

**EXPLORING THE PROCESSES AND DYNAMICS OF
WORK-RELATED DEMANDS IN RELATION TO FLEMISH
CRITICAL CARE NURSES' HEALTH: A
CONSTRUCTIVIST GROUNDED THEORY STUDY ON
MITIGATING STRATEGIES**

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Preface

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Billiau Lukas

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Abstract

Aim: To explore the processes and dynamics of work-related demands in relation to critical care nurses' (CCNs) health and to identify mitigating strategies.

Background: CCNs around the globe face more health challenges compared to their peers in general hospital nursing. Additionally, the nursing workforce has to deal with staffing shortages. As a consequence, developing a sustainable work environment to retain the current nursing workforce is needed.

Methods: A qualitative study following the principles of a constructivist grounded theory approach was conducted. From October 2022 to April 2023, six focus groups were organised with 27 CCNs from three CCN wards in one local hospital in Flanders (Belgium). Data were analysed by applying the Qualitative Analysis Guide of Leuven to support the constant comparison process.

Results: CCNs reported being exposed to occupational physical activity, emotional, quantitative, and cognitive work-related demands, adverse patient behaviour, and poor working time quality. Exposure to these work-related demands was perceived as harmful, potentially leading to physical, mental, and psychosomatic complaints and increased turnover intention. CCNs seek to mitigate the effects of exposure to work-related demands by relying upon social support, job control, work equipment, rewards, and leisure time physical activity.

Conclusion: CCNs' health is challenged by work-related demands that are not entirely covered by the traditional quantitative frameworks used in research on psychologically healthy work. Therefore, future studies should focus on improving such frameworks by exploring the role of psychosocial and organisational factors in more detail.

Implications for nursing management: This study suggests the development of an employee-centric work environment by providing sufficient risk management strategies, schedule flexibility, uninterrupted off-job recovery time, and positive management to guarantee extended healthy working lives among the CCN workforce.

Keywords: Critical care; Nursing; Occupational health; Psychosocial; Qualitative research; Sustainable employment; Work-related demands.

1. Introduction

Globally, the nursing profession is a strenuous occupation with high levels of work-related demand, leading to adverse health outcomes [1], reduced marital and life satisfaction [2], absenteeism, and high costs for society [3]. In addition, the nursing workforce has to deal with staffing shortages due to the reduced amount of individuals entering the nursing profession [4], the ageing working population [5], and the increased amount of nurses on premature retirement [6,7].

Especially critical care nurses (CCNs), who specialise in managing life-threatening diseases across all age groups, work in an exceptionally demanding environment [8]. Increasing evidence suggests that CCNs' health is mainly challenged by five work-related demands, namely, occupational physical activity (OPA) [1], shiftwork [9], as well as quantitative [10], cognitive [11], and emotional work-related demands [12]. Among CCNs, OPA involves various physically demanding tasks, such as forward bending and isometric neck postures, heavy lifting, prolonged standing, and long-distance walking [1,9]. With continued exposure to OPA, musculoskeletal disorders can arise in terms of pain-related complaints of the wrists, back, thigh, knees, and feet [1]. However, many studies have reported that engaging in regular leisure time physical activity has a beneficial influence on health, while OPA may have no beneficial, or even adverse, influence on health [13]. These conflicting health influences are indicated as the "physical activity health paradox" [13] and might be explained by differences in duration, intensity, recovery opportunities, and physiological responses [14,15].

Besides OPA is shift work, which is the amount of time an individual works outside the typical nine AM to five PM schedule, known to impact CCNs' health through circadian rhythm disruption, fatigue, and social isolation [16-18]. First, circadian rhythm disruption induces the proliferation of dysfunctional immune cells and is likely to cause cancer [19], coronary heart disease [20], diabetes mellitus [21], and gastrointestinal disorders [18,22]. Second, fatigue may contribute to the development of cancer [16], coronary heart disease, diabetes mellitus, gastrointestinal disorders [23], and psychological stress [18,24]. Finally, CCNs report experiencing social isolation because shift work makes it difficult for them to participate in leisure time activities or family time, which can lead to depression [25,26].

Furthermore, CCNs face quantitative work-related demands regarding high workload, time pressure, and workflow interruptions [10,27]. These demands impair CCNs' mental focus and increase the likelihood of developing prolonged fatigue and stress [10]. In addition, CCNs need to deal with high levels of cognitive work-related demands, which can be defined as: "burdens placed on the brain processes involved in information processing" [28, p.1574]. These cognitive work-related demands above the acceptable threshold contribute to attention narrowing, psychological stress, and burnout [29-31]. In addition, CCNs are exposed to emotional work-related demands that require them to provide effort to deal with the desired emotional responses [28]. These demands involve workplace violence and end-of-life care issues and can cause anxiety, fatigue, and depression [12,32].

Given the number of studies having postulated the adverse health effects of work-related demands, there is an increasing need for developing mitigating strategies to guarantee extended healthy working lives [33]. From a theoretical perspective, the Job Demand-Control-Support model [34] hypothesises job control and workplace social support as psychosocial moderators to mitigate the strenuous impact of work-related demands on health [35]. In particular, job control refers to: "a working individual's potential control over his task and his conduct during the working day" [36, pp. 289-290]. It has been argued that job control can reduce the physiological impact of work-related demands on employees' health by allowing them to take a break if necessary [35]. Likewise, workplace social support can be considered as interpersonal relationships at work to cope with stressful situations by putting them into another perspective, thereby leading to less psychological stress [37]. Additionally, the Effort-Reward Imbalance model [38] considers the prevention of adverse health outcomes by providing sufficient rewards in line with the performed efforts at work [39].

Numerous correlational studies are available researching the impact of work-related demands on nurses' health [40-42]. To our knowledge, no grounded theories have been conducted to understand how CCNs perceive exposure to work-related demands on their health, nor about the complex social and psychological processes that clarify how CCNs continually mitigate this exposure. However, this is essential to identify new factors in the research of CCNs' work-related health and to create a policy which prevents health complaints and their associated costs. Thus, this study aimed to explore the processes

and dynamics of work-related demands on CCNs' health and to identify mitigating strategies.

2. Methodology

2.1. Study design

This qualitative study was based on a constructivist grounded theory approach [43] and was part of the Flemish Employees' Physical Activity study [44]. A constructivist grounded theory approach is appropriate to understand the processes and dynamics of work-related demands on CCNs' health more thoroughly [43,45]. In addition, this approach is well suited for an in-depth exploration of the complex social and psychological processes of how CCNs mitigate exposure to work-related demands according to different CCN wards [43]. Such a grounded theory approach was applied by conducting focus groups, which refers to a discussion with several people to explore ideas and perceptions about a specific topic from a multiplicity of views [46].

2.2. Study population and setting

CCNs were recruited from a local hospital in Flanders (Belgium) with a capacity of 1100 beds through a combination of convenience sampling and purposive sampling. This sampling strategy sought to ensure a maximum variation in CCN characteristics (age, gender, educational degree, years of seniority, and type of CCN ward). Eligibility criteria required CCNs to be employed for more than 50% in the emergency department (ED), intensive care unit (ICU), stroke unit, or the critical care mobile nursing team and to be Dutch speaking. Nurses of the critical care mobile nursing team were employed simultaneously in the ED, ICU, and stroke unit. CCNs in management positions were not included due to their potential impact on the reporting of their subordinates' experiences [47].

The CCNs were recruited between October 2022 and April 2023 by posting recruitment flyers in the CCNs' lockers and placing posters in the CCN wards. Moreover, an invitation mail with informed consent was sent to the head nurses, who then delivered this mail to their CCNs. However, the CCNs could also receive informed consent by directly expressing their willingness to participate by email to the research team. According to the insights that emerged after the intermediate analysis of the first focus groups, the

principles of theoretical sampling were used to deepen the understanding of the discussed topics from earlier focus groups. For example, CCNs reported the detrimental influence of prehospital physician-staffed emergency care interventions on their health. Therefore, CCNs with similar and diverse experiences in prehospital physician-staffed emergency care interventions were purposively selected.

2.3. Data collection

2.3.1. Data collection method

The research team consisting of experts in occupational health (E.C., M.K., and L.Bo.), emergency nursing (L.Bi.), and qualitative research (L.Bo.) developed a Dutch semi-structured focus group guide (Table 1). This guide sought to explore the processes and dynamics of work-related demands on CCNs' health and to identify strategies in which CCNs could mitigate these processes and dynamics. Concerning the implementation of a constructivist grounded theory approach, the focus group guide used a deductive approach because of the preliminary exploration of the Job Demand-Control-Support model [34], the Effort-Reward Imbalance model [38], and the Sixth European Working Conditions Survey (EWCS) [43,48]. However, the focus groups were conducted with an open mind to identify new topics and to stimulate further questions that could contribute to the development of a theory [49]. As a result, the focus group guide became more focused when the transcripts were coded and preliminary ideas of the research team emerged [50].

Table 1: focus group guide

Primary question	Possible probes
What aspects of your work influence your health?	<ul style="list-style-type: none"> • How do you experience: <ul style="list-style-type: none"> ○ ...exposure to physical activity at your workplace? ○ ...your working time quality? ○ ...a sense of responsibility? ○ ...patient-related stressful situations? ○ ...leisure time physical activity in comparison to occupational physical activity?

How do you deal with certain health complaints at your workplace?

How do you perceive the efforts performed at your workplace?

Can you tell me about the perceived rewards for your delivered work?

Can you tell me about the resources meaningful to you in your work environment?

Can you tell us more about the amount of self-perceived commitment to the organisation?

What would you like to change in your work environment to maintain a sustainable and health-promoting work environment to prevent health complaints?

- ...exposure to emotional work-related demands?
 - Do you have the sense that your personality has changed due to your employment in a CCN ward?
 - Can you specify the nature and levels of health complaints at your workplace?
 - Does your employment at the CCN ward influence your private life?
 - How do you perceive this influence on your health?
 - How do you experience social support from your co-workers and your supervisors (head nurse and physicians)?
 - Can you tell me more about the amount of control you have at your workplace?
 - What does more job control mean to you?
 - What are the consequences of this to you?
-

2.3.2. Data collection procedure

Between October 2022 and April 2023, six focus groups were held in a comfortable meeting room after lunchtime at the local hospital in Flanders (Belgium). Each focus group consisted of four to five CCNs from the same CCN ward and lasted uninterrupted for a maximum of 90 minutes, with an average duration of 68.75 minutes. The first 60 minutes were during working time and the rest could be accounted as overtime. All focus groups were conducted by one master student in nursing science (L.Bi.) and supervised by an experienced qualitative researcher in occupational health (L.Bo.). The master student was known at the ED in the local hospital due to his nursing student work. No observer was present during the focus groups. Because the participants were encouraged to share their experiences freely, the focus group guide was only implemented when the participants discussed topics irrelevant to this study, when a participant was too dominant, or when the discussion needed stimulation [46]. All focus groups were audiotaped with a smartphone and tablet.

2.4. Data analysis

The audiotapes were transcribed verbatim. The data analysis process was based on the principles of a constructivist grounded theory approach [43] and followed the Qualitative Analysis Guide of Leuven [51]. The Qualitative Analysis Guide of Leuven guaranteed a cyclic process between data collection and data analysis to refine the arising theoretical categories and to develop a conceptual framework [51].

