



Interventions to reduce the risk of mental health problems in health and social care workplaces: A scoping review

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ABSTRACT

Work in the health and social care sector is stressful, and work-related stress increases the risk of depression, anxiety, burnout, and sleep disorders. Although interventions to reduce stress and burnout at workplaces have been developed and studied, most studies have lacked the effectiveness to improve the situation. Thus, more knowledge on interventions and analysis of their mechanisms is needed to reduce the risk of more adverse mental health problems (MHP). We conducted a scoping review to identify the relevant literature on individual and organizational interventions to improve mental health in health and social care workplaces. Data were gathered on target groups, intervention types and their effectiveness, and the outcomes of the interventions. We summarized this data thematically. The final review consisted of 76 studies. Mental health interventions primarily focused on health care workers rather than social care professionals. The interventions were mostly directed at individual workers, ignoring organizational-level interventions. They used a great variety of outcomes and questionnaires, and the questionnaires that measured the outcomes were used ambiguously. In most cases, the reported effectiveness of the studied interventions was incoherent, and many of the interventions had both statistically significant and non-significant effects. Evidence that interventions reduce the risk of work-related MHP is scarce. High-quality randomized controlled trials of interventions to promote mental health with more coherently formed outcomes are needed, especially on the organizational level. More interventions to improve social care professionals' mental health are also needed.

1. Introduction

The prevalence of long-term sick leave absences from work due to mental health problems (MHP) is rising in Western countries (Salomonsson et al., 2018). Today, MHP are one of the most common causes of work disability (Vos et al., 2017). It is estimated that roughly one fifth of the working-age population in western countries suffer from common MHP (Steel et al., 2014; OECD, 2012). Psychosocial stress factors at work, such as job strain, effort-reward imbalance, and organizational injustice are a major cause of MHP (Duchaine et al., 2020). Moreover, psychosocial hazards, including work-related stress, burnout, workplace violence, and critical events at workplace, are considered new and emerging risk factors (Magnavita and Chirico, 2020; Chirico, 2015). Work is especially stressful for workers in health and social services

(HSS), increasing HSS workers' risk of depression, anxiety, burnout and sleep disorders. (De Sio et al., 2020; West et al., 2016; Bronkhorst et al., 2015). Work-related stress can also increase the risk of adjustment disorders and post-traumatic stress disorders, as seen in the current COVID-19 pandemic (Chirico et al., 2021; Chirico, 2016).

Preventive mental health interventions or health promotion programs are one concrete way to reduce the risk of mental health problems and to enhance protective factors, such as social support (World Health Organization, 2004). They are warranted especially during the COVID-19 pandemic (Tracy et al., 2020). Health promotion interventions are often designed to influence individuals (Seppälä et al., 2017), although organizational approaches, including reduction of job demands, improvement of job resources, and improving workflow, have also been outlined (Sinsky et al., 2020). In the present study, we examine

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both individual and organizational interventions, as both are potentially effective in improving mental health (ibid.)

Many systematic and scoping reviews have already been conducted on interventions to reduce HSS workers' experienced stress (Ruotsalainen et al., 2015; Alkhawaldeh et al., 2020) and burnout (West et al., 2016; O'Connor et al., 2018). However, reviews on interventions to prevent more adverse MHP such as depression and anxiety, are few (Zhang et al., 2019). Systematic reviews and meta-analyses have shown that intervention effectiveness in reducing the prevalence of the risk factors of MHP is low or moderate (Ruotsalainen et al., 2015; Clough et al., 2017). Developing more effective interventions requires that the scope of the literature is determined.

Whereas systematic reviews focus on the evidence of the effect of interventions on certain outcomes, a scoping review is the preferred tool for reporting on the type of research in the field of mental health interventions (Munn et al., 2018). Scoping reviews of interventions to promote mental health in HSS are scarce. Barrientos-Trigo et al. (2018) conducted a scoping review on macro-management level interventions to improve the working conditions of the nursing staff in hospital care. van Diepen et al. (2020) conducted a scoping review on the association between person-centered care and healthcare providers' job satisfaction and work-related health. To our knowledge, however, no scoping reviews on reducing the risk of MHP in HSS exist.

The aim of this scoping review is to systematically examine the literature on mental health promotion and determine what kind of interventions have been implemented to reduce the risk of mental health problems (MHP): at whom they are aimed, how the interventions are expected to work and which outcomes they are proposed to affect. We thus aim to contribute to the existing literature on work-related stress and burnout and add more adverse MHP to the scope. We also aim to determine how many interventions are directed to individual workers to cope with stress and how many to change the work itself and tackle the psychosocial stressors at work.

2. Methods

We conducted a scoping review using the PRISMA Extension for Scoping Reviews (PRISMA-ScR) checklist (Tricco et al., 2018). We formulated our research question in PICO format (Tricco et al., 2018): "What kinds of workplace organization-level and individual-level interventions can be found that promote mental health in social and health care workplaces?". We were particularly interested in the following: do the study populations represent all HSS workers? How many of the analyzed interventions were organizational and focused on job stressors? Which interventions have been reported to affect mental disorders, and did organizational interventions have a significant effect? What kinds of research gaps can be identified based on this review?

We conducted a systematic literature search for relevant studies in December 2020 in the PUBMED, CINAHL and PSYCINFO databases, which we considered the most relevant for studies of mental health. We used a wide list of multiple keywords and subject headings (see Appendix 1) to avoid missing potential published studies. We formed the search strategy together with a librarian from the University of Eastern Finland.

We selected the studies according to the following criteria: First, we included studies where the population comprised health and social care professionals, usually collaborating and working in the same health and social care organizations. We excluded studies of HSS students; even though encountering stressful situations in practical training, they do not carry the same responsibility for patients or experience the same amount of stressors as registered nurses (Onieva-Zafra et al., 2020). Second, we only included studies where the intervention was associated with workplace factors or delivered in work contexts for either individual workers, work units, or the whole organization. Third, we chose studies from 2000 to 2020, which were written in English, and published in peer-reviewed journals. Fourth, we selected only randomized

controlled studies (RCT). Finally, we included studies where the outcome could be considered an ICD-10 defined psychiatric condition, with either an F-code or a Z-code. In practice, depression, anxiety, insomnia, burnout, and stress were the main outcomes in this review. We also included psychological distress and (general) mental health as outcomes. We included Z-codes because work stress and burnout increase the risk of more adverse mental disorders and physical health problems (Havermans et al., 2018; Maslach et al., 2001) and thus increase the risk of long-term absences and work disability. We included studies where MHP or their risk was either a primary or a secondary outcome.

Through the database searches we identified 1518 studies, of which 301 were duplicates (see Fig. 1). Abstract screening found 1085 of the studies to be irrelevant, resulting in 132 full-text studies, which were assessed for eligibility. Of these, 56 were excluded mainly due wrong study design (26 studies), wrong article type (9), wrong outcomes (7) or wrong intervention (6). The remaining 76 studies were included in the review. We used Covidence software to assist with screening and administering the literature.

We compiled an MS Excel worksheet of relevant information on the included articles. We considered relevant information to be the country where the study was conducted in, study population, participant eligibility criteria (if mentioned), the number of participants in the intervention and control groups, the description of the intervention and the comparative intervention, outcome variables and measures, measurement time points, length of the intervention, and the reported effectiveness of the intervention. Two authors (RN, KS) first collected the data from the same 10 articles and compared the results and adjusted the classifications on the sheet. After this, they independently collected the data on the rest of the articles. All disagreements were discussed and when needed, other authors were consulted.

We analyzed and summarized the data that we had compiled in the MS Excel worksheet. We classified the interventions into two main categories and six intervention subcategories, which we formed according to how the interventions were expected to reduce the risk of MHP. The two main categories were individual and organizational interventions. The six subcategories were 1) individual stress-coping interventions, 2) mental relaxation interventions, 3) physical exercise interventions, 4) professional-patient coordination interventions, 5) co-creational interventions, and 6) management interventions.

3. Results

3.1. Characteristics of the included studies

Seventy-six studies were included in the final review (see Table 1). Most of these (12) were published in 2019. Almost half of the studies (37) were published after 2015, which indicates a growing interest in mental health promotion in recent years. Most studies, 28, were conducted in Northern America (27 in the USA and one in Canada) and Europe (27 in total). Of the included trials, 18 used a cluster-randomized controlled trial (RCT) design. The rest 58 studies were RCTs. To be precise, four studies (Bramble et al., 2011; Ewers et al., 2002; McElligott et al., 2003; van Weert et al., 2005) were reported to be quasi-experimental studies, but they had randomized either participants or study sites to receive either an intervention or comparative treatment. We interpreted these as RCTs.

3.2. Target groups in studies

In 32 studies the target group was nurses; for example, mental health nurses, elderly care nurses, and nursing assistants. In 19 studies, the target group was physicians or medical doctors; for example, psychiatrists, pediatricians and oncologists. In one study the target group was social workers. In the remaining 24 articles, the target group was miscellaneous, i.e., it consisted of several professions, such as health

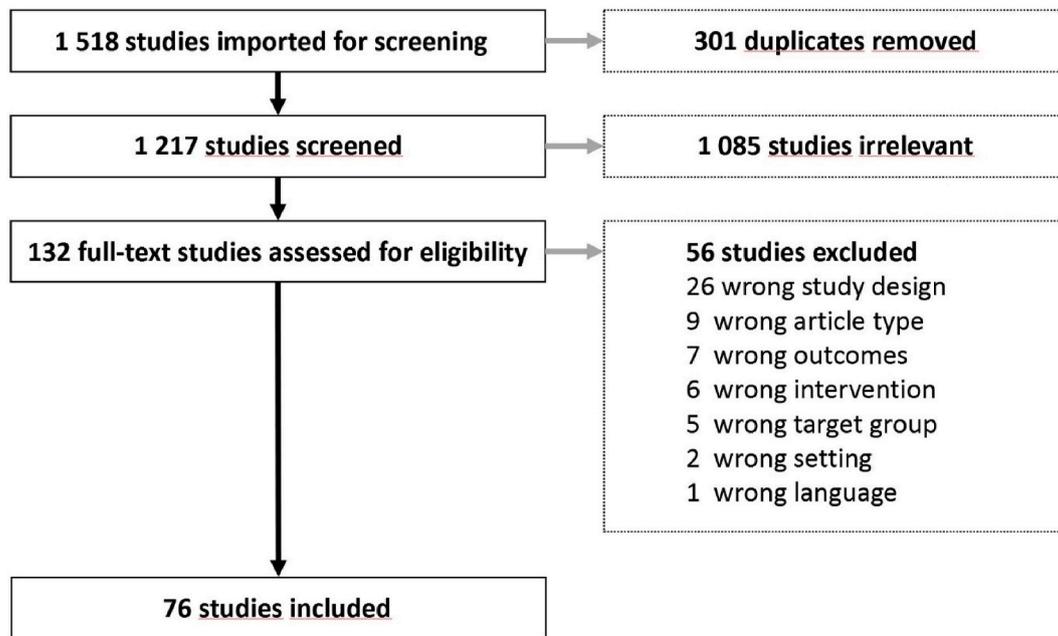


Fig. 1. Study flow diagram.

care workers, emergency medical services staff and nursing professionals.

