i.e. involving employees without overburdening them, providing information without overwhelming).

Strengths

The current research has some important strengths. First of all, by including a large number of job factors and the use of certain statistical techniques (e.g. regression tree analyses of chapter 2) we were able to provide better insight into predominant job demands and resources (and their combined effects) related to stress-related outcomes and well-being in the ED nursing population. As such, important job factors (including developmental opportunities, and within worktime recovery) not considered by previous research in this occupational group, were identified. In addition, by also assessing the relationship between the working environment and work engagement, we were able to provide insight in the motivational effects of work in the ED.

Second, the intervention project described in chapter 6, included an organization-directed approach (with or without a person-directed intervention) and a longitudinal design with a 2.5-year time frame. As such, our research answers to the call of Holman et al. (2018) to conduct more organization-directed interventions and include longer follow-up assessments to provide better insight in the effectiveness of stress management interventions over time. Furthermore, the current project includes one of the first evaluations of a stress management intervention conducted in the ED and provides important insights in the facilitators and barriers for effective stress management in this setting. In addition, by using a realist approach in which we did not only study the effect of the intervention project but also the influence of

process variables and the context. As such, additional insights were gained in how the effectiveness of organization-directed interventions can be improved.

Finally, instead of implementing an intervention based upon theoretical problems, the current intervention project included research cycles of assessing risk factors, implementing actions and evaluation of the results. This had some important advantages. First of all, by pinpointing psychosocial risk factors, and regular evaluation of the outcomes and approach, the project was more likely to fit the problems of the ED and lead to successful outcomes. In addition, EDs were not passive participants, but actively involved and empowered to design and implement their own actions. This increases the probability that actions are designed and implemented that would be fitting to the organizational context and that the project will continue to lead to positive results even after the researchers have left. Finally, the close collaboration between ED management and researchers led to further insights regarding the practical barriers of implementing interventions in the ED setting.

Limitations

This research is also subject to some limitations. Firstly, all data was collected using self-report surveys, and as such is prone to common method bias (Podsakoff et al., 2003). Efforts were made to reduce this, including the use of valid questionnaires and guaranteeing anonymity in the study (Conway & Lance, 2010). In addition, stress-related outcomes and well-being are subjective and as such best measured using self-report methods. Furthermore, the potential impact of common method bias is reduced in longitudinal research (Lindell & Brandt, 2000), implying that this is mainly a concern for the cross-sectional studies reported in chapter 2 and 3. Still, future studies may consider to also include objective measures for job factors (e.g. the number and medical complexity of patients visiting the ED) or stress-related outcomes (e.g. cortisol, heartrate variability), to further rule out the influence of common method bias and gain additional understanding of the influence of the working environment on ED nurses` well-being.

Second, chapter 2 and 3 are based on cross-sectional data and as such do not allow causal interpretation. Although, based upon the JD-R model, we expect that (frequent) exposure to a high level of job demands predicts stress-related outcomes, nurses that already experienced these outcomes, may also experience their working environment as more demanding. Still,

although reverse relationships between job demands and stress-related outcomes have been found, in general these effects tend to be smaller (Guthier et al., 2020).

Third, there was no control group to compare the effects of the intervention implementation project to. As such we cannot be certain that the positive effects on job factors were due to the intervention project or whether the changes were part of an ongoing trend in all hospitals. In general, it is difficult to find a suitable control group to study the effects of organization-directed or multilevel intervention (Nielsen & Noblet, 2018). For example, in the current study, it would not be feasible for EDs to refrain from implementing any actions regarding psychological risk factors for 2.5 years. Nevertheless, we believe that the current approach including a comparison of the EDs on the factors of interest (e.g. more versus less employee involvement) enhances our insight in effective mechanisms for intervention projects.

Finally, the current project was limited to 2.5 years, whereas the results indicate that a longer timeframe might be necessary to determine the effects on employee well-being.