First, two members of the research team (L.Bi. and L.Bo.) conducted the initial open coding process by reading the transcripts several times [18]. Both researchers wrote down memos and one researcher (L.Bi.) then developed a narrative focus group report for each focus group [51]. Thereafter, focused coding was done by combining in vivo codes into different concepts, which allowed the development of a conceptual scheme for each focus group. During this focused coding process, the same two researchers discussed and cross-checked the identified analytical and contextual concepts and sought to obtain a detailed understanding of the data [52]. This constant comparison process allowed a within-case and across-case analysis to compare new concepts with earlier coded data so that similarities and differences could be identified and analysed [53,54]. Subsequently, the concepts were linked to relevant focus group fragments by using the QSR NVivo 12 software program. During this phase, data were further coded

by combining concepts into groups of concepts based on emerging ideas and comparable meanings. These groups of concepts were resulting in certain categories and subcategories and were then reassembled into theoretical categories. The theoretical categories were tested and grounded in the existing literature and rooted in the practical and theoretical knowledge of the research team after several intermediate meetings. Last, the theoretical categories were outlined in a conceptual framework, which represented the essential structure of the findings. Theoretical saturation was reached when enough in-depth data was obtained and no new dimensions or relationships emerged during the focus groups [54].

2.5. Trustworthiness of the data

The confirmability of the data was improved by applying different strategies. During the iterative process, the interview style and the arising questions of the focus group guide that could contribute to the development of a theory were peer-reviewed by the research team. Next, investigator triangulation was applied by two researchers with prior experience in the nursing profession (L.Bi. and L.Bo.) who analysed the transcripts independently and discussed the inductive code tree continuously. This inductive code tree was then peer-reviewed by the entire research team at several intermediate meetings. Moreover, theory triangulation was performed by testing the inductive code tree with multiple competing theoretical interpretations from the Job Demand-Control-Support model [34], the Effort-Reward Imbalance model [38], and the EWCS [48]. Last, data triangulation was used by collecting data from different but comparable CCN wards.

In addition, an audit trail with detailed information about the decisions made by the research team throughout the research process was documented to enhance the dependability and confirmability of the study [46]. The transferability of the results was supported by a thick description of the setting, sample, and observations. The reflexivity of the research team was stimulated because one research member was not familiar with occupational health, two research members were not a nurse, and one research member only had experience in the nursing profession in Switzerland [54]. The Standards for Reporting Qualitative Research were implemented to enhance the quality of the reported data [55].

2.6. Ethical considerations

Ethical approval was granted for this study by the Ethics Committee of the Ghent University Hospital (THE-2022-0152) and by the Commission of Medical Ethics of the local hospital in Flanders, Belgium (AZGT2022023). All participants received written and verbal information and gave their written consent before enrolment.

3. Results

3.1. Participants

The sample consisted of 37 CCNs, of which 27 CCNs participated in one of the six focus groups and ten CCNs could not participate due to organisational difficulties. Of those 27 CCNs, six were male and 21 were female, with a mean age of 36.07 years. Most CCNs worked in the ED (55.55%), with 77.78% of all included CCNs working full-time. Further socio-demographic characteristics of the CCNs are shown in Table 2.

Table 2: Socio-demographic characteristics of the CCNs (N = 27)

Socio-demographic characteristics	N (%)
Age (years)	
21-30	11 (40.74)
31-40	6 (22.22)
41-50	6 (22.22)
51-60	4 (14.82)
Gender	
Male	6 (22.22)
Female	21 (77.78)
Highest educational degree	
Bachelor's degree	3 (11.11)
Bachelor's and postgraduate's degrees in critical care nursing	23 (85.19)
Bachelor's and master's degree	1 (3.70)
Seniority as a CCN (years)	
<5	8 (29.63)
5-10	6 (22.22)
11-15	4 (14.82)
>15	9 (33.33)
Job time (%)	
100	21 (77.78)
75-80	6 (22.22)
Type of CCN ward	
Emergency department	15 (55.55)
Intensive care unit	5 (18.52)
Stroke unit	5 (18.52)
Critical care mobile nursing team	2 (7.41)

N = number of participants, CCN = critical care nurse

3.2. The interrelated theoretical categories

During the iterative development, the processes and dynamics of work-related demands on CCNs' health and the mitigating strategies were identified. While being employed at a CCN ward, CCNs were continuously exposed to OPA, emotional, cognitive, and quantitative work-related demands, adverse patient behaviour, and poor working time

quality. Exposure to such work-related demands was perceived as harmful and could lead to physical, mental, and psychosomatic complaints and an increased turnover intention. CCNs seek to mitigate the processes and dynamics of work-related demands on their health by relying upon social support, job control, work equipment, rewards, and leisure time physical activity. The findings are outlined in the conceptual framework (Figure 1).

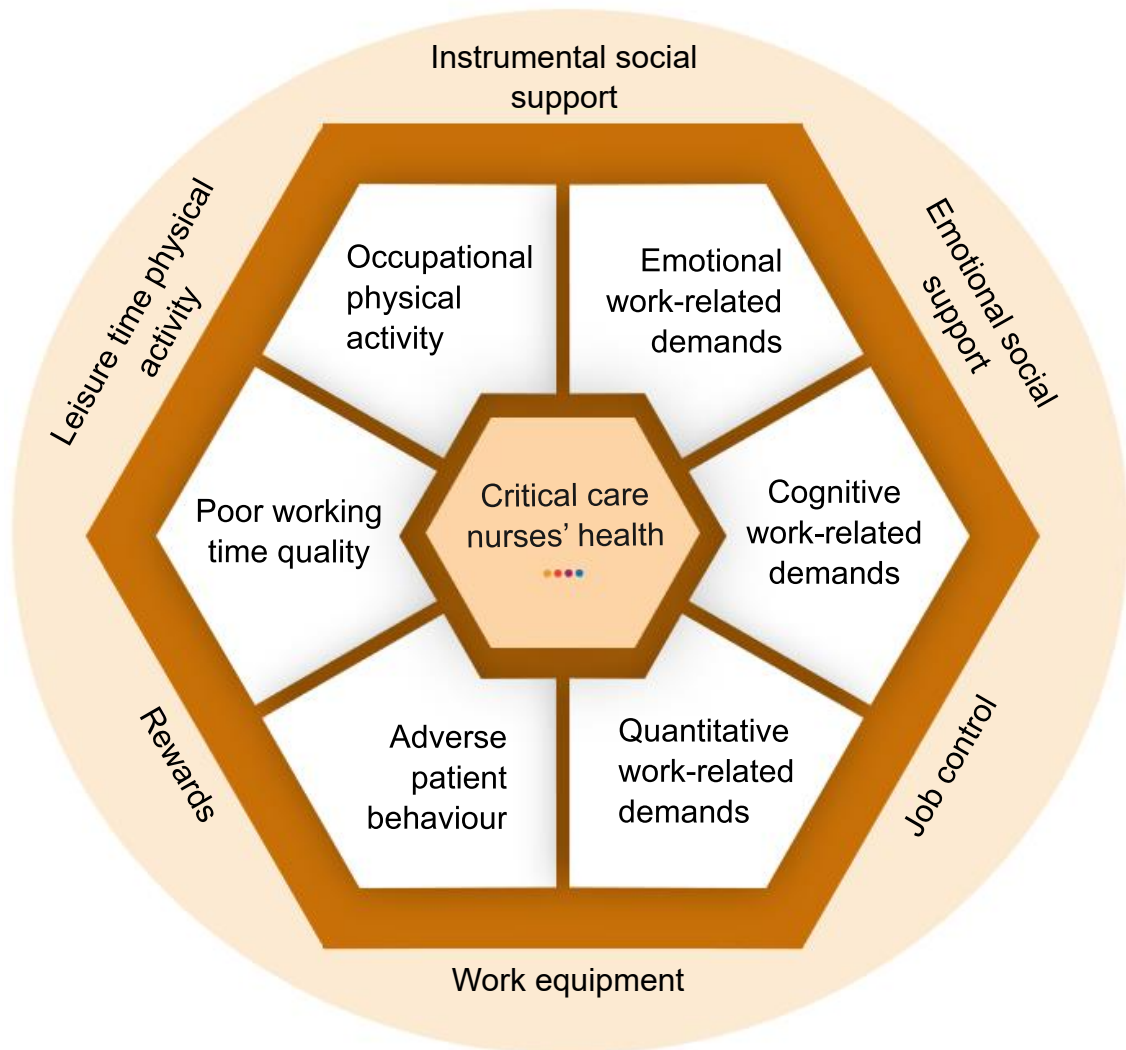


Figure 1: The conceptual framework of CCNs' health influenced by work-related demands and mitigating strategies, which is inspired by the Job Demand-Control-Support model [34], the Effort-Reward Imbalance model [38], and the EWCS [48]

The structuring of the findings was inspired by the Job Demand-Control-Support model [34], the Effort-Reward Imbalance model [38], and the EWCS [48], and supported with exemplar citations referring to the specific focus group they belong to (FG1-FG6) [47].

3.3.1. Work-related demands

3.3.1.1. OPA

CCNs experienced continuous exposure to OPA inside the hospital and during prehospital physician-staffed emergency care interventions. ED nurses were exposed to less OPA during the morning shift compared to ICU and stroke unit nurses. The most reported types of OPA were forward bending and isometric neck postures, prolonged standing, and long-distance walking. Forward bending and isometric neck postures were frequently required in various tasks performed, such as resuscitating, plastering, carrying heavy emergency coffers, tilling heavy patients in ambulance stretchers, and caring for intubated patients:

“For example applying a plaster, holding up a leg with one arm and your back being curved, I have already had instances where the day after I thought: ‘I had to hold up a leg of 50 kilos which made my arm hurt the day after’.” (FG3)

3.3.1.2. Emotional work-related demands

CCNs indicated the resuscitation of a child or family member, severe trauma victims, the announcement of cancer diagnosis to patients, and the high mortality rate as emotionally demanding:

“I have seen things during the COVID that I never want to see again. I found that terrible... Yes (...), that feeling of powerlessness. You had to go through it. How many people that died alone. I held their hands, but I stood there alone in my alien outfit. Then you have to call the family and tell them that you didn’t leave them alone. Those family members started to cry and I cried with them. I have apologised for that... I found that a very heavy period, those first two months of COVID. And those older persons who arrived and said: ‘You do not have to give the oxygen to us, give it to the younger persons’, and after two hours they were dead.” (FG4)

In addition, the quality of management by supervisors was identified as a significant work-related demand among CCNs, as they reported feeling undervalued and

unsupported, as well as experiencing a lack of empathy of their supervisors. Multiple CCNs claimed that the high amount of telephone calls from their supervisors to provide shift coverage during off-job time contributed to this perceived poor management quality. FG1 and FG2 participants added that they felt the sense of being controlled by their supervisors via electronic patient records or checklists. The need for resilience, the changing work environment, and the lack of decision authority were further mentioned as significant demands in their role:

“They also ask for your opinion when it has already been determined. That is something that often happens to us. They already decided on something and then ask us for the show like: ‘How do you think about it?’, but our opinion does not matter anymore.” (FG3)

Furthermore, the adverse social behaviour from colleagues were cited as emotionally demanding by several participants. In particular, interpersonal conflicts, such as working with nursing students, inexperienced colleagues or colleagues with whom the CCNs had a less good connection could contribute to an increased interdependency and the need to control the delivered care:

“You have colleagues you get completely stressed out by... Yes, because the way of working is completely different, that you cannot relate to them, that you cannot do anything right for them, whereas you have other colleagues where you feel each other.” (FG4)