3.3. Intervention types

We classified the interventions in the included studies into two main categories and six subcategories, based on the mechanism they were expected to reduce the risk of MHP (see Table 2). Individual interventions comprised, first, individual stress coping interventions, which aimed to provide new ways to feel, think and act in stressful situations (Ruotsalainen et al., 2015). They aimed either to improve skills for controlling work stressors and problems at work or to improve the ability to cope with work stressors. They included cognitive-behavioral techniques, psychosocial skills training sessions, relational support groups, coaching, and online stress and well-being management interventions.

Second, mental relaxation interventions aimed to reduce stress and help recovery from stressful situations. They were mainly mindfulness interventions, but touch therapy, Snoezelen-therapy, music and imagery therapy, and gratitude diaries were also studied. Third, physical exercise interventions aim to enhance good health and vitality which in turn improves well-being, reduces levels of fatigue and increases levels of emotional energy and mental resilience. The interventions included yoga, muscle stretching and massage therapy. Fourth, we discovered interventions that aimed to improve cooperation between professionals and patients. They aimed to influence patients' and their families' expectations and demands for treatment and thus decrease HSS workers' stress. They included communication skills training, programs to improve cooperation and communication between staff and patients' families, and education on better care for elderly patients.

Organizational interventions comprised, first, co-creational interventions, which aimed to change the way in which work is designed, organized and managed in a cocreational, participatory process (Nielsen, 2013). Cocreation is a process in which the staff of a work unit identify the factors that influence health and well-being at their own workplace and make action plans. (Sirola-Karvinen et al., 2010). Second, management interventions aimed to improve leadership skills, onboarding programs, and work schedule planning in the organizations employees worked in.

3.4. Reported effectiveness of the interventions

Twenty of the 32 studies assessing individual stress coping interventions showed a statistically significant positive effect on at least one risk factor of MHP (see Table 2). Psychological communication training and coaching interventions were reported to be effective in reducing stress and some dimensions of burnout. In addition, most psychoeducational and coping skills training interventions had positive effects on stress, anxiety, and one or two subgroups of the Maslach Burnout Inventory (MBI). However, some studies reported no effects. Web-based interventions and two of three cognitive behavior therapy interventions had no significant effect on the risk of MHP. In reflective support groups, stress and anger management interventions, and mental health surveillance interventions, the reported effects on the risk of MHP were contradictory: some studies showed a significant effect while others did not.

In most cases, mental relaxation interventions, primarily mindfulness programs, had a positive effect on the risk of MHP: 10 of the 14 studies found a positive effect on at least one risk factor of MHP, most often stress, and in the MBI subgroup, emotional exhaustion (but not other subgroups). On the other hand, two studies (Errazuriz et al., 2020) (Watanabe et al., 2019) found that mindfulness had no effect on the risk of MHP.

Six of the nine physical exercise interventions had a positive effect on MHP. Muscle stretching and relaxation interventions and a massage therapy intervention had a positive effect on stress, whereas the reported effectiveness of other physical exercise and yoga was contradictory.

Six of the eleven studies analyzing patient-professional cooperation interventions reported a positive effect on the risk of MHP. The results of communication skills training interventions and dementia care education interventions were contradictory, but emotion-oriented care and person-centered care for patients were reported to have positive effects on stress, and in the MBI subgroup, on personal accomplishment.

All but one study reported that co-creational interventions had a non-significant effect on the risk of MHP: in the Healthy Work Place study (Linzer et al., 2015), interventions related to workflow redesign improved communication, and QI projects directed at clinician concerns reduced burnout, but did not alleviate stress.

Of the management interventions, one work break study and one

Table 1
 Characteristics of included studies (N = 76) evaluating interventions to reduce the risk of mental health problems (MHP).

Study number	Authors	Country	Study design	Population	Intervention	Control	MHP-related outcome	Length of intervention	Measurement time points
1	Alexander (2015)	USA	RCT	Nurses	Yoga	Usual care	Burnout	8 weeks	Baseline, end
2	Axisa et al. (2019)	Australia	RCT	Physician trainees	Well-being workshop	No information	Depression, anxiety, stress, burnout	4,5 h	Baseline, 3 and 6 months after baseline
3	Barbosa et al. (2016)	Portugal	RCT	Direct care workers in elderly care	Person-centered care	Only education, no supportive component	Stress, burnout	8 weekly 1.5 h sessions	Baseline, end, 6 months after end
4	Bernburg et al. (2016)	Germany	RCT	Junior pediatricians	Psychosocial skills training	No intervention	Stress	12 weekly 1.5 h sessions	Baseline, end, 6 months after baseline
5	Bragard et al. (2010)	Belgium	RCT	Cancer physicians	Communication skills training	Basic training	Burnout	37 h over 3 months	Baseline, end, 3 months after end
6	Bramble et al. (2011)	Australia	Quasi-experimental	Staff caregivers	Education program: treating dementia with family	Placebo including fewer sessions	Stress	3 sessions	Baseline & 1, 5, 9 months after end
7	Brinkborg et al. (2011)	Sweden	RCT	Social workers	Behavior therapy	Waiting list	Stress, general mental health, burnout	4 × 3 h over 7 weeks	Baseline, end
8	Brooks et al. (2010)	USA	RCT	Nurses	Music and imagery therapy	Waiting list	Burnout	1 h per week for 3–6 weeks	Baseline, end
9	Butow et al. (2008)	Australia	RCT	Medical and radiation oncologists	Communication skills training	Waiting list	Burnout	1.5 days +6 h over 4 months	Baseline, end, 1 year after baseline
10	Costa et al. (2019)	Brazil	RCT	Nurses	Muscle stretching	No information	Stress	2-3 40-min sessions over 8 weeks	Baseline, end
11	Cheng et al. (2015)	China	RCT	Health care practitioners	Gratitude diaries	Hassle intervention & no treatment	Depression, stress	4 weeks	Baseline, end, 3 months after end
12	Chesak et al. (2020)	USA	RCT	Nurse leader mothers	Relational support groups	1 h per week of protected time	Depression, anxiety, stress	1 h per week for 12 weeks	Baseline, end, 3 months after end
13	Clemow et al. (2018)	USA	RCT	Urban medical center employees	Stress and anger management	Minimally enhanced usual care group	Depression, stress, burnout	1 h per week for 10 weeks	Baseline, 2 months after end
14	Coburn et al. (2006)	Germany	RCT	Resident anesthetists	Scheduled breaks	No intervention	Sleepiness, anxiety	1 working day	Baseline, end
15	Cohen-Katz et al. (2005)	USA	RCT	Nursing professionals	Mindfulness	Waiting list	Burnout, psychological distress	2.5 h per week for 8 weeks	Baseline, end, 3 months after end
16	Cordoza et al. (2018)	USA	RCT	Nurses in hospital	Work breaks in a garden	No intervention (crossover design)	Burnout	6 weeks	Baseline, end
17	Csipke et al. (2019)	UK	Cluster-RCT	Mental health nurses	CBT and other cognitive therapies	No intervention	Burnout	6 sessions 2–3 h each	Baseline, 6 months after baseline
18	Delvaux et al. (2004)	Belgium	RCT	Oncology nurses	Psychological communication training	Waiting list	Stress	5 days per month for 3 months, total 105 h	Baseline, end, 3 months after end
19	Duchemin et al. (2015)	USA	RCT	Surgical Intensive Care Unit Personnel	Mindfulness & yoga	Waiting list	Stress, depression, anxiety, burnout	1–2 h per week for 8 weeks	Baseline, end
20	Dyrbye et al. (2016)	USA	RCT	Physicians	Online well-being micro-tasks	No intervention	Burnout, depression	10 weeks	Baseline, end
21	Dyrbye et al. (2019)	USA	RCT	Physicians	Professional coaching	Waiting list	Burnout	1 h + 5 × 30 min over 5 months	Baseline, end
22	Errazuriz et al. (2020)	Chile	RCT	Health care workers (others than physicians)	Mindfulness-based stress reduction	Control 1: Stress management, Control 2: waiting list	Psychological distress, stress	2 h per week for 8 weeks	Baseline, end, 4 months after end
23	Ewers et al. (2002)	UK	Quasi-experimental	Forensic mental health nurses	Patients' mental health treating skills	Waiting list	Burnout	20 days over 6 months	Baseline, end
24	Finnema et al. (2005)	Netherland	RCT	Nursing assistants	Emotion-oriented care for patients	Usual care	Stress	9–12 days over 9 months	Baseline, middle, end
25	Ghawadra et al. (2020)	Malaysia	RCT	Ward nurses	Mindfulness	Waiting list	Depression, anxiety, stress	2 h workshop + 4 weeks training	Baseline, end, 8 weeks after end
26	Gunasingam et al. (2015)	Australia	RCT	Junior doctors	Debriefing sessions	No intervention	Burnout	4 sessions over 2 months	Baseline, end

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Table 1 (continued)

