



Swedish Agency for Work  
Environment Expertise

# A report of work environment and health among assistant nurses, registered nurses and physicians in Sweden's public healthcare system

A report of work environment and health among assistant nurses, registered nurses  
and physicians in Sweden's public healthcare system

Report 2023:12

ISBN 978-91-89747-64-7

Published in 2023

---

The Swedish Agency for Work Environment Expertise

Box 9, 803 20 Gävle

Telephone: +46 26 14 84 00, Email: [info@mynak.se](mailto:info@mynak.se)

[www.sawee.se](http://www.sawee.se)

# A report of work environment and health among assistant nurses, registered nurses and physicians in Sweden's public healthcare system

# Foreword

This report is part of the agency's reporting on its government assigned task to "collect and compile knowledge about work environment risks and health-promoting factors among healthcare professionals" (Ref. No. S2021/06572 [in part]).

Healthcare is a cornerstone of the Swedish welfare state. Thus, an increased understanding of the health and work environment situation of employees in this sector is important for society as a whole. In turn, maintaining good quality and creating a sustainable, healthy and safe working environment for employees is crucial for skills supply and retention.

However, different groups in the healthcare system encounter different work environment risks and health-promoting factors. For this reason, it is important to shed light on the work environment and health in different professions. This knowledge can also support work environment management and prioritisation within the sector.

In this report, the Swedish Agency for Work Environment Expertise has created a survey of the work environment and health of a representative sample of three major occupational groups, namely, assistant nurses, registered nurses (including midwives and radiographers) and physicians. It goes without saying that the healthcare sector also encompasses many other important occupational groups, but the categories included constitute a significant majority of those working in the sector.

With this report, we hope to be able to provide increased knowledge of the work environment and work-related health of Sweden's assistant nurses, physicians and registered nurses. We also hope our work can serve as a support and a guide in the development and creation of health-promoting work environment management for staff in the healthcare sector.

The authors of the report are Emma Brulin, a registered nurse and Associate Professor of Occupational and Environmental Medicine, and Britta Elsert Gynning, a PhD candidate in Occupational and Environmental Medicine, both of whom work at the Unit of Occupational Medicine at the Karolinska Institutet's Institute of Environmental Medicine.

The authors of this report have chosen their own theoretical and methodological starting points and are responsible for the results and conclusions presented herein.

Professor Kristina Alexandersson has reviewed the quality of the report on behalf of the Swedish Agency for Work Environment Expertise. The responsible process manager at the agency was Thomas Nessen, Ph.D. and the responsible communicator was Kristin Nylander.

I would like to extend my sincere thanks to our external researchers and quality reviewers, as well as to those agency employees who contributed to the production of this valuable report. It is published on the agency's website and in the agency's report series.

Gävle, November 2023

A handwritten signature in black ink, appearing to read "Nader Ahmadi". The signature is fluid and cursive, with a large loop at the end.

Nader Ahmadi, Director-General

# **The report has been co-authored by:**

Emma Brulin, Associate Professor of Occupational and Environmental Medicine at the Unit of Occupational Medicine, Institute of Environmental Medicine, Karolinska Institute, registered nurse.

Britta Elsert Gynning, PhD candidate in Occupational and Environmental Medicine at the Unit of Occupational Medicine, Institute of Environmental Medicine, Karolinska Institute.

# Summary

The Swedish Government has commissioned the Swedish Agency for Work Environment Expertise to collect and compile knowledge about work environment risks and health-promoting factors among healthcare professionals. This task is underpinned by an ambition to offer everyone a sustainable, safe and healthy working life, including through a positive work environment.

Healthcare professionals play an important societal role in the prevention, investigation and treatment of illnesses and injuries, on equal terms, for everyone in the population. Good health and a positive work environment for all those who work in the healthcare sector are prerequisites for fulfilling this mandate.

The purpose of this report was to assess and increase knowledge of the health of physicians, registered nurses (including midwives and radiographers) and assistant nurses, as well as to identify potential risk and health-promoting factors in the work environments of these groups. The report draws particular attention to a cohort of groups that are at high risk of illness and poor well-being, in order to highlight those risk factors in the work environment that should be prioritised. This report can be used by employers, managers, safety representatives and other elected officials in their systematic work environment management.

The following two questions were formulated:

- How do Swedish physicians, registered nurses and assistant nurses rate their organisational and social work environment, as well as their health and well-being?
- What organisational and social work environment factors have been identified that may be important to follow up in the systematic work environment management at the workplace?

## Method

The basis for this report are data compiled from the 2022 Longitudinal Occupational Health survey in Health Care Sweden (LOHHCS). The LOHHCS cohort contains a representative sample of the occupational groups of physicians, registered nurses and assistant nurses working in Sweden. The compilation of data for this report is limited to those who reported that they worked in the municipal and regional healthcare system. The collected material comprised 6,492 individuals: 2,232 physicians (34%), 2,456 registered nurses (38%) and 1,804 assistant nurses (28%). Once analytical weighting was calibrated, the final analytical sample comprised 253,873 individuals: 33,144 physicians (13%), 86,160 registered nurses (34%), and 134,568 assistant nurses (53%).

The LOHHCS survey contains questions in four areas: 1) professional background; 2) work environment; 3) health and 4) demographics. Area 1 contains occupation-specific questions, while Areas 2, 3 and 4 comprise the same questions, regardless of occupational group.

Validated and self-formulated questions and instruments taken from , for example, the Copenhagen Psychosocial Questionnaire (COPSOQ), the Effort-Reward Imbalance (ERI) Model, the Bern Illegitimate Task Scale, a scale of work-life interference and the Karolinska Exhaustion Disorder Scale (KEDS) have been used to measure health and well-being, as well as the organisational and social work environment.

Data were compiled in the form of prevalence or mean value and presented using a traffic light system that illustrates which factors are highly likely to pose a risk of ill health if left unaddressed. For each work environment factor, a mean value was determined for each occupational group. These were then compared against a reference value. Green meant that the value was better than those reference values; yellow meant that the value was equal to the reference value; and orange or red meant that the value was worse. Red means that the factor represents a potential risk of illness.

## **Results**

The results of the survey indicate that among the occupational groups of physicians, registered nurses and assistant nurses working in the Swedish municipal and regional healthcare system, three out of ten had symptoms of stress-related illness and nearly half were considering quitting their jobs.

For the “work-life interference”, “effort-reward imbalance”, “emotional demands” and “social support from managers” factors, the three occupational groups examined here had worse values for their organisational and social work environment compared to the reference values for the labour market in general.

There were variations between and within the occupational groups. Physicians reported a high level of quantitative demands, while registered nurses reported a high level of emotional demands. The assistant nurses reported no such demands, but felt they had a low level of influence and work control and had poorer self-rated health than physicians and registered nurses.

The results also pointed to differences within the occupational groups. Physicians and registered nurses at the beginning of their careers, as well as physicians, registered nurses and assistant nurses who worked an average of more than 45 hours per week, reported poor organisational and social conditions in their work environment, compared to physicians and registered nurses with more years of experience and shorter working weeks. Individuals aged 58 or older had significantly better values than the reference values for most factors.



Physicians, registered nurses and assistant nurses reported a high level of social cohesion. Registered nurses also reported having a high level of social support from colleagues and said they had a high level of work control. Physicians reported a greater amount of influence over their work.

Despite a zero tolerance policy with regard to threats and violence in the healthcare sector, nearly 40% of all individuals in the study had experienced some form of threat or violence in the past 12 months. Assistant nurses experienced the greatest prevalence of threats and violence, and among the assistant nurses subjected to such treatment, nearly 70% felt that it affected them in their work.

A majority of the threats and violence cited in the report had been reported to a manager or safety representative, but a significant proportion remained unreported.

## **Conclusion**

By and large, the three examined groups – physicians, registered nurses and assistant nurses – experienced a worse organisational and social work environment compared to the labour market in general. A large proportion of the physicians, registered nurses and assistant nurses who responded to the survey suffered from stress-related illness and had considered quitting their jobs. The results also indicate differences both between and within the occupational groups in terms of how they perceived organisational and social conditions in their work environments.

This report contributes knowledge about how professionally active physicians, registered nurses and assistant nurses in Sweden's municipal and regional healthcare system perceived their work environment and their health. It also sheds light on the potential risks in the organisational and social work environment. These results can be used as a support in systematic work environment management, with the aim of achieving a more sustainable working life for those in the healthcare sector.



# Table of contents

Summary .....	7
<b>1. Introduction .....</b>	<b>12</b>
Health and well-being .....	13
Self-rated health .....	14
Symptoms of burnout .....	14
Turnover intention .....	15
Organisational and social conditions in the work environment .....	15
Effort-reward imbalance .....	16
The Demand-Control-Support Model .....	16
Work-life interference .....	17
Moral distress .....	18
Illegitimate tasks .....	18
Risk and health-promoting factors at work .....	19
Identifying risks in the work environment .....	20
Physicians, registered nurses and assistant nurses in Sweden .....	22
<b>2. Method .....</b>	<b>23</b>
Sampling and data collection .....	23
Categorisation of individuals in the LOHHCS cohort .....	24
Measurement instruments .....	25
Health and well-being .....	26
Organisational and social factors in the work environment .....	26
Processing of data .....	28
Reference values and mean values for variables from the COPSQ .....	29
Mean value for the Swedish healthcare sector .....	29
Reference values from scientific articles and limit values .....	29
Presentation of data and identification of risks at work .....	30
<b>3. Results .....</b>	<b>32</b>
Health and well-being as well as organisational and social conditions in the work environment of municipal and regional healthcare professionals .....	32
Health and well-being .....	32
Physicians .....	35
Registered nurses .....	37
Assistant nurses .....	39
Threats and violence at work .....	41
Prevalence of threats and violence at work .....	41
<b>4. Discussion and conclusions .....</b>	<b>44</b>
Health, well-being and organisational and social conditions in the work environment: the report's results in relation to national and international research .....	44
Risks in the work environment .....	45
Protective and health-promoting factors in the work environment .....	47
Threats and violence in the workplace .....	47
The report as a basis for work environment management in Sweden's municipal and regional healthcare system .....	48
Methodological discussions .....	48
<b>References .....</b>	<b>51</b>
<b>Appendix .....</b>	<b>57</b>

# 1. Introduction

An important mission of healthcare professionals is medically prevent, investigate and treat illnesses and injuries, on equal terms for everyone in the population. A good working environment is essential to the ability of healthcare professionals to fulfil this mission. Research shows that a substandard work environment and stress-related illness among staff contribute to poorer quality of care and undermine patient safety (1–3). For example, symptoms of burnout among healthcare professionals can lead to a higher risk of malpractice and adverse events (1–3). Individuals with symptoms of burnout often exhibit mental and emotional distancing (4), which can impair their ability to empathise with their patients (5). Interpersonal relationships are also negatively affected (5) which, in turn, can lead to conflicts in the workplace (6–8). It can also reduce productivity, thereby increasing the workload shouldered by colleagues. Overall, a work environment that contributes to stress-related illness among health and medical care staff can be very costly for both the employer and society (9, 10).

The Swedish Government has commissioned the Swedish Agency for Work Environment Expertise to collect and compile knowledge about work environment risks and health-promoting factors among healthcare professionals. This is underpinned by an ambition to offer everyone a sustainable, safe and healthy working life, including through a positive work environment.

For this report, researchers at Karolinska Institutet compiled data from an 2022 extensive survey of professionally active physicians, registered nurses (including midwives and radiographers) and assistant nurses in Sweden. The report focuses in particular on health and well-being, the social and organisational work environment, and experiences of threats and violence in the Swedish municipal and regional healthcare system.

The target group for this report is employers, managers, safety representatives and other elected officials in municipal and regional health care. The report can be seen as an initial investigation of the social and organisational work environment at the group level. It can serve as a basis and support for systematic work environment management (11). The report identifies which factors in the work environment constitute a risk of illness and should be prioritised for further investigation at the workplace level.

The purpose of this report is to assess and increase knowledge about the work environment and health of physicians, registered nurses and assistant nurses, as well as to identify potential risk and health-promoting factors in the work environments of these groups.

The questions posed are:

- How do Swedish physicians, registered nurses and assistant nurses rate their organisational and social work environment, as well as their health and well-being?
- What organisational and social work environment factors have been identified that may be important to follow up in the systematic work environment management at the workplace?

In the remainder of the introduction to the report, health and well-being are defined and described, along with theories and models for risk and health-promoting factors in the organisational and social work environment. This is followed by a methodology section, which presents the approach of the report. In the “Results” section, the overall values for health and well-being are presented first, together with the risk and health-promoting factors in the organisational and social work environment for the three occupational groups examined. Then each occupational group is presented separately, on the basis of demographic and work-related factors. At the end of the section, an account is provided of the studied occupational groups’ experiences of threats and violence in the Swedish regional and municipal healthcare system. To elucidate our results, we have used a traffic light system (with the exception of the area of threats and violence) that guides the reader in determining which organisational and social work environment factors can be prioritised in the workplace’s systematic work environment management. In the “Discussion” section, the results are discussed in relation to national and international scientific research. We also present areas in which employers, managers, safety representatives and other elected officials at affected workplaces could work to improve the organisational and social work environment.

## Health and well-being

The workplace is one of the arenas in which a high proportion of the Swedish population spends a great deal of their working lives. Thus, the workplace, work environment and colleagues have a major impact on an individual’s well-being and health (12).

The concept of “health” is broad and can mean different things in different contexts. This report’s use of the word is based on the definition of the World Health Organisation (WHO), which views health as a holistic concept. The WHO (13) describes health as “...a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (p. 1). An overarching starting point is that health comprises two dimensions, well-being and health, which are related to each other but are not opposites. For example, a person may experience a low level of well-being despite having good mental and physical health (13). Likewise, a person who is physically or mentally ill can experience a good sense of well-being. In other words, health goes beyond the individual’s perception of their well-being or the presence of mental and physical illnesses. Rather, it is a combination of various interacting factors (14).

Thus, in investigating and measuring health and work-related well-being, it is necessary to examine a combination of factors. This report measures the health and well-being of physicians, registered nurses and assistant nurses in Sweden's municipal and regional healthcare system through their self-rated health, symptoms of burnout and turnover intention.

## **Self-rated health**

Self-rated health is the employee's perception or evaluation of their overall health. It is used in many Swedish population surveys, such as "*Folkhälsan i Sverige*" ["Public Health in Sweden"] (15). In 2022, just over 70% of Swedes aged 16 to 84 assessed themselves as having good or very good health (15). Women, older people and individuals without a post-secondary education rated their health worse than men, younger people and those with a post-secondary education. Research has identified a clear link between self-rated health and an individual's future physical and mental health (16).

## **Symptoms of burnout**

In this report, the term "burnout" is only used as a theoretical concept, with no clinical meaning. Exhaustion disorder is the clinical diagnosis that can be made in the event of symptoms of burnout. Its diagnosis classification is in accordance with ICD-10 is F43.8 (17).

According to the National Board of Health and Welfare, for a diagnosis of exhaustion disorder (F43.8) to be established, the following five criteria must be met (18):

- physical and mental symptoms of burnout for at least two weeks, with a symptom progression of at least six months. These symptoms have developed as a result of one or more identifiable stressors that have been present for at least six months.
- markedly reduced mental energy and stamina, with long recovery time.
- at least four of the following symptoms experienced every day over a two-week period: difficulty concentrating or impaired memory, reduced capacity to cope with demands or time constraints, sleep problems, emotional instability and irritability, marked physical weakness or fatigue, and physical symptoms such as aches, chest pain, palpitations, gastrointestinal problems, dizziness, or sensitivity to sound.
- the symptoms cause clinically significant distress or impaired function at work, in social settings, or in other important respects.
- the symptoms are not due to the psychological effects of various substances or physical illness.
- if the criteria for major depressive disorder, dysthymia or generalised anxiety disorder are also met, exhaustion disorder is cited as an additional specification regarding the diagnosis in question.

Burnout, which we measure in this report, must be distinguished from the clinical concept of exhaustion disorder.