Finally, CCNs experienced a demand to perform without the ability to schedule a break and to be present at work during an illness because of their loyalty to colleagues:

“Recently, a colleague arrived with a kidney stone. She sat in the kitchen with an infusion of analgesics and started to work an hour and a half later.” (FG1)

3.3.1.3. Cognitive work-related demands

CCNs reported feeling highly vigilant throughout their shifts, especially when attending to unplanned care for critically ill patients. This required hypervigilance, combined with a lower presence of physicians, increasing their sense of responsibility. In addition, FG3 participants expressed being overwhelmed by the high amount of auditory stimulation they were exposed to:

“In the ICU, I do have more stress because of the responsibility in comparison with the ED. In the ED, the emergency physicians will do a lot of things by themselves, whereas in the ICU, I am expected to do it by myself. In the ICU, you also have a lot more critical patients than in the ED, because in the ED, sometimes you have a lot of geriatrics, but there is nothing critical about it. Whereas in the ICU, if you have an unstable patient, you have to think and reason continuously. Then again, that is tougher, the psychological aspect.” (FG4)

3.3.1.4. Quantitative work-related demands

CCNs perceived the high work pace combined with telephone-related workflow interruptions, caused by managing the chaotic CCN ward and processing the high amount of medical orders, as harmful to their health. Furthermore, CCNs considered the need to carry out double work and inefficient work as significant demands in their role. As a consequence, multiple participants stated that more OPA was performed due to a lack of instrumental social support from colleagues:

“Sometimes you feel like you are behind the times. You have to do this and that and that and that. You have continuously, you are faced with something that is not feasible of care as you have been taught. In practice, that is not feasible. This is then shifted on a maximum of pressure (...).” (FG4)

3.3.1.5. Adverse patient behaviour

CCNs reported experiencing incongruence feelings and dissatisfaction while providing care to self-referred non-urgent, dissatisfied, disrespectful, or aggressive patients:

“I sometimes feel unsafe, yes. Especially in the ED, very unsafe... Yes, I am roused and stressed. I put it away. I do not show it externally because I do not want the patient to realise this. Internally, this is something that eats you up. I feel I am tachycardic then.” (FG4)

3.3.1.6. Poor working time quality

CCNs highlighted the atypical working times as demanding due to working full-time in rotating shifts, on holidays, and during weekends:

“Those mixed evening shifts, morning shifts, night shifts, and day shifts... Yes, I stopped working full-time here because I could no longer cope with it.” (FG4)

Furthermore, the highly commanded flexibility and poor working time arrangements were mentioned as significant work-related demands due to keeping up with all the refresher courses during the off-job time, assisting in other nursing wards, dealing with unpredictable work schedules, and providing shift coverage when colleagues call in sick:

“I got a call an hour later from my nursing supervisor asking if I can work another night shift. But I said: ‘It is my non-working weekend and again it is during my non-working weekend that I have to do a night shift’. Again, I was justifying myself and I thought: ‘Why am I doing that?’. They know my weaknesses and you gave in to one [supervisor], but the other one [supervisor] is also trying because maybe you will also give in to him.” (FG5)

3.3.2. Consequences of work-related demands

3.3.2.1. Physical complaints

CCNs reported experiencing musculoskeletal disorders, particularly after increased exposure to OPA during busy shifts. Multiple participants mentioned the most intense pain in the lower and upper back, neck, shoulders, knees, hips, or bilateral wrists. FG2 and FG3 participants added experiencing inflammation in their feet, lateral epicondylitis, and restless legs at a young age:

“I have never, in the beginning, I did not suffer so much from that, but recently, I started having such restless legs from time to time <<laughs>>. And then I think: ‘Oh so embarrassing because you are only 25 or 26 years old’.” (FG3)

However, several participants suggested that OPA was more likely to cause musculoskeletal disorders compared to leisure time physical activity. This distinction was attributed to the fact that OPA involves prolonged exposure to less intense physical activity and leisure time physical activity involves shorter exposure to more intense PA:

“The physical work is more chronic (...), walking (...), or your arms or your back being strained... Whereas when you exercise, that is very intense (...), your arms or your legs that you are training.” (FG2)

Furthermore, FG4 participants expressed the risk of developing urinary disorders in terms of urinary tract infections and kidney stones. This increased risk was attributed to the lack of opportunities to drink while working and unhealthy toileting behaviours, such as delayed voiding while facing a high work pace. Moreover, CCNs stated that their rotating shift work and atypical working times may lead to irregular and unhealthy eating patterns, resulting in unintentional weight gain:

“I eat chips with a mandarin and a sandwich with chocolate, and minced meat.” (FG3)

Last, CCNs experienced an impaired sleep quantity in terms of insomnia, shortened or prolonged sleep duration, and increased sleep disturbances, which were probably caused by circadian rhythm disruption due to shift work:

“Yeah, especially if I had to switch from night to day rhythm. I was nauseous, intolerant, restless, rushed, unable to sleep, lying awake, not finding rest, being hungry when not being hungry.” (FG4)

3.3.2.2. Mental complaints

CCNs mentioned experiencing challenges in detaching mentally from patient-related stressful situations, particularly when children or family members were involved. Further difficulties to detach from work were attributed to the high amount of consecutive working days, the changing work environment, the challenging weekend schedule/shift, and the considerable level of flexibility required of CCNs. This lack of detachment likely contributed to impaired sleep health, emotional exhaustion, concentration disorders, work-family interference, and alcohol consumption:

“I often need something like alcohol to just, really, detach for a while <<sighs>>. My partner shares in the blows, but you are so overwhelmed at work and you come home with nine emails, a message from that one and a message from that one. On your day off again those emails, again those telephone calls, again...” (FG5)

In addition, CCNs reported that poor management quality, adverse social behaviour from colleagues, and working with nursing students could lead to work-related stress and more intense perceptions of OPA. Multiple participants added that the refresher courses during the off-job time, the adverse patient behaviour, and the reported shortcomings in

providing the best possible care to patients were also seen by CCNs as contributing to work-related stress, likely resulting in personal dissatisfaction, moral distress, carry over into their personal lives, and an increased turnover intention:

“That satisfaction is completely overshadowed by the workload and the unsafe atmosphere at the ED. A stroke patient is located in the hallway and a person with epilepsy is located in the hallway, I am not satisfied when I come home. I just think: ‘No one died because of me in my care zone’.” (FG5)

Furthermore, CCNs tended to experience feelings of agitation during exclusion from the multidisciplinary decision-making processes and due to the lack of social support from physicians and the confrontation with dissatisfied patients:

“We also do not understand why nurses were never involved in the development of patient rooms. I was part of the project group and when I measured everything and said it would not work for that, I got the reply: ‘Sorry, but it is too late, the rooms are already made and you cannot change that anymore’.” (FG6)

Besides that, CCNs perceived emotional exhaustion, which could lead to personality changes and reduced marital and life satisfaction:

“I do not know what all of you think about that, but everyone is sad at work. I feel that about myself too.” (FG6)

Moreover, CCNs reported experiencing work-family interference and attributed this to the considerable level of flexibility required, the nature of shift work, and the presence of patient-related stressors. Because of this continuous interference, CCNs were not able to take care of their children, perform tasks at home, and spend time with family. This work-family interference was likely to cause work-related stress, emotional exhaustion, concentration disorders, impaired marital satisfaction, and a reduced perceived work ability:

“So I also stopped working night shifts because of the work-life imbalance. From the moment I had my third child, I said: ‘This is no longer possible’. This caused tension in all possible areas and then you have to make a choice and say that your private life

comes first. It is almost not feasible to work full-time at the pace we work and in the circumstances we work. It is almost not feasible.” (FG3)

Finally, CCNs expressed being subject to social isolation, probably caused by the demanded flexibility, shift work, and unpredictable work schedules:

“Yes, for example, I can no longer take dance classes because it is at a particular hour and due to irregular shifts, I cannot guarantee that I can follow the class every week. So yes, too bad, but I cannot do my hobby anymore that I love to do.” (FG3)

3.3.2.3. Psychosomatic complaints

CCNs stated that emotional exhaustion and work-related stress could lead to unintentional weight loss, increased muscle tension, and migraine:

“I notice from myself that due to the emotional burden at work, I am starting to have physical complaints. For example migraine, um yes, always being so tired, extremely losing weight, not being able to gain weight.” (FG5)

Moreover, multiple participants expressed the physical effort of OPA and leisure time physical activity as comparable, but the lack of decision authority and satisfaction that comes with OPA could increase the risk of prolonged fatigue and emotional exhaustion, potentially resulting in physical exhaustion:

“I can spend a whole day in my garden doing heavy work, then I come in [inside home] and I feel so energetic, fulfilled, and relaxed. But when I come home from work, I feel so empty and drained of energy... The mindset here is already different. It [gardening] is also not an obligation. The work in the ED is an obligation... I can also feel that [physical activity during gardening] in my back and muscles, but still, I am not tired.” (FG4)

Furthermore, repetitive exposure to work-related stress was seen by CCNs as a main factor in developing heart palpitations and tachycardia:

“The moment I had tachycardia at triage due to enormous stress, no one cared from the physicians, except my two colleagues who then did take care of me.” (FG5)

Additionally, CCNs experienced reduced sleep quality and attributed this to work-related stress, emotional exhaustion, and lack of detachment. In particular, CCNs faced excessive daytime sleepiness and nightmares:

“I went for a blood draw last week because my girlfriend said: ‘You should go for a blood draw because you are always tired, you always sleep around the clock and you would take another afternoon nap’. But yes, everything was normal so the cause is probably my work.” (FG5)

Last, CCNs perceived concentration disorders, which were likely caused by work-related stress, prolonged fatigue, emotional exhaustion, and lack of detachment, potentially leading to traffic accidents:

“I also nearly drove through a red light once. I had three to four prehospital physician-staffed emergency care interventions during one night and I was thinking of (...), anyways, I had to hit my brakes suddenly.” (FG1)

3.3.2.4. Turnover intention

CCNs stated that they tended to leave their CCN ward due to the high work pace, unsafe working conditions, work-family interference, and lack of social support from their supervisors:

“I have been in it [CCN profession] for more than 20 years now and I always said: ‘If it works out, I will stay in it until my retirement’... That you can stay employed until your retirement, I do not think that is possible anymore because of the current workload.” (FG5)

3.3.3. Mitigating strategies

3.3.3.1. Social support

CCNs reported the instrumental social support from colleagues as a strategy to prevent the physical burden when dealing with OPA and to alleviate the cognitive overload when coordinating a chaotic CCN ward:

“If I know it is a severely affected patient or someone who is somewhat corpulent and obese, I usually do go and ask the colleague: ‘Do you want to help me with turning this patient so I can wash his back?’.” (FG2)

Moreover, CCNs indicated that emotional social support from supervisors and colleagues could reduce work-related stress by putting the work-related demands into another perspective. As a result, CCNs were less likely to carry over emotional and cognitive work-related demands into their personal life, which likely improved their mental well-being and marital satisfaction. Multiple participants added that ventilating to a self-employed psychologist or a family member who also works in healthcare helped them prevent emotional exhaustion and burnout:

“Listening, giving advice, helping you, cheering you up, coming to help you unasked (...). Just asking if they can do something, for instance. Often they cannot do anything, but just the question they ask does wonders.” (FG4)