Future directions

The results of the current research offer some important directions for future studies. First of all, the use of an occupation specific screening instrument provided insight into a large number of job factors, but also limited the detail in which these could be explored, which in turn may have influenced our findings regarding the buffering effect of job resources. Future research, including more specific instruments (i.e. differentiating between emotional and instrumental support) may provide further understanding in the potential buffering effect of job resources in the ED. Furthermore, the concept of morally distressing events, situations in which one knows the right action but is constraint from taking this action due to environmental reasons (e.g. limited time, lack of supervisory support, organizational policies), has received increased research attention amongst studies on healthcare professionals (Wolf et al., 2016) and might be an important mediator between job demands and stress-related symptoms in ED nurses. Examples of such situations include: not being able to provide good patient care due to high workload, sending patients home that under normal circumstances would be hospitalized, performing procedures for which one has received limited training, and not having the time and/or materials to keep patients integrity when performing procedures (Corley et al., 2001). Due to a growing workload and overcrowding in the ED, nurses may especially be

confronted with these types of situations, which can have lasting negative effects on their well-being (Wolf et al., 2016). In addition, even though recovery turned out to be an important asset in ED nurses` well-being, the topic of recovery in this setting has received little to no research attention. There are some studies available showing the importance of momentary breaks in the workflow on preventing stress-related outcomes in ED staff, including taking a few seconds of silence with the team after the death of a patient (Cunningham & Ducar, 2019). Still, the effect of (micro)breaks and ways to stimulate these is an important topic for future research and could be challenging as the ED environment provides many barriers for effective recovery. For example, a recent study amongst ED physicians showed that taking breaks was related to concerns about reduced productivity and the safety of patients for which they were responsible (O'Shea et al., 2020).

Third, there is a need for more research on the role of the organizational context in the effectiveness of stress management interventions. This is in line with the general trend in occupational health psychology to study the "cause of causes" (e.g. the theory of Psychosocial Safety Climate) as opposed to more proximal determinants of health and well-being in employees (i.e. JD-R model) (Van Veldhoven et al., 2019). The Context-Mechanism-Outcome (CMO) framework (Nielsen & Miraglia, 2016) may provide a good basis for future studies assessing what processes relate to specific outcomes and under what circumstances these are triggered. Promising effects were found of Psychosocial Safety Climate in predicting information provision and employee participation, but more research is necessary to confirm these findings. In addition, future research is necessary regarding the impact of other contextual factors including ongoing changes during the project (reorganizations, changes in management, high turnover) and available mental resources to actively participate and deal with change caused by the project.

Fourth, the current intervention project including an organization-directed approach (with or without a person-directed intervention) showed positive effects on job factors but not (yet) on employee well-being. This suggests that to understand the effects of these types of interventions on employee well-being even longer-term follow-up measurements are necessary (> 2.5 year after the onset of the program). In addition, apart from improving the working environment, additional professional support may be necessary to relieve any existing stress-related problems, however this idea needs further empirical support.

Furthermore, if the goal is to find long term solutions to reduce and prevent stress-related outcomes in the nursing population, more studies are necessary focusing on tackling the stressor (i.e. organization directed interventions either with or without a person-directed intervention) and gain further understanding on how this can best be done. As the current intervention project shows, this path is difficult, demanding many resources (e.g. time investment, financial resources and commitment) from the organization and patience from the researchers, employees and management, as effects of such interventions may take several months or even years to be shown. However, "in choosing a window dressing or less effective intervention rather than doing the work needed to truly address the problem, a disservice is done to both the organization and individual employees" (Heaney & Van Ryn, 1990, p. 419).

Finally, considering that the healthcare sector is rapidly changing and challenges such as the aging population and pandemics including COVID-19 pose serious risks to the health and well-being of ED nurses, it is important to realize that there are no simple solutions and stress management in this setting should be a continuous process.