Theoretically speaking, burnout is a multidimensional concept and is often defined based on four main dimensions: exhaustion<sup>1</sup>, emotional impairment, cognitive impairment and mental distancing (19). There are also three secondary dimensions and symptoms: psychological distress with sleep problems and anxiety, psychosomatic disorders in the form of physical ailments such as chest pain and headaches, and a depressive frame of mind characterised by a sense of powerlessness, guilt and self-disappointment (19). Schaufeli and Taris (4) argue that burnout is not a condition, but rather a cascading progression of symptoms over time. They posit that long-term stress leads to extreme physical and mental fatigue which, in turn, impairs cognitive and emotion regulation processes. Among other things, this can lead to, e.g., difficulty concentrating and remembering things, trouble controlling own emotions, or a lack of empathy. To cope with the situation, emotional distancing develops. The sufferer no longer finds their work meaningful, becomes cynical, and avoids contact with others. This becomes a counterproductive and inefficient way of coping, leads to even more fatigue, and a negative spiral is reinforced.

Burnout is often more prevalent in patient and client-oriented professions. In these kinds of jobs, burnout can lead to, for example, cynicism in the form of isolation and numbness towards patients and clients, as well as a sense inadequacy and poor work performance (20).

## **Turnover intention**

Previous scientific studies examine employees' turnover intention as a measure of well-being at work (21–23). Studies have shown that the desire to leave one's current job is associated with higher rates of sickness absence, reduced work performance, poor work engagement and low level of job satisfaction (22–24). A bad work environment increases the risk that healthcare professionals may want to quit their jobs (25). Research shows that physicians and registered nurses who report that they are considering giving notice are more likely to leave their jobs than those who do not say they are considering this option (26–28).

## **Organisational and social conditions in the work environment**

According to the Swedish Work Environment Authority, the organisational work environment comprises the terms and conditions for work in the areas of

- management and governance
- communication
- participation
- room for manoeuvring
- distribution of tasks
- job demands, resources and responsibilities.

---

<sup>1</sup> The main dimension is exhaustion.

The social work environment comprises the terms and conditions of work and includes

- social interaction
- collaboration
- social support from managers and colleagues.

The organisational and social work environment is regulated by law and specified in the Swedish Work Environment Authority's Statute Book (AFS) 2015:4 (29). It should be noted that this report only focuses on organisational and social work environment factors and *not* the physical work environment, for example, heavy lifting, work with chemicals, etc.

Working life research has developed numerous theories and models to explain and understand the complex relationship between work and health. Some of these theories and models are applied in this report to investigate the organisational and social work environment in the Swedish municipal and regional healthcare system. These are described in detail below. More detailed information on measurement instruments and how they have been adapted to this report can be found in the "Methodology" section and Appendix A.

## **Effort-reward imbalance**

The Effort-Reward Imbalance model (30), often referred to as the "ERI" in both English and Swedish, is based on the principle that performance is expected to be rewarded. According to the ERI model, there is a kind of psychological contract which, in a job context, is based on the relationship between an individual's work efforts and some form of compensation or gain in the form of money, appreciation, development opportunities or job security (31). The assumption of the ERI model is that such psychological contracts are rarely symmetrical. In other words, there is almost always an imbalance between the employee's efforts and their gains. If a negative imbalance occurs, i.e., if the level of effort is considered too high for the rewards received, the employee may feel disappointed, mistreated or underappreciated. It is these experiences of recurrent high job demands with recurrent low rewards that risk creating a sense of strain in the individual. According to the ERI model, this strain can have negative consequences in the form of increased stress levels, which in the long term cause health to deteriorate (30).

Several review articles indicate that an imbalance between effort and reward increases the risk of both physical and mental illness (32, 33).

## **The Demand-Control-Support Model**

A job usually entails multiple demands. According to Karasek and Theorell (34), to handle the demands that a workplace imposes on its employees, individual employees must also be afforded a certain level of control and self-determination. This constitutes the Demand-Control Model.



Based on the main dimensions of demands and control in the workplace, an individual may encounter four different situations:

- Low strain (low job demands – high level of control)
- Active (low job demands – high level of control)
- Passive (low demands – low level of control)
- High strain (high demands – low level control).

Professions or work circumstances that entail low strain or a passive situation are associated with unstimulating work environments. An active job means a high level of activity and engagement in the workplace. A high strain work situation with high job demands but low level of work control is associated with both stress and overload. According to Karasek and Theorell (34), control and self-determination can buffer the detrimental effects of high-demand situations.

Work can involve different types of demands. Some demands are *quantitative*, for example, the need to work under time constraints or shoulder a large workload. Other demands are *emotional*, for example, being frequently called upon to manage other people's emotional reactions. Examples of different forms of control are the extent to which an individual can control their tasks or overall work activities, as well as the sense of meaningfulness they associate with their job.

Control also includes the individual's ability to use specific professional skills and exercise influence in decision-making processes (35).

The Demand-Control model was later expanded from a two-dimensional model to a three-dimensional model, with social support as the third dimension. In stressful situations, social support can act as a buffer and reduce imminent stress. Thus, if an individual is in a high strain work situation, social support in the form of factors such as a supportive work environment, colleagues, managers and family can mitigate the demand-control imbalance to some extent (31).

The links between demand-control-support and stress-related and other mental health problems have good empirical support (32, 33).

## **Work-life interference**

A key aspect of a person's mental well-being is the feeling that they live a balanced life, i.e., that they can manage to get the pieces of life's puzzle to fit together. Among other things, balance (or imbalance) is derived from the interaction between an individual's various roles in life. These life roles are usually played out either in their private life (e.g., the role of child, partner, parent or friend) or in their working life. Collectively, they comprise the two sides of the same coin – with interrelationships that can rarely be separated from each other. Situations sometimes arise in which job demands and commitments do not always go hand in hand and therefore risk being in conflict with each other and creating an imbalance between the two sides (36, 37).

Work-life interference can take two different directions – either from work to private life or from private life to work (38). Factors that can create an imbalance are both individual (a person's partner, their occupation, children living at

home, high professional status) and structural (organisational and social work environment, as illustrated in the Demand-Control-Support and ERI models, overtime, unsocial working hours) (39). This report only analyses work-life interference, as it is this that has been shown to be of the greatest significance in work-oriented societies such as Sweden (40).

The consequences of work-life interference can include stress, elevated blood pressure and poorer well-being. All in all, these and other consequences affect an individual's physical and mental well-being, and in the long term increase the risk of burnout, cardiovascular disease and increased alcohol consumption (39). Studies also show that individuals who experience work-life interference are more likely to end up on sick leave (41).

### **Moral distress**

The theory of moral distress is based on the contradiction that can exist between personal (moral and ethical) values and professional/institutional demands (42). In other words, an individual may have moral views about what should be done in a certain situation, and these may be in conflict with prevailing expectations of what the individual should and can do, based on their professional role (43).

Moral distress refers to the conflict that can exist in an individual and the stress it leads to when the individual makes a moral decision that they believe to be "right", and which is intended to protect the patient and provide good care, but where the implementation of this decision is hindered by institutional or organisational barriers such as policies, time constraints, medical decisions, etc. (42, 44). This kind of conflict can lead to a sense of frustration, anger and anxiety, especially with regard to decisions and actions that affect others, for example, in healthcare professions in which the focus is on the patient and their care (42, 45). On the whole, moral distress can cause the individual to perceive the demands of their work to be in conflict with their moral principles, and this can undermine their sense of control and autonomy (46).

Research points to a connection between moral distress, illness and turnover intention among healthcare professionals (47).

### **Illegitimate tasks**

Illegitimate tasks are those tasks that are considered to fall beyond the scope of an employee's primary responsibilities and profession, or tasks that are not expected to be performed by a specific role (48, 49). In other words, the task itself need not be difficult or unfounded; rather, it becomes illegitimate when it goes beyond the expectations of a professional role. A task can be seen as legitimate for one professional role but illegitimate for another. Each task is contextual, and it is the person to whom it is assigned, as well as their role and expectations, that affect the perception of the task.

Illegitimate work can be divided into two categories: unnecessary tasks and unreasonable tasks.

Unnecessary tasks are tasks that the role holder believes need not be done, or could be avoided if the tasks were organised differently. Unreasonable tasks ought to be done by someone else, as these tasks fall beyond the scope of the individual's professional role (48, 49).

Many individuals identify themselves through their professional role, especially in occupations that require higher education and in which failure can have social consequences, as is the case in various care professions (22, 50). When an individual is forced to perform illegitimate tasks, it can affect their self-image and well-being, as well as the organisation, its efficiency, and its status. The individual risks becoming anxious about the fact that the core tasks of their professional role are not prioritised which, in turn, increases the effort necessary to cope with the heightened demands of performing their legitimate tasks at the same time as their illegitimate tasks. Likewise, good health and well-being are based on a positive self-image, and healthy employees are the foundation of an efficient organisation (50). Since many people identify closely with their professional role, their self-image – and also their health – are at risk of deteriorating. Illegitimate tasks make it harder to achieve professional goals, and the status and identity of a professional role may be called into question when tasks “outside the scope” become standard. This contributes to illness (48–50).

Research indicates that the amount of illegitimate tasks in the healthcare sector has increased over time (48, 51, 52). It also shows a correlation between illegitimate tasks and illness (23), work motivation and the desire to remain in a job (28).

## **Risk and health-promoting factors at work**

Based on the above-mentioned theories and models, as well as current empirical data, the research has identified factors in the organisational and social work environment that can have a more or less negative or positive impact on employees' health. These are known as risk and health-promoting factors.

A risk factor is a circumstance or condition that has the potential to have a detrimental effect on health and well-being (12). In working life, the definition is more specific and pertains to work environment factors that create burdens or stressors that can lead to illness, low engagement and higher rates of sick leave. Organisational risk factors can include a work environment characterised by long working hours, temporary employment, poor leadership and bad HR strategies (53).

Risk factors include circumstances and conditions at work that are mentally strenuous, for example (53–55):

- high job demands together with a low level of control
- role conflict
- effort-reward imbalance
- work-life interference
- unclear goals
- threats, threats of violence and violence.

Health-promoting factors, on the other hand, are most easily described as circumstances and conditions that promote or maintain health or prevent illness (56). A health-promoting factor can be either a single component or comprise intricate situations and circumstances (53).

Examples of health-promoting factors are (53, 54):

- inclusive leadership
- high level of control
- reasonable workload
- clear goals
- balance between effort and reward
- support.

Risk and health-promoting factors are sometimes described as polar opposites. This is often true, but there are also exceptions. Demands at work are one example. Low job demands are typical of occupations involving monotonous tasks with a low level of control and influence, while high job demands in occupations with high levels of stress have proven ties to mental illness (56). In other words, both low and high job demands are potential risk factors. Thus, some strongly interrelated risk and health-promoting factors are polar opposites, but other risk and health-promoting factors are unique and independent, and do not necessarily have an interrelated opposite (56). Moreover, up to a certain level and under certain conditions, some factors (for example, high job demands with strong support from managers) may be perceived as positive challenges that promote personal development and engagement (57).

## **Identifying risks in the work environment**

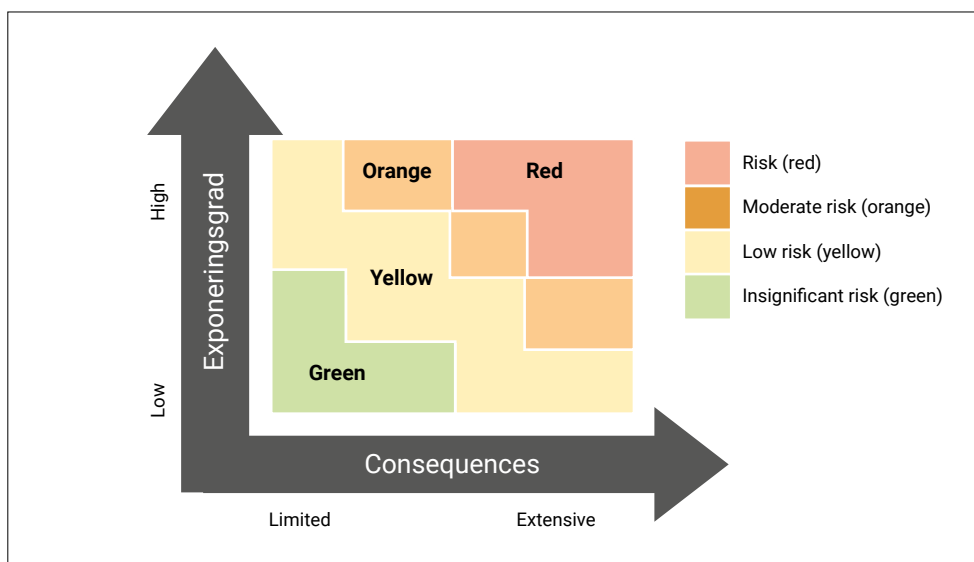
As part of systematic work environment management, risks in the work environment must be identified, assessed, addressed and controlled (11). To identify risks, an investigation of the work environment must be conducted. This process is regulated in the Swedish Work Environment Authority's Statute Book. The investigation has been carried out in various ways, depending on the type of risk. To identify organisational and social risks at work, employees are asked questions about how they perceive their work environment.

The Swedish Work Environment Authority describes the concept of risk as the probability of the occurrence of a dangerous event or exposure, the consequences of which may be various forms of injury or illness (11). This means that a risk factor does not pose a risk of illness, *per se*. Rather, exposure to a risk factor increases the likelihood of developing both physical and mental illness (32, 33).

Based on this explanation, our report uses a so-called traffic light system to present those factors in the organisational and social work environment that are most likely to constitute a risk of illness if they remain unmitigated.

Traffic light systems are often used in risk matrices in workplace risk assessments (Figure 1). Risk matrices are used to assess the significance of a risk based on the probability of exposure (prevalence and duration) and the consequences of exposure.

**Figure 1.** Risk matrix based on exposure (or lack thereof) and consequences.



Factors in the organisational and social work environment that are classified as risk factors have a scientifically established connection to illness.

If the prevalence is low, the likelihood of developing an illness is lower and the consequences are limited. Conversely, if the prevalence is high, there is an increased likelihood that illness will develop and that the consequences will be more extensive (for example, a longer period of sick leave for stress-related illness).

health-promoting factors – when they exist – can promote health. Thus, a high level of exposure to these factors is beneficial; on the other hand, a lack of exposure to health-promoting factors can lead to illness. For example, control, influence and support have been identified as important health-promoting factors. At the same time, research shows that a lack of control, influence and support increases the likelihood that the exposed person will develop illness (33). Insufficient control, influence and support therefore become risks in the work environment.

In this way, health-promoting factors can also be applied to risk matrices.

## Physicians, registered nurses and assistant nurses in Sweden

According to figures from the Swedish Occupational Register, there were approximately 39,000 physicians, 110,000 registered nurses and 173,000 assistant nurses working in Sweden in 2020/2021.<sup>32</sup> In this report, we focus only on the physicians, registered nurses and assistant nurses employed in Sweden's municipal and regional healthcare system in 2021. The physician group includes individuals ranging from junior physicians to consultants, in all specialties. Registered nurses also include specialist nurses, midwives and radiographers (the latter is a distinct field of study and not a specialist education).

The group of assistant nurses is difficult to define in the Occupational Register, as it was not until the summer of 2023 that this became a protected title. In this report, attendants, care assistants, etc. are also included in this group.

Healthcare professionals are among the occupational groups most likely to be on sick leave due to work-related illness (58, 59). Among registered nurses and assistant nurses, the rate of sickness absence has long been high, whereas among physicians it has been low. In recent years, however, sickness absence among physicians has increased, especially among female resident physicians. The increased burden of stress on healthcare professionals during the COVID-19 pandemic is assumed to have led to increased illness and sick leave, as well as voluntary termination (60). The data on which this report is based were collected during the spring and autumn of 2022, i.e., in the final months of the pandemic and immediately after it ended.

---

2 The data in the Swedish Occupational Register need to be updated ; it has no up-to-date data. This means that the data available in 2022 (during data collection for the LOHHCS) concerned physicians, registered nurses and assistant nurses recorded in the register in 2020/2021.

## 2. Method

The report uses data from the 2022 Longitudinal Occupational Health survey in Health Care Sweden (LOHHCS). The following section presents the study participants, the method of data collection, and how we have processed the data for presentation in this report.

### Sampling and data collection

The LOHHCS cohort<sup>3</sup> comprises a representative sample of physicians, registered nurses and assistant nurses working in Sweden. This sample has been drawn from the Swedish Occupational Register and the Education Register and was selected by Statistics Sweden (SCB). People recorded in the Occupational Register were selected using stratified random sampling<sup>4</sup>, based on the administrative healthcare region<sup>5</sup> in which they worked. The sample from the Education Register was obtained to ensure the inclusion of registered nurses and physicians who had completed their studies but had not yet been recorded in the Occupational Register. This sample constituted a separate stratum.