3.3.3.2. Job control

CCNs emphasised a high amount of skill discretion due to the accommodative access to refresher courses, which contributed to their sense of safety and may result in less work-related stress and more job satisfaction. Concerning decision authority, multiple participants considered the perceived amount of control to schedule their holidays and take up overtime as an important motivator to cope with work-related demands. Additionally, CCNs stated that the authority to schedule a break at work was needed to recover mentally and physically during periods of high work pace:

“It feels good if you can recuperate for once. If you now say like for example in certain night shifts, you have finished your patient care and at midnight or 1 AM you say: ‘Come, let us drink a coffee’. That you can <<blows out>>. This is just for 15 minutes because you still have to do...” (FG1)

3.3.3.3. Work equipment

CCNs expressed that work equipment to transfer patients, such as the HoverMatt®, sliding sails, and patient lifts, alleviated the physical burden of OPA. Nevertheless, several participants reported shortcomings in ergonomic work equipment to deal with

OPA during prehospital physician-staffed emergency care interventions. In addition to these shortcomings, work equipment to transfer patients was not used to its full potential while facing high work pace. Furthermore, CCNs disclosed that adjustable hospital stretchers, ergonomic shoes, and chairs with adaptability for taking blood samples were beneficial in preventing physical complaints. Participants in FG1 and FG3 added the benefits of compression stockings, analgesics, and magnesium to avoid restless legs:

“And especially if you work night shifts, the restless legs that you have when you get into your bed. Now, I no longer have that <<looks at compression stockings>>.” (FG1)

3.3.3.4. Rewards

CCNs perceived the patients' gratitude, their wages, job security, equal social benefits, career prospects, and off-job time as helpful to cope with the required efforts at work:

“That you have been able to do your job the way you want and if you build up a good relationship with your patient that you feel you have been able to help him both physically and mentally through the difficult period, then this does give you satisfaction, uhm.” (FG2)

3.3.3.4. Leisure time physical activity

CCNs indicated leisure time physical activity as a strategy to detach mentally from work:

“I exercise every day and that just helps me more, I am more relaxed compared to when I do not exercise.” (FG1)

4. Discussion

A key finding of this study was the continuous exposure to a high amount of OPA. However, contrary to Aleid et al. [56], differences in exposure to OPA between the different CCN occupations were identified. This finding could be attributed to two organisational factors. First, the patient occupancy rate is normally lower during the morning at the ED in comparison to the ICU and stroke unit. Second, ICU and stroke unit nurses had their work equipment to deal with OPA more closely available in the patient room, while ED nurses had not [9]. In contrast to Clays et al. [57], however, this study also emphasised the psychosocial work environment as an influencer of exposure to OPA. This finding could be explained by CCNs experiencing adverse social behaviour from colleagues with whom they had a less good connection, resulting in them receiving less instrumental social support and having to perform more OPA alone. Another possible explanation could be that CCNs were subject to more OPA due to the lack of authority to question medical orders given by physicians. This may be attributed to the experienced patriarchal physician-nurse relationship and the financial incentive of diagnostic tests for physicians due to the fee-for-service payment system in Belgium. Because of the exposure to OPA, the CCNs in this study reported experiencing musculoskeletal disorders, which corroborates the findings of previous studies among CCNs [1,58]. Despite several risk management strategies across the nursing profession to reduce the risk of developing musculoskeletal disorders, exposure to side-bending postures during prehospital physician-staffed emergency care interventions is not decreasing [59,60]. From a theoretical perspective, OPA is widely covered by the physical job demands subscale of the Job Demand-Control-Support model [34], the effort subscale of the Effort-Reward Imbalance model [38], and the physical environment index of the EWCS [48].

Exposure to emotional work-related demands related to exclusion from multidisciplinary decision-making processes and providing inappropriate care to patients and their relatives likely resulted in moral distress and emotional exhaustion among the included CCNs. Consistent with Azoulay et al. [40], this mental burden can be considered as an important factor for developing burnout. As a consequence, CCNs tended to experience unintentional weight loss, migraine, personality changes, job dissatisfaction, and an increased turnover intention. Concerning personality changes, previous research has noted that 38.6% of South Korean ICU nurses were characterised by a Type D personality in terms of anxiety, depression, and inappropriate worrying [61]. However,

CCNs in this study also experienced less empathy towards their patients, and remarkably also towards their partners and friends. Despite the major influence of emotional work-related demands on CCN's health, these demands are solely covered by the EWCS [48].

Our findings indicate that exposure to cognitive work-related demands during employment at a CCN ward is essential to consider when evaluating CCNs' health. Previous research has indicated that the continuous solving of unforeseen problems can contribute to self-development at work [48]. However, consistent with Bolliger et al. [47], the included CCNs perceived this continuous problem-solving as stress-inducing. An increasing amount of evidence suggests that the required cognitive hypervigilance of CCNs can increase the risk of concentration disorders and may lead to medical errors [10,11]. This increased risk of medical errors was not demonstrated by this study, which could be due to socially desirable answers during the focus groups. Cognitive work-related demands are part of the effort subscale of the Effort-Reward Imbalance model [38] and the skills and discretion index of the EWCS [48].

The current study demonstrated that exposure to quantitative work-related demands in terms of high work pace, workflow interruptions, and inefficient work likely reduced attention and sleep health of CCNs due to work-related stress, which is well supported by evidence [10]. Multiple participants experienced reduced subjective sleep quality, disrupted sleep duration, and increased sleep disturbances, which they associated with an increased risk of traffic accidents, and which is in line with Smyth' [62] Pittsburgh Sleep Quality Index. According to the theoretical models, quantitative work-related demands are covered by the demands subscale of the Job Demand-Control-Support model [34], the effort subscale of the Effort-Reward Imbalance model [38], and the work intensity index of the EWCS [48].

Consideration is required concerning the influence of working time quality on CCNs' health. Regarding the working time quality index of the EWCS [48], the combination of atypical working times and family role demands was perceived by CCNs as detrimental to their health and marital life. A possible explanation for this might be that most participating CCNs were aged between 25 and 35 years, which is seen as the most interesting period for career development, marriage, and raising children [31,63,64]. Furthermore, in line with the EWCS [48], CCNs who were informed at short notice of adaptations in their work schedule tended to experience a lack of detachment, work-

family interference, and social isolation. However, previous research has shown that male workers are more likely to develop low back pain due to work-related demands when they experience work-family interference [65]. Given these findings, nursing supervisors should give more consideration to the risk factors of work-family interference in risk management strategies to prevent the development of musculoskeletal disorders. The dimensions of the working time quality index are not considered by the Job Demand-Control-Support model [34], nor by the Effort-Reward Imbalance model [38].

This study identified workplace social support as a psychosocial moderator on the development of emotional exhaustion due to stress-inducing work-related demands. In line with Sampei et al. [66], CCNs were more likely to develop emotional exhaustion when they faced high exposure to work-related demands with low levels of social support. In contrast to Clays et al. [35], however, no evidence of the buffering potential of social support on the development of coronary heart diseases due to OPA was detected. From a theoretical perspective, workplace social support is widely mentioned in the Job Demand-Control-Support model [34], the Effort-Reward Imbalance model [38], and the EWCS [48].

Concerning skill discretion, access to training opportunities among the European workforce improved by 12% in 2015 compared to 2005 [48]. This finding is consistent with this study, in which the accommodative access to refresher courses contributed to CCNs' sense of safety at work. However, the amount of flexibility required to be present at the refresher courses during the off-job time was likely to induce work-related stress and work-family interference. Regarding decision authority, this study demonstrated that CCNs experienced exclusion from the multidisciplinary decision-making processes and had fewer opportunities to schedule a break at work. This finding is consistent with the EWCS [48] stating that only a scarce 33% of European subordinates were involved by their supervisors in decision-making processes influencing their work [47]. Surprisingly, the Job Demand-Control-Support model [34] was found to measure job control solely on positively perceived decision authority [47].

The included CCNs expressed the mitigating influence of wages, career prospects, and job security when it comes to coping with work-related demands. According to the earnings index of the EWCS [48], 39% of the European workforce approved that their employment offers prospects that are beneficial for career advancement. This is in line

with this study, in which CCNs perceived that being employed at a CCN ward contributed to their professional development. From a theoretical perspective, the Effort-Reward Imbalance model [38] includes the rewards subscale in terms of money, esteem, and security/career opportunities.

In light of the discussed theoretical models, some show additional shortcomings. Despite that the CCNs' health was influenced by patient-related stressful situations, the poor management quality, and the experienced demand to perform, these emotional work-related demands are not considered by the Job Demand-Control-Support model [34], nor by the Effort-Reward Imbalance model [38]. In addition, the Job Demand-Control-Support model [34] does not pay attention to the work-family interference concept caused by the considerable level of required flexibility, the nature of shift work, and the presence of patient-related stressors. However, the Effort-Reward Imbalance model partially conceptualises work-family interference as overcommitment [47,48]. Finally, the Job Demand-Control-Support model [34] does not include the rewards subscale in terms of patients' gratitude, wages, job security, equal social perks, career prospects, or off-job time. Thus, solely the EWCS [48] covers a wide range of work-related demands that are perceived as harmful according to the current CCN workforce.

4.1. Strengths and limitations

The major strength of this study is the implementation of a constructivist Grounded Theory approach, by which traditional quantitative frameworks used in the research of psychologically healthy work were discussed and shortcomings were identified. Another strength is the added value of conducting focus groups, which allowed the exploration of concepts and categories that would not have been identified while conducting quantitative research with corresponding questionnaires, or qualitative research with individual interviews. Moreover, theoretical saturation was reached for the theoretical categories. Last, the trustworthiness of the findings was enhanced by the implementation of multiple strategies.

Notwithstanding these strengths, the inclusion of solely one hospital may have provoked selection bias and might hinder the transferability of the results to other CCNs employed in similar work environments. Furthermore, the scheduled focus groups with the ICU nurses were frequently cancelled at short notice due to seasonal epidemics and changing work schedules. In addition, the stroke unit's nursing team is characterised by

a limited number of nurses and therefore it was only possible to organise one focus group. As a consequence, the subgroup of ICU and stroke unit nurses was small and data saturation concerning sampling remains debatable. Another limitation is the possible occurrence of the healthy worker effect bias [67], as nurses on sick leave may have felt impeded from participating. During each focus group, essential observations could have been missed due to the absence of an observer. Additionally, interviewer bias may have occurred due to the moderator's pre-existing superficial relationship with the ED nurses. However, the research team is convinced that the CCNs were not hampered to engage and that this relationship stimulated them to share their deep-rooted feelings and perceptions.

4.2. Implications for nursing management

The findings of this study include several recommendations for practice. First, the identified and assessed physical and psychosocial risk factors can be used to develop risk management strategies. Concerning this recommendation, more ergonomic emergency coffers could be provided to prevent side-bending postures during prehospital physician-staffed emergency care interventions. Second, nursing supervisors should implement forward and rapidly rotating work schedules to impede the development of circadian rhythm disruption [25]. Regarding work schedules, schedule flexibility should be guaranteed by introducing the principles of self-scheduling to provide more control over the working time, prevent work-family interference, and reduce the risk of circadian rhythm disruption [25]. Third, nursing supervisors should provide vertical trust, job security, transparent communication, decision authority, and social support to their employees, so they perceive the processes and dynamics of work-related demands less intensely [47]. In particular, organisations should provide a leadership program in which supervisors learn appropriate coaching strategies. Fourth, the risk of mental complaints and work-related stress can be reduced by assigning a psychologist who educates CCNs on how to cope with patient-related stressful situations. Finally, greater efforts are needed to ensure a sufficient and uninterrupted recovery time between shifts, to provide breaks without interruptions, and to reduce the demand to perform [68].