Study number	Authors	Country	Study design	Population	Intervention	Control	MHP-related outcome	Length of intervention	Measurement time points
27	Guo et al. (2020)	China	RCT	Nurses with burnout symptoms	Online psychotherapy	No intervention	Burnout	5 days a week over 6 months	Baseline, end
28	Gärtner et al. (2013)	Holland	Cluster-RCT	Nurses and allied health care professionals	Mental health surveillance	Usual care	Distress, depression and anxiety, posttraumatic Stress	1 session	Baseline & 3, 6 months after baseline
29	Hersch et al. (2016)	USA	RCT	Nurses	Web-based stress management	Waiting list	Stress, distress	3 months	Baseline, end
30	Holt (2005)	Australia	RCT	General practice with psychological distress	Mailed GHQ-12 feedback	No intervention	Psychological distress	1 feedback	Baseline, 3 months after baseline
31	Huang et al. (2020)	China	RCT	Resident physicians	Balint groups discussion session	Waiting list	Burnout	12 1-h sessions over 6 months	Baseline, end
32	Jakobsen et al. (2017)	Denmark	Cluster-RCT	Health care workers	Supervised physical exercise	Physical exercise at home	Mental health	5 days a week for 10 weeks +5 sessions	Baseline, end
33	Ketelaar et al. (2013)	Netherlands	Cluster-RCT	Health care professionals	Feedback and self-help e-mental health intervention	Waiting list	distress, post-traumatic stress	No information	Baseline & 3, 6 months after baseline
34	Kossek et al. (2019)	USA	Cluster-RCT	Direct care workers	Supervisor and organizational social support to increase control over work time	Waiting list	Mental health, stress	4 months	Baseline & 6, 12, 18 months after baseline
35	Lin et al. (2019)	China	RCT	Nurses	Mindfulness	Waiting list	Stress	2 h/week for 8 weeks	Baseline, end, 3 months after end
36	Linzer et al. (2015)	USA	Cluster-RCT	Primary care clinicians	Improving working conditions (communication, workflow etc.)	No intervention	Stress, burnout	No information	Baseline, 12–18 months after
37	Lucas et al. (2012)	USA	Cluster-RCT	General medicine attending physicians	Inpatient rotations	No intervention (crossover design)	Burnout, stress	1 year	Baseline, end
38	Maatouk et al. (2018)	Germany	RCT	Nurses aged 45 and older	Stress prevention discussion groups	Waiting list	Mental health-related quality of life, mental strain, depression, anxiety	2 h/week for 7 weeks	Baseline, end
39	Mache et al. (2015)	Germany	RCT	Junior Physicians	Psychosocial skills training	Waiting list	Stress	2 h/week for 12 weeks	Baseline & 3, 6 months after baseline
40	Mache et al. (2016)	Germany	RCT	Psychiatrists	Psychosocial skills training	Waiting list	Stress	1.5 h/week for 12 weeks	Baseline, end, 3, 6 months after end
41	Mache et al. (2017)	Germany	RCT	Junior gynecologists	Coping skills training	Waiting list	Stress, burnout (emotional exhaustion)	1.5 h/week for 12 weeks	Baseline, end, 3, 6 months after end
42	Mache et al. (2018)	Germany	RCT	Junior physicians	Psychoeducational intervention	Waiting list	Stress, burnout (emotional exhaustion)	1.5 h/week for 12 weeks	Baseline, end, 3, 6 months after end
43	Mackenzie et al. (2006)	Canada	RCT	Nurses and nurse aides	Mindfulness	Waiting list	Burnout	4 weeks	Baseline, end
44	Madede et al. (2017)	Mozambique	Cluster-RCT	Health workers	Supportive supervision intervention	Waiting list	Burnout (emotional exhaustion)	21 months	Baseline, end
45	Mahdizadeh et al. (2019)	Iran	RCT	Emergency medical services staff	Massage therapy	No intervention	Stress	2 × 25 min/week for 4 weeks	Baseline, end
46	Marino et al. (2016)	USA	Cluster-RCT	Extended care workforce	Employees' control over work and working hours	Usual practice	Insomnia, Sleep insufficiency	4 months	Baseline & 6, 12 months after baseline
47	Matsugaki et al. (2017)	Japan	RCT	Nurses	Supervised physical exercise	Instructions only during the first session	Depression, psychological status	2/week for 12 weeks	Baseline, end
48	McElligott et al. (2003)	USA	Randomized quasi-experimental	Nurses	AMMA touch therapy	Mock treatments	Anxiety	1 h/week for 4 weeks	Baseline, end
49	McGonagle et al. (2020)	USA	RCT	Primary care physicians	Well-being coaching	Waiting list	Burnout, work stress	6 sessions of 0.5–1 h over 3 months	Baseline, end, 3, 6 months after end
50	Medisauskaite and Kamau (2019)	UK	RCT	Medical doctors	Psychoeducational intervention	No intervention	Burnout, anxiety, psychiatric morbidity, insomnia	7 days	Baseline, end

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Table 1 (continued)

Study number	Authors	Country	Study design	Population	Intervention	Control	MHP-related outcome	Length of intervention	Measurement time points
51	Menzel and Robinson (2006)	USA	RCT	Registered nurses and nursing assistants	CBT	Waiting list	Stress, burnout, depression, anxiety	1.5 h/week for 6 weeks	Baseline, end
52	Mistretta et al. (2018)	USA	RCT	Health care workers	Mindfulness	No intervention	Depression, anxiety and stress, burnout	2 h/week for 6 weeks	Baseline, end, 3 months after end
53	Morita et al. (2009)	Japan	RCT	Nurses	Communication skills training	Waiting list	Burnout	8 × 3 h over 4 months	Baseline, end, 3/6 months after end
54	O'Brien et al. (2019)	USA	RCT	Nurses and nurse aids	Behavior therapy	Waiting list	Mental health symptoms	Two 2.5 h sessions with 1 week space	Baseline, 1 month
55	Ozgundodu and Gok Metin, 2019	Turkey	RCT	Nurses	Muscle relaxation	1 educational session	Stress	20 min/week for 8 weeks	Baseline & 4, 8, 12 weeks after baseline
56	Palumbo et al. (2012)	USA	RCT	Nurses aged over 40	Tai Chi	No intervention	Mental health, stress	85 min/week for 15 weeks	Baseline, end
57	Pehlivan and Güner (2020)	Turkey	RCT	Nurses	Knowledge and skills to improve resilience	No intervention	Burnout, stress	10 h in 2 days or in 5 weeks	Baseline, end, 3, 6, 12 months after end
58	Peterson et al. (2008)	Sweden	RCT	Health care workers	Reflecting peer-support group	No intervention	Burnout, anxiety, depression	20 h over 4 weeks	Baseline, pre-treatment, end, 7, 12 months after end
59	Pillemer et al. (2008)	USA	Cluster-RCT	Nursing home staff	Retention specialist	No information	Stress	1 year	Baseline, end, 6, 12 months after end
60	Robison et al. (2007)	USA	Cluster-RCT	Nursing home staff	Communication and cooperation between families and staff	No intervention	Depression, burnout (depersonalization), stress	4–5 h + 2 h	Baseline & 2, 6 months after end
61	Salyers et al. (2019)	USA	RCT	Clinicians	Stress coping: CBT, mindfulness etc.	Motivational interviewing training	Burnout	4 h + 2 × 2 h sessions over 2 months	Baseline & 3, 6, 12 months after baseline
62	Sampson et al. (2020)	USA	RCT	Nurses	CBT skill-building	Debriefing sessions	Stress, anxiety, depression	8 weekly sessions	Baseline, end, 3, 6 months after end
63	Schrijnemaekers et al. (2003)	Netherlands	Cluster-RCT	Professional caregivers in elderly people's home	Emotion-oriented care for patients	Usual care	Burnout	7.5 days over 8 months	Baseline & 3, 6, 12 months after baseline
64	Shapiro et al. (2005)	USA	RCT	Health care professionals	Mindfulness	Waiting list	Psychological distress, burnout, stress	2 h/week for 8 weeks	Baseline, end
65	Sharif et al. (2013)	Iran	RCT	Intensive care unit nurses	Emotional intelligence workshop	Waiting list	General mental health	2 days	Baseline, end, 1 month after end
66	Spector et al. (2015)	USA	Cluster-RCT	New graduate nurses	Onboarding program	Usual care	Work stress	15 months	Baseline, 6, 9, 12 months after baseline
67	Strijk et al. (2012)	Netherlands	RCT	Older hospital workers	Yoga, workout, aerobics	Information about a healthy lifestyle in general	Mental health	6 months	Baseline, 6 months after baseline
68	Tonarelli et al. (2018)	Italy	RCT	Palliative care professionals	Expressive writing	Neutral writing protocol	Stress, burnout	2 sessions	Baseline, end
69	Uchiyama et al. (2013)	Japan	Cluster-RCT	Nurses	Participatory work environment improvement	No intervention	Mental health	6 months	Baseline, end
70	van de Ven et al. (2013)	Netherlands	Cluster-RCT	Care home staff	Dementia care mapping training	Usual care	Stress-related symptoms	4 months	Baseline & 4, 8 months after baseline
71	van Weert et al. (2005)	Netherlands	Quasi-experimental	Nursing assistants	Snoezelen (stimulus relaxation)	Usual care	Stress, burnout	4 days	Baseline, 18 months after baseline
72	Watanabe et al. (2019)	Japan	Cluster-RCT	Hospital nurses	Mindfulness	Psychoeducation leaflet	Depression, anxiety, burnout, insomnia	30 min/week for 4 weeks	Baseline & weeks 13, 26 and 52
73	Wei et al. (2017)	China	RCT	Emergency department nurses	Communications and emotional skills training	Usual care	Burnout	6 months	Baseline, end

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Table 1 (continued)

Study number	Authors	Country	Study design	Population	Intervention	Control	MHP-related outcome	Length of intervention	Measurement time points
74	West et al. (2014)	USA	RCT	Physicians	Well-being discussion groups (mindfulness, reflection etc.)	1 h per week of protected time	Burnout, stress, depression, mental health	1 h every other week for 9 months	Baseline, mid-study & 3, 12 months after end
75	Yung et al. (2004)	China	RCT	Nurse managers	Muscle and cognitive relaxation	No intervention	Anxiety, mental health	20 min/week for 4 weeks	Baseline, end, 1 month after end
76	Zwijnsen et al. (2015)	Netherlands	Cluster-RCT	Dementia special care staff	Dementia care education package	No intervention (crossover design)	Burnout	4–16 months	Baseline, mid-study, end

inpatient rotations study reported a positive effect on stress and the MBI subgroups personal accomplishment and emotional exhaustion but not on anxiety or sleepiness.

3.5. Outcomes of the studies

Our analysis of the selected studies revealed a wide variety of different ways to measure MHP and their risk factors (see Table 3). Anxiety was measured most often using the Generalized Anxiety Disorder Questionnaire(GAD-7), the Depression Anxiety Stress Scale (DASS-21), and the State-Trait Anxiety Inventory (STAI).

Depression was measured most often using DASS-21, the Epidemiologic Studies Depression Scale (CES-D) and Patient Health Questionnaire (PHQ-9). The Beck Depression Inventory was used to measure depression in two studies.

Stress, work stress or perceived stress were measured most often using the Perceived Stress Scale (PSS). The Perceived Stress Questionnaire (PSQ) was used in five studies, DASS-21 in four studies, and the Nursing Stress Scale (NSS) in three studies. The General Health Questionnaire (GHQ), either the 12-item version or the 28-item version, was also used to measure stress in three studies.

Three questionnaires were used to measure two or three of the anxiety, depression, and stress outcomes. The Brief Symptom Inventory (BSI) was used in one study to measure both depression and anxiety. Two studies used the Hospital Anxiety and Depression Scale to measure depression and anxiety. Finally, four studies used DASS-21 to measure depression, anxiety, and stress.

Regarding the outcomes of distress, psychological distress or psychological morbidity, three studies used the 12-item GHQ to measure not only stress, but also psychological morbidity or distress. Two studies, in addition to measuring depression and anxiety, also used the BSI to measure psychological distress.

Burnout or at least one of its dimensions (emotional exhaustion, depersonalization or personal accomplishment; Maslach and Jackson, 1981) was most often measured using the MBI or the MBI-General Survey.