The survey questions were sent to 24,000 physicians, registered nurses and assistant nurses (8,000 in each group). A total of 556 individuals were eliminated from the sample because they had moved abroad, died or had a secret address. A total of 7,845 people responded to the survey. For the purposes of this report, only those physicians, registered nurses and assistant nurses who stated that they work in municipal and regional healthcare are included. Once we excluded everyone who did not work in municipal and regional healthcare, 6,492 individuals remained: 2,232 physicians (34%), 2,456 registered nurses (38%) and 1,804 assistant nurses (28%).

Since the LOHHCS data are based on a representative sample, Statistics Sweden calibrated the weighting<sup>6</sup> for the cohort. Calibration weighting allows the results below to provide a more accurate picture of the work environment, health and well-being of physicians, registered nurses and assistant nurses working in Sweden. The total analytical sample comprised 253,873 individuals. Appendix B presents demographic data with and without calibration weighting. In the other analyses and results presented in the report, the calibration weighting has been adapted.

---

3 In this context, "cohort" refers to the physicians, registered nurses and assistant nurses included in the study.

4 A method of sampling in which the population is first divided (stratified) into groups of elements called *strata*. A random sample is then drawn from each stratum.

5 Administrative healthcare regions comprise a municipal association with healthcare principals that cooperate with regard to the use of the region's healthcare resources. The six healthcare regions are Northern, Central, Southeastern, Western and Southern Sweden, as well as Stockholm.

6 <sup>7</sup> A method to improve the quality of statistics, as calibration weighting takes into account the fact that different groups in society are more or less inclined to respond to surveys. The weighting compensates for the overrepresentation of a particular group during data collection, thereby ensuring that the analysed data better match the actual study population.

## Categorisation of individuals in the LOHHCS cohort

The term “occupational groups” is used in this report to describe the three professions of physicians, registered nurses (wherein midwives and radiographers are also included) and assistant nurses. To further describe the differences between and within these three occupational groups, five individual categories were used: gender, age, work experience, management responsibilities and working hours. For physicians, differences in rank were also examined, and for registered nurses and assistant nurses, the difference between regional and municipal operations was investigated. The division of each individual category is described both below and in Appendix B.

*Gender* is defined here as male or female. Information about gender is taken from SCB’s registers and is therefore not self-reported. A majority of the study participants were female, with the largest proportion (90%) in the assistant nurse group. The most even gender distribution was found in the physician group (48% male and 52% female).

*Age groups* are divided into four age categories: 21 to 36 years old, 37 to 47 years old, 48 to 57 years old and 58 to 76 years old (based on percentage quartiles). Physicians’ age ranged from 25 to 76 years, registered nurses from 23 to 69 years and assistant nurses from 21 to 68 years. Information about age is obtained from SCB’s registers.

The study participants were generally evenly distributed across the four age categories, with the greatest variations in the physician group.

*Work experience* is the number of years an individual has had their present occupation and is divided into three categories: less than 5 years of work experience, 5 to 15 years, and over 15 years. Half (50%) of all the study participants had more than 15 years of occupational experience. The proportion of group members with extensive experience was highest among the assistant nurse group (52% had over 15 years of work experience) and lowest among the physician group (42% had over 15 years of work experience).

*Management responsibilities* means that the individual’s position entails management responsibility. Here the groupings are based on whether the individual is a manager with personnel responsibility, a manager without personnel responsibility, or has no management responsibilities. For physicians and nurses, medical management positions are also included, i.e., those with medical management responsibilities (MMR) or medically responsible nurses (MRNs). The majority of the study participants had no management responsibilities.

*Working hours* are divided into three categories: an average of less than 36 hours per week, 36 to 45 hours per week, and more than 45 hours per week. This division of working hours is constructed based on the organisation of working hours in Sweden’s regional and municipal healthcare system, in which there are various full-time norms (for example, some people work fewer hours per week when they work night shifts). Regardless of occupation, the majority of



study participants worked 36 to 45 hours per week. It was most common for physicians (38%) to work more than 45 hours per week, while 30% of registered nurses and 38% of assistant nurses worked fewer than 36 hours per week.

*Rank* applies only to physicians and is divided into three categories: physicians in training, specialists and consultants. Physicians in training include junior physicians prior to their general internship<sup>7</sup>, medical interns, licensed junior physicians and resident physicians<sup>8</sup>. Specialists only include physicians who have completed specialist training. The consultant category includes deputy consultants and consultants. Overall, rank was evenly distributed across the physician group, although trainee physicians accounted for a slightly higher proportion (37%).

*Place of employment* only applies to registered nurses and assistant nurses and is divided into “regional” (i.e., if the individual works in regional health care) and municipal (i.e., if they work at the municipal level) categories. For registered nurses, it was most common to be employed in regional operations (81%), while most assistant nurses (70%) worked for the municipality.

## Measurement instruments

The LOHHCS survey comprises four sections: Occupational Background, Work Environment, Health, and Demographics. A high proportion of the questions included in the LOHHCS are based on various measurement instruments developed to investigate the organisational and social work environment of physicians, registered nurses and assistant nurses. All measurement instruments and tools based on the theories and models presented in the “Background” section have been previously tested and validated, and are regularly used in scientific contexts. This report brings together data obtained using some of these instruments and tools. More detailed information about the included measurement instruments, response options and how they were coded, as well as the sources of the instruments, can be found in Appendix A.

Several of the instruments used in this report are taken from the Copenhagen Psychosocial Questionnaire (COPSOQ)<sup>9</sup>. The COPSOQ is a well-established and validated tool that measures essential aspects of the organisational and social work environment and is founded on a scientific basis.

In its entirety, the COPSOQ comprises 76 questions divided into 33 work environment-related dimensions which, in turn, are grouped into 7 domains.

All 76 questions in the COPSOQ have five possible response options. Each of the five response options is assigned a value: 0, 25, 50, 75, or 100. The questions in each dimension are merged to provide a mean value for the dimension of

---

7 A general internship complements the basic training of physicians and is a prerequisite for obtaining a medical licence. Students who started a Swedish medical programme after 1 July 2021 will not need to conduct a general internship to receive a licence. In this context, “interns” refers to physicians conducting their general internship.

8 A licenced physician who wants to apply for a certificate of specialist competence needs to complete a residency. During this period, they are known as “resident physicians”.

9 Read more about the COPSOQ, its design and its practical application at [www.COPSOQ.se](http://www.COPSOQ.se).

between 0 and 100. Five of the seven domains in the COPSOQ are used in the LOHHCS survey and are presented in this report.

These domains are

- Self-Rated Health
- Demands at Work (quantitative and emotional demands)
- Work-Life Interference
- Interpersonal Relations and Leadership (i.e., the dimensions of Social Support from Managers, Social Support from Colleagues, and Social Cohesion)
- Offensive Behaviours (i.e., threats and violence).

Other validated tools and questions used in this report are the KEDS (61), the ERI (30) and Illegitimate Tasks (62). We use Turnover Intention (22,63) and Moral Distress (42,43,64) as tools. These latter two have not been validated in published studies but have been used in other research (ibid.).

## Health and well-being

*Self-rated health* was measured by asking the participants how they generally perceived their health. The question about self-rated health was taken from the COPSOQ (65,66).

*Burnout* was measured using a battery of questions from the Karolinska Exhaustion Disorder Scale (KEDS (61)). This instrument can give an indication of whether an individual has no, mild or severe symptoms of burnout, and should therefore be offered medical assistance. The KEDS is often used clinically as part of a medical history to diagnose exhaustion disorder. Nine questions from the KEDS are included here. They concern an individual's ability to concentrate, memory, bodily fatigue, endurance, recovery, sleep, hypersensitivity to sensory impressions, experience of job demands, and propensity for irritation and anger. The responses to the questions were summed up to a value between 0 and 54, where a high value indicates a greater risk of burnout. In line with Beser et al. (61), the limit value of 19 or above was selected as an indication of burnout.

*Turnover intention*, which serves as a measure of work-related well-being, was measured by asking the question: *How many times in recent months have you considered looking for another job?* Those individuals who responded that they had considered leaving their job several times in the past days, weeks or months were categorised as “considered leaving their current job”, while those individuals who responded that they had only considered giving notice a few times in the past 12 months, or who had never considered it, were categorised as “not considered leaving their current job”.

## Organisational and social factors in the work environment

Below is a brief description of factors in the organisational and social work environment that are studied in this report, as well as how they are dealt with in the report. A more detailed overview of all the factors and measurement instruments is presented in Appendix A.

*Effort-reward imbalance* was measured using the validated Effort-Reward Imbalance (ERI) tool (30). ERI is based on the calculation of an effort-reward ratio. Effort and reward were measured using three and seven questions, respectively. The responses were then separately combined into two mean values between 1 and 4. When the ratio of effort to reward<sup>10</sup> exceeds 1.0, this indicates an imbalance (meaning that the effort is greater than the reward).

*Work rewards* is only based on the overall index which, in turn, is based on the seven questions related to workplace rewards according to the ERI scale (30). For the clarity of this report, the index was redesigned to correspond to the COPSOQ grading, but with an adjustment for four response options with a score of 0, 33.3, 66.6 and 100.<sup>11</sup>

*Quantitative demands* (COPSOQ) were measured using three questions about a possible imbalance between the scope of tasks and the time available to perform them. Emotional demands (COPSOQ) were measured using a question about how often the respondents felt they had to deal with other people's personal problems.

*Work control* was measured using eight questions that concerned the participants' opportunities to influence their work shifts and the extent to which they could control their workdays. Influence was measured using three questions related to the time available for patient interactions and freedom to make clinical decisions. Meaningfulness was measured using a question about how satisfied the participants are with their work. For the sake of clarity in this report, all the responses (about work control, influence and meaningfulness) were reformulated to correspond to the grading used for the COPSOQ.

*Social support from managers and colleagues and social cohesion* (COPSOQ) were measured using one question each. The respondents were asked to rate how they rated support from their managers and colleagues, as well as the sense of community at work.

*Work-life interference* (38) was measured using five questions related to the extent to which work affects their private life. For the sake of the clarity of this report, the summary was reformulated to correspond to the grading for the COPSOQ.

*Moral distress* (64) was assessed using five questions touching on various forms of ethical dilemmas and moral distress that the individual might encounter in their occupational role. For the sake of the clarity of this report, the responses were reformulated to correspond to the grading for the COPSOQ.

Illegitimate tasks (62) are presented for the dimensions of *unreasonable tasks* and *unnecessary tasks*. For unreasonable tasks, four questions were included about, for example, how often the participants stated they had to perform tasks that they

---

10 Calculation of effort to reward ratio: When effort and reward are measured using different numbers of questions, a correction factor is used (correction factor = c). The correction factor is calculated by dividing the number of reward questions by the number of effort questions, i.e. 3 divided by 7, which is equal to 0.42857143. The formula on which the ERI is based is the ER Ratio = effort score/(reward score x c).

11 Responses to the measurement instruments in the COPSOQ range from 0 to 100, and each response option is assigned a certain number of points: 0, 25, 50, 75, or 100. For the variables not included in the COPSOQ, we have adjusted the scoring for the response options to range from 0 to 100 points.

felt could be performed by someone else. Unnecessary tasks were covered by four questions about, for example, how often the participants were assigned tasks whose actual necessity they found questionable. For the sake of the clarity of this report, the responses were reformulated to correspond to the grading for the COPSOQ.

*The experience of violence and threats* in the healthcare system was measured using a single question about how often during the past 12 months the participants had been subjected to violence, threats of violence or threats at work.

The response options were divided into two categories: all respondents who said they had experienced some form of threat or violence in the past 12 months were grouped into one category (1), and those who responded that they had never experienced threats and violence were assigned to another category (0).

Anyone who responded that they had experienced threats and violence in the past year was also asked who it was who had subjected them to such treatment, i.e., who the perpetrator was. There were four response options, and it was possible to select more than one of them. The response options were “patient”, “relative”, “other healthcare professional” and “other person”. These options were divided into the subcategories of “internal perpetrator only”, including other healthcare professionals, “external perpetrator only”, including patients, relatives and other persons, and “both internal and external perpetrator”, including the participants who reported being subjected to violent or threatening treatment by both patients and other healthcare professionals.

Furthermore, those participants who had been subjected to violence were asked if they had reported the alleged violence to their manager or safety representative, as well as whether they felt the violence had affected them. The question about whether threats and violence had been reported had three possible response options. In specifying the extent to which they felt the violence had affected them, the respondents had four response options ranging from “to a very great extent” (1) to “not at all” (4). Response options 1 and 2 were merged to form the “high impact” group, while response options 3 and 4 were kept intact.

## Processing of data

The data were compiled by first calculating the mean value<sup>12</sup> of each instrument (see Appendix A) for each individual who responded to the questionnaire. In compiling the data, a mean value was calculated for each studied group (e.g., a mean value for self-rated health for all female physicians). For instruments sourced from the COPSOQ or which have been adapted to conform with the COPSOQ scoring technique, the mean value could be between 0 and 100.

---

<sup>12</sup> For the effort-reward balance, a ratio calculated for the ERI above was calculated.

The data have been compiled so that the reader can get an idea of whether the result is better or worse in relation to a reference value either for the labour market as a whole or in relation to the entire LOHHCS cohort. This means that the self-rated value has been compared with a reference value.

## **Reference values and mean values for variables from the COPSQ**

For the COPSQ, reference values for the Swedish labour market as a whole have been determined for each dimension (65). These reference values are based on the mean value of a sample of employees in the Swedish labour market in 2018. These reference values should not be regarded as the “right” or the “best” values; rather, they are intended to help the reader interpret the values we present.

For some dimensions, a low mean value is desirable, while for others it is better for this value to be high. The desired value for each dimension (low and high) is therefore included in the presentation of the results.

## **Mean value for the Swedish healthcare sector**

Since some of the organisational and social work environment factors covered in this report are not included in the COPSQ, a mean value for the Swedish healthcare system has been compiled instead and used as a reference value. To make the results of the report more transparent for readers, the same scoring system is used for these questions as in the COPSQ.

This includes scales that measure the following factors:

- turnover intention
- moral distress
- illegitimate tasks (unreasonable and unnecessary tasks)
- work rewards
- control, influence and meaningfulness at work.

## **Reference values from scientific articles and limit values**

As recommended by Beser et al. (61), burnout measured using the KEDS is addressed using a research-based clinical value. The ERI ratio differs from the other factors in the report and has not been adapted to the COPSQ. In a published article, it was stated that the average ERI ratio for a general population of Swedish workers was 1.1 (67). This was used as a reference value for this report.

## Presentation of data and identification of risks at work

The organisational and social work environment conditions examined in the report are presented based on risk and health-promoting factors.

The compilation of data is presented using a so-called traffic light system (Table 1). Traffic light systems are used in the report to visualise the level of exposure to each work environment factor and whether the risk presents a low, medium or high probability of illness (Figure 1).

Using the traffic light system, the factors that are very likely to pose a risk of illness (should they remain unmitigated) are identified.

This is conducted in three stages:

- The mean value of a given factor is compared with the reference value for the same value (see above for reference value).
- The difference between the mean and the reference value is calculated.
- Based on the size and direction (better or worse) of the difference, the value is assigned a colour – green, yellow, orange or red – in accordance with Table 1.

According to the COPSQ, a difference greater than 5 is significant. Appendix C presents how the values of green, yellow, orange and red have been coded for each factor.

**Table 1.** Classification of mean values according to the traffic light system.

	Difference between mean value and reference value <sup>a</sup> , as well as direction	Exposure to the work environment factor	Likelihood that the exposure will contribute to illness
Green	The difference from the reference value is greater than 5, in the direction that is better than the reference value	Low level of exposure to risk factors	Limited
		High level of exposure to health-promoting factors	
Yellow	The difference from the reference value is less than or equal to 5 and the mean value is neither better nor worse than the reference value	Low level of exposure to risk and health-promoting factors	Minor
Orange	The difference from the reference value is greater than 5 and less than 10, in the direction that is worse than the reference value	Medium level of exposure to risk factors	Moderate
		Medium level of exposure to health-promoting factors	
Red	The difference from the reference value is greater than 10, in the direction that is worse than the reference value	High level of exposure to risk factors	High
		Low level of exposure to health-promoting factors	

<sup>a</sup> In accordance with the recommendations of the COPSQ (65), which describe the relationship between a mean value and a reference value.