4.3. Implications for research

This qualitative study focused solely on the perspectives of CCNs. However, it might be relevant to include emergency medical technicians, emergency physicians, and intensivists because of their employment in a comparable work environment. Furthermore, future research should include CCNs who are exclusively employed at night to gain a more detailed understanding of the processes and dynamics of work-related demands on CCNs' health. Additionally, considerably more work will need to be done to determine the long-term moderating effects of psychosocial job resources by implementing longitudinal research designs. Finally, further studies need to be carried out to establish the modernisation of traditional quantitative frameworks used in the research of psychologically healthy work, in which they explore the role of psychosocial and organisational factors in more detail.

5. Conclusion

This qualitative study identified that CCNs' health is challenged by work-related demands which are not entirely covered by the traditional quantitative frameworks used in research on psychologically healthy work. In particular, CCNs' health was challenged by the processes and dynamics of OPA, emotional, cognitive, and quantitative work-related demands, adverse patient behaviour, and poor working time quality. In an attempt to mitigate the influence of work-related demands on their health, CCNs relied upon social support, job control, work equipment, rewards, and leisure time physical activity. Therefore, future studies should explore the role of psychosocial and organisational factors in more detail. In conclusion, this study recommends the development of an employee-centric work environment by providing sufficient risk management strategies, schedule flexibility, uninterrupted off-job recovery time, and positive management to guarantee extended healthy working lives among the CCN workforce.

6. References

1. Bazazan, Ahmad, Iman Dianat, Samira Bahrampour, Amirhosein Talebian, Hojat Zandi, Amir Sharafkhaneh, and Azam Maleki-Ghahfarokhi. 2019. "Association of Musculoskeletal Disorders and Workload with Work Schedule and Job Satisfaction among Emergency Nurses." *International Emergency Nursing* 44 (May): 8–13. <https://doi.org/10.1016/j.ienj.2019.02.004>.
2. Wu, Yafei, Xuan Zou, Yanhong Gong, Nan Jiang, Mi Tian, Jiali Zhang, Xiaoxv Yin, and Chuanzhu Lv. 2021. "Work-Family Conflict of Emergency Nurses and Its Related Factors: A National Cross-Sectional Survey in China." *Frontiers in Public Health* 9 (October). <https://doi.org/10.3389/fpubh.2021.736625>.
3. Briggs, Andrew M., Anthony D. Woolf, Karsten Dreinhöfer, Nicole M. Homb, Damian Hoy, Deborah Kopansky-Giles, Kristina Åkesson, and Lyn March. 2018. "Reducing the Global Burden of Musculoskeletal Conditions." *Bulletin of the World Health Organization* 96 (5): 366–68. <https://doi.org/10.2471/blt.17.204891>.
4. Liebermann, Susanne C., Andreas Müller, Matthias Weigl, and Jürgen Wegge. 2015. "Antecedents of the Expectation of Remaining in Nursing until Retirement Age." *Journal of Advanced Nursing* 71 (7): 1624–38. <https://doi.org/10.1111/jan.12634>.
5. Bell, Lesley. 2013. "The Ageing of the Nursing Workforce: What Lies Ahead and What We Can Do." *International Nursing Review* 60 (3): 277–78. <https://doi.org/10.1111/inr.12049>.
6. De Vries, Neeltje, Anke Boone, Lode Godderis, J. Bouman, Szymon Szemik, Domenica Matranga, and Peter De Winter. 2023. "The Race to Retain Healthcare Workers: A Systematic Review on Factors That Impact Retention of Nurses and Physicians in Hospitals." *Inquiry* 60 (January): 004695802311593. <https://doi.org/10.1177/00469580231159318>.
7. Flinkman, Mervi, Helena Leino-Kilpi, and Sanna Salanterä. 2010. "Nurses' Intention to Leave the Profession: Integrative Review." *Journal of Advanced Nursing* 66 (7): 1422–34. <https://doi.org/10.1111/j.1365-2648.2010.05322.x>.
8. Western Governors University. 2023. "Critical Care Nurse Career Guide." What Is a Critical Care Nurse? 2023. <https://www.wgu.edu/career844/guide/healthcare/critical-care-nurse-career.html#close>.
9. Yu, Fiona, Anantha Narayanan, Lisa Mackay, Kim Ward, Anna King, and Melody Smith. 2020. "Describing Objectively Measured Intensive Care Nurses' Physical

- Work Activity Behavioural Patterns during a 12-hr Shift.” *Journal of Clinical Nursing* 29 (21–22): 4331–42. <https://doi.org/10.1111/jocn.15470>.
10. Weigl, Matthias, Joana Beck, Markus Wehler, and Anna Schneider. 2017. “Workflow Interruptions and Stress Atwork: A Mixed-Methods Study among Physicians and Nurses of a Multidisciplinary Emergency Department.” *BMJ Open* 7 (12): e019074. <https://doi.org/10.1136/bmjopen-2017-019074>.
 11. Weaver, Amy L., Sonja E. Stutzman, Charlene Supnet, and DaiWai M. Olson. 2016. “Sleep Quality, but Not Quantity, Is Associated with Self-Perceived Minor Error Rates among Emergency Department Nurses.” *International Emergency Nursing* 25 (March): 48–52. <https://doi.org/10.1016/j.ienj.2015.08.003>.
 12. An, Ying, Yuan Yang, Aiping Wang, Yue Li, Qinge Zhang, Teris Cheung, Gabor S. Ungvari, Ming Qin, Feng Rong An, and Yu Tao Xiang. 2020. “Prevalence of Depression and Its Impact on Quality of Life among Frontline Nurses in Emergency Departments during the COVID-19 Outbreak.” *Journal of Affective Disorders* 276 (November): 312–15. <https://doi.org/10.1016/j.jad.2020.06.047>.
 13. Merkus, Suzanne L., Pieter Coenen, Mikael Forsman, Stein Knardahl, Kaj Bo Veiersted, and Svend Erik Mathiassen. 2022. “An Exploratory Study on the Physical Activity Health Paradox—Musculoskeletal Pain and Cardiovascular Load during Work and Leisure in Construction and Healthcare Workers.” *International Journal of Environmental Research and Public Health* 19 (5): 2751. <https://doi.org/10.3390/ijerph19052751>.
 14. Holtermann, Andreas, Niklas Krause, Allard J. Van Der Beek, and Leon Straker. 2017. “The Physical Activity Paradox: Six Reasons Why Occupational Physical Activity (OPA) Does Not Confer the Cardiovascular Health Benefits That Leisure Time Physical Activity Does.” *British Journal of Sports Medicine* 52 (3): 149–50. <https://doi.org/10.1136/bjsports-2017-097965>.
 15. Johansson, Melker Staffan, Andreas Holtermann, Jacob Louis Marott, Eva Prescott, Peter Schnohr, Mette Korshøj, and Karen Søgaard. 2022. “The Physical Activity Health Paradox and Risk Factors for Cardiovascular Disease: A Cross-Sectional Compositional Data Analysis in the Copenhagen City Heart Study.” *PLOS ONE* 17 (4): e0267427. <https://doi.org/10.1371/journal.pone.0267427>.
 16. Bolino, Mark C., Thomas K. Kelemen, and Samuel H. Matthews. 2020. “Working 9-to-5? A Review of Research on Nonstandard Work Schedules.” *Journal of Organizational Behavior* 42 (2): 188–211. <https://doi.org/10.1002/job.2440>.

17. Moreno, De Castro, Claudia Roberta, Elaine Cristina Marqueze, Charli Sargent, Kenneth P. Wright, Sally A. Ferguson, and Philip Tucker. 2019. "Working Time Society Consensus Statements: Evidence-Based Effects of Shift Work on Physical and Mental Health." *Industrial Health* 57 (2): 139–57. <https://doi.org/10.2486/indhealth.sw-1>.
18. Suleiman, Adekemi O., Ragan E. Decker, Jacob C. Garza, Rick Laguerre, Alicia G. Dugan, and Jennifer M. Cavallari. 2021. "Worker Perspectives on the Impact of Non-Standard Workdays on Worker and Family Well-Being: A Qualitative Study." *BMC Public Health* 21 (1). <https://doi.org/10.1186/s12889-021-12265-8>.
19. Yong, Mei, Maria Blettner, Katharina Emrich, Michael Nasterlack, Christoph Oberlinner, and Gaël P. Hammer. 2014. "A Retrospective Cohort Study of Shift Work and Risk of Incident Cancer among German Male Chemical Workers." *Scandinavian Journal of Work, Environment & Health* 40 (5): 502–10. <https://doi.org/10.5271/sjweh.3438>.
20. Chellappa, Sarah Laxhmi, Nina Vujovic, Jonathan S. Williams, and Frank A.J.L. Scheer. 2019. "Impact of Circadian Disruption on Cardiovascular Function and Disease." *Trends in Endocrinology and Metabolism* 30 (10): 767–79. <https://doi.org/10.1016/j.tem.2019.07.008>.
21. Shan, Zhilei, Yanping Li, Geng Zong, Yanjun Guo, Jun Li, JoAnn E. Manson, Frank B. Hu, Walter C. Willett, Eva Schernhammer, and Shilpa N Bhupathiraju. 2018. "Rotating Night Shift Work and Adherence to Unhealthy Lifestyle in Predicting Risk of Type 2 Diabetes: Results from Two Large US Cohorts of Female Nurses." *BMJ*, November, k4641. <https://doi.org/10.1136/bmj.k4641>.
22. Pryce, Cheryl. 2016. "Impact of Shift Work on Critical Care Nurses." *PubMed* 27 (4): 17–21. <https://pubmed.ncbi.nlm.nih.gov/29786977>.
23. Letvak, Susan, Christopher J. Ruhm, and Susan Lane. 2011. "The Impact of Nurses' Health on Productivity and Quality of Care." *Journal of Nursing Administration* 41 (4): 162–67. <https://doi.org/10.1097/nna.0b013e3182118516>.
24. Drake, Diane, Michele Luna, Jane M. Georges, and Linsey M. Steege. 2012. "Hospital Nurse Force Theory." *Advances in Nursing Science* 35 (4): 305–14. <https://doi.org/10.1097/ans.0b013e318271d104>.
25. Jensen, Hanne Irene, Jette West Larsen, and Tina Damgaard Thomsen. 2017. "The Impact of Shift Work on Intensive Care Nurses' Lives Outside Work: A Cross-sectional Study." *Journal of Clinical Nursing* 27 (3–4). <https://doi.org/10.1111/jocn.14197>.