Mental health, general mental health, or psychological status were most often measured using the RAND Short Form 36 questionnaire. Four studies, in addition to measuring stress and distress, used the GHQ (full, 12-item or 20-item version) to measure mental health. CES-D was used in one study to measure mental health.

Finally, two studies used the Insomnia Severity Index, and one study used both the Pittsburgh Sleep Quality Index and Stanford Sleepiness Scale to measure insomnia or sleep disorders.

Of the 45 studies reporting statistically significant change in mental health-related outcome (see Table 2), MBI detected intervention effectiveness in most studies. It was used in 36 studies and detected a change in one or several MBI dimensions in 21 studies (21/36). PSS detected a statistically significant outcome change in seven (7/17) studies. PSQ detected a change in all five studies it was used in, GHQ-12 in four (4/7) studies, and NSS in two (2/3) studies. Other questionnaires detected no change or a change in one included study.

4. Discussion

This scoping review examined interventions to reduce the risk of mental health problems (MHP) at workplaces. We found that mental health interventions primarily focused on nurses and nursing staff and secondarily on multiple health care professions; only one study's intervention targeted social workers. Second, interventions aimed to reduce the risk of MHP were mostly directed at individual workers, aiming to help them cope with or handle stressful situations. Only five co-creational interventions and one management intervention aimed to tackle job stressors. Third, in most cases, the reported effectiveness of the interventions studied was inconsistent. Fourth, the outcomes measured in the intervention studies varied greatly.

Table 2

Intervention types and their reported effect on mental health problems in the included studies. Each study is indicated using study numbers in Table 1.

Intervention main category	Intervention subcategory	Intervention subtypes	Interventions reported to have a positive effect ^a	Interventions reported to have no effect	Total N of studies	
Individual interventions	Individual stress coping interventions	Psychoeducation/coping skills training (4, 39–42, 50, 57, 61)	Psychoeducation/coping skills training (4, 39–42, 50)	Psychoeducation/coping skills training (57, 61)	32	
		Relational/reflective support groups (2, 12, 26, 31, 38, 58, 74)	Relational/reflective support groups (12, 38, 58, 74)	Relational/reflective support groups (2, 26, 31)		
		Online stress and well-being management (20, 27, 29, 33)	Online stress and well-being management (29)	Online stress and well-being management (20, 27, 33)		
		Stress and anger management (7, 13, 54)	Stress and anger management (7, 13)	Stress and anger management (54)		
		Cognitive behavioral therapy (17, 51, 62)	Cognitive behavioral therapy (62)	Cognitive behavioral therapy (17, 51)		
		Psychological communication training (18, 73)	Psychological communication training (18, 73)	Mental health surveillance (28)		
		Coaching (21, 49)	Coaching (21, 49)			
		Mental health surveillance (28, 30)	Mental health surveillance (30)			
		Emotional intelligence (65)	Emotional intelligence (65)			
		Mindfulness (15, 19, 22, 25, 35, 43, 52, 64, 72)	Mindfulness (15, 19, 25, 35, 43, 52, 64)	Mindfulness (22, 72)		14
Physical exercise	Mental relaxation	Music and imagery therapy (8)	Gratitude diaries (11), Expressive writing (68), Snoezelen (71)	Music and imagery therapy (8) Touch therapy (48)		
		Gratitude diaries (11)				
		Touch therapy (48)				
		Expressive writing (68)				
Physical exercise	Physical exercise	Muscle stretching and relaxation (10, 55, 75)	Muscle stretching and relaxation (10, 55, 75)	Yoga (67)	9	
		Yoga (1, 67)	Yoga (1)	Supervised physical exercise (32)		
		Supervised physical exercise (32, 47)	Supervised physical exercise (47)	Tai Chi (56)		
		Massage therapy (45)	Massage therapy (45)			
Patient-professional cooperation	Patient-professional cooperation	Tai Chi (56)				
		Communication skills training (5, 9, 53)	Communication skills training (53)	Communication skills training (5, 9)	11	
		Dementia treating/care education (6, 70, 76)	Dementia treating/care education (70)	Dementia treating/care education (6, 76)		
		Eotion-oriented care (24, 63),	Emotion-oriented care (24, 63)	Staff and family communication (60)		
Staff and family communication (60)	Patients' mental health treating skills (23), Person-centered care (3)					
Organizational interventions	Co-creational interventions	Supervisor and organizational support to increase control over work time (34, 46)	Improving working conditions (36)	Supervisor and organizational support to increase control over work time (34, 46)	5	
		Improving working conditions (36, 69)		Improving working conditions (69)		
		Retention specialist (59)		Retention specialist (59)		
	Management interventions	Management interventions	Work schedule breaks (14, 16)	Work schedule breaks (16)	Work schedule breaks (14)	5
			Inpatient rotations (37)	Inpatient rotations (37)	Supportive supervision (44)	
			Supportive supervision (44)		Onboarding program (66)	
		Onboarding program (66)				

^a Statistically significant effect on at least one mental health-related outcome.

Most previous studies and reviews on interventions to prevent HSS workers' stress, burnout, and MHP have been on health care workers. In the few systematic and scoping reviews where social care professionals have been included, usually a few or no studies have targeted social care professionals (Pollock et al., 2020; Wirth et al., 2019; Trowbridge and Lawson, 2016). The current review found only one study that targeted social workers (Brinkborg et al., 2011), and another that identified social workers as part of a larger, multiprofessional population (Peterson et al., 2008). As social work professionals have a high risk of stress and burnout (Blomberg et al., 2015; Lloyd et al., 2002), it is evident that more interventions to promote better mental health among social care professionals are needed. However, as this review has focused on HSS workers, our search strategy may have ignored workers in some fields of social work. Our findings should, thus, not be generalized to all social workers.

Most interventions analyzed in this review focused on individual workers. Stress-coping interventions, mental relaxation, physical exercise, and patient-professional coordination interventions aimed to

reduce the risk of MHP for an individual worker, not on a workplace or work community level. Only ten interventions in this review focused on the organizational level, which is surprisingly few, considering the literature proposes that they produce more sustainable effects on the health of employees than interventions focusing mainly on individual-level characteristics (Uchiyama et al., 2013; Montano et al., 2014). This finding is in accordance with that of a literature review of stress management interventions by Chesak et al. (2019), which found that the majority of interventions implemented in nursing workplaces aimed to treat the individual instead of improving the workplace environment. Some previous reviews have found organizational interventions to weakly affect the risk of MHP, but the evidence has usually been of low quality (Kossek et al., 2019; Ruotsalainen et al., 2015). This scoping review also found organizational interventions to have a limited effect on MHP: only one co-creational intervention and two management interventions had statistically significant effects. This lack of effect may, according to the studies in our review, stem from several challenges. Implementing the RCT can be challenging, for example, due to low

Table 3
Outcomes of the included studies. Each study is indicated using study numbers in Table 1.

Outcome	Number of studies with outcome	Outcome measurement
Anxiety	15	Generalized Anxiety Disorder-7 (38, 50, 62, 72) Depression Anxiety Stress Scale (DASS-21; 2, 19, 25, 52) State-Trait Anxiety Inventory (14, 51, 75) Hospital Anxiety and Depression Scale (HADS; 58, 72) Brief Symptom Inventory (BSI; 28) Visual Analog Scale (48) Zung Self-rating Anxiety Scale (12)
Depression	17	Center for Epidemiologic Studies Depression Scale (CES-D; 11, 13, 60) Patient Health Questionnaire-9 (38, 62, 72) DASS-21 (2, 19, 25, 52) Beck Depression Inventory (47, 51) HADS (58, 72) Zung Self-rating Depression Scale (12) Primary Care Evaluation of Mental Disorders (20), BSI (28) authors' own questions (74)
Stress, post-traumatic stress	41	Perceived Stress Scale (3, 7, 11, 12, 13, 19, 22, 34, 35, 37, 51, 55–57, 62, 64, 74) Perceived Stress Questionnaire (4, 39–42) Nursing Stress Scale (NSS; 18, 29, 56) DASS-21 (2, 19, 25, 52) authors' own questionnaire (59, 60, 66) General Health Questionnaire 12 (GHQ-12; 70, 71) Occupational Stress Scale (10, 36) Impact of Event Scale (28, 33) GHQ-28 (24) Irritation scale (38) Expanded Nursing Stress Scale (45) Stress in General Scale (49) Central Sensitization Inventory (6)
Distress, psychological distress, psychological morbidity	10	GHQ-12 (22, 30, 50) Four-dimensional Symptom Questionnaire (28, 33) BSI (15, 64) Outcome Questionnaire 45 (22) authors' own question (29, 68)
Burnout	41	Maslach Burnout Inventory (MBI; 1, 3, 5, 7–9, 13, 15–17, 19–21, 23, 26, 31, 36, 37, 41–44, 49–53, 60, 61, 63, 64, 68, 71, 72, 74, 76) MBI-General Survey (27, 73) Professional Quality of Life (2, 57) Oldenburg Burnout Inventory (58) RAND Short Form 36 (32, 56, 67, 74) GHQ-12 (7, 54) GHQ (75) GHQ-20 (65) Kessler-6 (34) World Health Organization Quality of Life Scale (38) Profile of Mood States (47) CES-D (69)
Mental health, general mental health, psychological status	12	Insomnia Severity Index (50, 72) Pittsburgh Sleep Quality Index (46) Stanford Sleepiness Scale (14)

baseline stress levels in the intervention group (Kossek et al., 2019) and randomizing larger facilities instead of individual workers into the intervention group (Marino et al., 2016). And, compared to interventions targeted at individual workers, organizational interventions may need a longer effect time (Uchiyama et al., 2013).

In addition to focusing on individual workers, most interventions in our review focused on individual coping with work stressors instead of tackling the actual work stressors. The adverse association between psychosocial stressors such as job strain, effort-reward imbalance and organizational injustice at work have been found to increase the risk of MHP (Duchaine et al., 2020). Yet, in the current scoping review, only five co-creational interventions and one management intervention (Madede et al., 2017), even though not all explicitly focusing on psychosocial stressors, aimed to affect the work environment and have an impact on psychosocial stressors.

Overall, the evidence of the intervention effectiveness in reducing the risk of MHP seems incoherent and inconsistent, also in non-organizational interventions. Many of the individual stress coping, mental relaxation, physical exercise, patient–professional coordination and management interventions that were reported to have statistically significant positive effects on mental health in some studies, had statistically non-significant effects in others. The reliability of the evidence also raises doubts, although drawing conclusions on the quality of the evidence in the selected studies would require a systematic review that includes critical appraisal of the evidence sources.

