

Bachelorarbeit

Psychosocial stress in European nurses – Possibilities of dealing with psychosocial stress from employee's point of view: A literature review

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Zusammenfassung

Hintergrund: Im Jahr 2018 ist Stress ein allgegenwärtiges Thema. Neue Literatur zeigt, dass in allen europäischen Ländern die Zahl der stressbedingten Erkrankungen steigt. Insgesamt 27% Prozent aller Beschäftigten sind von arbeitsbedingtem Stress betroffen (EU-OSHA 2015) Pflegepersonen, die von psychosozialen Stress betroffen sind, neigen dazu Fehler zu machen, gehen öfter in den Krankenstand, leiden unter einem Mangel an Motivation und sind am Arbeitsplatz weniger effektiv (BG-Pflege GmbH 2017).

Ziel: Das Ziel dieser Arbeit ist es, anhand von europäischer Literatur, die Ursachen und Prävalenz von psychosozialen Stress im Pflegeberuf aufzuzeigen und zu ergründen wie betroffene Pflegepersonen damit umgehen können.

Methodik: Zur Beantwortung der Forschungsfrage wurde ein Literaturreview durchgeführt. Die Recherche wurde von Oktober bis November 2018 anhand der Datenbanken PubMed, CINAHL und Web of Science durchgeführt. Zusätzlich wurde eine Handsuche ausgerichtet. Aus den Jahren 2008 bis 2018 wurden 16 Studien in deutscher und englischer Sprache identifiziert. Die kritische Bewertung erfolgte anhand der Hawker Checkliste (Hawker et al. 2002).

Resultate: Zwischen 23 und 43 Prozent gaben an, an psychosozialen Stress zu leiden. Die gefundenen Ursachen für psychosozialen Stress sind das Gefühl unzureichend zu sein, emotionale Herausforderungen, Mangel an Kohärenzgefühl und Ressourcen, Rollenkonflikte, hohe Jobanforderungen und Schichtarbeit. Als Möglichkeiten für den Umgang mit psychosozialen Stress konnten das Mindfulness-Based-Stress-Reduction Programm (MBSR), Copingstrategien, Schutzfaktoren und der berufsbedingte Selbstwirksamkeitsglaube (OSCE) identifiziert werden.

Fazit: Im Zuge dieses Literaturreviews hat sich Stress als ein relevanter Faktor für Herausforderungen im Pflegeberuf dargestellt. Es existieren etablierte Programme (MBSR, OSCE) – es kann auf individueller und struktureller Ebene interveniert werden. Bereits Gespräche mit KollegInnen und ein gutes Berufsklima zeigen Effektivität. Es zeigen sich Defizite in der Forschung, ebenso wie ein Mangel an strukturierten Programmen und an einer kontinuierlichen Wissensvermittlung. Mehr Forschung, Interventionen an den Abteilungen, und die Steigerung der Awareness bereits in der Ausbildung, sind notwendig.

Schlüsselwörter: nursing, psychosocial, Europe, stress

Abstract

Background: In the year of 2018, stress is an omnipresent issue. Recent literature shows that in all European countries the number of stress-related illnesses is rising. A total of 27% of all employees is affected by work-related stress (EU OSHA 2015). Nurse practitioners affected by psychosocial stress tend to make mistakes, go to sick leave more often and may suffer from lack of motivation and decline of efficacy (BG-Pflege GmbH 2017).

Aim: The aim of this literature review is to determine the quantity of nursing practitioners affected from psychosocial stress by means of European literature. In addition, triggers and ways to deal with psychosocial stress from employee's point of view will be pointed out.

Methods: A literature review was conducted to answer the research question. The search was held from October to November 2018 using the databases PubMed, CINAHL and Web of Science. Additionally, a hand search was undertaken. From the years 2008 to 2018, 16 studies in German and English language were identified. The critical appraisal was conducted by using the Hawker checklist (Hawker et al. 2002).

Results: Eight studies indicate the frequency of psychosocial stress in nursing. Between 23% and 43% stated to suffer from mental distress. The found causes of psychosocial stress are the feeling of personal shortcomings, emotional challenges, weak sense of coherence, lack of resources, role conflicts, high job demands, and shift work. As possibilities of dealing with psychosocial stress Mindfulness-Based-Stress Reduction (MBSR), coping strategies, protective factors and Occupational Self-Efficacy Beliefs (OSCE) could be identified.

Conclusion: In the course of this literature review, stress has presented itself as a relevant factor for challenges in the nursing profession. There are elaborated programs (MBSR, OCSE) - action can be taken on an individual and structural level. Simple approaches, such as conversations with colleagues and a good professional climate, show effectiveness. There are shortcomings in research, as well as a lack of structured programs and of a continuous transfer of knowledge. More research, interventions in departments, and the increase in awareness already in training, are required.

Keywords: nursing, psychosocial, Europe, stress

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Content of abbreviation

CIT: Critical Incident Technique

CINAHL: Cumulative Index to Nursing & Allied Health Literature

COPSOQ: Copenhagen Psychosocial Questionnaire

CSV: Clinical Supervision

JDC: Job Demand Control

LTSA: long-term sickness absence

MBSR: Mindful Based Stress Reduction

n.s.: not significant

OCSE: Occupational self-efficacy beliefs

OCSE-N: Occupational Coping Self-Efficacy Scale for Nurses

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses

QPSNordic: General Nordic Questionnaire for Psychological and Social Factors at Work

WHO: World Health Organization

WPA: Workplace Physical Activity

1. Introduction

In the year of 2018 stress is an omnipresent issue. Recent literature shows that in all European countries the number of stress-related health-problems, such as cardiovascular diseases or back pain, is rising. A total of 27% of all employees is affected by work-related stress (EU-OSHA 2015). Along with other psychosocial risks, work-related stress causes 50% of all sickness absences, which leads to enormous costs. The European Agency of Safety and Health (EU-OSHA) explains work-related stress as the inability to master high job demands adequately (EU-OSHA 2013). Stressors like personal overload and lack of self-determination combined with under-demand and monotonousness are named as triggers (BMG 2016). In the European region the quantity of physicians and nurses has risen about 10% since 2008, however it is unlikely that the number of physicians and nurses is going to be steady and adequate to satisfy the requirements of an ageing population. Nurses are of utmost importance in the elderly care (WHO 2018). It is of great importance to anticipate early career endings and to keep the nursing profession healthy.

In order to be able to understand the study results in chapter three (results) well, the following chapter deals with the topic of stress.

1.1 Definition and models of stress

Stress is a very complex concept every human has experienced. Stress can be a cause for pathologic proceedings and diseases but can also yield improved job performance. Stress needs to be itemized to understand the many processes and to initiate actions against it. The following section includes a definition of stress and two models which allow to get a comprehensive picture of stress

1.1.1 Defining stress

Various definitions and models describing stress can be found in literature. The definition of Brinja Schmidt in this bachelor thesis depicts stress as an interaction of three types of stress: physical stress, stress-based behavior and psychosocial stress. These three types of stress are interdependent and may have a positive or negative effect on each other. On the one hand elongation of the stress reaction may be a result or on the other hand there might be favorable inducement (e.g. relaxation exercises or a clarifying talk) (Schmidt 2015).

1.1.1.1 Physical stress

Hofmann states that stress primarily is a biologic reaction (stress reaction) of an organism to various stimuluses and stress factors (stressors). It triggers a physiologic series of reactions in the body and enables accelerated actions. The stressors activate the hypothalamus and the sympathetic nervous system which release the hormones adrenaline, noradrenaline, cortisol and endorphins. Adrenaline and noradrenaline raise the blood pressure and the heartbeat. Glucose and fat are being mobilized which leads to a short-time release of energy. Cortisol activates energy reserves, assists the effect of adrenaline and has anti-inflammatory properties. Endorphin suppresses the sense of pain and raises the body temperature (Hofmann 2010). Overall the body is ideally prepared for physical actions (“fight or flight-reaction”). If there is chronic stress the concentrations of stress hormones in the blood may have a negative effect on the health (Schmidt 2015). Schmidt states various health-damaging consequences of stress as shown in table 1.

Some scientists distinguish this unhealthy stress – called distress – from eustress. Eustress has positive effects on one’s health and work behavior. Experiencing eustress people tend to enjoy work and consider job strains as a challenge and not as a burden. Typical bodily reactions as sweating or a rising pulse appear extenuated or lack

completely (Brendt&Sollmann 2012). After reconsidering this, stress does not necessarily have a negative impact and may yield improved job performance.

Table 1: Consequences of chronic stress (Schmidt 2015)

Stress-related increase of body functions	Negative consequences of chronic stress
High Cortisol levels	Blocks the function of the hippocampus, which is responsible for the memory Blocks the release of testosterone, which leads to reduced sex drive; increased risk of impotence and to a disturbance of the menstrual cycle Blocks immune cells, increased risk of infections
High insulin levels	Stimulates the pancreas to release more and more insulin, increased risk of diabetes mellitus type 2
High blood pressure	Damages the blood vessels, which leads to sedimentation of fat and calcium carbonate; increased risk of arteriosclerosis
High muscle activity	Burn enduringly an increased amount of fatty acids and muscular proteins; decrease of muscle mass and muscle hardenings
High gastric acid concentration	Constriction of blood vessels in the stomach, which leads to a decrease of blood flow; progeny of bacteria, increased risk of stomach ulcers

1.1.1.2 Stress based behavior

The behavior of one's changes being stressed. Fast eating, cutting short on breaks and rapid movements can be observed. As a result, stressed persons can develop a drug abusing behavior, e.g. uncontrolled tobacco smoking, eating or alcohol consumption. Also, this category includes the abuse of painkillers, tranquilizers and stimulants. Affected persons may develop an addiction to distracting activities, e.g. excessive television watching or gaming on the computer. Uncoordinated working behavior, doing many things at once, lack of planning, losing track of things and the forgetting of facts can be witnessed in the setting workplace. Stressed persons tend to behave aggressively and reproachful. Chronic stress can also lead to passive and subdominant behavior. This can show in the avoidance of conflicts (Schmidt 2015).

1.1.1.3 Psychosocial stress

Psychosocial stress includes internal mental processes, which are not always visible from the outside. It is about emotions, cognitions, social interactions and thoughts that can be triggered within a stressful situation. Examples for these feelings and thoughts are inner restlessness, the fear to fail, dissatisfaction and self-reproach. Many parallels to the emotions caused by burn-out syndrome can be observed. There is an interaction between psychosocial stress, physical stress (e.g. high pulse, sweating or rising cholesterol) and stress-based behavior (e.g. uncontrolled alcohol consumption or an aggressive attitude) (Schmidt 2015).

Since psychosocial stress is a very elastic term, terms as “psychosocial burden”, “psychosocial strain”, “psychosocial crisis”, “psychological stress”, “mental stress” and “mental distress” are considered synonyms in this thesis. Therefore, the term “psychosocial risk” is to be concerned as the risk of developing psychosocial stress.

1.1.2 Stress Models

The following two models are very renowned in stress research and have proven themselves over a long period of time. To be able to understand the following section well, the term “coping” is first explained.

1.1.2.1 Elaboration of the term “coping”

Coping is the process of dealing with existing or expected stressful situations and stressors. This includes behavioral, emotional, cognitive or motivational reactions. The concept goes back to Richard Lazarus who shifted the focus from the stressors to the individual resources for stress management. Lazarus’ stress model is explained in detail in chapter 1.1.2.3. Certain situations, conflicts or illnesses can be considered so stressful that they cause or require coping behavior. This concerns persons with chronic illnesses or emotionally stressful social situations. In stress research, appropriate coping strategies are regarded important health resources. Which

strategies can be considered successful has not yet been sufficiently clarified (Bengel & Margraf 2018).