The “effort-reward imbalance” factor is based on a ratio and assumes a value above or below 1. If the mean value is the same as the reference value (1.1), it is assigned the colour yellow. If the mean value is equal to or greater than 1.2, the value is assigned the colour red. Mean values equal to or below 1.0 are ascribed the colour green.

The “burnout”, “turnover intention” and “threats and violence” factors are presented in terms of prevalence, i.e., the proportion of respondents with symptoms of burnout, the proportion who are considering quitting their jobs, as well as the proportion who have been subjected to threats and violence. The traffic light system is not used for these factors.

Thus, the colour coding provides an indication of factors in the organisational and social work environment whose values are better or worse than a reference value. Mean values cannot be compared between different factors. However, the results for the same factor can be used for comparisons between occupations and groups.

In keeping with the tenets of systematic work environment management, the values marked in red in the results should be further investigated to determine possible actions or changes. The values marked in orange in the results should be seen as alarming, as they risk turning red.

## 3. Results

In the following sections, results regarding the health, well-being and organisational and social work environment of physicians, registered nurses and assistant nurses are presented. These results are then presented for individual categories within each of these three occupational groups.

The results are presented in both tables and in text. In the tables, all values (with the exception of burnout, turnover intention and effort-reward imbalance) have been assigned the colour green, yellow, orange or red. The burnout and turnover intention factors are presented in terms of prevalence, and the results for the factor of effort-reward imbalance are presented as an average based on the ERI ratio (see the “Method” section for details). In the text, the contents of the tables are described, with emphasis on the results that have a red value and have thus been identified as constituting a potential risk of illness.

The results of the report can be regarded as an initial investigation of the work environment in the Swedish municipal and regional healthcare system and used as a basis for systematic work environment management.

### Health and well-being as well as organisational and social conditions in the work environment of municipal and regional healthcare professionals

Table 2 shows that compared to the labour market as a whole (the reference values), physicians, registered nurses and assistant nurses working in municipal and regional healthcare generally have poorer mean values for health and for factors in the organisational and social work environment.

#### Health and well-being

In terms of health and well-being, Table 2 shows that self-rated general health is marked red, indicating a worse value compared to the reference values for the Swedish labour market. Nearly one third of Sweden’s physicians, registered nurses and assistant nurses working in municipal and regional health care have mild to severe symptoms of burnout (31%) and 43% had considered leaving their current job.

The occupational groups of physicians, registered nurses and assistant nurses have different levels of self-rated health. The values of assistant nurses for self-rated health are marked in red, while the values of registered nurses and physicians are marked in orange and yellow, respectively. The prevalence of burnout is higher among assistant nurses than physicians and registered nurses, and a higher proportion are considering giving notice.



## **Organisational and social conditions in the work environment**

All three occupational groups had worse values than the reference values for the “effort-reward imbalance”, “demands at work”, “work-life interference” and “social support from managers” factors (indicated in red or orange in Table 2). This means that exposure to these factors is relatively high and that there is a risk of illness. There were some differences between occupational groups. While quantitative demands among physicians were worse compared to the reference value, emotional demands among registered nurses were worse compared to the reference value. Compared to the reference value for the entire LOHHCS cohort, assistant nurses had a low level of control and influence at work.

All three occupational groups report a significant imbalance between effort and reward. All three groups in this report have more imbalance than the general labour market (indicated by values above 1.1). The value for effort-reward is 1.2 for physicians, 1.4 for registered nurses and 1.5 for assistant nurses.

The prevalence of moral distress differs among the three occupational groups. Physicians have a lower mean value compared to the reference value for the total LOHHCS cohort, while assistant nurses have a higher mean value. As regards illegitimate tasks, there are only marginal differences between the three occupations in terms of the prevalence of unreasonable tasks. On the other hand, physicians report a higher prevalence of unnecessary work tasks compared to both registered nurses and assistant nurses.

**Table 2.** Health and well-being and organisational and social conditions in the work environments of physicians, registered nurses and assistant nurses.

■ = Green   ▲ = Yellow   ■ = Orange   ■ = Red

	Desired value	Total	Physicians	Registered nurses	Assistant nurses	Reference value
Proportion (%)		100	13	34	53	
<b>Health and well-being</b>						
Self-rated health	H	51	59	53	47	61 <sup>b</sup>
Burnout (%)	L	31	21	30	36	
Turnover intention (%)	L	43	34	44	46	
<b>Organisational and social conditions in the work environment</b>						
Effort-reward imbalance (ERI ratio)	L	1,4	1,2	1,4	1,5	1,1 <sup>c</sup>
Quantitative demands	L	45	54	46	42	41 <sup>b</sup>
Emotional demands	L	56	53	60	54	47 <sup>b</sup>
Work-life interference	L	54	55	52	54	40 <sup>b</sup>
Moral distress	L	66	62	66	68	67 <sup>d</sup>
Unreasonable tasks	L	50	50	49	51	50 <sup>d</sup>
Unnecessary tasks	L	51	55	50	50	51 <sup>d</sup>
Social support from managers	H	64	66	63	63	75 <sup>b</sup>
Social support from colleagues	H	83	83	86	81	80 <sup>b</sup>
Social cohesion	H	88	86	90	87	80 <sup>b</sup>
Work control	H	36	32	44	31	37 <sup>d</sup>
Influence at work	H	57	66	62	50	57 <sup>d</sup>
Meaningfulness at work	H	66	69	69	63	66 <sup>d</sup>
Work rewards	H	50	50	49	50	50 <sup>d</sup>

<sup>a</sup> Indicates whether the desired value is high (H) or low (L)

<sup>b</sup> Reference value for the labour market as a whole (65)

<sup>c</sup> Reference value for a sample from the Swedish labour market (67)

<sup>d</sup> Reference value for all physicians, registered nurses and assistant nurses, calculated from the LOHHCS cohort

All three occupational groups experience a better sense of community compared to the reference values. Among registered nurses, the values for social support from colleagues, as well as control and influence at work, were also better than the reference values. These factors can be health promoting if they are present at work. Support at work can be a health-promoting factor at work so exposure to social support is good.

### **Summary of the healthcare sector**

- One third of the practising physicians, registered nurses and assistant nurses in Sweden had mild to severe symptoms of burnout.
- The work environment of physicians, registered nurses and assistant nurses in the healthcare sector is characterised by more risk factors at work compared to those encountered by workers in the rest of the labour market.
- Assistant nurses generally have a low level of health and well-being, with particularly low values for their perception of control and influence at work.
- The studied occupational groups in the Swedish healthcare sector experienced low support from managers compared to employees in the rest of the labour market.

## **Health and well-being and organisational and social conditions in the work environments of physicians, registered nurses and assistant nurses**

The following sections present the results of the differences within each occupational group. The results are presented based on the five individual categories of gender, age, work experience, management responsibility and working hours (see the “Method” section). For physicians, differences in rank are also described, and for registered nurses and assistant nurses, differences between municipalities and regions are specified.

### **Physicians**

The results for health and well-being and organisational and social conditions in the work environments of physicians are presented in their entirety in Table 3.

#### **Health and well-being**

The values for self-rated health are in line with the reference value for all subgroups of physicians, with the exception of female physicians and physicians aged 48 to 57 years. These two groups rate their health as slightly worse than the reference value.

The prevalence of mild to severe symptoms of burnout varies, from 14% for physicians over the age of 58, to 29% among physicians aged 48–57 years. The prevalence of mild to severe symptoms of burnout is higher for female physicians (26%) compared to male physicians (15%).

The proportion of those who are considering quitting their jobs varies between subgroups of physicians. Compared to other subgroups, a higher proportion of physicians in training who are at an early stage of their careers (aged 21–36 years), as well as those who work an average of more than 45 hours per week, are considering leaving their current job.

**Table 3.** Health and well-being and organisational and social conditions in the work environments of physicians.

■ = Green   ■ = Yellow   ■ = Orange   ■ = Red

Physicians	Reference value	Desired value	Gender		Age				Rank			Work experience			Management responsibilities			Working hours		
			Male	Female	21–36	37–47	48–57	58+	Physicians During training	Specialister	Överläkare	< 5 years	5–15 years	> 15 years	MMR	Manager with/without	None	< 36 hours	36–45 hours	> 45 hours
Proportion (%)			48	52	30	33	18	19	40	26	36	20	38	42	17	5	79	11	50	40
<b>Health and well-being</b>																				
Self-rated health	61 <sup>b</sup>	H	62	55	61	58	54	60	59	59	57	59	59	58	58	59	59	60	60	56
Burnout (%)		L	15	26	18	22	29	14	21	24	19	20	21	20	21	18	21	24	19	22
Turnover intention (%)		L	32	36	41	37	34	16	38	38	26	37	40	27	29	32	35	27	30	40
<b>Organisational and social conditions in the work environment</b>																				
Effort-reward imbalance	1,1 <sup>c</sup>	L	1,2	1,2	1,3	1,3	1,3	1	1,3	1,3	1,1	1,3	1,3	1,2	1,2	1,3	1,2	1	1,2	1,4
Quantitative demands	41 <sup>b</sup>	L	51	56	51	58	59	46	52	58	53	51	54	54	56	63	53	46	51	59
Emotional demands	47 <sup>b</sup>	L	51	54	57	55	51	43	57	56	46	56	56	48	52	55	53	51	52	54
Work-life interference	40 <sup>b</sup>	L	52	58	58	58	58	42	58	55	52	59	57	51	53	57	55	40	50	64
Moral distress	67 <sup>d</sup>	L	56	68	64	61	63	57	63	63	60	63	63	60	62	62	62	64	61	63
Unreasonable tasks	50 <sup>d</sup>	L	48	52	55	51	50	41	52	52	46	54	51	47	50	52	50	41	48	55
Unnecessary tasks	51 <sup>d</sup>	L	56	54	59	56	54	48	58	56	52	58	57	52	55	58	55	50	54	58
Social support from managers	75 <sup>b</sup>	H	68	64	65	66	65	69	65	67	66	65	66	66	69	66	65	69	67	63
Social support from colleagues	80 <sup>b</sup>	H	85	81	85	85	79	80	85	82	82	86	85	80	82	78	83	83	84	82
Social cohesion	80 <sup>b</sup>	H	87	85	86	88	84	84	85	85	86	85	87	85	87	83	86	83	86	86
Work control	37 <sup>d</sup>	H	35	29	25	31	31	45	26	33	37	26	29	38	38	32	31	52	34	24
Influence at work	57 <sup>d</sup>	H	69	64	61	65	69	74	61	64	74	60	64	71	72	73	65	69	67	65
Meaningfulness at work	66 <sup>d</sup>	H	70	68	67	67	68	76	67	66	73	66	67	72	73	71	68	75	70	65
Work rewards	50 <sup>d</sup>	H	51	50	50	50	51	52	49	50	51	50	49	52	53	51	50	54	50	50

<sup>a</sup> Indicates whether the desired value is high (H) or low (L)

<sup>b</sup> Reference value for the labour market as a whole (65)

<sup>c</sup> Reference value for a sample from the Swedish labour market (67)

<sup>d</sup> Reference value for all physicians, registered nurses and assistant nurses, calculated from the LOHCS cohort

## Organisational and social conditions in the work environment

Table 3 presents factors in the organisational and social work environment for subgroups of physicians, and some significant differences emerge. Physicians who worked fewer than 36 hours per week or were over 58 years of age generally had better values or were at the same level as the reference values. This means that they rate their work environment as relatively good compared to other physicians.

It seems that most subgroups of physicians report relatively high to high exposure to effort-reward imbalances, quantitative and emotional demands, work-life interference and social support from managers, i.e., the mean values of these factors are worse than the reference values (orange and red). At the same time, many physicians feel they can exercise influence over their work, compared to the reference value for healthcare professionals in general.

Female physicians, junior physicians, those with less than 15 years of work experience and, above all, physicians who work more than 45 hours per week reported a consistently worse work environment than other subgroups of physicians. This means that they are exposed to more negative factors in their organisational and social work environment.

## Registered nurses

The results for health and well-being and organisational and social conditions in the work environments of registered nurses (including midwives and radiographers) are presented in their entirety in Table 4.

### Health and well-being

Most of the values for self-rated health among the subgroups of registered nurses are somewhat to much worse than the reference value (marked in orange and red). Young registered nurses, registered nurses at the beginning of their careers and registered nurses who work more than 45 hours per week have the worst values for self-rated health.

The prevalence of symptoms of burnout ranges from 20% among male registered nurses to 47% among registered nurses who work more than 45 hours per week. However, few registered nurses work more than 45 hours per week.

Turnover intention decreases with age and level of experience. Among registered nurses over 58 years of age, turnover intention was lower than in the other subgroups.

Among registered nurses at the beginning of their careers, four out of ten reported that they have symptoms of burnout, and six out of ten were considering leaving their current jobs. The same subgroup also has poor self-rated health.

**Tabell 4.** Hälsa och välbefinnande samt organisatoriska och sociala förhållanden i arbetsmiljön för sjuksköterskor.

■ = Green ■ = Yellow ■ = Orange ■ = Red

Registered nurses	Reference value	Desired value	Gender		Age				Employment		Work experience			Management responsibilities*			Working hours		
			Male	Female	21-36	37-47	48-57	58+	Regional	Municipal	< 5 years	5-15 years	> 15 years	M/RN	Manager with/without	None	< 36 hours	36-45 hours	> 45 hours
Proportion (%)			12	89	30	26	24	20	81	19	20	32	48	5	4	91	30	65	5
<b>Health and well-being</b>																			
Self-rated health	61 <sup>b</sup>	H	57	53	50	53	55	57	53	53	47	53	56	55	58	53	55	53	46
Burnout (%)		L	20	32	35	33	28	22	30	30	38	33	26	25	26	31	27	31	47
Turnover intention (%)		L	46	43	59	44	39	26	44	42	62	50	32	43	31	44	36	45	64
<b>Organisational and social conditions in the work environment</b>																			
Effort-reward imbalance	1,1 <sup>c</sup>	L	1,3	1,4	1,6	1,4	1,3	1,2	1,4	1,3	1,6	1,4	1,3	1,5	1,3	1,4	1,3	1,4	1,8
Quantitative demands	41 <sup>b</sup>	L	40	47	49	46	46	41	45	49	53	46	43	50	51	46	41	48	57
Emotional demands	47 <sup>b</sup>	L	60	60	63	62	59	54	60	58	63	62	57	64	61	60	58	61	64
Work-life interference	40 <sup>b</sup>	L	48	53	60	52	49	44	53	48	65	53	46	51	53	52	46	54	67
Moral distress	67 <sup>d</sup>	L	54	67	67	65	63	66	66	66	67	67	63	68	71	65	66	66	66
Unreasonable tasks	50 <sup>d</sup>	L	46	50	57	49	46	41	50	48	58	51	44	51	48	49	45	50	59
Unnecessary tasks	51 <sup>d</sup>	L	53	50	55	52	47	45	50	52	57	52	47	54	52	50	47	51	57
Social support from managers	75 <sup>b</sup>	H	66	63	62	64	64	64	63	64	62	64	63	63	70	63	65	63	54
Social support from colleagues	80 <sup>b</sup>	H	86	86	86	87	86	85	86	84	85	87	86	84	88	86	87	86	80
Social cohesion	80 <sup>b</sup>	H	90	90	91	90	90	88	91	88	90	90	90	89	92	90	90	90	85
Work control	37 <sup>d</sup>	H	36	45	35	45	48	48	38	61	30	45	48	45	44	44	45	44	33
Influence at work	57 <sup>d</sup>	H	66	62	55	64	67	66	62	66	51	62	67	64	65	62	64	62	53
Meaningfulness at work	66 <sup>d</sup>	H	68	69	62	70	72	73	68	71	61	67	73	68	73	68	71	68	55
Work rewards	50 <sup>d</sup>	H	49	49	48	49	49	49	49	49	48	49	50	50	53	49	48	49	49

<sup>a</sup> Indicates whether the desired value is high (H) or low (L)

<sup>b</sup> Reference value for the labour market as a whole (65)

<sup>c</sup> Reference value for a sample from the Swedish labour market (67)

<sup>d</sup> Reference value for all physicians, registered nurses and assistant nurses, calculated from the LOHHCS cohort

## Organisational and social conditions in the work environment

Effort-reward imbalance, emotional demands, work-life interference and social support from managers have worse mean values than the reference values and pose risks for several of the subgroups of registered nurses (red and orange values).