References

Abildgaard, J. S., Hasson, H., von Thiele Schwarz, U., Løvseth, L. T., Ala-Laurinaho, A., & Nielsen, K. (2018). Forms of participation: The development and application of a conceptual model of participation in work environment interventions. *Economic and Industrial Democracy*, *41*(3), 746-769. https://doi.org/10.1177/0143831x17743576

Adriaenssens, J., de Gucht, V., & Maes, S. (2012). The impact of traumatic events on emergency room nurses: findings from a questionnaire survey. *Int J Nurs Stud*, *49*(11), 1411-1422. https://doi.org/10.1016/j.ijnurstu.2012.07.003

Adriaenssens, J., De Gucht, V., & Maes, S. (2015). Causes and consequences of occupational stress in emergency nurses, a longitudinal study. *J Nurs Manag*, *23*(3), 346-358. https://doi.org/10.1111/jonm.12138

Aiken, L. H., Sermeus, W., Van den Heede, K., Sloane, D. M., Busse, R., McKee, M. et al. (2012). Patient safety, satisfaction, and quality of hospital care: cross sectional surveys of nurses and patients in 12 countries in Europe and the United States. *BMJ, 344*, e1717, doi:10.1136/bmj.e1717

Anderson, V. L., Johnston, A. N. B, Massey, D., & Bamford-Wade, A. (2018) Impact of MAGNET hospital designation on nursing culture: an integrative review. *Contemp Nurse, 54* (4-5), 483-510. https://doi.org/10.1080/10376178.2018.1507677.

Bakker, A. B., & Demerouti, E. (2017). Job demands-resources theory: taking stock and looking forward. *Journal of Occupational Health Psychology*, *22*(3), 273–285. https://doi.org/10.1037/ocp0000056

Brborovic, H., Daka, Q., Dakaj, K., & Brborovic, O. (2017). Antecedents and associations of sickness presenteeism and sickness absenteeism in nurses: A systematic review. *Int J Nurs Pract*, *23*(6). https://doi.org/10.1111/ijn.12598

Briere, J., & Elliott, D. M. (1998). Clinical utility of the impact of event scale: psychometrics in the general population. *Assessment*, *5*(2), 171-180. https://doi.org/10.1177/107319119800500207

Bronkhorst, B., Tummers, L., & Steijn, B. (2018). Improving safety climate and behavior through a multifaceted intervention: Results from a field experiment. *Safety Science*, *103*, 293-304. https://doi.org/10.1016/j.ssci.2017.12.009

Conway, J. M., & Lance, C. E. (2010). What Reviewers Should Expect from Authors Regarding Common Method Bias in Organizational Research. *Journal of Business and Psychology*, *25*(3), 325-334. https://doi.org/10.1007/s10869-010-9181-6

Corley, M. C., Elswick, R. K., Gorman, M., & Clor, T. (2001). Development and evaluation of a moral distress scale. *J Adv Nurs*, *33*(2), 250-256. https://doi.org/10.1046/j.1365-2648.2001.01658.x

Cunningham, T., & Ducar, D. M. (2019). Benefits of Using The Pause after Death in Emergency Departments: A Delphi Study. *South Med J, 112*(9), 469-474. https://doi.org/10.14423/SMJ.0000000000001012

D'Ettorre, G., Pellicani, V., Mazzotta, M., & Vullo, A. (2018). Preventing and managing workplace violence against healthcare workers in Emergency Departments. *Acta Biomed*, *89*(4-S), 28-36. https://doi.org/10.23750/abm.v89i4-S.7113

de Jonge, J., & Dormann, C. (2003). The DISC model: Demand-induced strain compensation mechanisms in job stress. In M. F. Dollard, H. R. Winefield, & A. H. Winefield (Eds.), *Occupational stress in the service professions.* (pp. 43–74). Taylor & Francis.

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, *86*(3), 499-512. https://doi.org/10.1037//0021-9010.86.3.499

Dollard, M. F., & Bakker, A. B. (2010). Psychosocial safety climate as a precursor to conducive work environments, psychological health problems, and employee engagement. *Journal of Occupational and Organizational Psychology*, *83*(3), 579-599. https://doi.org/10.1348/096317909x470690

Escribà-Agüir, V., & Pérez-Hoyos, S. (2007). Psychological well-being and psychosocial work environment characteristics among emergency medical and nursing staff. *Stress and Health*, *23*(3), 153-160. https://doi.org/10.1002/smi.1131

Garcia-Izquierdo, M., & Rios-Risquez, M. I. (2012). The relationship between psychosocial job stress and burnout in emergency departments: an exploratory study. *Nurs Outlook*, *60*(5), 322-329. https://doi.org/10.1016/j.outlook.2012.02.002