There are two types of coping strategies: There is adaptive coping, which enables reactions within a healthy manner. Instead of overreacting, a stressful situation can be handled well by, for example, positive thoughts and inner strength. In contrast to this is maladaptive coping: stress is not handled in a proper way. It can lead to outbursts of emotion and even substance abuse (Vantage Point 2019).

1.1.2.2 Hans Seyle's stress model

Hans Seyle (1907-1982), an Austrian-Hungarian endocrinologist, was the first stress scientist and strongly characterized the concept of stress. Seyle explained stress as the General Adaption Syndrome (Hofmann 2010). Seyle differentiated between four stages in his book "The Stress of Life":

1. *Stage (Alarm)*: due to short-time stress triggered by a stimulus. A physiologic body reaction (stress reaction) can be observed which regresses completely after the all-clear.
2. *Stage (Resistance)*: a reaction provoked by continuing stress. Due to the lack of rest periods the physical stress reaction cannot be stopped anymore which can lead to illnesses.
3. *Stage (Exhaustion)*: due to long-time and intensive stress. The body does not have capacity to cope anymore. A fatal course can occur (e.g. sudden cardiac arrest) (Seyle 1976).

1.1.2.3 Richard Lazarus' „Transactional Model of Stress and Coping”

Richard Lazarus (1922-2002) was a leading American psychologist. In the year of 1984, he introduced his model "Transactional Model of Stress and Coping" which states stress as being something individual. Not every person shows the same reaction experiencing stress. Lazarus assumed that primarily the personal mental handling with

stress is of significance and not – as in Seyle’s model – the triggers and stimuluses of stress. According to Lazarus stress is triggered by a person feeling not able to cope anymore. This person then feels placed in a harmful and threatening situation. Lazarus’ model of stress describes three categories of appraisal (figure 1):

- *Primary appraisal* (of a potential threat): the stimulus is being noticed and appraised as nonrelevant, favorable or stressing.
- *Secondary appraisal*: the personal ability to cope with stressful events is being estimated. Either there are enough resources and it is possible to cope with an event or there are no more resources and coping is impossible.
- *Reappraisal*: The initial situation is being newly appraised. If the person can provide coping strategies, the distress can be converted into eustress. The distress increases if there are not enough personal resources to fend it off (Lazarus&Folkman 1984).

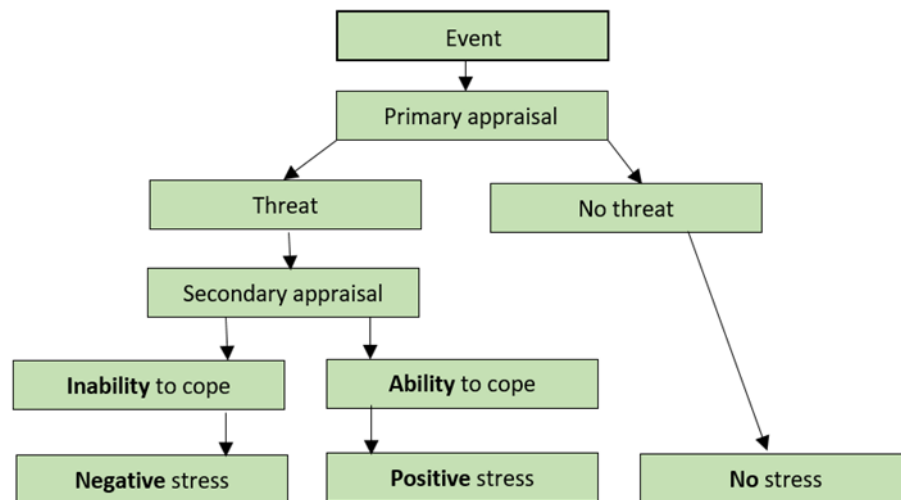


Figure 1: Self-compiled, based on the “Transactional Model of Stress and Coping” (Lazarus & Folkman 1984)

1.1.2.4 Job-Demand-Control-Model

The Job-Demand-Control Model (JDC-model), developed by the researchers Karasek and Theorell (1990), treats characteristics of the job profile: The quantity and pressure of the requirements (demand) and the existing scope for decision-making (control). The lack of it leads to psychological and psychosomatic burdens. With low demands and little room for action, the profile of a passive job is created. There is little stress and the development possibilities are low. If both characteristics of activity are strong, the job profile is in the active area. There are good conditions for learning and skill development. Very high demands with low decision-making room lead to strong tension, in the sense of a stressful job and a high risk of psychological burden. (Karasek&Theorell 1990). The model does not include individual aspects such as coping strategies. In order to consider the complex relationships of modern employment, Karasek (2008) expanded the model by the dimension social support, which can reduce job stress (Junne et al. 2017).

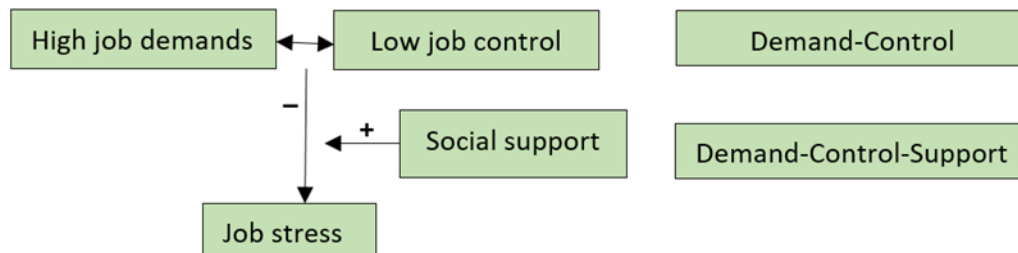


Figure 2: Self-compiled, based on the “Job-Demand-Control model” (Karasek 2008)

1.1.3 Stress in Europe

In a data acquisition by the contraction agency “ADP” in 2017, it was shown that one in five European employees (n=9908) is affected by stress. The data were collected via online questionnaires, which included questions about psychosocial factors and the attitude towards the future of the employees. Every third European states to

consider a change of job. In Poland, most stress is reported (27% state to be affected daily) and least in the Netherlands (10%), as shown in figure 2 (ADP 2017).

The data of the eight different European countries that participated in the survey differ greatly, unfortunately there are no reasons for these varied results explained. The exact stress distribution can be seen in table 2.

Table 2: Self-compiled, based on “Stress distribution in Europe” (Statista 2017)

	Daily	Weekly	Monthly	Never
France	20%	43%	25%	12%
Germany	19%	55%	20%	6%
Great Britain	20%	40%	24%	16%
Netherlands	10%	32%	36%	22%
Poland	27%	43%	22%	7%
Spain	16%	43%	32%	9%
Switzerland	15%	46%	28%	11%
Basis: 9 908 employees				

1.2 Relevance for research and practice

The nursing profession builds up the largest occupational group in the Austrian health care system. In the year 2016, around 91,400 people were employed as nursing staff in Austrian hospitals (BMG 2016). The Ministry of Social Affairs made an investigation about the working conditions in about five thousand Austrian businesses of various professional guilds in 2017. The nursing profession was one of the occupational groups that expressed most complaints (BMG 2017). Nurse practitioners affected by psychosocial stress tend to make mistakes, go to sick leave more often and may suffer from lack of motivation and decline of efficacy. Additionally, the number of employee turnover is rising, and avoidable operating costs arise due to sickness absences and poor work (BG-Pflege GmbH 2017). In Austria, little about psychosocial stress in nursing is known. In order to be able to intervene specifically in the nursing profession

in case of psychosocial stress, it is necessary to know numbers, triggers and ways of dealing with it. This can reduce health risks for those affected, reduce costs for the health system and ensure continuous patient safety.

1.2.1 Aim and research question

The aim of this literature review is to determine the quantity of nursing practitioners affected from psychosocial stress by means of European literature. In addition, triggers and ways to deal with psychosocial stress from employee's point of view will be pointed out.

The following research question arises: "What are causes for psychosocial stress among the nursing profession, how often does psychosocial stress occur and how do concerned nurses deal with it?"

2. Methods

The methods section includes the research design, the search strategy, inclusion and exclusion criteria, the search results and finally the critical appraisal.

2.1 Design

A literature review was conducted to answer the research question. One of the definitions found in recent literature describes a literature review as "a critical summary of research on a topic of interest, often prepared to put a research problem into context" (Polit & Beck 2017, p. 733). The Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement (PRISMA statement) is the background of this literature review's design. The PRISMA statement is a 27-item checklist designed to enhance the author's report of systematic reviews. The selection process is described by the PRISMA flow chart, which consists of four steps as shown in Figure 3 (Moher et al. 2009).

2.2 Search strategy

A literature search was held from October to November 2018. The included electronic data bases were PubMed, CINAHL (Cumulative Index to Nursing & Allied Health Literature) and Web of Science. One search in PubMed using the MeSh terms “nursing” and “stress, psychological” – no MeSh term for “psychosocial stress” existent - did not lead to satisfying results and was not included in the search process.

The literature search started by applying the key words “nursing” and “psychosocial stress”. Truncations as in “nurs*” and “psychosocial*” were set to expand the search to include varied spellings and word endings.

Since little studies could be identified the search was broadened by disposing the keywords “nurs*”, “psychosocial stress”, “psychosocial burden”, “psychosocial strain”, “psychosocial work environment”, “psychosocial risk” and “psychosocial crisis”. “AND” and “OR” were set as Boolean operators to narrow and broaden the results. This search strategy implied an advanced search, which means that only studies which included the keywords in abstract and title were selected. This search strategy lead to mainly unsatisfying results that did not have a focus on nursing.

Subsequently to include all psychosocial aspects an abstract/title search was conducted applying the keywords “nurs*” and “psychosocial*”. More than 2500 hits were raised in PubMed alone which exceeded the resources because a single person was involved in the search process.

For this reason, the decision was made to apply the following title search – including all psychosocial aspects - which showed clearly relevant results:

- PubMed search strategy: (nurs*[Title]) AND psychosocial*[Title]
- CINAHL search strategy: TI nurs* AND TI psychosocial*
- Web of Science search strategy: TI=(nurs* AND psychosocial*)

The key words of the final search strategy were “nurs*” and “psychosocial*”. The feature “advanced search” was used to specify the search in broader detail as only studies, which included the described keywords in the title, were selected. The detailed search strategy is shown in figure 4, the PRISMA flowchart. Following filters were set:

- Year of publication: 2008-2018
- German and English language

2.3 Selection of studies

The following section describes the textual inclusion and exclusion criteria of the selection process and the consideration procedures of this literature review.

2.3.1 Inclusion and exclusion criteria

Only studies carried out in the European area were included in the literature review. These studies had to have a clear focus on nursing and nursing research. Since stress is a very broad subject only studies that showed a psychosocial focus in the title were included. By assuming that the broad search strategy included results about strategies against psychosocial stress, no additional search strategy was developed.

2.3.2 Consideration procedures

By searching the databases, 635 studies could be identified. All studies were imported into the data management program Endnote X8. After the removal of duplicates, 293 studies remained. A hand search, using the same keywords, was conducted by use of Google Scholar and the screening of reference lists. Following the removal of duplicates, a title screening was performed by which studies that appeared unsuitable to answer the research question were immediately sorted out. The following step was to exclude non-European studies. This had to be done by hand, as putting filters into databases excluded relevant studies that included, for example, not the top term Europe but the name of a European country in the text. After that, an abstract screening

was carried out in which again non-relevant studies had to be excluded. The full text of 20 remaining studies was then read, resulting into 16 remaining studies (12 studies identified by a data bank search and four identified by a hand search) that were critically appraised.