Newly graduated registered nurses at the beginning of their careers, including those in the 21 to 36 age group, report that they have a poorer organisational and social work environment compared to their older and more experienced colleagues. Several factors are worse than the reference values for the labour market as a whole or for the LOHHCS cohort. The effort-reward imbalance ratio for these subgroups is 1.6, and they report lower levels of control and influence in their jobs.

It appears that registered nurses working in municipal operations report a slightly better work environment than registered nurses working in regional activities operations. Registered nurses working in municipal operations say they have considerably more work control. This is an important health-promoting factor.

With the exception of registered nurses at the beginning of their careers, many subgroups of registered nurses reported that they receive good support and have a strong sense of community at work, as well as control and influence over their jobs.

## Assistant nurses

The results for health and well-being and organisational and social conditions in the work environments of assistant nurses are presented in their entirety in Table 5.

### Health and well-being

Among most subgroups of assistant nurses, the values for self-rated health are marked red and are far worse than the average for the entire Swedish labour market.

The proportion of assistant nurses with mild to severe symptoms of burnout is generally high and varies between 27% for male assistant nurses, and approximately 43% among assistant nurses in the 21–47 years age group. The prevalence of exhaustion is also high among assistant nurses who work an average of more than 45 hours per week.

Similarly, the proportion of assistant nurses who often consider quitting their jobs is high. Among young assistant nurses, and assistant nurses who work more than 45 hours a week, the proportion who think about handing in their notice is over 60%. The proportion is lowest among those over the age of 58.

## Organisational and social conditions in the work environment

Among assistant nurses, the values for the “effort-reward imbalance” and “work-life interference” factors and to some extent for “social support from managers”, were worse than the reference values. In general, assistant nurses have more yellow mean values than both physicians and registered nurses.

The subgroups of assistant nurses who work more than 45 hours per week, and to some extent assistant nurses aged 21–36, report poorer organisational and social conditions in the work environment than other groups.

In comparison with assistant nurses in regional operations, assistant nurses who worked in municipal health care encountered more organisational and social risk factors in their work.

**Tabell 5.** Health and well-being and organisational and social conditions in the work environments of assistant.

■ = Green ▲ = Yellow ▽ = Orange ■ = Red

Assistant nurses	Reference value	Desired value	Gender		Age				Employment		Work experience			Working hours				
			Male	Female	21–36	37–47	48–57	58+	Regional	Municipal	< 5 years	5–15 years	> 15 years	Manager with/without	None	< 36 hours	36–45 hours	> 45 hours
Proportion (%)			10	90	23	23	29	25	30	70	10	38	52	3	97	37	58	6
<b>Health and well-being</b>																		
Self-rated health	61 <sup>b</sup>	H	53	46	44	47	47	50	49	46	46	45	48	55	47	45	48	52
Burnout (%)		L	27	37	43	43	33	24	36	36	40	40	32	32	36	35	36	39
Turnover intention (%)		L	46	46	64	49	44	30	39	49	53	54	39	44	46	45	45	62
<b>Organisational and social conditions in the work environment</b>																		
Effort-reward imbalance	1,1 <sup>c</sup>	L	1,4	1,5	1,6	1,5	1,4	1,4	1,4	1,5	1,4	1,5	1,4	1,2	1,5	1,4	1,5	1,7
Quantitative demands	41 <sup>b</sup>	L	44	42	47	43	41	38	39	43	46	44	40	43	42	40	43	48
Emotional demands	47 <sup>b</sup>	L	48	55	59	56	53	50	52	55	47	56	55	43	54	54	54	59
Work-life interference	40 <sup>b</sup>	L	50	55	59	57	53	49	49	56	56	58	51	49	54	52	55	59
Moral distress	67 <sup>d</sup>	L	61	69	68	69	68	68	65	69	70	67	69	56	68	68	67	79
Unreasonable tasks	50 <sup>d</sup>	L	53	51	58	53	49	43	46	53	54	56	47	49	51	48	52	57
Unnecessary tasks	51 <sup>d</sup>	L	54	50	55	52	50	46	46	52	51	54	48	54	50	48	51	58
Social support from managers	75 <sup>b</sup>	H	64	63	58	66	65	64	69	61	64	63	64	65	63	63	65	54
Social support from colleagues	80 <sup>b</sup>	H	78	82	83	81	79	83	84	80	80	80	83	76	81	82	81	82
Social cohesion	80 <sup>b</sup>	H	84	88	90	86	86	89	88	87	88	86	88	85	87	88	87	88
Work control	37 <sup>d</sup>	H	38	31	30	36	29	30	33	31	38	31	30	51	31	33	32	25
Influence at work	57 <sup>d</sup>	H	50	50	47	50	51	52	56	47	46	49	52	62	50	50	51	44
Meaningfulness at work	66 <sup>d</sup>	H	61	63	58	62	63	67	69	60	60	60	65	72	63	63	64	54
Work rewards	50 <sup>d</sup>	H	50	50	51	50	50	49	52	49	50	50	50	50	50	49	51	46

<sup>a</sup> Indicates whether the desired value is high (H) or low (L)

<sup>b</sup> Reference value for the labour market as a whole (65)

<sup>c</sup> Reference value for a sample from the Swedish labour market (67)

<sup>d</sup> Reference value for all physicians, registered nurses and assistant nurses, calculated from the LOHHCS cohort



## Threats and violence at work

Below is a summary of the prevalence of perceived threats and violence among physicians, registered nurses and assistant nurses in the Swedish municipal and regional healthcare system. First, an overview of all three occupational groups is provided regarding the prevalence of threats and violence, the type of perpetrator, whether the violence was reported to a manager or safety representative, and the extent to which the threatening or violent situation affected the respondent (Table 6). This is followed by a compilation of the prevalence of threats and violence, broken down by gender and workplace for all three occupational groups (Table 7).

### Prevalence of threats and violence at work

Nearly 40% of physicians, registered nurses and assistant nurses in the Swedish municipal and regional healthcare system stated that they had experienced threatening or violent situations at work in the past 12 months (Table 5). More assistant nurses than registered nurses and physicians had been subjected to threats and violence.

Of those who reported that they had experienced threatening or violent situations at work at some point in the past year, more than 98% stated that the perpetrator was a patient or a patient's relative. Just over 1% stated that the violence they had experienced was perpetrated by a colleague or manager in the healthcare system.

Compared to registered nurses, a larger proportion of physicians and assistant nurses reported that the perpetrator was a colleague or manager (2% for physicians and assistant nurses and 1% for registered nurses).

Around one third of those who had experienced threatening or violent situations at work in the past 12 months reported that they had filed a report after each incident. Approximately the same number stated that they had reported some incidents, but not all of them. Assistant nurses were more likely than physicians and registered nurses to report threatening or violent incidents. More than 60% of the physicians who had experienced situations involving threats and violence stated they had not reported the incidents.

Those respondents who stated that they had experienced threatening or violent situations at work were also asked about the extent to which this affected their work. Most respondents said that the incident had not impacted them much (52%). Overall, more assistant nurses stated that threatening or violent situations had affected them to some extent, compared to the other two occupational groups. Physicians were least affected by such incidents, although over 50% of them felt the incident had affected them to some extent.

**Table 6.** The prevalence of threats and violence, overall and by occupational group.

	Overall	Physicians	Registered nurses	Assistant nurses
Experienced threats or violence	40 %	21 %	37 %	46 %
Had not experienced threats or violence	60 %	79 %	63 %	54 %
<b>Perpetrators of threats or violence<sup>a</sup></b>				
Internal only	1 %	2 %	1 %	2 %
External only	98 %	98 %	99 %	98 %
Both internal and external	0 %	1 %	0 %	0 %
<b>Had threatening or violent situation(s) been reported to a manager/safety representative?</b>				
Yes, every time	32 %	21 %	27 %	35 %
Yes, but not every time	29 %	15 %	23 %	34 %
No	39 %	64 %	49 %	31 %
<b>Affected by a threatening or violent situation</b>				
Major impact	13 %	4 %	7 %	17 %
Minor impact	52 %	49 %	54 %	52 %
No impact	35 %	47 %	39 %	31 %

<sup>a</sup> Includes only individuals who stated that they had experienced threats or violence.

### Prevalence of threats and violence for women and men in different workplaces

Certain changes occurred when the occupational groups were divided by workplace and gender instead. A slightly higher proportion of women than men had experienced threatening or violent situations in their workplace over the past 12 months. Among physicians and assistant nurses, the prevalence of threats and violence was evenly distributed between men and women. Around one half of the male registered nurses had experienced threats or violence in the workplace. This was a significantly higher proportion than among female registered nurses.

**Table 7.** The prevalence of threats and violence among physicians, registered nurses and assistant nurses (only those exposed), sorted by occupation and gender.

	Overall		Physicians		Registered nurses		Assistant nurses	
	Male	Female	Male	Female	Male	Female	Male	Female
Experienced threats or violence	35 %	41 %	21 %	21 %	49 %	36 %	42 %	47 %
Municipality	38 %	46 %	N/A	N/A	34 %	29 %	39 %	49 %
Region	34 %	36 %	21 %	21 %	51 %	37 %	51 %	40 %

Among male registered nurses and assistant nurses who worked in regional health care, over 50% stated that they had experienced threatening or violent situations in the past 12 months, compared to their female colleagues, of whom 37–40% reported the same treatment.

For assistant nurses in municipal health care, the prevalence of threats and violence in the workplace was higher among women than men. On the other hand, among assistant nurses who work in regional operations, men had experienced more threatening or violent situations than women.

It is important to point out that there are relatively few male assistant nurses and registered nurses compared to physicians, among whom the gender distribution is more even (See Appendix B).

## **4. Discussion and conclusions**

The purpose of the report was to assess and increase knowledge about organisational and social conditions in the work environment, health, and the well-being of physicians, registered nurses and assistant nurses in Sweden's municipal and regional healthcare system. The purpose was also to identify potential risks in the work environments of these groups.

The report is intended for managers, safety representatives, decision-makers and other people responsible for the work environments of municipal and regional healthcare employers in Sweden. The goal is for the results compiled in the report to serve as a basis for systematic work environment management and for further discussion and reflection on the work environment, health and well-being in workplaces in Sweden's municipal and regional healthcare system.

Using a traffic light system, the report illustrates the factors in the organisational and social work environment that constitute risks and need further assessment and investigation. The report also gives an indication of how various factors can pose a higher or lower risk to groups of physicians, registered nurses and assistant nurses.

In the following section, the results are discussed in relation to national and international scientific research. We then describe how they can be used and followed up in practice. The aim is for this information to be used in the systematic work environment management of Sweden's healthcare sector.

### **Health, well-being and organisational and social conditions in the work environment: the report's results in relation to national and international research**

The results of this report indicate that among professionally active physicians, registered nurses and assistant nurses in the Swedish municipal and regional healthcare system, three out of ten had mild to severe symptoms of burnout and many of them – especially assistant nurses – self-rated their health as poor. Unless they are mitigated or prevented, symptoms of burnout and ill health can lead to further ill health, illness and eventually sick leave. Lidwall et al. (68) determined that when examined as a subgroup of service sector workers, healthcare professionals had a higher risk of sick leave due to mental illness, compared to employees in other business areas in the same sector.

The results presented in this report about the health of physicians, registered nurses and assistant nurses in the Swedish healthcare system are in line with international research results (55, 69–71).

The WHO stresses that the mental health of healthcare professionals is threatened by the challenges in the global work environment of stress and understaffing. These challenges came to the fore in the aftermath of the COVID-19 pandemic (72–74). Despite the fact that the authorities have declared the pandemic over, healthcare systems remain under pressure as a result of, for example, inflation, long waiting times for care (related to the fact that many operations were put on hold during the pandemic), and staff shortages.

O'Connor et al. (3) and West et al. (75) state that among healthcare professionals, burnout resulting from poor working conditions is a growing global challenge. A substandard work environment is also linked to an increased propensity to leave a workplace, and sometimes even to quit an occupation altogether (75–77). The results of this report indicate that one third of physicians and nearly one half of all assistant nurses have considered leaving their jobs in the past month. However, this pattern of turnover intention is not unique to Sweden; it has also been estimated that by 2030 there will be a global healthcare worker shortage of up to 15 million employees (78). Sweden's municipal healthcare system is expected to face a deficit of 14,000 assistant nurses (including care assistants) per year (79). When staff quit or go on sick leave, a negative spiral may be created. The workload of those who remain on the job increases and working conditions deteriorate. This, in turn, can compel more people to quit or go on sick leave. It is important that such negative spirals are counteracted before they become whirlpools.

## **Risks in the work environment**

Workers exposed to risk factors in their organisational and social work environment – such as an effort-reward imbalance, demands at work, work-life interference, moral distress and illegitimate work tasks – are more likely to develop illness and poor well-being (32, 33). Exposure to these factors therefore creates risks in the work environment, which must be assessed and remedied in accordance with the Work Environment Act and the provisions of the Swedish Work Environment Authority.

The organisational and social work environment factors that consistently stood out in this report were effort-reward imbalance and work-life interference. Research shows that physicians in Sweden who experience an effort-reward imbalance are 11 times more likely to exhibit symptoms of burnout than those who do not perceive such an imbalance (80). Both international and national research has identified work-life interference as a risk factor for both mental illness (53, 75, 81, 82) and sick leave (41) among healthcare professionals. All three studied occupational groups and the subgroups within each of them had a low opinion of the amount of social support they received from supervisors and their organisation, compared to the overall situation in the labour market. The loss of or lack of social support can make healthcare professionals more apt to quit their jobs and increase the risk of burnout (1).

The results of the report indicate that physicians, registered nurses and assistant nurses may be exposed to various work environment risks. Physicians

were subjected to a high level of quantitative demands, while registered nurses reported that they faced great emotional demands.

This pattern, in which different occupational groups perceive their work environment differently, even if they work at the same workplace, is also confirmed in a report from the Swedish Agency for Health Technology Assessment (SBU) (12). In its report, the SBU emphasises – for healthcare professionals specifically, but also for the working age population in general – that different occupations entail different tasks, and thus different job demands at work (12). Research indicates that risks in the work environment can also vary between different wards and units (83). The design and content of work in a psychiatric ward may differ from work in an intensive care unit. To address risks, interventions must be designed based on the needs of the occupation and the specific needs of individuals in a particular workplace.

This report also reveals significant variations, not only between occupations but also within them. It shows that regardless of occupational category, employees who work more than 45 hours per week consistently face more organisational and social work environment factors that pose a higher risk of illness. Among physicians, the proportion who estimate that they work more than 45 hours per week is significantly higher than among registered nurses and assistant nurses. At the same time, research shows that long working weeks in themselves increase the risk of physical and mental illness (84, 85, 85, 86), accidents (87) and sleep problems (88, 89), as well as the risk of work-life interference (90).

Younger and newly graduated physicians and registered nurses were another group that demonstrated high undesirable values in the organisational and social work environment. Extensive Swedish research has followed nursing students in their transition to working life and early years in their profession (6, 7, 91). These studies show that it is a stressful period (92). Furthermore, those healthcare professionals who report mental illness at the beginning of their careers are more likely to report burnout and sick leave at a later stage in their working lives (7, 91). There are far fewer studies on young physicians, but those studies that do exist indicate that this group faces a similar situation (93).

It is important to underscore that the combination of multiple risk factors can increase the risk of illness. For example, the combination of high job demands and low level of control and influence can contribute to illness (94). In our report, physicians reported high job demands and a low level of control but a high level of influence at work, registered nurses high job demands and a high level of control and influence, and assistant nurses reported slightly worse values than the reference values for job demands and level of control and influence at work. When delving deeper into an investigation of the work environment, it is important to consider the interaction between risk factors.

The social and organisational factors, as well as the categorical divisions highlighted in this report, are only some of the factors in the work environment that constitute a risk of illness. For example, research shows that healthcare professionals shoulder a heavy physical workload, and that musculoskeletal disorders are widespread (95). Similarly, previous Swedish studies have indicated

that people with night jobs and shift work are at a higher risk of developing diabetes (96), cardiovascular disease (97) and certain types of cancer (98). Physicians and registered nurses who lack the opportunity to recover both during and between shifts are more likely to mistreat patients, experience accidents and develop mental illness (3, 99).

## **Protective and health-promoting factors in the work environment**

Social support, control, influence and meaningfulness at work can protect against exposure to organisational and social risks in the work environment and promote employees' health. Among other things, research has emphasised that access to resources at work may be more important for health than the absence of potential risk factors such as high job demands, low level of control and stress (100).