In this review, we searched for outcomes related to the risk of MHP: depression, anxiety, insomnia or sleep disorders, psychological distress, mental health, burnout, and stress. The ways to measure these outcomes varied greatly, as the list of different questionnaires to measure each outcome was considerable. Selecting questionnaire for burnout measurement seemed simpler, as MBI was most often used questionnaire in the included studies. MBI dimensions also detected in most studies a statistically significant outcome change. Some questionnaires, especially GHQ and BSI, were used to measure more than one MHP outcome. GHQ was used to measure mental health in four studies, stress in three studies, and psychological distress in three studies. As previous reviews have stated (Rotenstein et al., 2018), comparing the effectiveness of interventions is difficult when there is no unambiguous measure for MHP risks. Especially in adverse MHP—depression, anxiety and insomnia—the measures were highly heterogeneous. The heterogeneous and incoherent use of outcomes and measurements also makes it difficult to limit the scope to certain mental health problems. Drawing a line between, for instance, stress and burnout or burnout and psychological distress is hard, as questionnaires are ambiguously used and often contain similar questions. Harmonization of outcome measures would improve the comparability of interventions and their effectiveness.

This scoping review has several strengths. First, we took a wide, scoping perspective to interventions reducing the risk of MHP and found several gaps in studying the interventions. Future research should consider these gaps. Second, in addition to health care workers, we included social work professionals in the scope of our review. Third, we analyzed adverse mental health outcomes instead of limiting to stress and burnout.

Our review also has some limitations. First, we did not search for unpublished studies and other grey literature. We also excluded studies that were not published in peer-reviewed journals. We may thus have missed some relevant studies. Second, we may have missed relevant studies due to including only articles written in English. Third, we included only studies published in 2000 and later, so we may have missed relevant earlier studies. Finally, we did not critically appraise the individual sources of evidence. Although PRISMA-ScR protocol (Tricco et al., 2018) enables this, we did not consider it necessary. However, this would have given us more information on the reliability of the intervention effectiveness. Fifth, we included only RCT:s in this review. This may have excluded relevant interventions, especially organizational interventions which may be studied in unrandomized settings. We used

this criterion, however, to achieve highest possible evidence of intervention effect (Burns et al., 2011).

Based on this review, we can make a few suggestions for future research. First, a greater number of high-quality RCT studies of organizational interventions to reduce the risk of MHP are needed. In this review, only five of the selected studies were carried out on the organizational level, even though they could potentially have long-lasting effects on workers' mental health. Second, more RCT studies of interventions to improve social work professionals' mental health are needed. Third, future RCT studies should use outcomes more coherently: the different mental health risks need consistent definitions and unambiguous measurements. Fourth, systematic reviews of interventions to reduce the risk of MHP in HSS workplaces are needed. Critical appraisal of evidence would improve the reliability of the reported intervention effectiveness, although previous systematic reviews have indicated that

high-quality evidence of effective interventions may not be found.

Our scoping review offers some implications for practice. Some individual stress coping interventions, such as psychological communication training and coaching, were reported to have a positive effect on mental health. Some mental relaxation, muscle stretching, and emotion-oriented care interventions also showed promising results. However, recommending these interventions for practical use would need a critical appraisal of the reliability of evidence.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix 1. Search strategy in PubMed

#1	employment[mh] OR workplace[mh] OR work[mh] OR occupations[mh] OR "occupational groups"[mh] OR employment[tiab] OR employed[tiab] OR employee*[tiab] OR job [tiab] OR jobs[tiab] OR work[tiab] OR working[tiab] OR worker*[tiab] OR workplace*[tiab] OR "work place"[tiab] OR worksite*[tiab] OR "work site"[tiab] OR occupation*[tiab] OR vocation*[tiab] OR personnel[tiab] OR professional*[tiab] OR staff[tiab]
#2	"work performance"[mh] OR "work capacity evaluation"[mh] OR "work performance"[tiab] OR "work capacit*[tiab] OR "work abilit*[tiab] OR workabilit*[tiab] OR "occupational health"[mh] OR workload[mh] OR "job satisfaction"[mh] OR "employee performance appraisal"[mh] OR "work engagement"[mh] OR absenteeism[mh] OR efficiency[mh] OR morbidity[mh] OR retirement[mh] OR "disability evaluation"[mh] OR "sick leave"[mh] OR "return to work"[mh]
#3	"mental health"[mh] OR "mental disorders"[mh] OR "stress, psychological"[mh] OR "psychological distress"[mh] OR depression[mh] OR "mental health"[tiab] OR "mental disorder*[tiab] OR "mental wellness"[tiab] OR "psychological load"[tiab] OR stress*[tiab] OR strain*[tiab] OR burden*[tiab] OR distress[tiab] OR depress*[tiab] OR burnout [tiab] OR "burn out"[tiab] OR anxiety[tiab] OR worry[tiab] OR worries[tiab] OR worried[tiab] OR panic[tiab] OR insomnia*[tiab]
#4	interven*[tiab] OR initiative*[tiab] OR action[tiab] OR actions[tiab] OR measure[tiab] OR measures[tiab] OR promot*[tiab] OR advancing[tiab] OR advancement*[tiab] OR enhanc*[tiab] OR improv*[tiab] OR develop*[tiab] OR ameliorat*[tiab] OR evidence[tiab] OR program[tiab] OR programs[tiab] OR policy[tiab] OR policies[tiab] OR support*[tiab]
#5	"health personnel"[mh] OR "social workers"[mh] OR "health personnel"[tiab] OR "health care personnel"[tiab] OR "healthcare personnel"[tiab] OR "health care work*[tiab] OR "healthcare work*[tiab] OR "health work*[tiab] OR "health professional*[tiab] OR "health care professional*[tiab] OR "healthcare professional*[tiab] OR "medical care personnel"[tiab] OR "medical personnel"[tiab] OR "medical staff"[tiab] OR "medical professional*[tiab] OR nurse[tiab] OR nurses[tiab] OR nursing[tiab] OR physician*[tiab] OR "social care*[tiab] OR "social worker*[tiab] OR "social work*[tiab] OR "social services profession*[tiab] OR "social service profession*[tiab] OR "social care staff"[tiab] OR "social care profession*[tiab] OR "social care provider*[tiab]
#6	"randomized controlled trials as topic"[mh] OR "random allocation"[mh] OR "randomized controlled trial"[pt] OR "clinical trials as topic"[mh] OR "clinical trial"[pt] OR "double-blind method"[mh] OR "interrupted time series analysis"[mh] OR "controlled before-after studies"[mh] OR "follow-up studies"[mh] OR "cross-over studies"[mh] OR rct[tiab] OR rcts[tiab] OR "randomized controlled"[tiab] OR "randomised controlled"[tiab] OR "random control"[tiab] OR "randomized trial*[tiab] OR "randomised trial*[tiab] OR "random allocation"[tiab] OR "clinical trial*[tiab] OR "controlled trial*[tiab] OR "double blind*[tiab] OR "double mask*[tiab] OR "controlled before-after stud*[tiab] OR "interrupted time series*[tiab] OR "follow-up stud*[tiab] OR "cross-over stud*[tiab]
#7	2000:2021[dp] AND english[la]
#8	review[pt] OR "meta-analysis"[pt] OR "meta-analysis as topic"[mh] OR "review literature as topic"[mh] OR review[tw] OR "meta analysis"[tw]
#9	#1 AND #2 AND #3 AND #4 AND #5 AND #6 AND #7 NOT #8

References

- Alexander, G.K., 2015. Yoga for self-care and burnout prevention among nurses. *Workplace Health Saf.* Oct 63 (10), 462–470. <https://doi.org/10.1177/2165079915596102> quiz 471.
- Alkhalafdeh, J.M.A., Soh, K.L., Mukhtar, F.B.M., Peng, O.C., Anshasi, H.A., 2020. Stress management interventions for intensive and critical care nurses: a systematic review. *Nurs. Crit. Care* 25, 84–92. <https://doi.org/10.1111/nicc.12489>.
- Axisa, C., Nash, L., Kelly, P., Willcock, S., 2019. Burnout and distress in Australian physician trainees: evaluation of a wellbeing workshop. *Australas. Psychiatr.* 27, 255–261. <https://doi.org/10.1177/1039856219833793>.
- Barbosa, A., Nolan, M., Sousa, L., Marques, A., Figueiredo, D., 2016. Effects of a psychoeducational intervention for direct care workers caring for people with dementia: results from a 6-month follow-up study. *Am. J. Alzheimer's Dis. Dementiasr* 31, 144–155. <https://doi.org/10.1177/1533317515603500>.
- Barrientos-Trigo, S., Vega-Vázquez, L., Diego-Cordero, R.D., Badanta-Romero, B., Porcel-Gálvez, A.M., 2018. Interventions to improve working conditions of nursing staff in acute care hospitals: scoping review. *J. Nurs. Manag.* 26, 94–107. <https://doi.org/10.1111/jonm.12538>.
- Bernburg, M., Baresi, L., Groneberg, D., Mache, S., 2016. Does psychosocial competency training for junior physicians working in pediatric medicine improve individual skills and perceived job stress. *Eur. J. Pediatr.* 175, 1905–1912. <https://doi.org/10.1007/s00431-016-2777-8>.
- Blomberg, H., Kallio, J., Kroll, C., Saarinen, A., 2015. Job stress among social workers: determinants and attitude effects in the nordic countries. *Br. J. Soc. Work* 45, 2089–2105. <https://doi.org/10.1093/bjsw/bcu038>.
- Bragard, I., Libert, Y., Etienne, A.-M., Merckaert, I., Delvaux, N., Marchal, S., et al., 2010. Insight on variables leading to burnout in cancer physicians. *J. Cancer Educ.* 25, 109–115. <https://doi.org/10.1007/s13187-009-0026-9>.
- Bramble, M., Moyle, W., Shum, D., 2011. A quasi-experimental design trial exploring the effect of a partnership intervention on family and staff well-being in long-term dementia care. *Aging Ment. Health* 15, 995–1007. <https://doi.org/10.1080/13607863.2011.583625>.
- Brinkborg, H., Michanek, J., Hesser, H., Berglund, G., 2011. Acceptance and commitment therapy for the treatment of stress among social workers: a randomized controlled trial. *Behav. Res. Ther.* 49, 389–398. <https://doi.org/10.1016/j.brat.2011.03.009>.
- Bronkhorst, B., Tummers, L., Steijn, B., Vijverberg, D., 2015. Organizational climate and employee mental health outcomes: a systematic review of studies in health care organizations. *Health Care Manag. Rev.* 40, 254–271. <https://doi.org/10.1097/HMR.0000000000000026>.
- Brooks, D.M., Bradt, J., Eyre, L., Hunt, A., Dileo, C., 2010. Creative approaches for reducing burnout in medical personnel. *Arts Psychother.* 37, 255–263. <https://doi.org/10.1016/j.aip.2010.05.001>.
- Burns, P.B., Rohrich, R.J., Chung, K.C., 2011. The levels of evidence and their role in evidence-based medicine. *Plast. Reconstr. Surg.* 128 (1), 305–310. <https://doi.org/10.1097/PRS.0b013e318219c171>.
- Butow, P., Cockburn, J., Gargis, Afaf, Bowman, D., Schofield, P., D'Este, C., et al. Cues Team, the, 2008. Increasing oncologists' skills in eliciting and responding to emotional cues: evaluation of a communication skills training program. *Psycho Oncol.* 17, 209–218. <https://doi.org/10.1002/pon.1217>.
- Cheng, S.-T., Tsui, P.K., Lam, J.H.M., 2015. Improving mental health in health care practitioners: randomized controlled trial of a gratitude intervention. *J. Consult. Clin. Psychol.* 83, 177–186. <https://doi.org/10.1037/a0037895>.