2.4 Critical appraisal

The critical appraisal took place by dint of the Hawker checklist (Hawker et al. 2002) containing nine top categories for the critical appraisal of studies. Each study was evaluated according to the built-up of a scientific article. The evaluation sheet includes the assessment of abstract and title, introduction and aim, methods and data collection, sampling, data analysis, ethical considerations and limitations, results, transferability and generalizability and the implications for practice and research. Notes of one (very poor), two (poor), three (fair) and four (good) were awarded per category. A maximum of 36 points could be achieved per study (Hawker et al. 2002). Studies that met the quality criteria were included in this literature review. The evaluation sheets of the 16 included studies can be found in the appendix (chapter 7).

Table 3: Appraised studies

Authors	Study title	Achieved points
Bär et al. (2018)	Psychological Stress in Hospital Nursing Staff: Effects of Status and Organizational Structures	29 (80%)
Bohström et al. (2017)	Managing stress in prehospital care: Strategies used by ambulance nurses	32 (88%)
Freimann et al. (2016)	Work-Related Psychosocial Factors and Mental Health Problems Associated with Musculoskeletal Pain in Nurses: A Cross-Sectional Study	29 (80%)
Hylén et al. (2018)	Psychosocial work environment within psychiatric inpatient care in Sweden: Violence, stress, and value incongruence among nursing staff	31 (86%)

Ilic et al. (2017)	Relationships of work-related psychosocial risks, stress, individual factors and burnout – Questionnaire survey among emergency physicians and nurses	28 (77%)
Karadzinska-Bislimovska et al. (2014)	Linkages between workplace stressors and quality of care from health professionals' perspective – Macedonian experience	28 (77%)
Kowalczyk et al. (2015)	Influence of selected sociodemographic factors on psychosocial workload of nurses and association of this burden with absenteeism at work	20 (55%)
Kowalczyk et al. (2017)	The Reciprocal Effect of Psychosocial Aspects on Nurses' Working Conditions	26 (72%)
Malinauskiene et al. (2011)	Associations between self-rated health and psychosocial conditions, lifestyle factors and health resources among hospital nurses in Lithuania	27 (75%)
Malinauskiene et al. (2009)	Psychosocial job characteristics, social support, and sense of coherence as determinants of mental health among nurses	29 (80%)
Martin-Asuero et al. (2010)	The Mindfulness-based Stress Reduction program (MBSR) reduces stress-related psychological distress in healthcare professionals	28 (70%)
Pélissier et al. (2015)	Impaired mental well-being and psychosocial risk: a cross-sectional study in female nursing home direct staff	34 (94%)
Pisanti et al. (2015)	Occupational coping self-efficacy explains distress and well-being in nurses beyond psychosocial job characteristics	32 (88%)
Roelen et al. (2018)	Psychosocial work environment and mental health-related long-term sickness absence among nurses	30 (83%)
Turesson et al. (2014)	Psychosocial Work Environment, Stress Factors and Individual Characteristics among Nursing Staff in Psychiatric In-Patient Care	33 (97%)
Ulusoy et al. (2018)	Psychosocial stress and strains in elderly care: Comparison between nurses with and without immigration background	31 (91%)

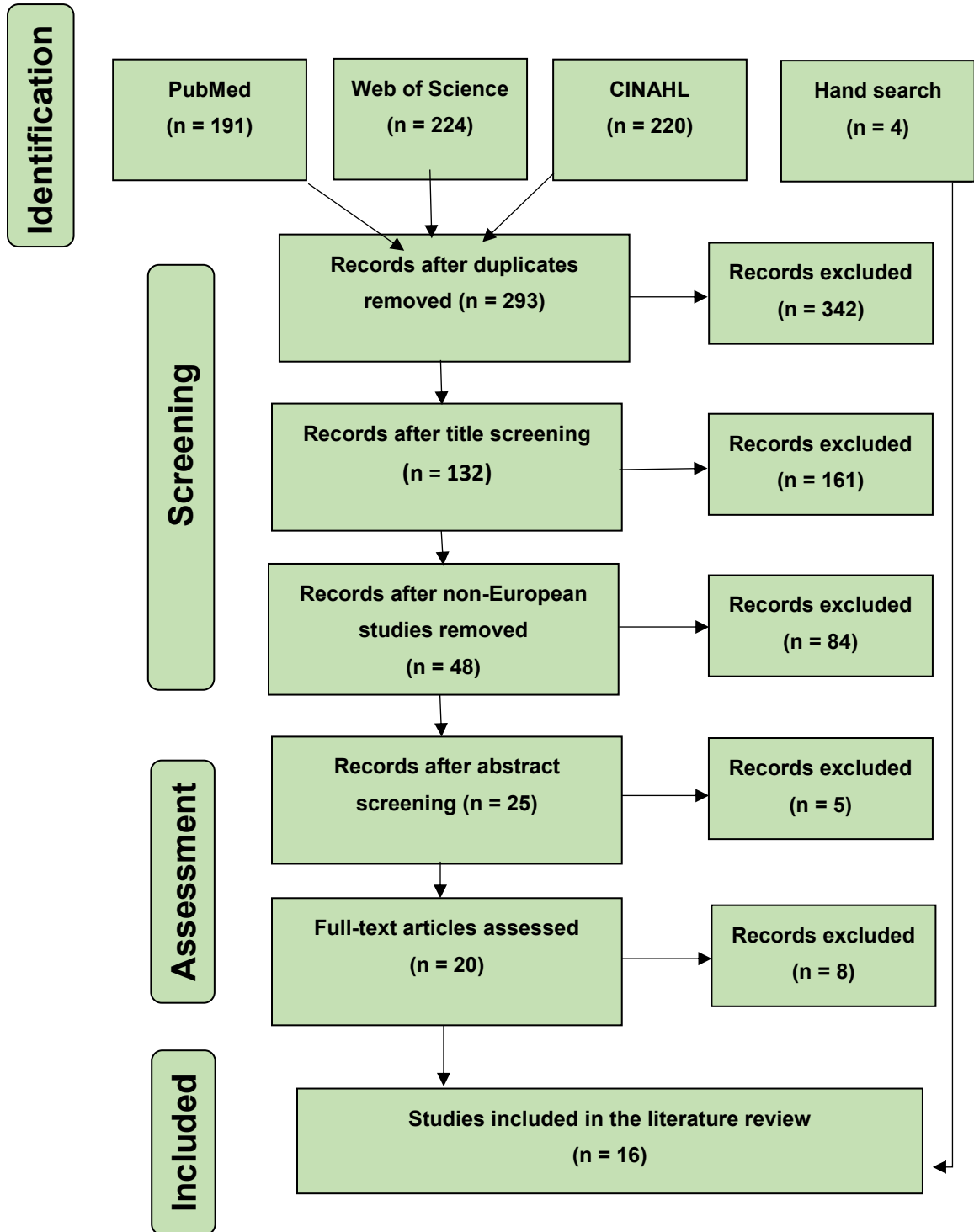


Figure 3: Self-compiled, based on the “PRISMA flowchart of the selection process” (Moher et al. 2012)

3. Results

This section treats the characteristics and results of the studies which are included in the critical appraisal.

3.1 Study characteristics

16 European studies are part of the literature review. Three Swedish, two Lithuanian, two German, two Polish and each one study from Italy, Spain, Macedonia, Norway, France, Serbia and Estonia are included in the critical appraisal. The results which are presented in top categories can be seen starting from section 3.2.

13 studies share the same design, all of them are quantitative cross-sectional studies. The remaining three studies have a qualitative design in common. The data collection method of the qualitative studies were self-reported interviews. The qualitative sample used diverse data collection methods. The sample size varies from 2471 (largest sample) to 29 participants (smallest sample). Five of the studies implement possibilities of dealing with psychosocial stress and protective factors against psychosocial stress. The frequency of psychosocial stress and causes of psychosocial stress are treated in the remaining studies. An overview of the study characteristics can be seen in table 4 starting from page 23.

Table 4: Study characteristics

Authors, country, year	Title	Aim	Design	Setting, sample	Data collection	Main findings
Bär, S. Starystach, S. Germany, 2018	Psychological Stress in Hospital Nursing Staff: Effects of Status and Organizational Structures	Investigating "the impact of organizational structures in hospitals on nursing staff's psychological stress" (p. 693).	Quantitative cross-sectional study	735 nurses working in a German hospital	Self-reported questionnaire	The organization of the hospital and position in the hospital have a big impact on psychological stress. Nursing is a high strain job and associated with psychological and social stress.
Bohström, D. Carlstrom, E. Sjostrom, N. Sweden, 2017	Managing stress in prehospital care: Strategies used by ambulance nurses	Examining "stress inducing and stress defusing factors among ambulance nurses" (p. 28).	Qualitative descriptive study	123 ambulance nurses working in Swedish hospitals	Semi-structured interviews applying the Critical Incident Technique	The stress levels were increased by indistinct circumstances. Rituals, such as discussions with colleagues and short breaks during the day, act stress reducing.
Freimann, T. Paasuke, M. Merisalu, E. Estonia, 2016	Work-Related Psychosocial Factors and Mental Health Problems Associated with Musculoskeletal Pain in Nurses: A Cross-Sectional Study	Reporting "the prevalence of musculoskeletal pain and the associations of work-related psychosocial factors and mental health problems with it" (p. 1).	Quantitative cross-sectional study	409 nurses working at Tartu University Hospital, Estonia	Self-reported electronic questionnaire	Musculoskeletal pain is associated with all mental health problems and most strongly associated with somatic stress.

<p>Hylén, U. Kjellin, L. Pelto-Piri, V. Warg, L.E.</p> <p>Sweden, 2018</p>	<p>Psychosocial work environment within psychiatric inpatient care in Sweden: Violence, stress, and value incongruence among nursing staff</p>	<p>Investigating "the perceived psychosocial work environment among nursing staff in comparison with other professions. Studying perceptions of violence, stress and relationships" (p. 1086).</p>	<p>Quantitative cross-sectional study</p>	<p>335 nurses from 10 inpatient psychiatric wards in central Sweden</p>	<p>Self-administered questionnaires</p>	<p>Nurses are exposed to violent situations. A third of them reported feeling stressed because of the job during the last twelve months. 25% of the participants rated the occurrence of conflicts between co-workers as often to very often.</p>
<p>Ilic, I. Arandjelovic, M. Jovanovic, J. Nesic, M.</p> <p>Serbia, 2017</p>	<p>Relationships of work-related psychosocial risks, stress, individual factors and burnout – Questionnaire survey among emergency physicians and nurses</p>	<p>Determining "the relationships of psychosocial risks arising from, work, stress, personal characteristics and burnout among physicians and nurses in the Emergency Medical Service (EMS)" (p. 167).</p>	<p>Quantitative cross-sectional study</p>	<p>168 health professionals (80 nurses, 88 physicians) employed at a Serbian hospital</p>	<p>Self-reported questionnaire</p>	<p>56% of the questioned nurses were identified as sufferers from work-related burnout. Stressful behavior and reaction were not significantly increased. Coping strategies showed high importance.</p>
<p>Karadzinska-Bislimovska, J. Basarovska, V. Mijakoski, D. Minov, J. Stoleski, S. Angeleska, N. Atanasovska, A.</p> <p>Macedonia, 2014</p>	<p>Linkages between workplace stressors and quality of care from health professionals' perspective – Macedonian experience</p>	<p>"Identify workplace stressors and factors that influence quality of care and to understand how they were linked in the context of such social circumstances" (p. 425).</p>	<p>Qualitative methodologic study</p>	<p>56 HPs (doctors, nurses, interns, and residents) employed at a hospital in Macedonia</p>	<p>Emails, meetings and notes were used to collect data.</p>	<p>Shift work, along with long working hours and night work, were identified as strong work stressors. Factors, that raise stress at the workplace, reduce the quality of care.</p>

Kowalczyk, K. Krajewska-Kulak, E. Poland, 2015	Influence of selected sociodemographic factors on psychosocial workload of nurses and association of this burden with absenteeism at work	Determining "if sociodemographic factors (age, sex, duration of employment) and chronic comorbidities have an impact on psychosocial working conditions and on absenteeism at work" (p. 1).	Quantitative cross-sectional study	789 nurses employed in inpatient health care facilities in Bialystok, Poland	Self-reported questionnaire	Nurses, who are affected by a chronic disease, showed lower levels of physical and psychosocial well-being. Nurses, who reported a decrease in well-being tend to go to sick leave more often.
Kowalczyk, K. Krajewska-Kulak, E. Sobolewski, M. Poland, 2017	The Reciprocal Effect of Psychosocial Aspects on Nurses' Working Conditions	Evaluating "the correlations between different aspects of nurses' psychosocial working conditions" (p. 1).	Quantitative cross-sectional study	789 nurses employed in inpatient health care facilities in Bialystok, Poland	Self-reported questionnaire	A strong correlation between physical and psychological well-being and the support from superiors and colleagues was found.
Malinauskiene, V. Leisyte, P. Malinauskas, R. Lithuania, 2009	Psychosocial job characteristics, social support, and sense of coherence as determinants of mental health among nurses	Investigating "associations of psychosocial job characteristics, social support, and internal resources as determinants of mental health status" (p. 910)	Quantitative cross-sectional study	372 Kaunas district (Lithuania) community nurses	Three-item version self-reported questionnaire	23% of the nurses were considered suffering from mental distress. About 30% stated to have a low sense of coherence. There was an association between high job and mental distress.