The results of this report indicate that compared to the labour market in general, physicians, registered nurses and assistant nurses in Sweden's municipal and regional healthcare system seem to receive a high level of social support from colleagues and feel a strong sense of community at work. This applies to all three of the studied occupational groups, but especially to registered nurses. Social support is important in a workplace, because it can act as a buffer against potential risk factors (12, 31, 54). Among other benefits, good relationships between healthcare professionals have been tied to a willingness to remain in their profession (77). The climate of a workplace benefits from a high level of social support and a strong sense of community (101). It is therefore important to empower healthcare professionals to create and maintain good social relationships.

This report indicates that first-line managers do not receive the support or resources they need to be able to act as supportive managers, and the scientific literature supports this result (102, 103). A employees' well-being and performance on the job depend on reciprocity between the employee and the organisation in which they are employed (103). This means that even if an employee feels a strong sense of community in their workplace, with ample support from colleagues, these protective factors only help to the extent that the system and the work climate allow.

## **Threats and violence in the workplace**

The results show that nearly 40% of physicians, registered nurses and assistant nurses in the municipal and regional healthcare system had experienced threatening or violent situations at work in the past 12 months. It was mainly patients or patients' relatives who had subjected them to threats or violence. Previous scientific literature indicates that threats and violence are common in healthcare settings (104–106). The large number of situations involving threats and violence can be partially explained by the occupational role of healthcare professionals, for whom patient interaction is a key part of their work, and

with it an inherent risk of encountering angry and aggressive patients and their relatives (104). Assistant nurses report the highest number of incidents of threats and violence. This confirms previous research that found assistant nurses to be most likely to be scratched, struck or kicked by patients and clients (104).

When it comes to reporting threatening or violent incidents to managers or safety representatives, the results of the survey varied significantly. One study shows that when incidents of threats and violence go unreported, it tends to normalise threats and violence in healthcare settings (105). This, in turn, can contribute to a societal view that threats and violence are part of working in the healthcare field. Although such incidents may already have been normalised somewhat, a majority of healthcare professionals who have experienced threatening or violent situations state that it affected them in their work.

There is a proven link between experiencing threats and violence in the workplace, a higher risk of burnout, and lower job satisfaction (106). In the long term, this increases the risk of more people leaving their jobs or profession, which would exacerbate the current care crisis (3, 75–78).

To counteract the normalisation and prevalence of threats and violence in health care, every healthcare facility should be required to provide relevant training, have clear safety procedures in place, and take preventive measures (104, 106). It is important that there is zero tolerance of threats and violence, regardless of who the perpetrator is, and that risk assessments are conducted to identify when, where and how threats and violence could occur.

The provisions of the Swedish Work Environment Authority regarding the organisational and social work environment also state that the workplace must be free from victimisation. In an ongoing study (107), researchers have shown, for example, that compared to their colleagues, female physicians and registered nurses born outside Europe report a higher proportion of abusive mistreatment at work (in the form of identity-based harassment and being made to feel invisible).

## **The report as a basis for work environment management in Sweden's municipal and regional healthcare system**

Over the years, a number of Swedish reports have compiled knowledge about how organisational and social factors at work affect the health and well-being of employees. All the reports have repeatedly emphasised the importance of work environment design in the creation of a healthy workplace (12, 53, 54).

As regards healthcare professionals, previous research has examined, at both individual and group level, how working conditions (for example, working hours, work demands, workload and social support) can affect employees' well-being and level of burnout (1, 3, 75, 101, 108). Against this background,



the knowledge base in this report has been developed to identify which factors in the social and organisational work environment constitute risks in the work of physicians, registered nurses and assistant nurses in Sweden's municipal and regional healthcare system.

How can this report be used for further work? The results of this report are presented at the group level and indicate that factors in the organisational and social work environment differ both between and within the investigated occupational groups. In other words, different groups have different experiences and needs. The report can thus serve as a starting point for future, more targeted work. The next step should be to perform a survey of the work environment at the workplace or operational level, in order to identify current problem areas or risks.

Before a work environment is investigated, the purpose and goals of the investigation should be clarified.

Improving the organisational and social conditions of a work environment is a process that entails multiple levels of work. It is important to look at the "big picture", in which the organisation, employees and patients interact with each other.

To create a sustainable healthcare system in which staff are in good health and want to remain in their jobs, long-term organisational and systematic work is needed.

The data used in this report were collected during the spring and autumn of 2022. In the spring of 2022, the COVID-19 pandemic was still ongoing and then subsided during the summer.

Some respondents completed the survey while the healthcare system was still in pandemic mode. However, we know that even after the pandemic, the healthcare system has remained under high pressure. During the COVID-19 crisis, planned care took a back seat to emergency care, causing queues to grow. After the pandemic, the prevalence of other viruses increased and some hospitals were put on high alert (109). In 2023, inflation hit health care hard and many of Sweden's regions entered a financial decline (110). At the same time, the country's healthcare system is facing extensive challenges, among them increased demand, an ageing population, increased costs and potential future pandemics. To meet these challenges, Sweden's healthcare system must allocate resources to ensure that staff remain healthy and want to remain in their jobs.

Several studies and a number of reports have tested and compiled effective interventions for the healthcare sector (101, 111). However, the effectiveness of the interventions depends on how well they are adapted and implemented in organisations characterised by complex adaptive systems (112–114), such as healthcare enterprises. Efficacy and outcome also depend on the extent to which the relevant stakeholders and organisational levels are integrated into all phases of a change.

There is extensive literature describing how intervention and implementation can be conducted and evaluated systematically, through an interaction between the organisation, healthcare workers and patients (111). The Swedish Agency for Work Environment Expertise, the Swedish Work Environment Authority, Prevent, and Suntarbetsliv<sup>13</sup> have developed a number of easy-to-use checklists and guides to simplify systematic work environment management for employers.

As regards measures to reduce the risk of threatening or violent incidents, a wealth of materials and resources have been developed specifically for the healthcare sector. Research stresses the importance of relevant training, clear security procedures, as well as measures to counter threats and violence (55). Tools for preventing threats and violence are also available from Suntarbetsliv, which provides support for well-functioning work environment management in the form of checklists and practical measures (115).

## **Methodological discussions**

The comparison of the report's results with the reference values can yield opportunities, but with some limitations. The main opportunity is to frame the results in a broader perspective. A mean value of 35 is of little importance if it cannot be compared with something.

For most values, we compare our values with those of the labour market in general, using the COPSOQ. The COPSOQ is designed to be used for both research and risk assessment in the workplace. In a scientific study, reference values have been determined in a Swedish context that provides an indication of whether a mean value for a certain factor is better or worse (65). To calculate these reference values, intersectional data from a sample of Swedish workers in various sectors and industries were used. Their validity and reliability have been confirmed (65). To the extent possible, in calculating the values for which we did not apply the COPSOQ, we used scientific literature with a study population from the Swedish labour market, or from a Swedish context. In cases in which we did not find any reference values, we created them ourselves using data on all individuals in the LOHHCS cohort. This is a limitation, as these reference values have not been validated and are only based on data from the healthcare sector.

The data on which the results of the report are based are derived from a representative sample of physicians, registered nurses and assistant nurses working in Sweden. With the help of its registers, Statistics Sweden calculated the calibration weighting for our representative sample. When we use its weighting, the generalisability of the results increases and we can say with a good level of certainty that they correspond to the situation in Sweden's municipal and regional healthcare system.

---

13 A non-profit organisation run by trade unions together with the Swedish Association of Local Authorities and Regions and the Swedish Municipal Employers' Association. It is tasked with collecting knowledge about preventive, health-promoting and rehabilitative efforts in the field of work environment.

### **Key points for sustainable health and medical care**

- Compared to the Swedish labour market in general, physicians, registered nurses and assistant nurses in the Swedish municipal and regional healthcare system experience a poorer organisational and social work environment. It is important to recognise and address this challenge in order to promote the well-being of healthcare professionals and allow them to thrive both personally and professionally.
- Different occupational groups experience different conditions, with clear differences both between and within professions. To improve the organisational and social work environment in this sector, interventions ought to be adapted to meet the specific needs of both the target group and the context. This requires efforts at the organisational, group and individual level.
- In the healthcare occupations studied for this report, risk groups can be identified. Regardless of occupation, factors such as age, work experience and working hours seem to be strong determinants of how an individual perceives their work environment.
- Efforts to deal with threats and violence should focus on jobs involving direct contact with patients; assistant nurses in particular constitute a group with a special need for support. By offering appropriate support and implementing preventive measures, a safer working environment can be created for these healthcare professionals.

# References

1. Teoh KRH, Hassard J, Cox T. Doctors' working conditions, wellbeing and hospital quality of care: A multilevel analysis. *Safety Science*. 2021;135:105115.
2. Teoh KRH, Hassard J, Cox T. Doctors' perceived working conditions and the quality of patient care: a systematic review. *Work & Stress*. 2019;33(4):385–413.
3. O'Connor DB, Hall LH, Johnson J. Job Strain, Burnout, Wellbeing and Patient Safety in Healthcare Professionals. I: Montgomery A, van der Doef M, Panagopoulou E, Leiter MP, redaktörer. *Connecting Healthcare Worker Well-Being, Patient Safety and Organisational Change* [Internet]. Cham: Springer International Publishing; 2020 [citerad 24 maj 2023]. s. 11–23. (Aligning Perspectives on Health, Safety and Well-Being). Tillgänglig vid: [https://link.springer.com/10.1007/978-3-030-60998-6\\_2](https://link.springer.com/10.1007/978-3-030-60998-6_2)
4. Schaufeli WB, Taris TW. The conceptualization and measurement of burnout: Common ground and worlds apart. *Work & Stress*. 2005;19(3):256–62.
5. Bakker AB, Demerouti E, Sanz-Vergel A. Job Demands–Resources Theory: Ten Years Later. *Annual Review of Organizational Psychology and Organizational Behavior*. 2023;10(1):25–53.
6. Gustavsson JP, Hallsten L, Rudman A. Early career burnout among nurses: Modelling a hypothesized process using an item response approach. *International Journal of Nursing Studies*. 2010;47(7):864–75.
7. Rudman A, Arborelius L, Dahlgren A, Finnes A, Gustavsson P. Consequences of early career nurse burnout: A prospective long-term follow-up on cognitive functions, depressive symptoms, and insomnia. *EClinicalMedicine*. 2020;27:100565.
8. Grossi G, Perski A, Osika W, Savic I. Stress-related exhaustion disorder – clinical manifestation of burnout? A review of assessment methods, sleep impairments, cognitive disturbances, and neuro-biological and physiological changes in clinical burnout. *Scandinavian J Psychology*. 2015;56(6):626–36.
9. Hassard J, Teoh KRH, Visockaite G, Dewe P, Cox T. The cost of work-related stress to society: A systematic review. *Journal of Occupational Health Psychology*. 2018;23(1): 1–17.
10. Teoh K, Hassard J, Blake H. Why Health Care Employers Should Promote Health: The Cost of Ill Health at Work. I: Blake H, Stacey G, redaktörer. *Health and Wellbeing at Work for Nurses and Midwives*. 1:a uppl. Amsterdam: Elsevier Health Sciences; 2022.
11. Arbetsmiljöverket. Systematiskt arbetsmiljöarbete. AFS 2001:1.
12. SBU. Arbetsmiljöns betydelse för symtom på depression och utmattningssyndrom [Internet]. Statens beredning för medicinsk utvärdering; 2014 feb [citerad 28 september 2022] s. 1–526. Report No.: 223. Tillgänglig vid: [https://www.sbu.se/contentassets/800ad7aecf9146c795d3a89c7a957048/arbetsmiljo\\_depression\\_2014.pdf](https://www.sbu.se/contentassets/800ad7aecf9146c795d3a89c7a957048/arbetsmiljo_depression_2014.pdf)
13. World Health Organization. Basic documents [Internet]. 49th ed. Geneva: World Health Organization; 2020 [citerad 28 september 2022]. 238 s. Tillgänglig vid: <https://apps.who.int/iris/handle/10665/339554>
14. Socialstyrelsen. Begrepp inom området psykisk hälsa [Internet]. Stockholm: Socialstyrelsen; 2020 [citerad 28 september 2022] s. 24. Report No.: Version 2020. Tillgänglig vid: [https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/dokument-webb/ovrigt/pm\\_begrepp-inom-området-psykisk-halsa.pdf](https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/dokument-webb/ovrigt/pm_begrepp-inom-området-psykisk-halsa.pdf)
15. Folkhälsomyndigheten. Folkhälsan i Sverige – Årsrapport 2023. Solna och Östersund: Folkhälsomyndigheten; 2023. Report No.: 23052.
16. Fayers PM, Sprangers MAG. Understanding self-rated health. *The Lancet*. 19 januari 2022;2022(359).
17. Socialstyrelsen. Rekommendationer och indikatorer. Socialstyrelsen; 2017 [citerad 05 mars 2023]. Utmattningssyndrom. Tillgänglig vid: <https://roi.socialstyrelsen.se/fmb/utmattningssyndrom/546>
18. Institutet för stressmedicin ISM. Västra götalandregionen - Institutet för stressmedicin. 2023 [citerad 27 juni 2023]. Diagnostik Utmattningssyndrom. Tillgänglig vid: [https://www.vgregion.se/ov/ism/stress-rad-och-behandling/for\\_vardgivare/diagnostik/](https://www.vgregion.se/ov/ism/stress-rad-och-behandling/for_vardgivare/diagnostik/)

19. Schaufeli WB, Desart S, De Witte H. Burnout Assessment Tool (BAT)—Development, Validity, and Reliability. *IJERPH*. 2020;17(24):9495.
20. Demerouti E, Bakker AB, Nachreiner F, Schaufeli WB. The job demands-resources model of burnout. *Journal of Applied Psychology*. juni 2001;86(3):499–512.
21. Cotton JL, Tuttle JM. Employee Turnover: A Meta-Analysis and Review with Implications for Research. *The Academy of Management Review*. januari 1986;11(1):55.
22. Thun S, Halsteinli V, Løvseth L. A study of unreasonable illegitimate tasks, administrative tasks, and sickness presenteeism amongst Norwegian physicians: an everyday struggle? *BMC Health Serv Res*. 2018;18(1):407.
23. Kilponen K, Huhtala M, Kinnunen U, Mauno S, Feldt T. Illegitimate tasks in health care: Illegitimate task types and associations with occupational well-being. *Journal of Clinical Nursing*. 2021;30(13–14):2093–106.
24. Gillet N, Fouquereau E, Coillot H, Cougot B, Moret L, Dupont S, m.fl. The effects of work factors on nurses' job satisfaction, quality of care and turnover intentions in oncology. *Journal of Advanced Nursing*. 2018;74(5):1208–19.
25. Vu-Eickmann P, Li J, Müller A, Angerer P, Loerbroks A. Associations of psychosocial working conditions with health outcomes, quality of care and intentions to leave the profession: results from a cross-sectional study among physician assistants in Germany. *Int Arch Occup Environ Health*. juli 2018;91(5):643–54.
26. Cohen G, Blake RS, Goodman D. Does Turnover Intention Matter? Evaluating the Usefulness of Turnover Intention Rate as a Predictor of Actual Turnover Rate. *Review of Public Personnel Administration*. 01 september 2016;36(3):240–63.
27. Hann M, Reeves D, Sibbald B. Relationships between job satisfaction, intentions to leave family practice and actually leaving among family physicians in England. *The European Journal of Public Health*. 01 augusti 2011;21(4):499–503.
28. Ahlstedt C, Moberg L, Brulin E, Nyberg A. Do illegitimate tasks matter for registered nurses' work motivation? A cross-sectional study based on a nationally representative sample of Swedish nurses. *International Journal of Nursing Studies Advances*. oktober 2023;100159.
29. Arbetsmiljöverket. Organisatoriskt och social arbetsmiljö. *Organisatorisk och social arbetsmiljö*, AFS 2015:4.
30. Siegrist J, Starke D, Chandola T, Godin I, Marmot M, Biedhammer I, m.fl. The Measurement of Effort-Reward Imbalance at Work. *Social Science & Medicine*. 2004;(58):1483–99.
31. Aronsson G, Hellgren J, Isaksson K, Johansson G, Sverke M, Torbiörn I. *Arbets- & organisationspsykologi: individ och organisation i samspel*. Vol. 2013. Stockholm: Natur & Kultur; 2012.
32. Niedhammer I, Bertrais S, Witt K. Psychosocial work exposures and health outcomes: a meta-review of 72 literature reviews with meta-analysis. *Scand J Work Environ Health*. 01 oktober 2021;47(7):489–508.
33. Harvey SB, Modini M, Joyce S, Milligan-Saville JS, Tan L, Mykletun A, m.fl. Can work make you mentally ill? A systematic meta-review of work-related risk factors for common mental health problems. *Occup Environ Med*. april 2017;74(4):301–10.
34. Karasek R, Theorell T. *Healthy work: stress, productivity, and the reconstruction of working life*. New York, N.Y.: Basic Books; 1990.
35. Häusser JA, Mojzisch A, Niesel M, Schulz-Hardt S. Ten years on: A review of recent research on the Job Demand–Control (–Support) model and psychological well-being. *Work & Stress*. 2010;24(1):1–35.
36. Greenhaus J, Allen T, Spector P. Health Consequences of Work–Family Conflict: The Dark Side of the Work–Family Interface. I: *Research in Occupational Stress and Well-being*. 2006. s. 61–98.
37. Greenhaus J, Beutell NJ. Sources of conflict between work and family roles. *The Academy of Management Review*. 1985;10(1):76–88.
38. Fisher GG, Bulger CA, Smith CS. Beyond work and family: A measure of work/nonwork interference and enhancement. *Journal of Occupational Health Psychology*. 2009;14(4):441–56.