- Chesak, S.S., Cutshall, S.M., Bowe, C.L., Montanari, K.M., Bhagra, A., 2019. Stress management interventions for nurses: critical literature review. *J. Holist. Nurs.* 37, 288–295. <https://doi.org/10.1177/0898010119842693>.
- Chesak, S.S., Bhagra, A., Cutshall, S., Ingram, A., Benoit, R., Medina-Inojosa, J.R., et al., 2020. Authentic connections groups: a pilot test of an intervention aimed at enhancing resilience among nurse leader mothers. *Worldviews Evidence-Based Nurs.* 17, 39–48. <https://doi.org/10.1111/wvn.12420>.
- Chirico, F., 2015. The assessment of psychosocial risk: only "work-related stress" or something else?, 106 *Med. Lav.* 9 (1), 65–66.
- Chirico, F., 2016. Adjustment disorder as an occupational disease: our experience in Italy. *Int. J. Occup. Environ. Med.* Jan 7 (1), 52–57.
- Chirico, F., Ferrari, G., Nucera, G., Szarpak, L., Crescenzo, P., Ilesanmi, O., 2021. Prevalence of anxiety, depression, burnout syndrome, and mental health disorders among healthcare workers during the COVID-19 pandemic: a rapid umbrella review of systematic reviews. *J. Health. Soc. Sci* 6 (2), 209–220. <https://doi.org/10.19204/2021/prv17>.
- Clemow, L.P., Pickering, T.G., Davidson, K.W., Schwartz, J.E., Williams, V.P., Shaffer, J. A., et al., 2018. Stress management in the workplace for employees with hypertension: a randomized controlled trial. *Transl. Behav. Med.* 8, 761–770. <https://doi.org/10.1093/tbm/iby018>.
- Clough, B.A., March, S., Chan, R.J., Casey, L.M., Phillips, R., Ireland, M.J., 2017. Psychosocial interventions for managing occupational stress and burnout among medical doctors: a systematic review. *Syst. Rev.* 6 <https://doi.org/10.1186/s13643-017-0526-3>.
- Coburn, M., Henzler, D., Baumert, J.-H., Fimm, B., Drüke, B., Rossaint, R., 2006. Influence of a 30-min break on divided attention and working memory in resident anaesthetists on daily routine. *Br. J. Anaesth.* 97, 315–319. <https://doi.org/10.1093/bja/ael151>.
- Cohen-Katz, J., Wiley, S.D., Capuano, T., Baker, D.M., Shapiro, S., 2005. The effects of mindfulness-based stress reduction on nurse stress and burnout, Part II: a quantitative and qualitative study. *Holist. Nurs. Pract.* 19, 26–35. <https://doi.org/10.1097/00004650-200501000-00008>.
- Cordoza, M., Ulrich, R.S., Manulik, B.J., Gardiner, S.K., Fitzpatrick, P.S., Hazen, T.M., et al., 2018. Impact of nurses taking daily work breaks in a hospital garden on burnout. *Am. J. Crit. Care* 27, 508–512. <https://doi.org/10.4037/ajcc2018131>.
- Costa, M.V.C., da Silva, J.N., Gurgel, J.L., Porto, F., 2019. Exercícios de alongamento na percepção de estresse em profissionais de enfermagem: estudo clínico randomizado. *Cad. Bras. Ter. Ocupacional* 27, 357–366. <https://doi.org/10.4322/2526-8910.ctoAO1696>.
- Csipke, E., Wykes, T., Nash, S., Williams, P., Koeser, L., McCrone, P., et al., 2019. Changing nurses' views of the therapeutic environment: randomised controlled trial. *BJPsych Open* 5, e17. <https://doi.org/10.1192/bjo.2018.87>.
- De Sio, S., Buomprisco, G., Perri, R., Bruno, G., Mucci, N., Nieto, H.A., et al., 2020. Work-related stress risk and preventive measures of mental disorders in the medical environment: an umbrella review 10. *Eur Rev Med Pharmacol Sci.* Jan 24 (2), 821–830. <https://doi.org/10.26355/eurrev.202001.20065>.
- Delvaux, N., Razavi, D., Marchal, S., Brédart, A., Farvacques, C., Slachmuylder, J.-L., 2004. Effects of a 105 hours psychological training program on attitudes, communication skills and occupational stress in oncology: a randomised study. *Br. J. Cancer* 90, 106–114. <https://doi.org/10.1038/sj.bjc.6601459>.
- Duchaine, C.S., Aubé, K., Gilbert-Ouimet, M., Vézina, M., Ndjaboué, R., Massamba, V., et al., 2020. Psychosocial stressors at work and the risk of sickness absence due to a diagnosed mental disorder. *JAMA Psychiatr.* 77, 1–10. <https://doi.org/10.1001/jamapsychiatry.2020.0322>.
- Duchemin, A.-M., Steinberg, B.A., Marks, D.R., Vanover, K., Klatt, M., 2015. A small randomized pilot study of a workplace mindfulness-based intervention for surgical intensive care unit personnel: effects on salivary α -amylase levels. *J. Occup. Environ. Med.* 57, 393–399. <https://doi.org/10.1097/JOM.0000000000000371>.
- Dyrbye, L.N., West, C.P., Richards, M.L., Ross, H.J., Satele, D., Shanafelt, T.D., 2016. A randomized, controlled study of an online intervention to promote job satisfaction and well-being among physicians. *Burn. Res.* 3, 69–75. <https://doi.org/10.1016/j.burn.2016.06.002>.
- Dyrbye, L.N., Shanafelt, T.D., Gill, P.R., Satele, D.V., West, C.P., 2019. Effect of a professional coaching intervention on the well-being and distress of physicians: a pilot randomized clinical trial. *JAMA Intern. Med.* 179, 1406. <https://doi.org/10.1001/jamainternmed.2019.2425>.
- Errazuriz, A., Schmidt, K., Undurraga, E.A., Medeiros, S., Baudrand, R., Cussen, D., et al., 2020. Effects of mindfulness-based stress reduction on psychological distress in health workers: a three-arm parallel randomized controlled trial. *J. Psychiatr. Res.* <https://doi.org/10.1016/j.jpsychires.2020.11.011>. S0022395620310700.
- Ewers, P., Bradshaw, T., McGovern, J., Ewers, B., 2002. Does training in psychosocial interventions reduce burnout rates in forensic nurses? *J. Adv. Nurs.* 37, 470–476. <https://doi.org/10.1046/j.1365-2648.2002.02115.x>.
- Finne, E., Dröes, R.-M., Ettema, T., Ooms, M., Adèr, H., Ribbe, M., Tilburg, W. van, 2005. The effect of integrated emotion-oriented care versus usual care on elderly persons with dementia in the nursing home and on nursing assistants: a randomized clinical trial. *Int. J. Geriatr. Psychiatr.* 20, 330–343. <https://doi.org/10.1002/gps.1286>.
- Gärtner, F.R., Nieuwenhuijsen, K., Ketelaar, S.M., van Dijk, F.J.H., Sluiter, J.K., 2013. The mental vitality @ work study: effectiveness of a mental module for workers' health surveillance for nurses and allied health care professionals on their help-seeking behavior. *J. Occup. Environ. Med.* 55, 1219–1229. <https://doi.org/10.1097/JOM.0b013e31829f310a>.
- Ghawadra, S.F., Lim Abdullah, K., Choo, W.Y., Danaee, M., Phang, C.K., 2020. The effect of mindfulness-based training on stress, anxiety, depression and job satisfaction among ward nurses: a randomized control trial. *J. Nurs. Manag.* 28, 1088–1097. <https://doi.org/10.1111/jonm.13049>.
- Gunasingam, N., Burns, K., Edwards, J., Dinh, M., Walton, M., 2015. Reducing stress and burnout in junior doctors: the impact of debriefing sessions. *Postgrad. Med.* 91, 182–187. <https://doi.org/10.1136/postgradmedj-2014-132847>.
- Guo, Y., Lam, L., Plummer, V., Cross, W., Zhang, J., 2020. A WeChat-based "Three Good Things" positive psychotherapy for the improvement of job performance and self-efficacy in nurses with burnout symptoms: a randomized controlled trial. *J. Nurs. Manag.* 28, 480–487. <https://doi.org/10.1111/jonm.12927>.
- Havermans, B.M., Boot, C.R., Brouwers, E.P., Houtman, I.L., Heerkens, Y.F., Zijlstra-Vlasveld, M.C., et al., 2018. Effectiveness of a digital platform-based implementation strategy to prevent work stress in a healthcare organization: a 12-month follow-up controlled trial. *Scand. J. Work. Environ. Health* 44, 613–621. <https://doi.org/10.5271/sjweh.3758>.
- Hersch, R.K., Cook, R.F., Deitz, D.K., Kaplan, S., Hughes, D., Friesen, M.A., Vezina, M., 2016. Reducing nurses' stress: a randomized controlled trial of a web-based stress management program for nurses. *Appl. Nurs. Res.* 32, 18–25. <https://doi.org/10.1016/j.apnr.2016.04.003>.
- Holt, J., 2005. Reducing occupational psychological distress: a randomized controlled trial of a mailed intervention. *Health Educ. Res.* 21, 501–507. <https://doi.org/10.1093/her/cyh076>.
- Huang, L., Harsh, J., Cui, H., Wu, J., Thai, J., Zhang, X., et al., 2020. A randomized controlled trial of balint groups to prevent burnout among residents in China. *Front. Psychiatr.* 10, 957. <https://doi.org/10.3389/fpsy.2019.00957>.
- Jakobsen, M.D., Sundstrup, E., Brandt, M., Andersen, L.L., 2017. Psychosocial benefits of workplace physical exercise: cluster randomized controlled trial. *BMC Publ. Health* 17, 798. <https://doi.org/10.1186/s12889-017-4728-3>.
- Ketelaar, S.M., Nieuwenhuijsen, K., Gärtner, F.R., Bolier, L., Smeets, O., Sluiter, J.K., 2013. Effect of an E-mental health approach to workers' health surveillance versus control group on work functioning of hospital employees: a cluster-RCT. *PLoS One* 8, e72546. <https://doi.org/10.1371/journal.pone.0072546>.
- Kossek, E.E., Thompson, R.J., Lawson, K.M., Bodner, T., Perrigino, M.B., Hammer, L.B., et al., 2019. Caring for the elderly at work and home: can a randomized organizational intervention improve psychological health? *J. Occup. Health Psychol.* 24, 36–54. <https://doi.org/10.1037/ocp0000104>.
- Lin, L., He, G., Yan, J., Gu, C., Xie, J., 2019. The effects of a modified mindfulness-based stress reduction program for nurses: a randomized controlled trial. *Workplace Health & Saf.* 67, 111–122. <https://doi.org/10.1177/2165079918801633>.
- Linzer, M., Poplauer, S., Grossman, E., Varkey, A., Yale, S., Williams, E., et al., 2015. A cluster randomized trial of interventions to improve work conditions and clinician burnout in primary care: results from the healthy work Place (HWP) study. *J. Gen. Intern. Med.* 30, 1105–1111. <https://doi.org/10.1007/s11606-015-3235-4>.
- Lloyd, C., King, R., Chenoweth, L., 2002. Social work, stress and burnout: a review. *J. Ment. Health* 11, 255–265. <https://doi.org/10.1080/09638230020023642>.
- Lucas, B.P., Trick, W.E., Evans, A.T., Mba, B., Smith, J., Das, K., et al., 2012. Effects of 2-week attending physician inpatient rotations on unplanned patient revisits, evaluations by trainees, and attending physician burnout: a randomized trial. *JAMA* 308, 2199. <https://doi.org/10.1001/jama.2012.36522>.
- Maatouk, I., Müller, A., Angerer, P., Schmook, R., Nikendei, C., Herbst, K., et al., 2018. Healthy ageing at work—efficacy of group interventions on the mental health of nurses aged 45 and older: results of a randomised, controlled trial. *PLoS One* 13, e0191000. <https://doi.org/10.1371/journal.pone.0191000>.
- Mache, S., Vitzthum, K., Klapp, B.F., Groneberg, D.A., 2015. Evaluation of a multicomponent psychosocial skill training program for junior physicians in their first year at work: a pilot study. *Fam. Med.* Oct 47 (9), 693–698.
- Mache, S., Bernburg, M., Baresi, L., Groneberg, D.A., 2016. Evaluation of self-care skills training and solution-focused counselling for health professionals in psychiatric medicine: a pilot study. *Int. J. Psychiatr. Clin. Pract.* 20, 239–244. <https://doi.org/10.1080/13651501.2016.1207085>.
- Mache, S., Baresi, L., Bernburg, M., Vitzthum, K., Groneberg, D., 2017. Being prepared to work in Gynecology Medicine: evaluation of an intervention to promote junior gynecologists professionalism, mental health and job satisfaction. *Arch. Gynecol. Obstet.* 295, 153–162. <https://doi.org/10.1007/s00404-016-4223-6>.
- Mache, S., Bernburg, M., Baresi, L., Groneberg, D., 2018. Mental health promotion for junior physicians working in emergency medicine: evaluation of a pilot study. *Eur. J. Emerg. Med.* 25, 191–198. <https://doi.org/10.1097/MEJ.0000000000000434>.
- Mackenzie, C.S., Poulin, P.A., Seidman-Carlson, R., 2006. A brief mindfulness-based stress reduction intervention for nurses and nurse aides. *Appl. Nurs. Res.* 19, 105–109. <https://doi.org/10.1016/j.apnr.2005.08.002>.
- Madede, T., Sidat, M., McAuliffe, E., Patricio, S.R., Uduma, O., Galligan, M., et al., 2017. The impact of a supportive supervision intervention on health workers in Niassa, Mozambique: a cluster-controlled trial. *Hum. Resour. Health* 15, 58. <https://doi.org/10.1186/s12960-017-0213-4>.
- Magnavita, N., Chirico, F., 2020. New and emerging risk factors in Occupational Health. *Appl. Sci.* 10 (24), 8906. <https://doi.org/10.3390/app10248906>.
- Mahdizadeh, M., Ansari Jaber, A., Negahban Bonabi, T., 2019. Massage therapy in management of occupational stress in emergency medical services staffs: a randomized controlled trial. *Int. J. Ther. Massage Bodyw. Res. Educ. Pract.* 12, 16–22. <https://doi.org/10.3822/ijtmb.v12i1.421>.
- Marino, M., Killeby, M., Lee, S., Klein, L.C., Moen, P., Olson, R., et al., 2016. The effects of a cluster randomized controlled workplace intervention on sleep and work-family conflict outcomes in an extended care setting. *Sleep Health* 2, 297–308. <https://doi.org/10.1016/j.sleh.2016.09.002>.
- Maslach, C., Jackson, S.E., 1981. The measurement of experienced burnout. *J. Organ. Behav.* 2, 99–113. <https://doi.org/10.1002/job.4030020205>.