Malinauskiene, V. Leisyte, P. Malinauskas, R. Kirtiklyte, K. Lithuania, 2011	Associations between self-rated health and psychosocial conditions, lifestyle factors and health resources among hospital nurses in Lithuania	Investigating "the association between self-rated health and psychosocial factors at work and everyday life (e.g. health behaviors, mental distress, job satisfaction and sense of coherence)" (p. 2383).	Quantitative cross-sectional study	784 nurses working in three university and six district hospitals in Lithuania	Self-reported questionnaire	Health was rated negatively by 60% of the nurses. There is an association between physical activity, overweight, obesity, mental distress and negative self-rated health.
Martin-Asuero, A. Garcia-Banda, G. Spain, 2010	The Mindfulness-based Stress Reduction program (MBSR) reduces stress-related psychological distress in healthcare professionals (p.	Examining "how Mindfulness facilitates a distress reduction in a group of health professionals" (p. 897)	Qualitative semi-experimental study	29 participants (76% health professionals working, 24% educational professionals) employed at Spanish health care facilities	Self-reported questionnaire	Distress dropped by 35%. There was a 30% reduction in rumination and negative effects decreased by 20%.
Pélissier, C. Fontana, L. Fort, E. Vohito, M. Sellier, B. Perrier, C. Glerant, V. Couprie, F. Agard, J.P. Charbotel, B. France, 2015	Impaired mental well-being and psychosocial risk: a cross-sectional study in female nursing home direct staff	Evaluating "the impaired mental well-being and psychosocial stress and determining the relationship of these two aspects" (p. 1).	Quantitative cross-sectional study	2471 women (27% housekeepers, 59% nursing assistants, 15% nurses) working in French nursing homes	Self-reported questionnaires	36,8% of the participants showed impaired well-being, which is significantly associated with overcommitment and effort-reward imbalance.

<p>Pisanti, R. van der Doef, M. Maes, S. Lombardo, C. Lazzari, D. Violani, C.</p> <p>Italy, 2015</p>	<p>Occupational coping self-efficacy explains distress and well-being in nurses beyond psychosocial job characteristics</p>	<p>Extending "the Job Demand Control Support (JDCS) model analyzing the direct and interactive role of occupational coping self-efficacy (OCSE) beliefs" (p. 1).</p>	<p>Quantitative cross-sectional study</p>	<p>1479 nurses employed at nine Italian public hospitals</p>	<p>Self-reported questionnaires</p>	<p>High demands, low job control and low social support predict distress and well-being outcomes. OCSE acts as a buffer between low job control and distress dimensions.</p>
<p>Roelen, C. A. M. van Hoffen, M. F. A. Waage, S. Schaufeli, W. B. Twisk, J. W. R. Bjorvatn, B. Moen, B. E. Pallesen, S.</p> <p>Norway, 2018</p>	<p>Psychosocial work environment and mental health-related long-term sickness absence among nurses</p>	<p>Investigating "which job demands, and job resources are predictive of mental health-related long-term sickness absence (LTSA) in nurses" (p. 195).</p>	<p>Quantitative follow-up study</p>	<p>1533 nurses working in Swedish health-care facilities</p>	<p>Self-reported questionnaires</p>	<p>LTSA was reported by 7% of the nurses. An association between harassment, social support and mental health-related LTSA was found.</p>

<p>Turesson, H. Eklund, M. Sweden, 2014</p>	<p>Psychosocial Work Environment, Stress Factors and Individual Characteristics among Nursing Staff in Psychiatric In-Patient Care</p>	<p>Investigating "perceptions of the psychosocial work environment and how individual characteristics are related to different aspects of the psychosocial work environment" (p. 1161).</p>	<p>Quantitative cross-sectional study</p>	<p>93 nursing staff members (38 nurses, 55 nursing assistants) working in twelve Swedish psychiatric acute in-patient wards</p>	<p>Self-reported questionnaires</p>	<p>Perceived stress and stress of conscience have an impact on the nursing staff's opinion towards the psychosocial work environment.</p>
<p>Ulusoy, N. Wirth, T. Lincke, H. J. Nienhaus, A. Schablon, A. Germany, 2018</p>	<p>Psychosocial stress and strains in elderly care: Comparison between nurses with and without immigration background</p>	<p>To investigate which psychosocial stresses and strains, nurses with immigration background are exposed to, compared to nurses without migration background (p. 1).</p>	<p>Quantitative cross-sectional study</p>	<p>266 nurses (112 with an immigrant background, 254 without an immigrant background) employed at two major geriatric institutions in Hamburg</p>	<p>Self-reported questionnaire</p>	<p>Nurses without an immigration background were slightly more likely to be affected by stress than nurses with an immigration background.</p>

3.2 Collection of results

In the following section, the results found in the studies are subdivided under the sub-headings frequency, causes, possibilities of dealing with psychosocial stress and protective factors against psychosocial stress. To ensure the reading flow, not all study titles, sample sizes and settings are named in the text. The data on all study titles, sample sizes and settings can be found in Table 4.

3.2.1 Frequency of psychosocial stress

Eight studies indicate the frequency of psychosocial stress in nursing, as seen in table 5.

Table 5: Frequency of psychosocial stress

Study	n (nurses)	Frequency of psychosocial stress (%)	Instrument
Malinauskiene et al. (2009)	372	23%	GHQ-12*
Malinauskiene et al. (2011)	748	29,2%	GHQ-12
Pélissier et al. (2015)	869	36,8%	GHQ-12
Tu vesson et al. (2014)	38	43%	GHQ-12
Freimann et al. (2016)	409	26,6%	COPSOQ**
Ilic et al. (2016)	80	37,2%	COPSOQ
Ulusoy et al. (2018)	783	29%	COPSOQ
Hylén et al. (2018)	353	28%	QPS Nordic***

*GHQ-12: The "General Health Questionnaire 12" (GHQ-12) is a 12-item questionnaire that assesses the mental health. The questions look like this: "Have you slept less in the last weeks because of worries?" There are four answer options for each question (not at all, not worse than usually, worse than usually or much worse than usually) (Goldberg&Williams 1991).

**COPSOQ: The "Copenhagen Psychosocial Questionnaire" assesses mental factors at work. Both burdens and stresses and complaints are questioned. There is a long version (30 scales and 141 items) or a standard version (25 scales and 87 items) (Berthelsen et al. 2015).

***QPSNordic: The "General Questionnaire for Psychological and Social Factors at Work - Nordic" is a 127-item measurement instrument designed for the use in Nordic countries (Wännström et al. 2009).

Highest levels of psychosocial stress could be identified in a study conducted by Tuveesson et al. (2009, p. 910) collecting data on "psychosocial work environment, stress factors and individual characteristics". 43% of the nurses (n=38, p<0,01), working in psychiatric in-patient wards in southern Sweden, stated being stressed due to work. In the course of the same study, 40% of the nursing assistants (n=55, p<0,01) stated being stressed (Tuveesson et al. 2009).

Lowest levels of psychosocial stress were observed in a study by Malinauskiene et al. (2009, p. 910). 372 community nurses, working in Lithuania, participated in this study collecting data on "psychosocial job characteristics, social support and sense of coherence as determinants of mental health". 23% of the nurses were considered suffering from mental distress (Malinauskiene et al. 2009).

Malinauskiene et al. (2011, p. 2383) conducted a later research on the associations between "self-rated health and psychosocial conditions, lifestyle factors and health resources among hospital nurses in Lithuania". In the course of this study (n=748) data on the frequency of mental distress in nurses was collected. 13,5% of the nurses who rated their health positively stated be mentally distressed and 29,2% of the nurses who rated their health negatively stated to suffer from mental distress (Malinauskiene et al. 2011).

In a study by Ilic et al., emergency nurses and physicians were compared in relation to stress, psychosocial risks, burnout and individual factors. Results showed that nurses (37,2%, p=n.s.) are slightly more frequently affected by cognitive stress than physicians (32,1%, p=n.s.). However, there could not be found any statistically significant differences (Ilic et al. 2017).

3.2.2 Causes of psychosocial stress

In the following section several psychosocial risk factors that could be found in the studies are presented. Due to the use of the same measurement instruments, many of the study results overlap. To ensure a good overview, the most clearly described and most valid results have been selected and summarized.

3.2.2.1 *Psychosocial risk factors*

Feeling of personal shortcomings: In a qualitative Swedish interview study on the ability of ambulance nurses to manage stress in prehospital care the participants (n=15) doubted their ability to assess and to implement adequate interventions and treatment in seriously ill patients. Nescience about the outcoming of the patient and about necessary interventions that had to be implemented were considered stressful (Bohström et al. 2017).

Emotional challenges: Health professionals expressed complaints about “the emotional challenges of working intensively with other people, working with chronic, incurable or dying patients; being responsible for people; and interacting with patients” in interviews (Karadzinska-Bislimovska et al. 2014, p. 430).

Weak sense of coherence: In a Lithuanian study, 46% of the participants (p<0,001) who stated to have a weak sense of coherence, means “the extent to which one has a pervasive, enduring though dynamic, feeling of confidence that one’s environment is predictable and that things will work out as well as can reasonably be expected”

(Antonovsky 1979, p. 725-33), suffered from mental distress (Malinauskiéne et al. 2009).

Lack of resources: Nurses often are worried about not providing plenty of resources to handle critical situations. During critical situations a chain of stress reactions starts due to the lack of information, a high workload and the inability to identify the medical challenge (Bohström et al. 2017).

Role Conflicts lead to a high level of stress of conscience in Swedish nurses working in the psychiatric setting ($p < 0,05$) and was also associated with internal ($p < 0,05$) and external demands ($p < 0,01$) (Tuveesson et al. 2014). Stress of conscience occurs when nurses feel inadequate about providing the quality of care that is demanded of them (Glasberg et al. 2006). In another Swedish study 25% of the participants rated the occurrence of conflicts between co-workers as often to very often (Hylén et al. 2018). In an Estonian study even 36% of the participants reported role conflicts at work (Freimann et al. 2016).

High job demands lead to emotional exhaustion, depersonalization, somatic complaints and psychological distress (Pisanti et al. 2015). In all forms of the hospital structure, the work as a nursing force presents itself as a high strain job, which is associated with a high degree of psychological and social stress. High job demands are not compensated by an appropriate level of control (Bär et al. 2018). Overcommitment ($p < 0,05$) and effort-reward imbalance ($p < 0,05$), measured by the Siegrist questionnaire (Siegrist et al. 2014), are clearly associated with the impaired mental well-being of female nursing home staff (Pélissier et al. 2015).