26. Kalmbach, David A., Vivek Pillai, Philip Cheng, J. Todd Arnedt, and Christopher L. Drake. 2015. "Shift Work Disorder, Depression, and Anxiety in the Transition to Rotating Shifts: The Role of Sleep Reactivity." *Sleep Medicine* 16 (12): 1532-38. <https://doi.org/10.1016/j.sleep.2015.09.007>.
27. Sonnentag, Sabine, Carmen Binnewies, and Eva J. Mojza. 2010. "Staying Well and Engaged When Demands Are High: The Role of Psychological Detachment." *Journal of Applied Psychology* 95 (5): 965–76. <https://doi.org/10.1037/a0020032>.
28. Gevers, Jmp Josette, Pierre Van Erven, Jan De Jonge, Maaïke Maas, and J.D. De Jong. 2010. "Effect of Acute and Chronic Job Demands on Effective Individual Teamwork Behaviour in Medical Emergencies." *Journal of Advanced Nursing* 66 (7): 1573–83. <https://doi.org/10.1111/j.1365-2648.2010.05314.x>.
29. Liu, Shuyang, Xia Duan, Peng Han, Haiyan Shao, Jinxia Jiang, and Li Zeng. 2022. "Occupational Benefit Perception of Acute and Critical Care Nurses: A Qualitative Meta-Synthesis." *Frontiers in Public Health*, September. <https://doi.org/10.3389/fpubh.2022.976146>.
30. Schooley, Benjamin, Neset Hikmet, Menderes Tarcın, and Gamze Yorgancıoğlu. 2016. "Comparing Burnout across Emergency Physicians, Nurses, Technicians, and Health Information Technicians Working for the Same Organization." *Medicine* 95 (10): e2856. <https://doi.org/10.1097/md.0000000000002856>.
31. Wu, Hui, Wei Sun, and Lie Wang. 2011. "Factors Associated with Occupational Stress among Chinese Female Emergency Nurses." *Emergency Medicine Journal* 29 (7): 554–58. <https://doi.org/10.1136/emj.2010.094391>.
32. Bardhan, Rupkatha, Karen Heaton, Mary V. Davis, Peter Chen, David B. Dickinson, and Claudiu T. Lungu. 2019. "A Cross Sectional Study Evaluating Psychosocial Job Stress and Health Risk in Emergency Department Nurses." *International Journal of Environmental Research and Public Health* 16 (18): 3243. <https://doi.org/10.3390/ijerph16183243>.
33. Ketels, Margo, Thomas Belligh, Dirk de Bacquer and Els Clays. 2022. "Are Psychosocial Resources Buffering the Relation Between Physical Work Behaviors and Need for Recovery?" *International Journal of Public Health* 67. <https://doi.org/10.3389/ijph.2022.1604787>
34. Karasek, Robert, and Töres Theorell. 1990. "Healthy Work: Stress, Productivity, and the Reconstruction of Working Life." *Choice Reviews Online* 28 (01): 28–0381. <https://doi.org/10.5860/choice.28-0381>.

35. Clays, Els, Annalisa Casini, Koen Van Herck, Dirk De Bacquer, Guy De Backer, and Andreas Holtermann. 2016. "Do Psychosocial Job Resources Buffer the Relation between Physical Work Demands and Coronary Heart Disease? A Prospective Study among Men." *International Archives of Occupational and Environmental Health* 89 (8): 1299–1307. <https://doi.org/10.1007/s00420-016-9551165-z>.
36. Karasek, Robert. 1979. "Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign." *Administrative Science Quarterly* 24 (2): 285. <https://doi.org/10.2307/2392498>.
37. Hornstein, Erica A., and Naomi I. Eisenberger. 2017. "Unpacking the Buffering Effect of Social Support Figures: Social Support Attenuates Fear Acquisition." *PLOS ONE* 12 (5): e0175891. <https://doi.org/10.1371/journal.pone.0175891>.
38. Siegrist, Johannes. 1996. "Adverse Health Effects of High-Effort/Low-Reward Conditions." *Journal of Occupational Health Psychology* 1 (1): 27–41. <https://doi.org/10.1037/1076-8998.1.1.27>.
39. Tian, Mi, Heping Yang, Xiaoxv Yin, Yafei Wu, Guopeng Zhang, Chuanzhu Lv, Ketao Mu, and Yanhong Gong. 2021. "Evaluating Effort-Reward Imbalance among Nurses in Emergency Departments: A Cross-Sectional Study in China." *BMC Psychiatry* 21 (1). <https://doi.org/10.1186/s12888-021-03344-6>.
40. Azoulay, Elie, Jan J. De Waele, Ricard Ferrer, Thomas Staudinger, Marta Borkowska, Pedro Póvoa, Katerina Iliopoulou, et al. 2020. "Symptoms of Burnout in Intensive Care Unit Specialists Facing the COVID-19 Outbreak." *Annals of Intensive Care* 10 (1). <https://doi.org/10.1186/s13613-020-00722-3>.
41. Bernal, Dinora, Javier Campos-Serna, Aurelio Tobias, Sergio Vargas-Prada, Fernando G. Benavides, and Consol Serra. 2015. "Work-Related Psychosocial Risk Factors and Musculoskeletal Disorders in Hospital Nurses and Nursing Aides: A Systematic Review and Meta-Analysis." *International Journal of Nursing Studies* 52 (2): 635–48. <https://doi.org/10.1016/j.ijnurstu.2014.11.003>.
42. Zare, Asma, Alireza Choobineh, Soheil Hassanipour, and Mahdi Malakoutikhah. 2021. "Investigation of Psychosocial Factors on Upper Limb Musculoskeletal Disorders and the Prevalence of Its Musculoskeletal Disorders among Nurses: A Systematic Review and Meta-Analysis." *International Archives of Occupational and Environmental Health* 94 (5): 1113–36. <https://doi.org/10.1007/s00420-021-01654-6>.

43. Charmaz, Kathy. 2006. *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis*. Sage EBooks. <http://ci.nii.ac.jp/ncid/BA79601482>.
44. Ketels, Margo, Charlotte Lund Rasmussen, Mette Korshøj, Nidhi Gupta, Dirk De Bacquer, Andreas Holtermann, and Els Clays. 2020. "The Relation between Domain-Specific Physical Behaviour and Cardiorespiratory Fitness: A Cross-Sectional Compositional Data Analysis on the Physical Activity Health Paradox Using Accelerometer-Assessed Data." *International Journal of Environmental Research and Public Health* 17 (21): 7929. <https://doi.org/10.3390/ijerph17217929>.
45. Van Hecke, Ann, Isabel Vlerick, Soumaya Akhayad, Michiel Daem, Elsie Decoene, and Lise-Marie Kinnaer. 2023. "Dynamics and Processes Influencing Role Integration of Advanced Practice Nurses and Nurse Navigators in Oncology Teams." *European Journal of Oncology Nursing* 62 (February): 102257. <https://doi.org/10.1016/j.ejon.2022.102257>.
46. Holloway, Immy, and Stephanie Wheeler. 2016. *Qualitative Research in Nursing and Healthcare*. <http://ci.nii.ac.jp/ncid/BB01240452>.
47. Bolliger, Larissa, Junoš Lukan, Elena Colman, Leen Boersma, Mitja Luštrek, Dirk De Bacquer, and Els Clays. 2022. "Sources of Occupational Stress among Office Workers—A Focus Group Study." *International Journal of Environmental Research and Public Health* 19 (3): 1075. <https://doi.org/10.3390/ijerph19031075>.
48. Eurofound. 2017. "Sixth European Working Conditions Survey – Overview report (2017 update)." Publications Office of the European Union, Luxembourg. https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef1634en.pdf
49. Turner, Carley, and Felicity Astin. 2021. "Grounded Theory: What Makes a Grounded Theory Study?" *European Journal of Cardiovascular Nursing* 20 (3): 285–89. <https://doi.org/10.1093/eurjcn/zvaa034>.
50. Higginbotham, Karen, I. Chester Jones, and Martin Johnson. 2021. "A Grounded Theory Study: Exploring Health Care Professionals Decision Making When Managing End Stage Heart Failure Care." *Journal of Advanced Nursing* 77 (7): 3142–55. <https://doi.org/10.1111/jan.14852>.
51. De Casterlé, Bernadette Dierckx, Chris Gastmans, Els Bryon, and Yvonne Denier. 2012. "QUAGOL: A Guide for Qualitative Data Analysis." *International*

- Journal of Nursing Studies* 49 (3): 360–71.
<https://doi.org/10.1016/j.ijnurstu.2011.09.012>.
52. Vandewalle, Joeri, Dimitri Beeckman, Ann Van Hecke, Bart Debyser, Eddy Deproost, and Sofie Verhaeghe. 2019. "Contact and Communication with Patients Experiencing Suicidal Ideation: A Qualitative Study of Nurses' Perspectives." *Journal of Advanced Nursing* 75 (11): 2867–77.
<https://doi.org/10.1111/jan.14113>.
53. Metelski, Fernanda Karla, José Luís Guedes Dos Santos, Caroline Cechinel Peiter, Greici Capellari Fabrizzio, Márcia Danieli Schmitt, and MarySue V. Heilemann. 2021. "Teoria Fundamentada Construtivista: Características e Aspectos Operacionais Para a Pesquisa Em Enfermagem." *Revista Da Escola De Enfermagem Da Usp* 55 (January). <https://doi.org/10.1590/s1980-220x2020051103776>.
54. Polit, Denise F., and Cheryl Tatano Beck. 2016. *Nursing Research - Generating And Assessing Evidence For Nursing Practice*.
<http://ci.nii.ac.jp/ncid/BB20993742>.
55. O'Brien, B. J., Ilene B. Harris, Thomas J. Beckman, Darcy A. Reed, and David Cook. 2014. "Standards for Reporting Qualitative Research." *Academic Medicine* 89 (9): 1245–51. <https://doi.org/10.1097/acm.0000000000000388>.
56. Aleid, Aesha Abdullah, Hend Abdelmonem Eid Elshnawie, and Ahmed Ammar. 2021. "Assessing the Work Activities Related to Musculoskeletal Disorder among Critical Care Nurses." *Critical Care Research and Practice* 2021 (June): 1–10.
<https://doi.org/10.1155/2021/8896806>.
57. Clays, Els, David Hallman, Jodi Oakman, and Andreas Holtermann. 2020. "Objectively Measured Occupational Physical Activity in Blue-Collar Workers: What Is the Role of Job Type, Gender and Psychosocial Resources?" *Applied Ergonomics* 82 (January): 102948.
<https://doi.org/10.1016/j.apergo.2019.102948>.
58. Ameri, Maryam, Seyedmohammad Mirhosseini, Mohammad Hasan Basirinezhad, and Hossein Ebrahimi. 2021. "Prevalence of Restless Legs Syndrome and Its Relationship with Fatigue in Critical Care Nurses." *Indian Journal of Critical Care Medicine* 25 (11): 1275–79.
<https://doi.org/10.5005/jp1050journals-10071-24010>.
59. Arial, Marc, D Benoit, and Pascal Wild. 2014. "Exploring Implicit Preventive Strategies in Prehospital Emergency Workers: A Novel Approach for Preventing