39. Engman F, Nordin A, Hagqvist E. Obalans mellan arbetet och privatlivet bland offentliganställda: betydelsen av kontroll och socialt stöd på arbetsplatsen. *Socialmedicinsk tidskrift*. 2017;94(5):610–22.
40. Lidwall U, Marklund S, Voss M. Work-family interference and long-term sickness absence: a longitudinal cohort study. *The European Journal of Public Health*. 2010;20(6):676–81.
41. Hagqvist E, Lidwall U, Leineweber C. Is work–life interference a risk factor for sickness absence? A longitudinal study of the Swedish working population. *European Journal of Public Health*. 2022;32(3):398–401.
42. Corley MC. Nurse Moral Distress: a proposed theory and research agenda. *Nurs Ethics*. november 2002;9(6):636–50.
43. Cronqvist A, Lützén K, Nyström M. Nurses' lived experiences of moral stress support in the intensive care context. *Journal of Nursing Management*. 2006;14(5):405–13.
44. Jameton A. *Nursing Practice: The Ethical Issues*. Englewood Cliffs, NJ: Prentice-Hall; 1984.
45. Källemark S, Höglund AT, Hansson MG, Westerholm P, Arnetz B. Living with conflicts-ethical dilemmas and moral distress in the health care system. *Social Science & Medicine*. mars 2004;58(6):1075–84.
46. Lützén K, Cronqvist A, Magnusson A, Andersson L. Moral Stress: synthesis of a concept. *Nurs Ethics*. 2003;10(3):312–22.
47. Karakachian A, Colbert A. Nurses' Moral Distress, Burnout, and Intentions to Leave: An Integrative Review. *Journal of Forensic Nursing*. juli 2019;15(3):133–42.
48. Aronsson G. Onödiga och oskäligen arbetsuppgifter bland läkare. *Läkartidningen*. 2012;109(48):2216–9.
49. Semmer N, Jacobshagen N, Meier LL, Alfring A, Beehr TA, Kälin W, m.fl. Illegitimate tasks as a source of work stress. *Work & Stress*. 2015;29(1):32–56.
50. Aronsson G, Mellner C. Illegitima arbetsuppgifter och identitet - en introduktion. *Arbetsmarknad och arbetsliv*. 2016;22(3/4):28–46.
51. Bejerot E, Hasselbladh H. Läkarkåren en profession med allt mindre stöd och inflytande. 2011;5.
52. Bejerot E, Gustavsson M, Hasselbladh H, Kankkunen TF, Ekberg K. Occupational Control on Drift—National and Local Intervention in Clinical Work at Emergency Departments. *Professions and Professionalism*. 24 april 2017;7(2):e1765–e1765.
53. Myndigheten för arbetsmiljökunskap. *Arbetsmiljö och psykisk hälsa. Gävle: Myndigheten för arbetsmiljökunskap; 2021. Report No.: 2021:4.*
54. Eva Vingård. En kunskapsöversikt – Psykisk ohälsa, arbetsliv och sjukfrånvaro [Internet]. Stockholm: FORTE; 2020 [citerad 28 september 2022] s. 20. Tillgänglig vid: <https://forte.se/app/uploads/2015/04/psykisk-ohalsa-arbetsliv-2020.pdf>
55. Chakraborty S, Mashreky SR, Dalal K. Violence against physicians and nurses: a systematic literature review. *J Public Health-Heidelberg*. 2022;30(8):1837–55.
56. Arbetsmiljöverket, Myndigheten för arbetsmiljökunskap. Friskfaktorer som kan mätas och följas över tid. Solna & Gävle: Arbetsmiljöverket & Myndigheten för arbetsmiljökunskap; 2021 s. 48. Report No.: 2021:2; 2021:1.
57. Crawford ER, LePine JA, Rich BL. Linking job demands and resources to employee engagement and burnout: A theoretical extension and meta-analytic test. *Journal of Applied Psychology*. september 2010;95(5):834–48.
58. Försäkringskassan. Stressrelaterade sjukskrivningar ökar igen efter pandemin [Internet]. Försäkringskassan; 2022 [citerad 27 oktober 2022]. Tillgänglig vid: [https://www.forsakringskassan.se/statistik/statistikdatabas!/ut/p/z1/04\\_Sj9CPyky0xPLMnMz0vMAfljo8ziLQI8TDy8Dlx8Ddy8jQwCfZ3dLUxDPY1dnE30w8EK-DHAARwP9KEL6o8BKTDxcnA3dnQ283b083QwcQ4L8TD2Nfa0Nngo2hCvBY-UZAbYZDpqKglAP7D\\_6I!/#!/sjuk/sjp-pagaende-sjukfall-diagnos-f43](https://www.forsakringskassan.se/statistik/statistikdatabas!/ut/p/z1/04_Sj9CPyky0xPLMnMz0vMAfljo8ziLQI8TDy8Dlx8Ddy8jQwCfZ3dLUxDPY1dnE30w8EK-DHAARwP9KEL6o8BKTDxcnA3dnQ283b083QwcQ4L8TD2Nfa0Nngo2hCvBY-UZAbYZDpqKglAP7D_6I!/#!/sjuk/sjp-pagaende-sjukfall-diagnos-f43)
59. Lidwall U. Sjukfrånvaro i psykiatriska diagnoser [Mental disorder sick leave - A register study of the Swedish working population in ages 20 to 69 years]. [Internet]. Stockholm: Försäkringskassan; 2020 [citerad 22 december 2022]. Report No.: 19. Tillgänglig vid: <https://www.forsakringskassan.se/download/18.7fc616c01814e-179a9f329/1656660446139/sjukfranvaro-i-psykiatriska-diagnoser-socialforsakrings-rapport-2020-8.pdf>

60. Hagqvist E, Kerstin Ekberg, Lidwall U, Nyberg A, Landstad BJ, Wilczek A, m.fl. The Swedish HealthPhys Study: Study Description and Prevalence of Clinical Burnout and Major Depression among Physicians. *Chronic Stress*. 2022;6:1–8.
61. Besèr A, Sorjonen K, Wahlberg K, Peterson U, Nygren Å, Åsberg M. Construction and evaluation of a self rating scale for stress-induced Exhaustion Disorder, the Karolinska Exhaustion Disorder Scale. *Scandinavian Journal of Psychology*. 2014;55(1):72–82.
62. Jacobshagen N. *Illegitimate tasks, illegitimate stressors: Testing a New stressor-strain concept*. Bern: University of Bern; 2006.
63. Cotton JL, Tuttle JM. Employee Turnover: A Meta-Analysis and Review with Implications for Research. *The Academy of Management Review*. januari 1986;11(1):55.
64. Forde R, Aasland OG. Moral distress among Norwegian doctors. *Journal of Medical Ethics*. 01 juli 2008;34(7):521–5.
65. Berthelsen H, Westerlund H, Bergström G, Burr H. Validation of the Copenhagen Psycho-social Questionnaire Version III and Establishment of Benchmarks for Psychosocial Risk Management in Sweden. *IJERPH*. 2020;17(9):3179.
66. Burr H, Berthelsen H, Moncada S, Nübling M, Dupret E, Demiral Y, m.fl. The Third Version of the Copenhagen Psychosocial Questionnaire. *Saf Health Work*. december 2019;10(4):482–503.
67. Leineweber C, Eib C, Bernhard-Oettel C, Nyberg A. Trajectories of effort-reward imbalance in Swedish workers: Differences in demographic and work-related factors and associations with health. *Work & Stress*. 2020;34(3):238–58.
68. Lidwall U, Bill S, Palmer E, Olsson Bohlin C. Mental disorder sick leave in Sweden: A population study. *WOR*. 2018;59(2):259–72.
69. Taylor C, Mattick K, Carrieri D, Cox A, Maben J. 'The WOW factors': comparing work-force organization and well-being for doctors, nurses, midwives and paramedics in England. *British Medical Bulletin*. 21 mars 2022;141(1):60–79.
70. Schneider A, Weigl M. Associations between psychosocial work factors and provider mental well-being in emergency departments: A systematic review. Van Bogaert P, redaktör. *PLoS ONE*. 04 juni 2018;13(6):e0197375.
71. Broetje S, Jenny GJ, Bauer GF. The Key Job Demands and Resources of Nursing Staff: An Integrative Review of Reviews. *Front Psychol*. 31 januari 2020;11:84.
72. World Health Organization. *Global strategy on human resources for health: workforce 2030* [Internet]. Geneva: World Health Organization; 2016 [citerad 30 maj 2023]. 64 s. Tillgänglig vid: <https://apps.who.int/iris/handle/10665/250368>
73. World Health Organization. *Working for health and growth: investing in the health workforce* [Internet]. Geneva: World Health Organization; 2016 [citerad 30 maj 2023]. 56 s. Tillgänglig vid: <https://apps.who.int/iris/handle/10665/250047>
74. World Health Organization. *Health workforce policy and management in the context of the COVID-19 pandemic response*. Geneva: World Health Organization; 2020 dec s. 1–33.
75. West CP, Dyrbye LN, Shanafelt TD. Physician burnout: contributors, consequences and solutions. *Journal of Internal Medicine*. 2018;283(6):516–29.
76. Eriksson A, Jutengren G, Dellve L. Job demands and functional resources moderating assistant and Registered Nurses' intention to leave. *Nurs Open*. mars 2021;8(2):870–81.
77. Sasso L, Bagnasco A, Catania G, Zanini M, Aleo G, Watson R, m.fl. Push and pull factors of nurses' intention to leave. *Journal of Nursing Management*. 2019;27(5):946–54.
78. Liu JX, Goryakin Y, Maeda A, Bruckner T, Scheffler R. *Global Health Workforce Labor Market Projections for 2030*. *Hum Resour Health*. 2017;15(1):1–12.
79. Wahlgren J. SKR: Kommunerna behöver 14 000 nya undersköterskor och vårdbiträden – varje år. *SVT Nyheter* [Internet]. 27 april 2021 [citerad 14 maj 2023]; Tillgänglig vid: <https://www.svt.se/nyheter/lokalt/orebro/skr-var-bild-ar-att-manga-kommuner-anvant-mojligheten>
80. Christiansen F, Elsert Gynning B, Lashari A, Johansson G, Brulin E. Associations Between Effort-Reward Imbalance and Burnout Among Swedish Physicians.
81. Lee YW, Dai YT, McCreary LL. Quality of work life as a predictor of nurses' intention to leave units, organisations and the profession. *Journal of Nursing Management*. 2015;23(4):521–31.

82. Elsert Gynning B, Christiansen F, Lidwall U, Brulin E. Work-life conflict and associations Impact of work-life and life-work interference on burnout: A longitudinal study of male and female physicians in Sweden. Submitted.
83. Menghini L, Balducci C. The Importance of Contextualized Psychosocial Risk Indicators in Workplace Stress Assessment: Evidence from the Healthcare Sector. *IJERPH*. 22 mars 2021;18(6):3263.
84. Rivera AS, Akanbi M, O'Dwyer LC, McHugh M. Shift work and long work hours and their association with chronic health conditions: A systematic review of systematic reviews with meta-analyses. Beiki O, redaktör. *PLoS ONE*. 02 april 2020;15(4):e0231037.
85. Kivimäki M, Jokela M, Nyberg ST, Singh-Manoux A, Fransson EI, Alfredsson L, m.fl. Long working hours and risk of coronary heart disease and stroke: a systematic review and meta-analysis of published and unpublished data for 603 838 individuals. *The Lancet*. oktober 2015;386(10005):1739–46.
86. Watanabe M, Yamauchi K. The effect of quality of overtime work on nurses' mental health and work engagement. *Journal of Nursing Management*. 2018;26(6):679–88.
87. Matre D, Skogstad M, Sterud T, Nordby KC, Knardahl S, Christensen JO, m.fl. Safety incidents associated with extended working hours. A systematic review and meta-analysis. *Scand J Work Environ Health*. 01 september 2021;47(6):415–24.
88. Virtanen M, Kurvinen T, Terho K, Oksanen T, Peltonen R, Vahtera J, m.fl. Work Hours, Work Stress, and Collaboration Among Ward Staff in Relation to Risk of Hospital-Associated Infection Among Patients. *Medical Care*. mars 2009;47(3):310–8.
89. Wong K, Chan AHS, Ngan SC. The Effect of Long Working Hours and Overtime on Occupational Health: A Meta-Analysis of Evidence from 1998 to 2018. *IJERPH*. 13 juni 2019;16(12):2102.
90. Shanafelt TD, West CP, Sinsky C, Trockel M, Tutty M, Wang H, m.fl. Changes in Burnout and Satisfaction With Work-Life Integration in Physicians and the General US Working Population Between 2011 and 2020. *Mayo Clinic Proceedings*. 2022;97(3):491–506.
91. Rudman A, Gustavsson P, Hultell D. A prospective study of nurses' intentions to leave the profession during their first five years of practice in Sweden. *International Journal of Nursing Studies*. april 2014;51(4):612–24.
92. Flinkman M, Salanterä S. Early career experiences and perceptions – a qualitative exploration of the turnover of young registered nurses and intention to leave the nursing profession in Finland. *Journal of Nursing Management*. 2015;23(8):1050–7.
93. Brulin E, Henriksson K, Landstad BJ. An impaired learning environment: Resident physicians' experience of the transition to pandemic care during the first wave of the COVID-19 pandemic in Sweden. *Front Psychol*. 2023;13:1090515.
94. Thapa DR, Stengård J, Ekström-Bergström A, Areskoug Josefsson K, Krettek A, Nyberg A. Job demands, job resources, and health outcomes among nursing professionals in private and public healthcare sectors in Sweden – a prospective study. *BMC Nurs*. 2022;21(1):140.
95. Bernal D, Campos-Serna J, Tobias A, Vargas-Prada S, Benavides FG, Serra C. 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*. 2015;52(2):635–48.
96. Viklund A, Andersson T, Selander J, Kader M, Albin M, Bodin T, m.fl. Night and shift work patterns and incidence of type 2 diabetes and hypertension in a prospective cohort study of healthcare employees. *Scand J Work Environ Health* [Internet]. 2023 [citerad 15 augusti 2023]; Tillgänglig vid: [http://www.sjweh.fi/show\\_abstract.php?abstract\\_id=4104](http://www.sjweh.fi/show_abstract.php?abstract_id=4104)
97. Kader M, Selander J, Andersson T, Albin M, Bodin T, Härmä M, m.fl. Night and shift work characteristics and incident ischemic heart disease and atrial fibrillation among healthcare employees – a prospective cohort study. *Scand J Work Environ Health*. 2022;48(7):520–9.
98. Gustavsson P, Bigert C, Andersson T, Kader M, Härmä M, Selander J, m.fl. Night work and breast cancer risk in a cohort of female healthcare employees in Stockholm, Sweden. *Occup Environ Med*. 2023;80(7):372–6.
99. Hall LH, Johnson J, Watt I, Tsipa A, O'Connor DB. Healthcare Staff Wellbeing, Burnout, and Patient Safety: A Systematic Review. Harris F, redaktör. *PLoS ONE*. 2016;11(7):e0159015.