Shift work, along with long working hours and night work, were identified as being strong work stressors (Karadzinska-Bislimovska et al. 2014). In the case of night shifts, the working conditions in the dimensions “work, workflows, working environment, information and consultation, development opportunities, work-life balance and recognition”, are psychologically and socially stressful (Bär et al. 2018, p. 696).

3.2.2.2 Associations with migration background

Ulusoy et al. observed the influence of the migration background on the occurrence of psychosocial stress in nurses working in two German geriatric institutions (n=266). The results show that nurses without an immigration background were slightly more likely to be affected by stress (36%, $p < 0,05$) than nurses with an immigration background (32%, $p < 0,05$). The authors concluded that one reason is that nurses with an immigration background are less likely to fill leadership positions, which may be more stressful, than nurses without an immigration background (Ulusoy et al. 2018).

3.2.3 Possibilities of dealing with psychosocial stress

Five of the included studies address possibilities of dealing with psychosocial stress and protective factors against psychosocial stress. Since the focus of this thesis is on possibilities of dealing with psychosocial stress from employee's point of view, these are explained in more detail in the following section.

3.2.3.1 Mindful-Based Stress Reduction

Martin-Asuero et al. investigated the effects of the Mindful-Based Stress Reduction Program (MBSR) on stress-related psychological distress in Spanish health care professionals. MBSR, an anti-stress program developed in the 1970s by Dr. Jon Kabat-Zinn (MBSR-MBCT Union 2018), which goal it is "to develop mindfulness in everyday activities through practice of exercises to focus one's attention, meditation and yoga stretches" (Asuero et al. 2010, p. 899). 29 participants (76% health care professionals, 24% educational professionals) attended a 28-hour group course and then carried out the practical tasks for 45 minutes every day for over eight weeks. The results showed that that psychological distress decreased by 35% ($p < 0,016$) after the group course. Between intervention and follow-up, the participants continued practicing meditation (93%), yoga and stretching (72%). The mean score of daily stress dropped by 18% ($p < 0,073$). At the time of the follow-up (three months after the intervention) the score had decreased by 23% (Martin-Asuero et al. 2010).

3.2.3.2 Strategies to manage stress

A Swedish study, conducted by Bohström et al. in the year of 2017, highlighted the strategies ambulance nurses use to manage stress in prehospital care. 15 nurses participated in the study and were asked several questions in a semi-structured interview about critical incidents they experienced. E.g.:

- “Tell us about an episode where stress was handled in a successful way”.
 - “Tell us about strategies you have used in order to handle stressful experiences”.
- (Bohström et al 2017, p. 29)

The researchers identified two main stress defusing factors: “collegial support” and “shared experiences”. “Collegial support” included informal conversations (e.g. participant 3 stated: ‘...we informally talk about our experiences together, how we handle it and what we learn of one another’.), support through colleagues (‘With the colleague you can review the situation, what was good and what could have been done different’.) and informal debriefs after a shift (‘The best stress-defusing support is when we sit down with colleagues in the end of a shift’.). To the category “shared experiences” the researchers counted confidence in colleagues (‘Shared feelings and experiences under traumatic missions create a special connection’.) and the advantages of teamwork (‘The fact that we are a tight team is very stress reducing, together we work independently, that is rewarding.’) (Bohström et al. 2017, p. 30-32).

3.2.3.3 Occupational coping self-efficacy beliefs

Pisanti et al. (2015) measured psychosocial job characteristics and the occupational coping self-efficacy (OCSE) beliefs of 1479 Italian nurses. The researchers aimed to widen out the Job Demand Control Support (JDCS) model by means of analyzing the OCSE beliefs. OCSE refers to the ability to deal with stressful situations in context with work stressors (Bandura et al. 1985). The participating nurses were asked questions on their ability to handle stressful situations by dint of the Occupational Coping Self-

efficacy scale for Nurses (OCSE-N, Pisanti et al. 2008). Results showed that “high levels of OCSE were consistently associated with higher well-being and lower distress” and “individuals with higher levels of OCSE are more likely to interpret occupational stressors as challenging situations” (Pisanti et al 2015, p. 10).

3.2.3.4 Protective factors

In a qualitative study based on focus group methodology, conducted by Karadzinska-Bislimovska et al. (2014), 56 health professionals (doctors, nurses, interns, residents) were questioned about factors that help them carry out their work. They reported the support from superiors and colleagues and good interpersonal relationships as stress protectors. However, most of the participants in another study rated the support of superiors lower than the support of colleagues ($p < 0,0000^{***}$) (Kowalczyk et al. 2017). Also, the positive feedback from patients made them feel successful and happy. During the interview, one of the nurses said: ‘We are health professionals and we are proud of our work. Our profession gives us the opportunity to feel satisfied and fulfilled. When the personnel are careful and polite, when the work is quickly and successfully completed, and the patient is pleased and grateful, I feel satisfied.’ (Karadzinska-Bislimovska et al. 2014, p. 431).

Kowalczyk et al. found a strong connection between physical and psychological well-being ($p < 0,0000^{***}$) in a study questioning 789 nurses, employed in inpatient health-care facilities in Poland. Nurses, who reported higher physical well-being, would also report higher psychological well-being and vice-versa (Kowalczyk et al. 2017).

The results described in the last two sections are summarized in figure 6, representing protective and imperiling factors that have a positive or negative effect on psychosocial stress in nursing.

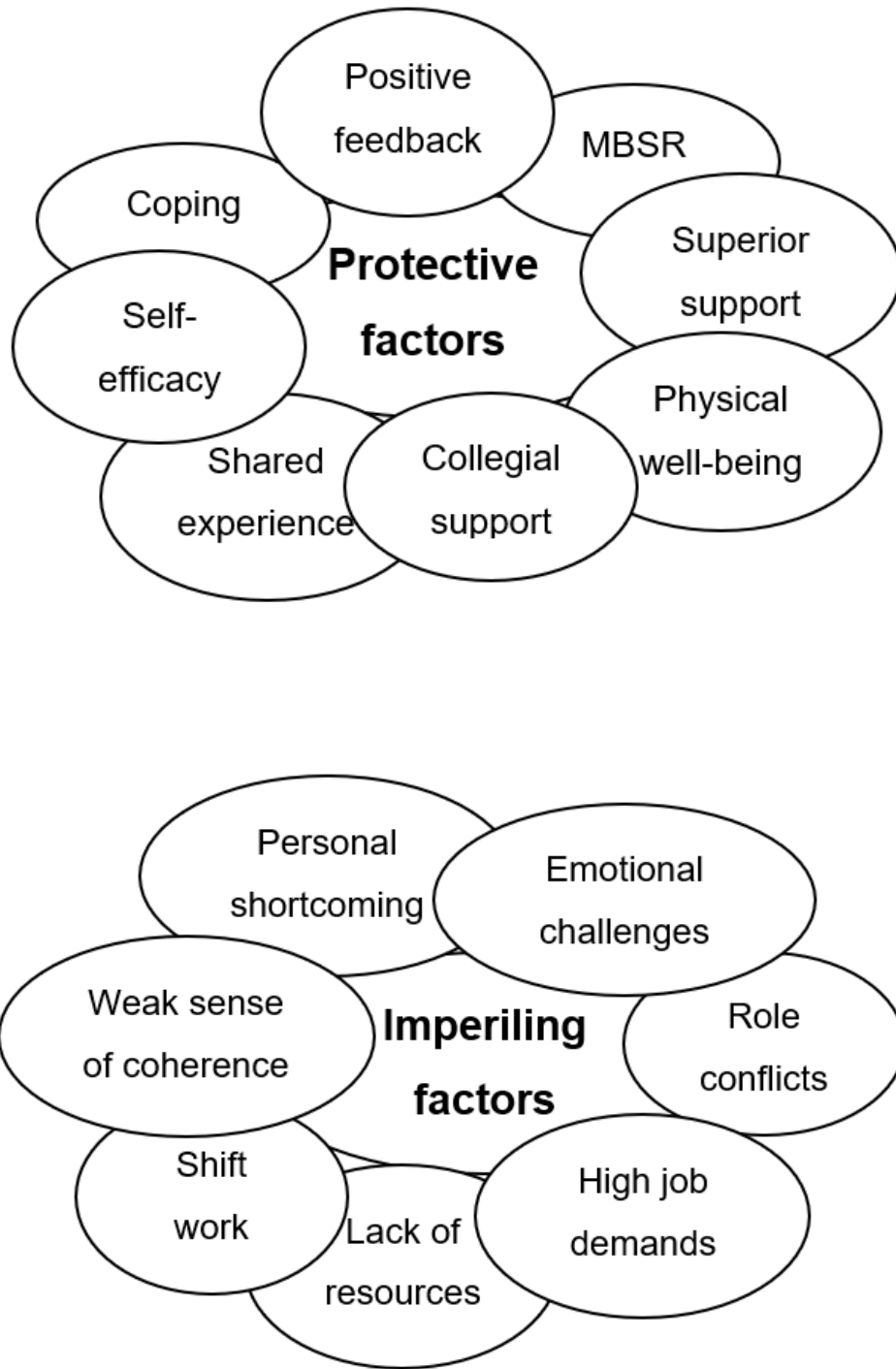


Figure 4: Protective and imperiling factors of psychosocial stress in nursing

4. Discussion

In Europe, based on the finding of this review, only a few studies have been carried out to deal with the topic of psychosocial stress in the nursing profession. The aim of this work was to identify the frequency and causes of psychosocial stress and possibilities of dealing with it.

The frequency of psychosocial stress was described between 23% to 43% in the included studies. Significant differences between the different settings showed up. The highest number of affected nurses (43%) was found in a study by Tuvešson et al. (2014), questioning nurses working in a psychiatric in-patient ward, which turns out to be a very stressful setting. Lowest levels of psychosocial stress (23%) could be found in a study on community nurses, who work more independently and not at “the setting hospital” (Malinauskiene et al. 2009, p. 910). Most of the other studies were conducted in the inpatient sector. This shows that the nursing profession is a very diverse occupation and it is difficult to generalize the profession in relation to the occurrence of psychosocial stress.

Overall, results show that a great percentage of nursing staff in Europe is affected by psychosocial stress. This is in accordance with results found on the occurrence of psychosocial stress in non-European countries. An Iranian study on this subject used the General Health Questionnaire 12, which was also used as a measurement instrument in many of the studies included in this literature review. This study shows that 29% of the Iranian nursing professionals (n=699) scored four points or less on the GHQ-12. The authors of the study stated that every person scoring less four points or less on the GHQ-12 is affected by psychosocial stress (Bazazan et al. 2018). This is within range of the percentages that were found in this literature review. Similar results (21% affected, n=24) were found in a Sri Lankan study, using the GHQ, on psychological distress among nurses working with war victims (Jayawardene 2011). In

a Chinese study that used the Kessler Psychological Distress Scale (Kessler et al. 2010), which has similarities to the GHQ, as many as 92,3% (n=581) of the participants reported psychological distress. There are certainly differences in continents and cultures: The relationship status was shown to be a productive factor in the occurrence of psychosocial stress in Chinese nurses (Feng et al. 2018). In Europe, where training is mostly likewise in principle and comparable structures of the health system prevail, similar numbers can be found. Summarizing it can be inferred that a significant proportion of nurses is affected worldwide, and this reinforces the need for action in this profession.