- Maslach, C., Schaufeli, W.B., Leiter, M.P., 2001. Job burnout. *Annu. Rev. Psychol.* 52, 397–422. <https://doi.org/10.1146/annurev.psych.52.1.397>.
- Matsugaki, R., Kuhara, S., Saeki, S., Jiang, Y., Michishita, R., Ohta, M., Yamato, H., 2017. Effectiveness of workplace exercise supervised by a physical therapist among nurses conducting shift work: a randomized controlled trial. *J. Occup. Health* 59, 327–335. <https://doi.org/10.1539/joh.16-0125-OA>.
- McElligott, D., Holz, M.B., Carollo, L., Somerville, S., Baggett, M., Kuzniowski, S., Shi, Q., 2003. A pilot feasibility study of the effects of touch therapy on nurses. *J. N. Y. State Nurses Assoc.* 9.
- McGonagle, A.K., Schwab, L., Yahanda, N., Duskey, H., Gertz, N., Prior, L., Roy, M., Kriegel, G., 2020. Coaching for primary care physician well-being: a randomized trial and follow-up analysis. *J. Occup. Health Psychol.* 25, 297–314. <https://doi.org/10.1037/ocp0000180>.
- Medisauskaitė, A., Kamau, C., 2019. Reducing burnout and anxiety among doctors: randomized controlled trial. *Psychiatr. Res.* 274, 383–390. <https://doi.org/10.1016/j.psychres.2019.02.075>.
- Menzel, N.N., Robinson, M.E., 2006. Back pain in direct patient care providers: early intervention with cognitive behavioral therapy. *Pain Manag. Nurs.* 7, 53–63. <https://doi.org/10.1016/j.pmn.2006.02.002>.
- Mistretta, E.G., Davis, M.C., Temkit, M., Lorenz, C., Darby, B., Stonnington, C.M., 2018. Resilience training for work-related stress among health care workers: results of a randomized clinical trial comparing in-person and smartphone-delivered interventions. *J. Occup. Environ. Med.* 60, 559–568. <https://doi.org/10.1097/JOM.0000000000001285>.
- Montano, D., Hoven, H., Siegrist, J., 2014. Effects of organisational-level interventions at work on employees' health: a systematic review. *BMC Publ. Health* 14, 135. <https://doi.org/10.1186/1471-2458-14-135>.
- Morita, T., Murata, H., Kishi, E., Miyashita, M., Yamaguchi, T., Uchitomi, Y., 2009. Meaninglessness in terminally ill cancer patients: a randomized controlled study. *J. Pain Symptom Manag.* 37, 649–658. <https://doi.org/10.1016/j.jpainsymman.2008.04.017>.
- Munn, Z., Peters, M.D.J., Stern, C., Tufanaru, C., McArthur, A., Aromataris, E., 2018. Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Med. Res. Methodol.* 18, 143. <https://doi.org/10.1186/s12874-018-0611-x>.
- Nielsen, K., 2013. Review Article: how can we make organizational interventions work? Employees and line managers as actively crafting interventions. *Hum. Relat.* 66, 1029–1050. <https://doi.org/10.1177/0018726713477164>.
- OECD, 2012. Sick on the Job?: Myths and Realities about Mental Health and Work, Mental Health and Work, 2012. OECD Publishing. <https://doi.org/10.1787/9789264124523-en>.
- Onieva-Zafra, M.D., Fernández-Muñoz, J.J., Fernández-Martínez, E., García-Sánchez, F. J., Abreu-Sánchez, A., Parra-Fernández, M.L., 2020. Anxiety, perceived stress and coping strategies in nursing students: a cross-sectional, correlational, descriptive study. *BMC Med. Educ.* 20, 370. <https://doi.org/10.1186/s12909-020-02294-z>.
- Ozgundodu, B., Gok Metin, Z., 2019. Effects of progressive muscle relaxation combined with music on stress, fatigue, and coping styles among intensive care nurses. *Intensive Crit. Care Nurs.* 54, 54–63. <https://doi.org/10.1016/j.iccn.2019.07.007>.
- O'Brien, W.H., Singh, R. (Sonia), Horan, K., Moeller, M.T., Wasson, R., Jex, S.M., 2019. Group-based acceptance and commitment therapy for nurses and nurse aides working in long-term care residential settings. *J. Alternative Compl. Med.* 25, 753–761. <https://doi.org/10.1089/acm.2019.0087>.
- O'Connor, K., Muller Neff, D., Pitman, S., 2018. Burnout in mental health professionals: a systematic review and meta-analysis of prevalence and determinants. *Eur. Psychiatr.* 53, 74–99. <https://doi.org/10.1016/j.eurpsy.2018.06.003>.
- Palumbo, M.V., Wu, G., Shaner-McRae, H., Rambur, B., McIntosh, B., 2012. Tai Chi for older nurses: a workplace wellness pilot study. *Appl. Nurs. Res.* 25, 54–59. <https://doi.org/10.1016/j.apnr.2010.01.002>.
- Pehlivan, T., Güner, P., 2020. Effect of a compassion fatigue resiliency program on nurses' professional quality of life, perceived stress, resilience: a randomized controlled trial. *J. Adv. Nurs.* 76, 3584–3596. <https://doi.org/10.1111/jan.14568>.
- Peterson, U., Bergström, G., Samuelsson, M., Åsberg, M., Nygren, Å., 2008. Reflecting peer-support groups in the prevention of stress and burnout: randomized controlled trial. *J. Adv. Nurs.* 63, 506–516. <https://doi.org/10.1111/j.1365-2648.2008.04743.x>.
- Pillemer, K., Meador, R., Henderson, C., Robison, J., Hegeman, C., Graham, E., Schultz, L., 2008. A facility specialist model for improving retention of nursing home staff: results from a randomized, controlled study. *Gerontol.* 48, 80–89. https://doi.org/10.1093/geront/48.Supplement_1.80.
- Pollock, A., Campbell, P., Cheyne, J., Cowie, J., Davis, B., McCallum, J., et al., 2020. Interventions to support the resilience and mental health of frontline health and social care professionals during and after a disease outbreak, epidemic or pandemic: a mixed methods systematic review. *Cochrane Database Syst. Rev.* <https://doi.org/10.1002/14651858.CD013779>.
- Robison, J., Curry, L., Gruman, C., Porter, M., Henderson, C.R., Pillemer, K., 2007. Partners in caregiving in a special care environment: cooperative communication between staff and families on dementia units. *Gerontol.* 47, 504–515. <https://doi.org/10.1093/geront/47.4.504>.
- Rotenstein, L.S., Torre, M., Ramos, M.A., Rosales, R.C., Guille, C., Sen, S., Mata, D.A., 2018. Prevalence of burnout among physicians. *JAMA* 320, 1131–1150. <https://doi.org/10.1001/jama.2018.12777>.
- Ruotsalainen, J.H., Verbeek, J.H., Mariné, A., Serra, C., 2015. Preventing occupational stress in healthcare workers. *Cochrane Database Syst. Rev.* Issue 4. <https://doi.org/10.1002/14651858.CD002892.pub5>. Art. No.: CD002892.
- Salomonsson, S., Hedman-Lagerlöf, E., Öst, L.-G., 2018. Sickness absence: a systematic review and meta-analysis of psychological treatments for individuals on sick leave due to common mental disorders. *Psychol. Med.* 48, 1954–1965. <https://doi.org/10.1017/S0033291718000065>.
- Salyers, M.P., Garabrant, J.M., Luther, L., Henry, N., Fukui, S., Shimp, D., et al., 2019. A comparative effectiveness trial to reduce burnout and improve quality of care. *Adm. Policy Ment. Health Ment. Health Serv. Res.* 46, 238–254. <https://doi.org/10.1007/s10488-018-0908-4>.
- Sampson, M., Melnyk, B.M., Hoying, J., 2020. The MINDBODYSTRONG intervention for new nurse residents: 6-month effects on mental health outcomes, healthy lifestyle behaviors, and job satisfaction. *Worldviews Evidence-Based Nurs.* 17, 16–23. <https://doi.org/10.1111/wvn.12411>.
- Schrijnemaekers, V.J.J., van Rossum, E., Candel, M.J.J.M., Frederiks, C.M.A., Derix, M. M.A., Sielhorst, H., van den Brandt, P.A., 2003. Effects of emotion-oriented care on work-related outcomes of professional caregivers in homes for elderly persons. *J. Gerontol. B Psychol. Sci. Soc. Sci.* 58, S50–S57. <https://doi.org/10.1093/geronb/58.1.S50>.
- Seppälä, T., Hankonen, N., Korhakangas, E., Ruusuvaari, J., Laitinen, J., 2017. National policies for the promotion of physical activity and healthy nutrition in the workplace context: a behaviour change wheel guided content analysis of policy papers in Finland. *BMC Publ. Health* 18 (1), 87. <https://doi.org/10.1186/s12889-017-4574-3>.
- Shapiro, S.L., Astin, J.A., Bishop, S.R., Cordova, M., 2005. Mindfulness-based stress reduction for health care professionals: results from a randomized trial. *Int. J. Stress Manag.* 12, 164–176. <https://doi.org/10.1037/1072-5245.12.2.164>.
- Sharif, F., Rezaie, S., Keshavarzi, S., Mansoori, P., Ghadakpoor, S., 2013. Teaching emotional intelligence to intensive care unit nurses and their general health: a randomized clinical trial. *Int J Occup Environ Med.* Jul 4 (3), 141–148.
- Sinsky, C.A., Biddison, L.D., Mallick, A., Dopp, A.L., Perlo, J., Lynn, L., Smith, C.D., 2020. Organizational evidence-based and promising practices for improving clinician well-being. 10.31478/202011a NAM Perspect. <https://doi.org/10.31478/202011a>.
- Sirola-Karvonen, P., Jurvansuu, H., Rautio, M., Husman, P., 2010. Cocreating a health-promoting workplace. *J. Occup. Environ. Med.* 52, 1269–1272. <https://doi.org/10.1097/JOM.0b013e3181f2e0a3>.
- Spector, N., Blegen, M.A., Silvestre, J., Barnsteiner, J., Lynn, M.R., Ulrich, B., et al., 2015. Transition to practice study in hospital settings, 2015 *Jan J Nurs Regul* 5 (4), 24–38.
- Steel, Z., Marnane, C., Iranpour, C., Chey, T., Jackson, J.W., Patel, V., Silove, D., 2014. The global prevalence of common mental disorders: a systematic review and meta-analysis 1980–2013. *Int. J. Epidemiol.* 43, 476–493. <https://doi.org/10.1093/ije/dyu038>.
- Strijk, J.E., Proper, K.I., van der Beek, A.J., van Mechelen, W., 2012. A worksite vitality intervention to improve older workers' lifestyle and vitality-related outcomes: results of a randomised controlled trial. *J. Epidemiol. Community Health* 66, 1071–1078. <https://doi.org/10.1136/jech-2011-200626>.
- Tonarelli, A., Cosentino, C., Tomasoni, C., Nelli, L., Damiani, I., Goisis, S., et al., 2018. Expressive writing. A tool to help health workers of palliative care. *Acta Bio Medica Atenei Parm* 89, 35–42. <https://doi.org/10.23750/abm.v89i6-S.7452>.
- Tracy, D., Tarn, M., Eldridge, R., Cooke, J., Calder, J., Greenberg, N., 2020. What should be done to support the mental health of healthcare staff treating COVID-19 patients? *Br. J. Psychiatry* 217 (4), 537–539. <https://doi.org/10.1192/bjp.2020.109>.
- Tricco, A.C., Lillie, E., Zarin, W., O'Brien, K.K., Colquhoun, H., Levac, D., et al., 2018. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann. Intern. Med.* 169, 467–473. <https://doi.org/10.7326/M18-0850>.
- Trowbridge, K., Lawson, L.M., 2016. Mindfulness-based interventions with social workers and the potential for enhanced patient-centered care: a systematic review of the literature. *Soc. Work. Health Care* 55, 101–124. <https://doi.org/10.1080/00981389.2015.1094165>.
- Uchiyama, A., Odagiri, Y., Ohya, Y., Takamiya, T., Inoue, S., Shimomitsu, T., 2013. Effect on mental health of a participatory intervention to improve psychosocial work environment: a cluster randomized controlled trial among nurses. *J. Occup. Health* 55, 173–183. <https://doi.org/10.1539/joh.12-0228-OA>.
- van de Ven, G., Draskovic, I., Adang, E.M.M., Donders, R., Zuidema, S.U., Koopmans, R. T.C.M., Vernooij-Dassen, M.J.F.J., 2013. Effects of dementia-care mapping on residents and staff of care homes: a pragmatic cluster-randomised controlled trial. *PLoS One* 8, e67325. <https://doi.org/10.1371/journal.pone.0067325>.
- van Diepen, C., Fors, A., Ekman, I., Hensing, G., 2020. Association between person-centred care and healthcare providers' job satisfaction and work-related health: a scoping review. *BMJ Open* 10, e042658. <https://doi.org/10.1136/bmjopen-2020-042658>.
- van Weert, J.C.M., van Dulmen, A.M., Spreeuwenberg, P.M.M., Bensing, J.M., Ribbe, M. W., 2005. The effects of the implementation of *snoezelen* on the quality of working life in psychogeriatric care. *Int. Psychogeriatr.* 17, 407–427. <https://doi.org/10.1017/S1041610205002176>.
- Vos, T., Abajobir, A.A., Abate, K.H., Abbafati, C., Abbas, K.M., Abd-Allah, F., et al., 2017. Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet* 390, 1211–1259. [https://doi.org/10.1016/S0140-6736\(17\)32154-2](https://doi.org/10.1016/S0140-6736(17)32154-2).
- Watanabe, N., Horikoshi, M., Shinmei, I., Oe, Y., Narisawa, T., Kumachi, M., Matsuoka, Y., Hamazaki, K., Furukawa, T.A., 2019. Brief mindfulness-based stress management program for a better mental state in working populations - happy Nurse Project: a randomized controlled trial. *J. Affect. Disord.* 251, 186–194. <https://doi.org/10.1016/j.jad.2019.03.067>.
- Wei, R., Ji, H., Li, J., Zhang, L., 2017. Active intervention can decrease burnout in ed nurses. *J. Emerg. Nurs.* 43, 145–149. <https://doi.org/10.1016/j.jen.2016.07.011>.
- West, C.P., Dyrbye, L.N., Rabatin, J.T., Call, T.G., Davidson, J.H., Multari, A., et al., 2014. Intervention to promote physician well-being, job satisfaction, and professionalism: a randomized clinical trial. *JAMA Intern. Med.* 174, 527. <https://doi.org/10.1001/jamainternmed.2013.14387>.