100. Marzocchi I, Ghezzi V, Di Tecco C, Ronchetti M, Ciampa V, Olivo I, m.fl. Demand –Resource Profiles and Job Satisfaction in the Healthcare Sector: A Person-Centered Examination Using Bayesian Informative Hypothesis Testing. *IJERPH*. 05 januari 2023;20(2):967.
101. Nilsen P, Fernemark H, Seing I, Skagerström J. Interventioner för god psykosocial hälsa inom hälso- och sjukvården. Gävle: Myndigheten för arbetsmiljökunskap; 2023 s. 1–51. Report No.: 2023:7.
102. McVicar A. Scoping the common antecedents of job stress and job satisfaction for nurses (2000-2013) using the job demands-resources model of stress. *J Nurs Manag*. 2016;24(2):E112–36.
103. Nyberg A, Westerlund H, Magnusson Hanson LL, Theorell T. Managerial leadership is associated with self-reported sickness absence and sickness presenteeism among Swedish men and women. *Scand J Public Health*. 2008;36(8):803–11.
104. Hallberg U. Hot och våld inom vård och omsorg. Solna: Arbetsmiljöverket; 2011 s. 47. Report No.: 2011:16.
105. Jakobsson J, Axelsson M, Örmon K. The Face of Workplace Violence: Experiences of Healthcare Professionals in Surgical Hospital Wards. *Nursing Research and Practice*. 2020;2020:1–10.
106. Mento C, Silvestri MC, Bruno A, Muscatello MRA, Cedro C, Pandolfo G, m.fl. Workplace violence against healthcare professionals: A systematic review. *Aggression and Violent Behavior*. 2020;51(101381):1–8.
107. Forsheden Sidoli E, Elsert Gynning B, Blindow K, Cedstrand E, Sabbath E, Brulin E. Workplace mistreatment of Swedish health care workers: Prevalence, perpetrators, and across profession, sex, and birth country. Submitted.
108. Jönsson S. Psychosocial work environment and prediction of job satisfaction among Swedish registered nurses and physicians - a follow-up study: Psychosocial work environment and prediction of job satisfaction. *Scandinavian Journal of Caring Sciences*. 2012;26(2):236–44.
109. Två regioner och ett sjukhus ännu i höjd beredskap. [citerad 13 november 2023]; Tillgänglig vid: <https://www.dagensmedicin.se/vardens-styrning/patientsakerhet/tva-regioner-och-ett-sjukhus-annu-i-hojd-beredskap/>
110. Mellgren F. Inflation slår ”extremt” mot vården: ”Tufft”. *Svenska Dagbladet* [Internet]. 27 februari 2023 [citerad 13 november 2023]; Tillgänglig vid: <https://www.svd.se/a/rl55de/inflation-slar-mot-sjukvard-810-miljarder-back-for-regioner>
111. Teoh KRH, Dhensa-Kahlon R, Christensen M, Frost F, Hatton E, Nielsen K. Organisational Wellbeing Interventions: Case Studies from the NHS [Internet]. London: Birkbeck University of London; 2023 [citerad 15 augusti 2023] s. 1–57. Tillgänglig vid: [https://www.som.org.uk/sites/som.org.uk/files/Organisational\\_Interventions\\_to\\_Support\\_Staff\\_Wellbeing\\_in\\_the\\_NHS.pdf](https://www.som.org.uk/sites/som.org.uk/files/Organisational_Interventions_to_Support_Staff_Wellbeing_in_the_NHS.pdf)
112. Abildgaard JS, Saksvik PØ, Nielsen K. How to Measure the Intervention Process? An Assessment of Qualitative and Quantitative Approaches to Data Collection in the Process Evaluation of Organizational Interventions. *Front Psychol*. 2016;7:1–10.
113. Heijkants CH, van Hooff MLM, Geurts SAE, Boot CRL. A team level participatory approach aimed at improving sustainable employability of long-term care workers: a study protocol of a randomised controlled trial. *BMC Public Health*. 2022;22:984(1): 1–9.
114. Noyes J, Booth A, Moore G, Flemming K, Tunçalp Ö, Shakibzadeh E. Synthesising quantitative and qualitative evidence to inform guidelines on complex interventions: clarifying the purposes, designs and outlining some methods. *BMJ Glob Health* [Internet]. 2019 [citerad 14 augusti 2023];4(1). Tillgänglig vid: <https://gh.bmj.com/lookup/doi/10.1136/bmjgh-2018-000893>
115. Suntarbetsliv. Säkerhetsdialogen. 2023 [citerad 14 augusti 2023]. Checklistor och stöd. Tillgänglig vid: <https://sakerhetsdialogen.suntarbetsliv.se/checklistor-och-stod/>

# Appendix

**Appendix A:** Description of included measurement instruments, internal validity (Cronbach's Alpha), response options and how they were coded, as well as the sources of the instruments.

**Appendix B:** Categorization of individuals in the LOHHCS cohort for each profession by demographic and work related factors.

**Appendix C:** Color coding of health factors based on reference values.

# Appendix A

Description of included measurement instruments, internal validity (Cronbach's Alpha), response options and how they were coded, as well as the sources of the instruments.

Skala	Källa	Antal frågor	Svarsalternativ	Chronbach's alpha <sup>1</sup>	Hur svaren presenteras/ kodats i rapporten
Självskattad hälsa	COPSOQIII <sup>2</sup>	1	5-gradig skala som sträckte sig från "Utmärkt" till "Dåligt"	Ej aktuellt	Enligt COPSOQIII
Utmattning (KEDS)	Beser m.fl. (1)	9	6 symptom-relaterade svarsalternativ	0,92	Kategoriserades till binär variabel som representerade en grupp med individer med ett medelvärde lika med 19 eller över, samt en grupp för individer med ett medelvärde på 18 eller lägre
Viljan att lämna	Ej aktuellt	1	5-gradig skala från "Varje dag" till "Aldrig"	Ej aktuellt	Modifierad för att motsvara COPSOQIII. Kategoriserades därefter om till en binär variabel som representerade över (kategori 1) och under (kategori 2) studiepopulationens medelvärde på 38.2.
Kvantitativa krav	COPSOQIII	4	5-gradig skala från "Alltid" till "Aldrig"	0,847	Enligt COPSOQ
Känslomässiga krav	COPSOQIII	1	5-gradig skala från "Alltid" till "Aldrig"	Ej aktuellt	Enligt COPSOQ
Obalans mellan arbetet och privatlivet	Fisher m.fl. (2)	5	5-gradig skala från "Inte alls" till "Nästan hela tiden"	0,93	Modifierad för att motsvara COPSOQIII
Moralisk stress	LEFO (3)	5	4-gradig skala från "Inte stressande" till "Mycket stressande", Svarsalternativ 5: "Inte aktuellt"	0,79	Modifierad för att motsvara COPSOQIII
Illegitima arbetsuppgifter	Bern Illegitimate Task Scale (BITS) (4)	Oskäligen uppgifter: 4	5-gradig skala från "Mycket ofta" till "Aldrig"	Oskäligen uppgifter: 0,840	Modifierad för att motsvara COPSOQIII
		Onödigen uppgifter: 4		Onödigen uppgifter: 0,770	
Obalans mellan ansträngning och belöning ERI	Siegrist m.fl. (5)	Ansträngning: 3	4-gradig skala	Ansträngning: 0,786	Presenteras på 2 sätt: - ERI-kvot - Belöning är modifierad för att motsvara COPSOQIII (0 – 33,3 – 66,6 – 100)
		Belöning: 8		Belöning: 0,770	
Socialt stöd från överordnad	COPSOQIII	1	5-gradig skala från "Alltid" till "Aldrig/Nästan aldrig"	Ej aktuellt	Enligt COPSOQIII
Socialt stöd från kollegor	COPSOQIII	1	5-gradig skala från "Alltid" till "Aldrig/Nästan aldrig"	Ej aktuellt	Enligt COPSOQIII

Fortsättning bilaga A.

Skala	Källa	Antal frågor	Svarsalternativ	Chronbach's alpha <sup>1</sup>	Hur svaren presenteras/ kodats i rapporten
Social gemenskap i arbetet	COPSOQIII	1	5-gradig skala från "Alltid" till "Aldrig/Nästan aldrig"	Ej aktuellt	Enligt COPSOQIII
Kontroll i arbetet	Ej aktuellt	8	5-gradig skala från "I mycket hög grad" till "I mycket liten grad"	0,908	Modifierad för att motsvara COPSOQIII
Inflytande	LEFO (3)	3	5-gradig skala från "I mycket hög grad" till "I mycket liten grad"	0,779	Modifierad för att motsvara COPSOQIII
Meningsfullhet	Ej aktuellt	1	5-gradig skala från "Mycket nöjd" till "Mycket missnöjd"	Ej aktuellt	Modifierad för att motsvara COPSOQIII

<sup>1</sup> Ett mått på hur väl de enskilda uppgifterna i ett test eller frågeformulär mäter samma sak.

<sup>2</sup> Läs mer om COPSOQ, dess utformning och praktiska användningsområden på [www.COPSOQ.se](http://www.COPSOQ.se)

**Referenser för mätinstrument**

1. Besèr A, Sorjonen K, Wahlberg K, Peterson U, Nygren Å, Åsberg M. Construction and evaluation of a self rating scale for stress-induced Exhaustion Disorder, the Karolinska Exhaustion Disorder Scale. *Scandinavian Journal of Psychology*. 2014;55(1):72–82.
2. Fisher GG, Bulger CA, Smith CS. Beyond work and family: A measure of work/nonwork interference and enhancement. *Journal of Occupational Health Psychology*. 2009;14(4):441–56.
3. Forde R, Aasland OG. Moral distress among Norwegian doctors. *Journal of Medical Ethics*. 01 juli 2008;34(7):521–5.
4. Jacobshagen N. ILLEGITIMATE TASKS, ILLEGITIMATE STRESSORS: TESTING A NEW STRESSOR-STRAIN CONCEPT. Bern: University of Bern; 2006.
5. Siegrist J, Starke D, Chandola T, Godin I, Marmot M, Biedhammer I, m.fl. The Measurement of Effort-Reward Imbalance at Work. *Social Science & Medicine*. 2004;(58):1483–99.

# Appendix B

Categorization of individuals in the LOHHCS cohort for each profession by demographic and work related factors with calibration weights.

Kategorisering	Kommunal och regional hälso- och sjukvård	Läkare	Sjuksköterskor	Undersköterskor
<b>Demografi</b>				
<b>Andel</b>	100% (253.873)	13% (33.144)	33%(86.160)	53% (134.568)
<b>Kön</b>				
Män	15%	48%	12%	10%
Kvinnor	85%	52%	89%	90%
<b>Ålder</b>				
21–36	26%	30%	30%	23%
37–47	25%	33%	26%	23%
48–57	26%	18%	24%	29%
58+	23%	19%	20%	25%
<b>Födelseland</b>				
Inom Sverige	80%	71%	92%	75%
Inom Europa	10%	21%	5%	10%
Utom Europa	10%	8%	3%	15%
<b>Arbete</b>				
<b>Arbetserfarenhet</b>				
< 5 år	15%	20%	20%	10%
5-15 år	36%	38%	32%	38%
> 15 år	50%	42%	48%	52%
<b>Ledningsgruppsansvar*</b>				
MLA	2%	17%	Ej aktuellt	Ej aktuellt
MAS	2%	Ej aktuellt	5%	Ej aktuellt
Chef med personal	3%	5%	4%	3%
Inget	92%	79%	91%	97%
<b>Abetstimmar per vecka</b>				
< 36h	31%	11%	30%	37%
36-45h	59%	50%	65%	58%
> 45h	10%	40%	5%	6%
<b>Rang (endast läkare)</b>				
Läkare under träning	38%	38%	Ej aktuellt	Ej aktuellt
Specialister	26%	26%	Ej aktuellt	Ej aktuellt
Överläkare	36%	36%	Ej aktuellt	Ej aktuellt
<b>Anställningsplats</b>				
Region	43%	100%	81%	30%
Kommun	57%	Ej aktuellt	19%	70%

\* Möjligt att inneha flera roller

# Appendix B

Categorization of individuals in the LOHHCS cohort for each profession by demographic and work related factors without calibration weights.

Kategorisering	Kommunal och regional hälso- och sjukvård	Läkare	Sjuksköterskor	Undersköterskor
<b>Demografi</b>				
<b>Andel</b>	100% (253.873)	13,1% (33.144)	33,9%(86.160)	53,0% (134.568)
<b>Kön</b>				
Män	20,8%	43,1%	10,1%	7,6%
Kvinnor	79,2%	56,9%	89,9%	92,4%
<b>Ålder</b>				
21–36	24,8%	31,6%	26,3%	14,3%
37–47	25,4%	33,0%	25,2%	16,4%
48–57	24,2%	17,2%	24,3%	32,6%
58+	25,6%	18,2%	24,2%	36,7%
<b>Födelseland</b>				
Inom Sverige	86,20%	81,3%	92,3%	84,0%
Inom Europa	8,50%	13,6%	5,0%	7,1%
Utom Europa	5,30%	5,2%	2,7%	8,9%
<b>Arbete</b>				
<b>Arbetserfarenhet</b>				
< 5 år	16,10%	21,9%	17,5%	6,9%
5-15 år	32,60%	38,4%	29,7%	29,3%
> 15 år	51,30%	39,7%	52,7%	63,8%
<b>Ledningsgruppsansvar*</b>				
MLA	1,8%	15,6%	Ej aktuellt	Ej aktuellt
MAS	5,4%	Ej aktuellt	4,8%	Ej aktuellt
Chef med personal	3,8%	4,7%	4,2%	2,3%
Inget	88,8%	80,3%	90,4%	97,2%
<b>Arbetstimmar per vecka</b>				
< 36h	27,30%	14,0%	30,1%	39,9%
36-45h	57,50%	51,0%	65,0%	55,2%
> 45h	15,30%	35,0%	4,9%	4,9%
<b>Rang (endast läkare)</b>				
Läkare under träning	40,8%	40,8%	Ej aktuellt	Ej aktuellt
Specialister	31,1%	31,1%	Ej aktuellt	Ej aktuellt
Överläkare	28,1%	28,1%	Ej aktuellt	Ej aktuellt
<b>Anställningsplats</b>				
Region	26,80%	100,0%	80,8%	29,6%
Kommun	73,20%	Ej aktuellt	19,2%	70,4%

\*Möjligt att inneha flera roller.

# Appendix C

Color coding of health factors based on reference values.

*Självskattad hälsa (ref. 61.3)*

Grön > 66

Gul 56–66

Orange 50–55

Röd < 50

**Organisatoriska och sociala förhållanden i arbetsmiljön**

**Önskat värde: Högt**

Kvantitativa krav (ref. 40.9)	Känslomässiga krav (ref 46.8)	Obalans mellan arbetet och privatlivet (ref. 39.7)	Moralisk stress (medel 66.6)	Oskäligen uppgifter (medel 49.7)	Onödigen uppgifter (medel 50.9)
Grön < 36	Grön < 42	Grön < 35	Grön < 62	Grön < 45	Grön < 46
Gul 36–46	Gul 42–52	Gul 35–45	Gul 62–72	Gul 45–55	Gul 46–56
Orange 47–52	Orange 53–58	Orange 46–52	Orange 73–78	Orange 56–61	Orange 57–62
Röd > 52	Röd > 58	Röd > 52	Röd > 78	Röd > 61	Röd > 62

**Önskat värde: Lågt**

Socialt stöd överordnad (ref. 75.3)	Socialt stöd kollega (ref. 80.2)	Social gemenskap (ref. 79.9)	Kontroll i arbetet (medel 36.7)	Inflytande i arbetet (medel 57.1)	Meningsfullhet i arbetet (medel 65.7)	Belöning i arbetet (medel 49.6)
Grön > 80	Grön > 85	Grön > 85	Grön > 42	Grön > 62	Grön > 71	Grön > 55
Gul 70–80	Gul 75–85	Gul 75–85	Gul 32–42	Gul 52–62	Gul 61–71	Gul 45–55
Orange 64–69	Orange 69–74	Orange 69–74	Orange 26–31	Orange 46–51	Orange 55–60	Orange 39–44
Röd < 64	Röd < 69	Röd > 69	Röd < 26	Röd < 46	Röd < 55	Röd < 39



Swedish Agency for Work  
Environment Expertise

[www.sawee.se](http://www.sawee.se)

ISBN 978-91-89747-64-7