The causes that nurses indicate for psychosocial stress are largely in line: loads and worries are identical or very similar. The found causes of psychosocial stress are feelings of personal shortcoming, emotional challenges, a weak sense of coherence, lack of resources, role conflicts, high job demands, and shift work. This showed that both - structural and personal characteristics - have an impact on psychosocial stress in the nursing profession, which is a high-strain job in all dimensions (Bär et al. 2018). My means of the literature review, thoughts and experiences by affected nurses could be dealt with. Nescience about the outcome of the patient and about necessary interventions that had to be implemented were considered stressful (Bohström et al. 2017). The lack of communication between medical and nursing staff could be a factor that leads to this situation. Péliissier et al. (2015) caught a connection between the impaired mental well-being of female nursing home staff with overcommitment and effort-reward imbalance. The topic of nursing staff not being paid enough for their work, which is characterized by high responsibility and stress, is a constant theme. In addition, nurses must take on more and more medical activities without an increase in payment (Péliissier et al. 2015). In a Turkish study similar causes for psychosocial stress in health care professionals were identified: “unfairness in promotion opportunities, imbalance between jobs and responsibilities, conflict with colleagues, lack of appreciation of efforts by superiors, responsibilities of role, long and tiring work hours, inadequacy of equipment, and problems experienced with patients and their

relatives” (Isikhan 2004, p. 234). The researchers found that health care professionals use likewise strategies to cope with stress. The most commonly used strategy was a “self-confident approach”, which means that the participating physicians and nurses used adaptive coping by meeting the patients and tasks with high self-confidence and awareness of their knowledge and expertise (Isikhan 2004, p. 234).

Since some stress factors in the care sector cannot be changed, such as for example obligatory shift work and the interaction with sick and dying patients, possible changes, that are easy to perform, remain in the personal level. It turns out that collegial support and conversations after a stressful situation can lead to a reduction in psychosocial stress. These results coincide with Karasek’s Job-Demand-Control model, which has been expanded to include the social support factor (Karasek 2008). An approach to reduce stress factors in the workplace is clinical supervision (CSV): Swedish researchers found out that clinical supervision can reduce nurses’ feelings of not being in control and that CSV may have a positive effect on nurses’ well-being. CSV included talking about the nurses’ feelings that were evoked working and the cooperation with colleagues (Bégat et al. 2005). Clinical supervision is carried out in hospitals by trained staff. The objectives of a supervisor are to accompany and support the employees. It ensures that employees use their skills correctly and that patients are protected in problematic medical situations (Shire 2019).

In Europe, there are few studies on stress prevention. It turns out, however, that already nursing students are affected by stress. Little has been done to date for early detection and support of students. In a Brazilian study, conducted by Almeida et al. (2018), social support and stress was observed in students, which showed that students who get social support showed improved stress behavior. The authors stated that “the creation of more welcoming spaces in the academic environment, the qualification of the social support, and the employment of strategies to improve the transition from the student stage to the professional stage are important recommendations that will contribute for positive outcomes regarding the coping with student stress” (Almeida et al. 2018, p. 1).

Also, specific models like MBSR and OCSE-belief lead to a significant decrease in psychosocial stress. Especially, the Mindfulness-Based-Stress-Reduction program showed a significant reduction of stress levels and was well received by the participants. However, these specific training programs lead to a large organizational overhead and are associated with costs. There would also be other possibilities to deal with stress. For example, progressive muscle relaxation, according to Edmund Jacobson, who observed that muscles contract instantly experiencing stress. This means that, on the contrary, mental and psychological relaxation can be initiated by relaxing muscles (Jacobson 1938). In the context of this literature review, no studies dealing with this technique could be identified. Progressive muscle relaxation is not associated with costs and can be easily applied during working breaks. In an Indian study, the use of progressive muscle relaxation has led to a significant reduction in the stress levels, resting heart rate and blood pressure (Chaudhuri 2014).

In the lead of this thesis also four consequences of psychosocial stress could be identified. Although the consequences of psychosocial stress are not part of the research question, they are discussed briefly in order to enable a comprehensive picture of psychosocial stress in nursing: First, the association between chronic disease and sickness absence: 18,6% of the nurses state being affected by at least one chronic disease. Nurses, who are affected by a chronic disease, show lower levels of self-rated physical and psychosocial well-being. Nurses, who report a decrease in well-being tend to go to sick leave more often. This is also the case in nurses without a chronic condition (Kowalczyk et al. 2015). Second, burnout is “in direct correlation with quantitative, cognitive and emotional demands, possibilities for career development, behavioral stress, somatic stress and cognitive stress” (Ilic et al. 2017, p. 172). 56% of the questioned nurses were identified as sufferers from work-related burnout (Ilic et al. 2016), according to the Copenhagen Burnout Inventory questionnaire (Kristensen et al. 2005). Third, in a two-year follow-up study conducted by Roelen et al., results showed that 7% of the participants suffered from mental health-related long-term sickness absence (LTSA) due to psychosocial factors. Especially harassment was

identified being a risk factor for mental health-related LTSA (Roelen et al. 2018). Last, musculoskeletal pain is associated with psychosocial factors such as high-quantitative and emotional demands, fast work pace, low justice, low respect in the workplace and role conflicts. The results of a study on associations between work-related psychosocial factors, mental health problems and musculoskeletal pain showed that 70% of the participants, 409 nurses employed at an Estonian hospital, stated suffering from musculoskeletal pain longer than a day within a year (Freimann et al. 2016). This does not seem like a long period of time: reason for this result could be that 21% of the questioned nurses worked in the nursing management, and therefore did not work with patients as much, and 20% of the participants had been working five years or less in the nursing profession. However, 64% of the nurses stated to have suffered from musculoskeletal pain during the past month. The most affected body zones were named to be the lower back and neck. Stress, and especially somatic stress, is clearly associated with musculoskeletal pain ($p < 0,05$) (Freimann et al. 2016). That coincides with the stress model mentioned in the introduction, which shows that health is influenced negatively by stress. Nurses, who reported higher physical well-being would also report higher psychological well-being and vice-versa (Kowalczyk et al. 2017). Therefore, physical health should not be overlooked. For example, Brazilian researchers conducted a quasi-experimental study on stressed palliative nursing professionals. They induced a workplace physical activity program (WPA) for a period of three months, which led to a decrease in physical pain and feeling of fatigue. The WPA included physical activities for ten minutes a day, five days a week. The physical training was supervised by a physical education professional, who instructed the nurses directly in their workplace. The participating nurses indicated an improvement in the attitude towards health and the work-related quality of life (Freitas et al. 2014).

4.1 Strengths and weaknesses

Despite searching only three databases, a great number of results could be identified. The research question could be answered comprehensively, and a research gap was identified. Also, high study quality was ensured using a valid appraisal instrument. New knowledge could be generated for practice and research.

Part of the limitations is the fact that only one person was involved in the research process and assessed the studies. Only German and English articles were used, ruling out studies written in other languages. Since only European studies were included in the literature review, the results are severely limited. Furthermore, there may have been publication bias and a lack of randomization in the studies, which may have a negative impact on this thesis.

5. Conclusion

The nursing occupation presents itself as a very demanding profession which is frequently associated with psychosocial and physical stress, along with stress-based behavior. Working with very sick and dying people, shift work, conflicts with colleagues and enormous job requirements provoke that nursing professionals suffer from health problems, must go to sick leave and partially leave the profession early. It was shown that a clear percentage of nursing professionals in Europe is affected by psychosocial stress. In the course of this work, it was possible to find out that even simple actions can reduce psychosocial stress. Conversations with colleagues after difficult experiences are easy to conduct and do not involve great costs. Little knowledge and offer about possible programs like MBSR exist. In the subject of the literature research, not a single study dealing with psychosocial stress in the Austrian nursing profession could be identified. In the study, it turned out that in non-European countries the interest in this topic is much higher, and the issue is dealt with more strongly. However, since nursing staff is the largest occupational group in the health sector, necessary numbers and facts must be generated urgently. In order to reduce the number of affected people,

awareness needs to be strengthened. Members of this profession should feel well cared for and satisfied with their very important work. After all, the profession presented itself as a very fulfilling occupation, thanks to the work with patients. Differences have been shown in the various settings, which shows that it is a very extensive job picture with many facets and differences. In order to be able to support affected persons in the best possible way and to act prophylactically, individual attention must be paid to the different settings and persons. This is the only way to guarantee that nurses will be able to carry out their profession happily and over many years. Also, health costs can be limited, and patient safety maintained.

5.1 Future research

In order to improve the situation in the nursing profession, more research should be carried out in Europe. In large part, the studies included treated a rather small sample. A Europe-wide survey of psychosocial stress in nurses could provide clear numbers and reflect the true standing of things.

Above all, very few qualitative studies with focus on strategies to deal with psychosocial stress could be identified. Qualitative studies that examine specific training models could broaden the supply for nursing. A study comparing the situations on different continents and cultures could also be revealing. In this way, various influential factors could be identified and actions against psychosocial stress could be better coordinated.

The search for only European studies was difficult, because the continent is not always indicated in the key words and PubMed, for example, lacks a filter for the country of origin. Implementation could make it easier to find continent-specific studies. A uniform definition and designation for psychosocial stress would also lead to higher specificity. For example, “psychosocial stress” could be defined as MeSh term, thus simplifying research.

5.2 Recommendations for nursing practice

Already simple measures, such as talking to colleagues after a shift, can reduce psychosocial stress. This is where the opportunity should be given in order to avoid role conflicts and bad operating climate. These talks should be part of the working time and not be carried out only in the leisure time of the nursing staff. This could increase job satisfaction and improve the operating climate. The sale of worries and the ability to communicate needs to be enabled. Stress-reducing programs, such as the MBSR, have also demonstrated effectiveness. The management should inform itself and show prudence around the health of its employees.

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7. Appendix

In the appendix, the evaluations of the studies can be seen.

7.1 Hawker checklists

The critical appraisal of the studies took place using the Hawker tool (Hawker, 2002), as explained in chapter 2.4.

Bär, S & Starystach, S 2018, 'Psychological Stress in Hospital Nursing Staff: Effects of Status and Organizational Structures', *Gesundheitswesen*, vol. 80, no. 8-09, pp. 693-9, doi:10.1055/s-0042-123850

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
The study design is missing in the title. The abstract is short but includes the most important information. However, the sample is not mentioned in the method section and there is no clear background of the study explained.	Fair 3
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The introduction is very short -only one paragraph - with little background information. Little relevant and international literature was cited. The study aim is not clearly defined.	Poor 2
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The method section is described in detail. A quantitative cross-sectional survey study was conducted. The questionnaire used is described and linked in text.	Good 4
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	

Yes, it was appropriate (non-probability purposive sampling). The sample is displayed clearly in a table. Inclusion and exclusion criteria are mentioned.	Good 4
5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
Yes, the process is very clear and described in detail. The reliability was ensured by Cronbach α .	Good 4
6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
No information on the approval of an ethic committee can be found in the text. The relationship between researchers and participants was not considered.	Very poor 1
7. Results: <i>Is there a clear statement of the findings?</i>	
The text is very demanding to read but contains all the necessary information and is supported by one table and one figure, which are explained in the text.	Good 4
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
The sample (n=735) is too small for the results to be generalizable. The setting and the differences in the different wards are clearly described and comparisons to other settings can be made.	Good 4
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
Very important, new information was found and suggestions for practice were made: Not every employee in the hospital is at the same risk. However, suggestions for further research are missing.	Fair 3
Total:	29 (80%)

Bohström, D, Carlstrom, E & Sjostrom, N 2017, 'Managing stress in prehospital care: Strategies used by ambulance nurses', *Int Emerg Nurs*, vol. 32, pp. 28-33, doi:10.1016/j.ienj.2016.08.004.