- Back Problems.” *Applied Ergonomics* 45 (4): 1003–9. <https://doi.org/10.1016/j.apergo.2013.12.005>.
60. Liu, Qianru, Xue Li, Huijing Lin, Yu Sun, Geng Li, Yongli Lyu, and Mengna Wang. 2023. “Occupational Low Back Pain Prevention Capacity of Nurses in China: A Multicenter Cross-Sectional Study.” *Frontiers in Public Health* 11 (March). <https://doi.org/10.3389/fpubh.2023.1103325>.
61. Cho, Geum-Jin, and Jiyeon Kang. 2017. “Type D Personality and Post-Traumatic Stress Disorder Symptoms among Intensive Care Unit Nurses: The Mediating Effect of Resilience.” *PLOS ONE* 12 (4): e0175067. <https://doi.org/10.1371/journal.pone.0175067>.
62. Smyth, Carole. 2012. “The Pittsburgh Sleep Quality Index (PSQI).” Best Practices in Nursing Care to Older Adults. 2012. https://andreasbjerregaard.files.wordpress.com/2015/01/try_this_6_1.pdf.
63. Adkins, Cheryl L., and Sonya F. Premeaux. 2012. “Spending Time: The Impact of Hours Worked on Work–Family Conflict.” *Journal of Vocational Behavior* 80 (2): 380–89. <https://doi.org/10.1016/j.jvb.2011.09.003>.
64. Pool, Inge, Rob F. Poell, Marjolein Berings, and Olle Ten Cate. 2015. “Strategies for Continuing Professional Development among Younger, Middle-Aged, and Older Nurses: A Biographical Approach.” *International Journal of Nursing Studies* 52 (5): 939–50. <https://doi.org/10.1016/j.ijnurstu.2015.02.004>.
65. Weale, Victoria, Jodi Oakman, and Els Clays. 2021. “Does Work–Family Conflict Play a Role in the Relationship between Work-related Hazards and Musculoskeletal Pain?” *American Journal of Industrial Medicine* 64 (9): 781–91. <https://doi.org/10.1002/ajim.23280>.
66. Sampei, Makiko, Ryo Okubo, Mitsuhiro Sado, Aurélie Piedvache, Tetsuya Mizoue, Koushi Yamaguchi, and Naho Morisaki. 2022. “Emotional Exhaustion of Burnout among Medical Staff and Its Association with Mindfulness and Social Support: A Single Center Study during the COVID-19 Pandemic in Japan.” *Frontiers in Psychiatry* 13 (March). <https://doi.org/10.3389/fpsy.2022.774919>.
67. Li, Chung-Yi, and Fung-Chang Sung. 1999. “A Review of the Healthy Worker Effect in Occupational Epidemiology.” *Occupational Medicine* 49 (4): 225–29. <https://doi.org/10.1093/occmed/49.4.225>.
68. Ghanayem, Mohamad, Einav Srulovici, and Cheryl Zlotnick. 2020. “Occupational Strain and Job Satisfaction: The Job Demand–Resource Moderation–Mediation

Model in Haemodialysis Units.” *Journal of Nursing Management* 28 (3): 664–72.
<https://doi.org/10.1111/jonm.12973>.

7. Attachments

7.1. Attachment 1: recruitment flyer and poster

 FACULTEIT GENEESKUNDE EN
GEZONDHEIDSWETENSCHAPPEN

 UNIVERSITEIT
GENT

Onderzoek:

De gepercipieerde relatie tussen werk-gerelateerde fysieke activiteit en de gezondheid bij acute zorgverpleegkundigen

 **80%**

VERPLEEGKUNDIGEN KAMPEN MET MUSCULOSKELETALE KLACHTEN DOOR FYSIEKE TAAKEISEN



VERPLEEGKUNDIGEN HEBBEN EEN VERHOOGD RISICO DOOR FYSIEKE TAAKEISEN OP CARDIOVASCULAIRE PROBLEMEN

 **23%**

VERPLEEGKUNDIGEN ZIJN OUDER DAN 55 JAAR

Deze kwalitatieve studie maakt gebruik van een grounded theory onderzoeksdesign, waarbij focusgroep gesprekken plaatsvinden met een vijftal participanten. Een focusgroep gesprek is een groepsinterview en duurt maximaal anderhalf uur. Deze gesprekken worden opgenomen met een dictafon om nadien alles anoniem te transcriberen.

Een eerste doelstelling van dit onderzoek is het exploreren van de gepercipieerde impact van werk-gerelateerde fysieke activiteit op de gezondheid van acute zorgverpleegkundigen. Daarnaast worden psychosociale factoren geïdentificeerd die deze impact kunnen verzachten. Tenslotte zullen concrete suggesties verworven worden om de psychosociale werkomgeving op een duurzamere manier vorm te geven.

Verpleegkundigen die minstens 50% tewerkgesteld zijn op de spoedgevallendienst, intensieve zorgafdeling, stroke unit of in de mobiele equipe kritieke diensten kunnen deelnemen aan deze studie. Verpleegkundigen die een managementfunctie invullen worden geëxcludeerd uit dit onderzoek.

Indien interesse om deel te nemen aan dit onderzoek, gelieve een mail te sturen naar lukas.billiau@ugent.be



7.2. Attachment 2: informed consent document



Informatiebrief voor de deelnemers

Titel van de studie: De perceptie van acute zorgverpleegkundigen omtrent de impact van werk-gerelateerde fysieke activiteit op hun gezondheid.

Officiële titel: Het exploreren van de gepercipieerde relatie tussen werkgerelateerde fysieke activiteit en de gezondheid van acute zorgverpleegkundigen in Vlaanderen, een kwalitatieve studie hoe deze impact verzacht kan worden.

Beste,

U wordt uitgenodigd om deel te nemen aan een studie. Neem, voor u beslist om deel te nemen aan deze studie, voldoende tijd om deze informatiebrief aandachtig te lezen en dit te bespreken met de onderzoeker of zijn vertegenwoordiger. Neem ook de tijd om vragen te stellen indien er onduidelijkheden zijn of indien u bijkomende informatie wenst. Dit proces wordt 'informed consent' of 'geïnformeerde toestemming' voor deelname aan een onderzoek genoemd. Eens u beslist heeft om deel te nemen aan de studie zal men u vragen om het toestemmingsformulier achteraan te ondertekenen.

1. Beschrijving en doel van de studie

Wij nodigen u graag uit om deel te nemen aan een wetenschappelijke studie in kader van de opleiding Master in de Verpleegkunde en Vroedkunde aan de Universiteit van Gent. De studie zal onderzoek voeren naar de percepties van acute zorgverpleegkundigen omtrent de blootstelling aan fysieke taakeisen op het werk en de ondervonden impact hiervan op de gezondheid. Acute zorgverpleegkundigen die minstens 50% tewerkgesteld worden op de verpleegeenheid spoedgevallenzorg, intensieve zorg, Stroke Unit of in de mobiele equipe kritieke diensten kunnen deelnemen aan dit onderzoek. Verder is het beheersen van de Nederlandse taal een vereiste en mag u geen managementfunctie invullen om deel te nemen aan deze studie. Het doel van dit kwalitatief onderzoek is het identificeren hoe acute zorgverpleegkundigen de blootstelling aan fysieke taakeisen en de impact ervan op hun gezondheid ervaren. Vervolgens zal er nagegaan worden hoe acute zorgverpleegkundigen hier mee omgaan en welke factoren een verzachtende werking hebben. Met deze informatie kunnen we gerichte aanbevelingen formuleren om vanuit het perspectief van de acute zorgverpleegkundigen een duurzame werkomgeving te creëren, waarbij de focus ligt op het voorkomen van gezondheidsklachten.

Deelname aan het onderzoek houdt in dat u éénmalig kan deelnemen aan een groepsinterview dat maximaal anderhalf uur duurt. Gedurende dit groepsinterview zullen in totaal vijf acute zorgverpleegkundigen aanwezig zijn en één onderzoeker (Billiau Lukas). De groepsinterviews verlopen, indien mogelijk, apart volgens verpleegeenheid. Hierbij zullen aansluitend tien vragen gesteld worden, wat kan

afwijken naargelang het verloop van het gesprek. Gedurende dit onderzoek zal groepsinteractie van belang zijn om te exploreren wat de percepties van acute zorgverpleegkundigen zijn. Het gesprek dat we in het kader van dit onderzoek met u willen hebben, willen we het liefst op band opnemen. Zo hoeven we minimaal te noteren tijdens het gesprek en kan de verwerking van het gesprek correcter gebeuren. Zie hiervoor deel 6 "Vertrouwelijkheid" voor de verwerking van deze gegevens. Het gesprek met u zal doorgaan op één van de ter beschikking gestelde momenten. Door het werken met groepsinterviews wordt dan vervolgens bekeken om een geschikt moment te kiezen die voor de vijf deelnemers past. De plaats waar het gesprek zal doorgaan wordt samen besproken met de hoofdverpleegkundigen, maar dit is zeker in ziekenhuis X. De onderzoeker zal u hieromtrent over informeren. Er zullen in totaal zo'n 40-tal acute zorgverpleegkundigen deelnemen aan dit onderzoek.

Deze studie werd vooraf goedgekeurd door een onafhankelijke Commissie voor Medische Ethiek verbonden aan het Universitair Ziekenhuis van Gent en de Universiteit Gent en na raadpleging van de commissie voor medische ethiek van ziekenhuis X. De studie wordt uitgevoerd volgens de richtlijnen voor de goede klinische praktijk (ICH/GCP) en de verklaring van Helsinki opgesteld ter bescherming van mensen deelnemend aan klinische studies. Deze verzameling van gegevens wordt uitgevoerd onder supervisie van Prof. Dr. Els Clays en PhD student Margo Ketels. De opdrachtgever van de studie is UGent.

2. Toestemming en weigering

De deelname aan deze studie is volledig vrijwillig. U kunt weigeren om deel te nemen aan een groepsinterview zonder dat u hiervoor een reden moet opgeven en zonder dat dit op enige wijze een invloed zal hebben op de verdere relatie met de onderzoeker of op uw werkrelaties. Uw deelname aan deze studie zal beëindigd worden als de onderzoeker van mening is dat dit in uw belang is. Indien de grondregels niet gerespecteerd worden gedurende het groepsinterview en er een storende invloed aanwezig is kan de onderzoeker u voortijdig uit de studie terugtrekken. Hierbij zullen de reeds verzamelde gegevens gebruikt worden voor analyse, maar er zal geen nieuwe data toegevoegd worden.

3. Voordelen

Deelname aan deze studie brengt voor u waarschijnlijk geen medisch of ander voordeel met zich mee. Uw deelname kan wel helpen om in de toekomst acute zorgverpleegkundigen te laten werken in een meer duurzame en gezondheidsbevorderende werkomgeving. Door deel te nemen aan deze studie kunt u deel uitmaken van een kwalitatief onderzoek en zo ervaring op doen in de onderzoekswereld. Daarnaast is het mogelijk om actuele problemen of ervaringen aan te kaarten in een comfortabele omgeving. Tenslotte wordt er een catering voorzien gedurende de groepsinterviews. De deelgenomen tijd buiten uw jobtime zal gecompenseerd worden onder de vorm van overuren.

4. Risico's

Er zijn geen risico's of bijwerkingen verbonden aan dit onderzoek. U hebt het recht op elk ogenblik vragen te stellen over de mogelijke en/of gekende risico's van deze studie.

5. Kosten

Uw deelname aan het onderzoek brengt geen bijkomende kosten mee voor u, enkel het feit dat het anderhalf uur van uw tijd vraagt. Daarnaast moet u zich verplaatsen naar ziekenhuis X, wat wellicht verplaatsingskosten met zich meebrengt. Tenslotte biedt dit onderzoek ook geen financieel voordeel op.

6. Vertrouwelijkheid

In overeenstemming met de Algemene Verordening Gegevensbescherming (of GDPR) (EU) 2016/679 van 27 april 2016 (die vanaf 25 mei 2018 in voege is) en de Belgische wet van 30 juli 2018, betreffende de bescherming van natuurlijke personen in verband met de verwerking van persoonsgegevens en betreffende het vrije verkeer van die gegevens, zal uw persoonlijke levenssfeer worden gerespecteerd en kan u toegang krijgen tot de over u verzamelde gegevens. Elk onjuist gegeven kan op uw verzoek verbeterd worden.