Guthier, C., Dormann, C., & Voelkle, M. C. (2020). Reciprocal effects between job stressors and burnout: A continuous time meta-analysis of longitudinal studies. *Psychol Bull*, *146*(12), 1146-1173. https://doi.org/10.1037/bul0000304

Hahn, V. C., Binnewies, C., Sonnentag, S., & Mojza, E. J. (2011). Learning how to recover from job stress: effects of a recovery training program on recovery, recovery-related self-efficacy, and well-being. *J Occup Health Psychol*, *16*(2), 202-216. https://doi.org/10.1037/a0022169

Hall, L. H., Johnson, J., Watt, I., Tsipa, A., & O'Connor, D. B. (2016). Healthcare Staff Wellbeing, Burnout, and Patient Safety: A Systematic Review. *PLoS One*, *11*(7), e0159015. https://doi.org/10.1371/journal.pone.0159015

Hackman, J. R., & Oldham, G. R. (1975). Development of the Job Diagnostic Survey. *Journal of Applied Psychology, 60*(2).

Havermans, B. M., Schlevis, R. M., Boot, C. R., Brouwers, E. P., Anema, J., & van der Beek, A. J. (2016). Process variables in organizational stress management intervention evaluation research: a systematic review. *Scand J Work Environ Health, 42*(5), 371-381. https://doi.org/10.5271/sjweh.3570

Heaney, C. A., & Van Ryn, M. (1990). Broadening the scope of worksite stress programs: A guiding framework. *American Journal of Health Promotion, 4*(6), 413-420.

Holman, D., Johnson, S., & O'Connor, E. (2018). Stress management interventions: Improving subjective psychological well-being in the workplace. In E. Diener, S. Oishi, & L. Tay (Eds.), *Handbook of well-being*. DEF Publishers.

Johnston, A., Abraham, L., Greenslade, J., Thom, O., Carlstrom, E., Wallis, M., & Crilly, J. (2016). Review article: Staff perception of the emergency department working environment: Integrative review of the literature. *Emerg Med Australas, 28*(1), 7-26. https://doi.org/10.1111/1742-6723.12522

Knaak, S., Mantler, E., & Szeto, A. (2017). Mental illness-related stigma in healthcare: Barriers to access and care and evidence-based solutions. *Healthc Manage Forum, 30*(2), 111-116. https://doi.org/10.1177/0840470416679413

Kristensen, T. S. (2005). Intervention studies in occupational epidemiology. *Occup Environ Med, 62*(3), 205-210. https://doi.org/10.1136/oem.2004.016097

Lake. E. T. (2002). Development of the Practice Environment Scale of the Nursing Work Index. *Research in Nursing & Health, 25*, 176–188. https://doi.org/10.1002/nur.10032

Lamontagne, A. D., Keegel, T., Louie, A. M., Ostry, A., & Landsbergis, P. A. (2007). A systematic review of the job-stress intervention evaluation literature, 1990-2005. *Int J Occup Environ Health, 13*(3), 268-280. https://doi.org/10.1179/oeh.2007.13.3.268

Leiter, M. P. (2019). The Psychology of Work Engagement. In: Oxford University Press.

Manson, S., Mountain, G., Turner, J., Arain, M., Revue, E., & Weber, E. J. (2014). Innovations to reduce demand and crowding in emergency care; a review study. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine, 22*(55), 1-7. http://www.sjtrem.com/content/22/1/55

McVicar, A. (2016). Scoping the common antecedents of job stress and job satisfaction for nurses (2000-2013) using the job demands-resources model of stress. *J Nurs Manag, 24*(2), E112-136. https://doi.org/10.1111/jonm.12326

Meijman, T. F., & Mulder, G. (1998). Psychological Aspects of Workload. In P. J. D. Drenth & H. Thierry. (Eds.), *Handbook of Work and Organizational Psychology* (pp. 5-33). Psychology Press.