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
The design is missing in the title. Implications and suggestions for practice and further research are missing in the abstract. The method section includes results and the data analysis is missing. The aim of the study is not separately defined in the abstract.	Fair 3
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The authors gave a good statement about the importance of the study based on international literature. However, the background focuses on post-traumatic stress disorder, which was not necessarily the objective of the study.	Fair 3
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The method (descriptive design, based on the critical incident technique) is appropriate to answer the research question. The sample size (15 participants) is appropriate since it is a qualitative study.	Good 4
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
Yes, the sampling method (non-probability purposive sampling) was adequate. Since there was a qualitative design, the sample size was appropriate (n=15). The sample is clearly described in a table. The inclusion and exclusion criteria are outlined well.	Good 4

5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
The analysis method is referenced in the text. The building of sub-categories is clearly explained.	Good 4
6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
There was ethical approval according to law and by the World Medical Association Declaration. The participants were informed about voluntary and the possibility to withdraw anytime.	Good 4
7. Results: <i>Is there a clear statement of the findings?</i>	
The results are very clearly divided into subcategories and contain many direct quotes. The results section is supported by two well structured tables. The results section is easy to understand.	Good 4
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
Since the sample is very small due to the qualitative design, it cannot be deduced from the total population. However, the opinions and experiences of the participants could be well captured.	Fair 3
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
Ideas for further research and implications for practice could be outlined in more detail. The opinions and feelings of the nurses could be well captured, and a good overview of the work situation could be given.	Fair 3
Total:	32 (88%)

Freimann, T, Paasuke, M & Merisalu, E 2016, 'Work-Related Psychosocial Factors and Mental Health Problems Associated with Musculoskeletal Pain in Nurses: A Cross-Sectional Study', *Pain Res Manag*, doi:10.1155/2016/9361016

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
Information about the setting is missing in the title. Also, there is only one sentence that gives information about the background of the study. Suggestions for research and practice are missing in the abstract.	Fair 3
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The background section is short but easy to read and understand. There is a clear statement about the aim and the objectives of the study.	Good 4
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The method (quantitative cross-sectional survey study) is appropriate. The measurement instruments could be explained in more detail, since there are only a few sentences to it. The questionnaires used are referenced in the text.	Fair 3
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
The sampling is explained very shortly, the inclusion and exclusion criteria are not described in detail. The strategy (non-probability purposive sampling) is appropriate. The data on the sample are presented in an extensive table.	Fair 3

5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
The analysis is not explained in a separate paragraph and not explained in detail. However, there are confidence intervals outlined.	Poor 2
6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
Ethical approval was gained from the Research Ethics Committee of the University of Tartu. There was written and verbal information, about the anonymity and voluntary, given to the participants.	Good 4
7. Results: <i>Is there a clear statement of the findings?</i>	
The results section is very short although a lot of data was generated. There is not enough information and explanation about the found data. Also, the tables are not explained very well in the text.	Fair 3
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
The findings are not generalizable due to the small sample (n=404). There was no difference made between the separate wards, although these could be important since the study focused on musculoskeletal pain.	Good 4
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
New knowledge was generated and suggestions for implications in practice were made. An association between psychosocial factors and musculoskeletal pain was sound, which contributes new knowledge.	Fair 3
Total:	29 (80%)

Hylén, U, Kjellin, L, Pelto-Piri, V & Warg, LE 2018, 'Psychosocial work environment within psychiatric inpatient care in Sweden: Violence, stress, and value incongruence among nursing staff', *Int J Ment Health Nurs*, vol. 27, no. 3, pp. 1086-98, doi:10.1111/inm.12421

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
The study design is missing in the title. The paper contains no abstract.	Very poor 1
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
Very detailed information was provided on the importance and background of the study using international current literature. The research aims (three research questions) are clearly defined and outlined.	Good 4
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The method (cross-sectional quantitative comparative survey study) is appropriate and well described. The measurement instrument is described in great detail in a separate paragraph.	Good 4
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
The sampling (non-probability purposive sampling) is appropriate and explained in detail.	Good 4
5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
The data analysis is explained sufficiently, the Mann-Whitney U-test was used to test differences. There could have given information on the data saturation.	Good 4

6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
Ethical approval was gained from the Regional Ethical Review Board in Uppsala, Sweden. There was information about the anonymity given to the participants.	Good 4
7. Results: <i>Is there a clear statement of the findings?</i>	
The results are explained very shortly, there could be more explanation about the generated tables. The found data match with the study objectives.	Fair 3
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
The sample is not big enough to transfer it to a wider population. There were 90/353 questionnaires reported by other health professionals than nurses. So, the sample of 90 questionnaires is not transferable to a wider population.	Fair 3
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
Useful suggestions for research and practice are made. Contributes new to the topic of violence and stress in psychiatric inpatient care.	Good 4
Total:	31 (86%)

Ilic, IM, Arandjelovic, MZ, Jovanovic, JM & Nestic, MM 2017, 'Relationships of work-related psychosocial risks, stress, individual factors and burnout - Questionnaire survey among emergency physicians and nurses', *Med Pr*, vol. 68, no. 2, pp. 167-78, doi:10.13075/mp.5893.00516

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
Title contains all of the information. The information on the data analysis is missing in the abstract. Also, no suggestions for research and practice were made.	Fair 3
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The importance of the research is stated. Little current literature is referenced in the background section. The study objective is not clearly defined.	Fair 3
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The method (cross-sectional quantitative survey study) is appropriate and clearly explained. The measurement instrument used is explained in detail.	Good 4
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
The sampling strategy (non-probability purposive sampling) was appropriate. The exact sample is represented in a table.	Good 4
5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
The data analysis is explained insufficiently and is missing information (e.g. significance levels). The data analysis was rigorous (ANOVA, Benferroni hoc test, Mantel-Haenszel Chi test, Spearman's rank correlation).	Poor 2

6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
No information about the approval of an ethic committee. Information about anonymity and voluntary was given. No information about an informed consent is mentioned.	Poor 2
7. Results: <i>Is there a clear statement of the findings?</i>	
The results are well divided into sections and clearly summarized. Information from the tables is explained in the text.	Good 4
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
The sample (168 participants: 88 physicians, 80 nurses/technicians) is small, which means that the results are not transferable. Some context and setting described, but there is more needing to replicate the study with others.	Fair 3
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
No suggestions for practice are given. Contributes new to the topic of psychosocial problems in the emergency setting.	Fair 3
Total:	28 (77%)

Karadzinska-Bislimovska, J, Basarovska, V, Mijakoski, D, Minov, J, Stoleski, S, Angeleska, N & Atanasovska, A 2014, 'Linkages between workplace stressors and quality of care from health professionals' perspective - Macedonian experience', *Br J Health Psychol*, vol. 19, no. 2, pp. 425-41, doi:10.1111/bjhp.12040.

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
Setting and design are missing in the title. Data analysis is missing in the abstract. The results are summarized very briefly.	Poor 2
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The aim is repeated, which is not necessary. There is an outlined content of contribution, that explains what is already known on the topic and what this study adds.	Fair 3
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The method (qualitative research using focus groups) is appropriate, but information on the exact preceding is missing (Why was this method selected?). Otherwise, the set out in detail.	Fair 3
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
Sampling method (non-probability purposive sampling) is appropriate. There is too little information on the sample (demographic data is missing).	Fair 3
5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
The data analysis is not shown in an extra paragraph. It's unclear who analyzed the data.	Fair 3

6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
Approval from ethic committee of the hospital was gained. An informed consent was signed.	Good 4
7. Results: <i>Is there a clear statement of the findings?</i>	
The results are set out well and in detail. The thoughts and experiences of the participatory are very well described and captured.	Good 4
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
Little comparison with other studies was made. Due to the qualitative design of this study and due to the small sample (56 health professionals) the results are not generalizable.	Fair 3
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
The opinions and experiences of the participants are well represented. The results were very revealing and captured the health professionals' situations very well.. No suggestions for further research were made.	Fair 3
Total:	28 (77%)

Kowalczyk, K & Krajewska-Kulak, E, 2015 'Influence of selected sociodemographic factors on psychosocial workload of nurses and association of this burden with absenteeism at work', *Medycyna Pracy*, vol. 66, no. 5, pp. 615-24, doi:10.13075/mp.5893.00076

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
Setting and design are missing in the title. There are discrepancies between the abstract and the title (aim is different). No suggestions for further research.	Poor 2
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The introduction is short, there could be more explanation given. The exact whole aim of the study is not presented in the introduction.	Fair 3
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The method is not presented transparently and cannot be found in the text. The assessment tool is not explained in great detail	Poor 2
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
Also, the sampling strategy is not explained in great detail. No information on the demographic data of the participants can be found in the text. Since it was an objective of the study to observe the impact of sociodemographic factors on psychosocial aspects, it would have been necessary to outline them. There also was only one inclusion and exclusion criterion: the participants had to sign an informed consent.	Poor 2

5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
Which program carried out the analysis and who carried it out is not explained. All in all, the method section is very confusing due to the lack of information.	Poor 2
6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
Ethical approval was gained from the Local Bioethics Committee, and the participants signed an informed consent.	Good 4
7. Results: <i>Is there a clear statement of the findings?</i>	
There are many tables that are very complicated to understand and not mentioned in the text. Most of the tables do not provide relevant information.	Poor 2
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
The sampling is not clearly defined, there is now information about how the participants were recruited. Due to the small sample (n=789) the findings are not transferable.	Poor 2
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
The findings could be important for practice, but the research process was not transparent.	Very Poor: 1
Total:	20 (55%)

Kowalczyk, K, Krajewska-Kulak, E & Sobolewski, M, 2017 'The Reciprocal Effect of Psychosocial Aspects on Nurses' Working Conditions', *Front Psychol*, vol. 8, doi:10.3389/fpsyg.2017.01386

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
The study design and the setting are missing in the title. Also, information on the method of the study is missing in the abstract. There is only one sentence on the background of the study.	Fair 3
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The aim can be found in the beginning of the introduction and not as it should be, in the end of the introduction. However, the introduction is well written and informative. Current and international literature was used.	Fair 3
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The method used is not named in paper and not described appropriately – purposive, non-purposive,...	Poor 2
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
The sampling strategy is not transparent enough and the detailed demographic data of the participants is missing. There is no information about the recruitment of the participants (e.g. written or electronic questionnaires) mentioned in the “Procedure” section.	Poor 2
5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
The description is sufficiently rigorous. The Spearman’s correlation coefficient was determined.	Good 4

6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
There was approval by Local Bioethics Committee of the Medical University of Bialystok. The participants were informed about the voluntary participation.	Good 4
7. Results: <i>Is there a clear statement of the findings?</i>	
The results are explained in great detail. The text is supported by a great number of tables and figures.	Good 4
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
The sampling strategy is not transparent enough. Many assumptions were made, so the findings are not transferable. The proportion between the text and figures is well balanced.	Very poor 1
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
Suggestions for practice were made, but none for research were made. The results can be quite important for policy and practice, since new knowledge about psychosocial aspects and working conditions was found.	Fair 3
Total:	26 (72%)

Malinauskiene, V, Leisyte, P, Malinauskas, R & Kirtiklyte, K, 2011 'Associations between self-rated health and psychosocial conditions, lifestyle factors and health resources among hospital nurses in Lithuania', *J Adv Nurs*, vol. 67, no. 11, pp. 2383-93, doi:10.1111/j.1365-2648.2011.05685.x

<p>1. Abstract and title: <i>Did they provide a clear description of the study?</i></p>	
<p>The design is missing in the title. Also, information about the data analysis is missing in the abstract. No suggestions for research can be found in the abstract. Also, the different sections are in the wrong order – the research aim, and the research background need to be swapped.</p>	Fair 3
<p>2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i></p>	
<p>The introduction is understandable and based on current literature. However, the aim is not part of the introduction but of the method section.</p>	Fair 3
<p>3. Method and data: <i>Is the method appropriate and clearly explained?</i></p>	
<p>The study method (quantitative survey study) is appropriate to answer the research question. There could be more information about the assessment instrument. However, they are referenced in the text.</p>	Fair 3
<p>4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i></p>	
<p>Yes, the sampling strategy is appropriate but there could be more explanation on the exact procedure – e.g. on the timeframe. There was sufficient randomization. The sample is described in a table.</p>	Fair 3