Uw toestemming om deel te nemen aan de studie betekent dat we gegevens van u verwerken voor het doel van de klinische studie. Deze verwerking van gegevens is wettelijk voorzien op basis van artikel 6, paragraaf 1 (b), (e), of (f) en artikel 9, paragraaf 2 (j) van de Algemene Verordening Gegevensbescherming.

Wat op band opgenomen is, wordt nadien uitgetypt. Alle informatie die tijdens deze studie verzameld wordt zal gepseudonimiseerd worden (hierbij kan men uw gegevens nog terug koppelen naar uw citaten tijdens de groepsinterviews met behulp van codes). In het geval van pseudonimisering zal de sleutel tot deze codes enkel toegankelijk zijn voor de onderzoeker of de door hem/haar aangestelde vervanger. Enkel de gepseudonimiseerde gegevens zullen gebruikt worden voor analyse van de gegevens en in alle documentatie, rapporten of publicaties (in medische tijdschriften of congressen) over de studie. Vertrouwelijkheid van uw gegevens wordt dus steeds gegarandeerd. Zowel persoonsgegevens als gegevens aangaande uw gezondheid zullen verwerkt en bewaard worden gedurende minstens 20 jaar. De verwerkingsverantwoordelijke van de gegevens is de instelling van de hoofdonderzoeker van de studie, Prof. Dr. Els Clays (Universiteit Gent). Haar onderzoeksteam zal toegang krijgen tot uw persoonsgegevens.

In het kader van de gegevensbescherming zullen de gegevens verwerkt worden door personen behorend tot het onderzoeksteam en aangeduid door en onder de verantwoordelijkheid van de hoofdonderzoeker inclusief interne medewerkers met een niet-gezondheidszorgberoep.

De Data Protection Officer kan u desgewenst meer informatie verschaffen over de bescherming van uw persoonsgegevens. Contactgegevens: Hanne Elsen, privacy@ugent.be.

Vertegenwoordigers van de opdrachtgever, auditoren, de Commissie voor Medische Ethiek en de bevoegde overheden, allen gebonden door het beroepsgeheim, hebben rechtstreeks toegang tot uw medische dossiers om de procedures van de studie en/of de gegevens te controleren, zonder de vertrouwelijkheid te schenden. Dit kan enkel binnen de grenzen die door de betreffende wetten zijn toegestaan. Door het toestemmingsformulier, na voorafgaande uitleg, te ondertekenen, stemt u in met deze toegang.

De Belgische toezichthoudende instantie die verantwoordelijk is voor het handhaven van de wetgeving inzake gegevensbescherming is bereikbaar via onderstaande contactgegevens:

Gegevensbeschermingsautoriteit (GBA)
Drukpersstraat 35 – 1000 Brussel
Tel. +32 2 274 48 00
e-mail: contact@apd-gba.be
Website: www.gegevensbeschermingsautoriteit.be

7. Verzekering

De opdrachtgever voorziet in een vergoeding en/of medische behandeling in het geval van schade en/of letsel ten gevolge van deelname aan deze klinische studie. Voor dit doeleinde is een verzekering afgesloten met foutloze aansprakelijkheid conform de wet inzake experimenten op de menselijke persoon van 7 mei 2004 (Allianz Global Corporate & Specialty; Uitbreidingstraat 86, 2600 Berchem; Tel: +32 33 04 16 00; polisnummer voor UGent BEL000862).

8. Contact

Indien u zich wenst te registreren om deel te nemen, kunt u uw participatie bevestigen via e-mail (lukas.billiau@ugent.be) en het bijgevoegd antwoordformulier gesigneerd deponeren in de hiervoor voorziene doos op uw verpleegeenheid. Als u aanvullende informatie wenst over het onderzoek of over uw mogelijke deelname, kunt u nu of in de loop van het onderzoek contact opnemen via e-mail (lukas.billiau@ugent.be). We danken u omdat u aan onze vraag aandacht hebt willen geven.

Met vriendelijke groeten,

Prof. Dr. Clays, Master in de Criminologie, Master in de Sociologie en doctor in de Medische Wetenschappen, hoofddocent aan de UGent Faculteit Geneeskunde en Gezondheidswetenschappen, Vakgroep Volksgezondheid en Eerstelijnszorg, +3293323616

Mevr. Ketels, onderzoeksmedewerker aan de UGent Faculteit Geneeskunde en Gezondheidswetenschappen, Vakgroep Volksgezondheid en Eerstelijnszorg, +3293328331

Billiau Lukas, student Master in de Verpleegkunde en de Vroedkunde aan de UGent
 Faculteit Geneeskunde en Gezondheidswetenschappen, lukas.billiau@ugent.be

TOESTEMMINGSFORMULIER VOOR DE DEELNEMERS

Ik heb het document "Informatiebrief voor de deelnemers", pagina 1 tot en met 5, gelezen en begrepen en ik heb er een kopij van gekregen. Ik heb uitleg gekregen over de aard, het doel en de duur van de studie en over wat men van mij verwacht.
--

Ik begrijp dat deelname aan de studie vrijwillig is en dat ik mij op elk ogenblik uit de studie mag terugtrekken zonder een reden voor deze beslissing op te geven en zonder dat dit op enigerlei wijze een invloed zal hebben op mijn verdere behandeling.

Ik ben me ervan bewust dat deze studie werd goedgekeurd door een onafhankelijke Commissie voor Medische Ethiek verbonden aan het UZ Gent, de Universiteit Gent en ziekenhuis X en dat deze studie zal uitgevoerd worden volgens de richtlijnen voor de goede klinische praktijk (ICH/GCP) en de verklaring van Helsinki, opgesteld ter bescherming van mensen deelnemend aan experimenten. Deze goedkeuring was in geen geval de aanzet om te beslissen om deel te nemen aan deze studie.

Men heeft mij ingelicht dat zowel persoonlijke gegevens als gegevens aangaande mijn gezondheid worden verwerkt en bewaard gedurende minstens 20 jaar. Ik ben op de hoogte dat ik recht heb op toegang en op verbetering van deze gegevens. Aangezien deze gegevens verwerkt worden in het kader van medisch-wetenschappelijke doeleinden, begrijp ik dat de toegang tot mijn gegevens kan uitgesteld worden tot na beëindiging van het onderzoek. Indien ik toegang wil tot mijn gegevens, zal ik mij richten tot de onderzoeker die verantwoordelijk is voor de verwerking ervan.
--

Aankruisen door de deelnemer indien akkoord

Ik stem in om deel te nemen aan de volgende delen van de studie:

- 1) Ik stem ermee in om volledig samen te werken met de onderzoeker.
- 2) Ik stem ermee in om deel te nemen aan het groepsinterview


Naam en voornaam van de deelnemer	Handtekening	Datum
Naam en voornaam van de onderzoeker*	Handtekening	Datum

2 kopieën dienen te worden vervolledigd. Het origineel wordt door de onderzoeker bewaard in de Universiteit van Gent gedurende 20 jaar, de kopie wordt aan de deelnemer gegeven.


***Aankruisen door de onderzoeker indien akkoord**

Ik verklaar de benodigde informatie inzake deze studie (de aard, het doel, en de te voorziene effecten) mondeling te hebben verstrekt evenals een exemplaar van het informatiedocument aan de deelnemer te hebben verstrekt.	
Ik bevestig dat geen enkele druk op de deelnemer is uitgeoefend om hem/haar te doen toestemmen tot deelname aan de studie en ik ben bereid om op alle eventuele bijkomende vragen te antwoorden.	

7.3. Attachment 3: outreach poster



Universitair Centrum voor
Verpleegkunde en Vroedkunde



De werk-gerelateerde gezondheid van de verpleegkundigen tewerkgesteld in de kritische zorg

Exploring the processes and dynamics of work-related demands on the health of critical care nurses in Flanders: A constructivist Grounded Theory study on mitigating strategies


Lukas Billiau (RN, MSc student), Margo Ketels (MSc, PhD Student), Larissa Bolliger (RN, MSc, PhD), Els Clays (MSc, PhD, Professor)

Inleiding


- **Verpleegkundigen tewerkgesteld in de kritische zorg** hebben een **verhoogd risico op gezondheidsklachten** door:
 - Atypische fysieke werkactiviteiten zoals reanimeren, gipsen aanleggen en geïntubeerde patiënten verzorgen
 - Emotioneel belastende situaties zoals agressie en het overlijden van een kind
 - Cognitief belastende situaties zoals de continue verhoogde waakzaamheid voor de kritiek zieke patiënt
 - Shiftwerk en lange werkuren
- **Verhoogd ziekteverzuim** in de huidige beroepsbevolking en **minder inschrijvingen** in het verpleegkundig onderwijs
- Hieruit ontstaat **de nood aan een duurzame werkomgeving** om het huidig tewerkgesteld personeel te behouden
- **Het doel van deze masterproef** was om de processen en dynamieken van werk-gerelateerde taakeisen op de gezondheid van de verpleegkundigen tewerkgesteld in de kritische zorg te exploreren en de strategieën waarmee zij deze taakeisen verzachten te identificeren

Methodologie


Kwalitatief onderzoek:
Grounded Theory benadering




Steekproef: 37 verpleegkundigen, waarvan 27 effectief deelnamen (2022 - 2023)




Data-analyse: volgens de Kwalitatieve Analysegedis van Leuven en de principes van een Grounded Theory




Setting: spoedopname, intensieve zorgafdeling en stroke unit van één algemeen ziekenhuis in Vlaanderen



Datacollectie: semi-gestructureerde focusgroepen



Betrouwbaarheid: audit trail, peer-review, onderzoekers-, theoretische en data-triangulatie



Resultaten

De verpleegkundigen in de kritische zorg werden blootgesteld aan:


- Fysieke werkactiviteiten
- Emotioneel en cognitief belastende situaties
- Een hoge werkintensiteit
- Ongunstig patiëntengedrag
- Een beperkte kwaliteit van de werktijd

Deze blootstelling leidde tot het ondervinden van:

- **Fysieke klachten:** spier- en skeletpijn, onbedoelde gewichtstoename, klachten van het urinewegstelsel en gereduceerde slaapduur
- **Mentale klachten:** beperkte ontkoppeling met het werk, stress, agitatie, emotionele uitputting, verstoorde balans tussen werk en gezin en sociale isolatie
- **Psychosomatische klachten:** onbedoeld gewichtsverlies, toegenomen spierspanning, migraine, cardiovasculaire klachten, beperkte slaapkwaliteit en concentratiestoornissen
- **Toegenomen verloopintentie**

De kans op deze gevolgen werd gereduceerd door:

- Emotionele en instrumentele sociale steun
- Job controle
- Arbeidsmiddelen en verdienen
- Vrijtijd fysieke activiteit



Aanbeveling

- Ondersteun het **risicomanagement** binnen de werkomgeving en monitor de blootstelling aan taakeisen
- Implementeer **zelfroosting** en het principe van **voorwaarts roterende shiften**
- Communiceer **transparant**
- Voorzie de verpleegkundigen tewerkgesteld in de kritische zorg van **beslissingsvrijheid, sociale steun en werkzekerheid**
- Integreer **psychologische hulp** op de werkvloer
- Respecteer een **ononderbroken rustperiode** tussen de opeenvolgende shiften

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