Nejati, A., Shepley, M., & Rodiek, S. (2016). A Review of Design and Policy Interventions to Promote Nurses' Restorative Breaks in Health Care Workplaces. *Workplace Health Saf, 64*(2), 70-77; quiz 78. https://doi.org/10.1177/2165079915612097

Nielsen, K., & Miraglia, M. (2016). What works for whom in which circumstances? On the need to move beyond the 'what works?' question in organizational intervention research. *Human Relations, 70*(1), 40-62. https://doi.org/10.1177/0018726716670226

Nielsen, K., & Noblet, A. (2018). Organizational interventions: where we are, where we go from here? In K. Nielsen & A. Noblet (Eds.), *Organizational Interventions for Health and Well-being: A Handbook for Evidence-Based Practice* (pp. 1-22). Routledge

Nielsen, K., & Randall, R. (2013). Opening the black box: Presenting a model for evaluating organizational-level interventions. *European Journal of Work and Organizational Psychology, 22*(5), 601-617. https://doi.org/10.1080/1359432x.2012.690556

O'Shea, J., Vu, S., Siegelman, J., Heron, S., & Lall, M. (2020). "Breaking" the Emergency Department: Does the Culture of Emergency Medicine Present a Barrier to Self-Care? *West J Emerg Med, 21*(2), 313-321. https://doi.org/10.5811/westjem.2019.10.44584

Petit dit Dariel, O. P., Regnaux, J. P. (2015) Do Magnet®-accredited hospitals show improvements in nurse and patient outcomes compared to non-Magnet hospitals: a systematic review. *JBI Database of Systematic Reviews and Implementation Reports, 13*(6), 168-219

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *J Appl Psychol, 88*(5), 879-903. https://doi.org/10.1037/0021-9010.88.5.879

Richardson, K. M., & Rothstein, H. R. (2008). Effects of occupational stress management intervention programs: a meta-analysis. *J Occup Health Psychol, 13*(1), 69-93. https://doi.org/10.1037/1076-8998.13.1.69

Roberts, R. K., & Grubb, P. L. (2014). The consequences of nursing stress and need for integrated solutions. *Rehabil Nurs, 39*(2), 62-69. https://doi.org/10.1002/rnj.97

Rodríguez-García, M. C., Márquez-Hernández, V. V., Belmonte-García, T., Gutiérrez-Puertas, L, & Granados-Gámez, G. (2020). How Magnet Hospital Status Affects Nurses, Patients, and Organizations: A Systematic Review. *Am J Nurs*, *20*(7), 28-38. https://doi.org/10.1097/01.NAJ.0000681648.48249.16.

Schneider, A., & Weigl, M. (2018). Associations between psychosocial work factors and provider mental well-being in emergency departments: A systematic review. *PLoS One*, *13*(6), e0197375. https://doi.org/10.1371/journal.pone.0197375

Semmer, N. K. (2006). Job stress interventions and the organization of work. *Scandinavian Journal of Work Environment & Health*, *32*(6), 515-527. https://doi.org/ 10.5271/sjweh.1056

Sermeus, W. (2015). Nurses' impact on quality of care: lessons from RN4CAST. *Obzornik zdravstvene nege, 49*(4), 260–269. https://doi.org/10.14528/SNR.2015.49.4.78

Van der Klink, J. J., Blonk, R. W., Schene, A. H., & van Dijk, F. J. (2001). The benefits of interventions for work-related stress. *Am J Public Health*, *91*(2), 270-276. https://doi.org/10.2105/ajph.91.2.270

Van Veldhoven, M., Van den Broeck, A., Daniels, K., Bakker, A. B., Tavares, S. M., & Ogbonnaya, C. (2019). Challenging the Universality of Job Resources: Why, When, and For Whom Are They Beneficial? *Applied Psychology*, *69*(1), 5-29. https://doi.org/10.1111/apps.12211

Wendsche, J., Ghadiri, A., Bengsch, A., & Wegge, J. (2017). Antecedents and outcomes of nurses' rest break organization: A scoping review. *Int J Nurs Stud*, *75*, 65-80. https://doi.org/10.1016/j.ijnurstu.2017.07.005

Wolf, L. A., Perhats, C., Delao, A. M., Moon, M. D., Clark, P. R., & Zavotsky, K. E. (2016). "It's a Burden You Carry": Describing Moral Distress in Emergency Nursing. *J Emerg Nurs*, *42*(1), 37-46. https://doi.org/10.1016/j.jen.2015.08.008