5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
Most information about the data analysis can be found in “data collection” section and not in the “data analysis” section.	Fair 3
6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
Yes, there was ethical approval by the regional Committee for Medical Research Ethics and a consent letter was signed. The participants were informed about the voluntary and anonymity.	Good 4
7. Results: <i>Is there a clear statement of the findings?</i>	
The result section consisted of only one paragraph. Most results can be found in the discussion section. There is little explanation about the tables in the text.	Poor 2
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
The findings are not transferable due to the small sample (n=784). Also, there would need to be more information about the setting and the sampling.	Poor 2
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
There are new important findings on nurses’ health. The suggestions for research and practice are clearly described and outlined very well.	Good 4
Total:	27 (75%)

Malinauskiene, V, Leisyte, P & Malinauskas, R 2009, 'Psychosocial job characteristics, social support, and sense of coherence as determinants of mental health among nurses', *Medicina-Lithuania*, vol. 45, no. 11, pp. 910-7, doi:10.3390/medicina45110117

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
Setting and design are missing in the title. Data analysis is missing in the abstract. No recommendations for research and practice were given in the abstract.	Fair 3
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The introduction is not easy to read but contains detailed information about the background of the study. Yes, but the aim of the study could be defined in more detail since it is very short.	Fair 3
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The method is appropriate to answer the research question. However, the method section is missing structure. The used questionnaires are well described and referenced in the text.	Fair 3
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
The sampling strategy (non-purposive sampling) is adequate. However, the inclusion and exclusion criteria are not clearly defined. The participants were randomly selected.	Fair 3
5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
The paragraph containing details on the data analysis contains all information.	Good 4

6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
There was approved by the institutional bioethics review committee of Kaunas University of Medicine. The questionnaire was anonymous.	Good 4
7. Results: <i>Is there a clear statement of the findings?</i>	
The results are explained in great detail and supported by tables and figures, which are explained in the text.	Good 4
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
No, due to the small sample (n=372). Also the setting of the study is not explained in detail.	Fair 3
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
The data is important for practice since new knowledge about psychosocial aspects and mental health was generated. Suggestions for practice are missing.	Poor 2
Total:	29 (80%)

Martin-Asuero, A & Garcia-Banda, G 2010, 'The Mindfulness-based Stress Reduction program (MBSR) reduces stress-related psychological distress in healthcare professionals', *Span J Psychol*, vol. 13, no. 2, pp. 897-905

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
The design is missing in the title. Suggestions for research and practice are missing in the abstract. Also, there is little information about the background of this study.	Fair 3
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The introduction and the aims are complete. The introduced is well structured and the study aims are outlined.	Good 4
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The method (semi-experimental qualitative study) is appropriate and clearly explained. Also, inclusion and exclusion criteria are explained in detail. The measurement instruments are described well and are referenced in the text. There was no control group.	Good 4
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
The sampling strategy (non-purposive sampling) was adequate to answer the research question. There is only little information about the demographic data of the participants (age, sex, profession).	Fair 3
5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
The data analysis was rigorous. However, the section about data analysis was part of the result section and not part of the method section.	Poor 2

6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
An informed consent was signed by the participants. There is no information about the approval of an ethic committee.	Fair 3
7. Results: Is there a clear statement of the findings?	
The results are not related to the aims. Most of the result section contains information about the data analysis. Also, the information about results that can be found in tables are not described sufficiently in the text.	Poor 2
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
Since the study used a qualitative design with a very small sample (29 participants) the results are not transferable to a wider population. Also, the sample consisted of various professions, which makes the findings not generalizable to the nursing profession.	Fair 3
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
Since, there has been only little research on MBSR in Europe, the findings are very important for practice. Also, recommendations and suggestions for research and practice were made.	Good 4
Total:	28 (70%)

Pélessier, C, Fontana, L, Fort, E, Vohito, M, Sellier, B, Perrier, C, Glerant, V, Couprie, F, Agard, JP & Charbotelt, B 2015, 'Impaired mental well-being and psychosocial risk: a cross-sectional study in female nursing home direct staff', *BMJ Open*, vol. 5, no. 3, doi:10.1136/bmjopen-2014-007190

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
The abstract is well structured. However, information about the data analysis is missing.	Good 4
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The introduction contains all relevant information but is very short and misses current literature. The measurement instrument is explained in the introduction, which is not necessary (part of the method section).	Fair 3
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The method (quantitative cross-sectional questionnaire survey) is adequate to answer the research question. The measurement instrument is described in detail and referenced in the text.	Good 4
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
The sampling strategy was adequate. The participants were randomly selected. The demographic data is well presented in a table.	Good 4
5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
The procedure of the data analysis is presented well.	Good 4

6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
There is no information about the approval of an ethic committee. Anonymity was guaranteed and the relationship between researcher and participants was considered.	Fair 3
7. Results: <i>Is there a clear statement of the findings?</i>	
The result section is easy to read, contains all important findings and is well structured.	Good 4
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
Since, the sample included different professions, the findings are not transferable to the nursing profession.	Good 4
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
Suggestions for research and practice were made by the researchers. The study adds new knowledge about difficulties in the nursing profession.	Good 4
Total:	34 (94%)

Pisanti, R, van der Doef, M, Maes, S, Lombardo, C, Lazzari, D & Violani, C 2015, 'Occupational coping self-efficacy explains distress and well-being in nurses beyond psychosocial job characteristics', *Front Psychol*, vol. 6, doi:10.3389/fpsyg.2015.01143

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
The study design is missing in the title and the data analysis is not outlined separately. Apart from that the abstract is well structured and contains all important information.	Fair 3
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The introduction is difficult to read and includes very detailed information. The aim is not explained in detail and the objectives are not clearly stated.	Good 4
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The study design (cross-sectional study) is appropriate to answer the research question. The measurement instruments are explained in detail and referenced in the text.	Poor 2
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
There is no detailed information about the demographic data of the participants (only age and gender). The sampling strategy (combined convenient and stratified sampling) is adequate.	Fair 3
5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
The data analysis is explained in detail. Cronbach's alphas, descriptive statistics and Pearson's correlations were evaluated.	Good 4

6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
The approval of hospital ethics committees was given. There was information given about the voluntary of participation .	Good 4
7. Results: <i>Is there a clear statement of the findings?</i>	
The findings are in relation to the aims. The proportion between the number of graphs and the text is not well-balanced.	Good 4
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
The researchers used a big sample (1479 nurses). Data saturation was reached. Due to that findings are generalizable to a wider population.	Good 4
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
Changes to reduce stress in nursing practice were suggested and recommendations for further research were made.	Good 4
Total:	32 (88%)

Roelen, CAM, van Hoffen, MFA, Waage, S, Schaufeli, WB, Twisk, JWR, Bjorvatn, B, Moen, BE & Pallesen S 2018, 'Psychosocial work environment and mental health-related long-term sickness absence among nurses', *Int Arch Occup Environ Health*, vol. 91, no. 2, pp. 195-203, doi:10.1007/s00420-017-1268-1

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
The study design is missing in the title. The data analysis is not outlined separately.	Fair 3
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The introduction is well structured and supported by current and international literature. The research aim and the research objectives are not explained in detail.	Fair 3
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
There is no detailed information on the design (cross-sectional survey study), but there is a reference to an earlier study from which the data was retrieved. The measurement instruments are explained in great detail and referenced in the text.	Poor 2
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
There is no detailed information on the sampling strategy, but there is a reference to a study from which the data was retrieved. The detailed demographic data of the participants are provided in a table.	Fair 3
5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
The data analysis is rigorous. Confidence intervals were defined.	Good 4

6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	
Informed consents were signed by the participants.	Good 4
7. Results: <i>Is there a clear statement of the findings?</i>	
The results are explained very shortly, there could be more explanation to it. The graphs are not explained sufficiently in the text.	Fair 3
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
The data was collected in an earlier study. Due to the big sample (1533 nurses) the findings are transferable to the nursing profession.	Good 4
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
The study adds new knowledge about mental-health related sickness absence, which is important for nursing practice. The suggestions for practice and research are described in detail.	Good 4
Total:	30 (83%)

Tu vesson, H, Wann-Hansson, C & Eklund, M, 2014 'Psychosocial Work Environment, Stress Factors and Individual Characteristics among Nursing Staff in Psychiatric In-Patient Care', *Int J Environ Res Public Health*, vol. 11, no. 1, pp. 1161-75, doi:10.3390/ijerph110101161

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
The design is missing in the title. The abstract is not structured well enough, it is missing sub-division. Also, the data analysis section contains only of a half sentence.	Fair 3
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
Yes, the introduction is very detailed, which makes it difficult to read. There are many references to current and international studies.	Good 4
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The method (cross-sectional questionnaire study) was appropriate to answer the research question. The measurement instruments are explained in detail.	Good 4
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
Yes, non-purposive sampling was applied to answer the research question. The inclusion criteria are clearly defined.	Good 4
5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
A significance level was defined, and Spearman's correlations were applied.	Good 4
6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	

Yes, ethical approval was given by the Regional Ethics Review Board.	Good 4
7. Results: <i>Is there a clear statement of the findings?</i>	
The findings are in relation to the study's objective but are not explained in the text well enough.	Fair 3
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
Since the researchers used a small sample (n=93), the findings are not generalizable.	Fair 3
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
The study contributes new knowledge, two especially important types of stress could be identified. Suggestions for practice and recommendations for further research were made.	Good 4
Total:	33 (97%)

Ulusoy, N, Wirth, T, Lincke, HJ, Nienhaus, A & Schablon, A 2018, 'Psychosocial burden and strains in geriatric nursing: comparison of nursing personnel with and without migration background', *Z Gerontol Geriatr*, doi:10.1007/s00391-018-1414-8

1. Abstract and title: <i>Did they provide a clear description of the study?</i>	
The design is missing in the title. The aim is outlined well. However, the abstract is not part of the first page.	Fair 3
2. Introduction and aims: <i>Was there a good background and clear statement of the aims of the research?</i>	
The introduction contains information on the method, which is not necessary.	Good 4
3. Method and data: <i>Is the method appropriate and clearly explained?</i>	
The study design (quantitative cross-sectional study) is appropriate to answer the research question. The measurement instrument is explained in detail and referenced in the text.	Fair 3
4. Sampling: <i>Was the sampling strategy appropriate to address the aims?</i>	
The sampling strategy (non-purposive sampling) was adequate to answer the research question. The demographic data is described in detail. Also information about detailed work conditions is given.	Good 4
5. Data analysis: <i>Was the description of the data analysis sufficiently rigorous?</i>	
The data analysis is rigorous. There was a confidence interval set.	Good 4
6. Ethics and bias: <i>Have ethical issues been addressed, and what has necessary ethical approval gained? Has the relationship between researchers and participants been adequately considered?</i>	

There is no approval by an Ethic committee mentioned in the paper. Participating was voluntary and anonymity was guaranteed.	Poor 2
7. Results: <i>Is there a clear statement of the findings?</i>	
The results relate to the research objectives. The proportion between the number of graphs and the text is okay. There is information about the graphs given in the text.	Good 4
8. Transferability or generalizability: <i>Are the findings of this study transferable (generalizable) to a wider population?</i>	
Since the researchers used a small sample (n=366) the findings are not generalizable. Also, the sample consisted of various professions.	Fair 3
9. Implications and usefulness: <i>How important are these findings to policy and practice?</i>	
New knowledge about the differences between nurses with and without a migration background could be generated. Recommendations for practice and further research were made.	Good 4
Total:	31 (91%)