- West, C.P., Dyrbye, L.N., Erwin, P.J., Shanafelt, T.D., 2016. Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. *Lancet* 388, 2272–2281. [https://doi.org/10.1016/S0140-6736\(16\)31279-X](https://doi.org/10.1016/S0140-6736(16)31279-X).
- Wirth, T., Mette, J., Prill, J., Harth, V., Nienhaus, A., 2019. Working conditions, mental health and coping of staff in social work with refugees and homeless individuals: a scoping review. *Health Soc Care Community*. Jul 27 (4), e257–e269.
- World Health Organization, 2004. *Prevention of Mental Disorders: Effective Interventions and Policy Options: Summary Report*. World Health Organization, Geneva.
- Yung, P.M.B., Fung, M.Y., Chan, T.M.F., Lau, B.W.K., 2004. Relaxation training methods for nurse managers in Hong Kong: a controlled study. *Int. J. Ment. Health Nurs.* 13, 255–261. <https://doi.org/10.1111/j.1445-8330.2004.00342.x>.
- Zhang, A., Borhneimer, L.A., Weaver, A., Franklin, C., Hai, A.H., Guz, S., Shen, L., 2019. Cognitive behavioral therapy for primary care depression and anxiety: a secondary meta-analytic review using robust variance estimation in meta-regression. *J. Behav. Med.* 42, 1117–1141. <https://doi.org/10.1007/s10865-019-00046-z>.
- Zwijzen, S.A., Gerritsen, D.L., Eefsting, J.A., Smalbrugge, M., Hertogh, C.M.P.M., Pot, A. M., 2015. Coming to grips with challenging behaviour: a cluster randomised controlled trial on the effects of a new care programme for challenging behaviour on burnout, job satisfaction and job demands of care staff on dementia special care units. *Int. J. Nurs. Stud.* 52, 68–74. <https://doi.org/10.1016/j.ijnurstu.2014.10.003>.