

## Consolidating job stress interventions for nurses: A literature review

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### Abstract

**Introduction:** Job-related stress has detrimental effects on nurses' physical and psychological health. Although great strides have been made by researchers from various disciplines to develop stress reduction and coping interventions, little research has examined their effects and outcomes on nurses.

**Aims:** This literature review aimed; 1) To examine the extant literatures on job-related stress interventions, which have investigated their effects and outcomes on nurses; 2) To provide a synthesis of stress coping strategies and interventions for nurses.

**Methods:** Studies from 2005 to 2016 were searched in electronic and Internet databases including ProQuest, EBSCOHost, ScienceDirect, Ovid SP, Cochrane library, SAGE journals online, PubMed, Google scholars, and a reference list of journal publications.

**Findings:** From 1613 titles and abstracts searched, 33 articles were used in this review. A total of 19 interventions were extracted and then categorized into three primary-level interventions, nine secondary-level interventions, and seven tertiary-level interventions. Primary-level interventions are catered toward executive nurses with authority to implement organizational changes. Secondary and tertiary-level interventions target groups or individual nurse users.

**Conclusions:** Organisational workload intervention was considered to be the most effective amongst primary-level interventions. Psycho-educational and cognitive-behavioural programs were the most common secondary-level interventions, which were particularly useful for nurses who have negative coping styles. Tertiary-level interventions showed promising effects however evidence on their effectiveness were still sparse. Executive nurses adopting primary-level interventions should take into account availability of resources and level of authority. Socio-cultural dimensions and length of intervention should be considered for nurses adopting secondary or tertiary-level approaches. More research is required to examine short and long-term outcomes of job stress interventions towards nurses' quality of life, nursing practice, and nursing management.

*Key words:* Job stress, intervention, coping strategies, stress management, nurse

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## INTRODUCTION

Job stress is the process that arises when work demands of various types and combinations exceed or do not match the employee's capacity and capability.<sup>1,2</sup> Job stress has proven to be detrimental on nurses' physical and psychological health including cardiovascular and pulmonary diseases, musculoskeletal disorders, anxiety, depression, and psychological distress, to name a few. The impacts of job stress cost healthcare organisation millions, if not, billions of dollars annually due to absenteeism and staff turnover.<sup>3-8</sup> Incidence rate of stress amongst nurses varies markedly throughout the world. Studies from the United States have reported an average of 19% nurse exposure to stress.<sup>9-15</sup> An average of 21% from nurses in Netherland<sup>16</sup>, 23% from Israel<sup>17</sup>, 26% from Canada<sup>18,19</sup>, 42% from Australia<sup>2,20,21</sup>, and 47% from India<sup>22</sup>.

In parallel with increasing recognition and acceptance that job-related stress has adverse impacts on nurses and health organisations, great strides have been made by researchers from various disciplines to develop stress reduction and preventive interventions.<sup>23</sup> However, stress as experienced by nurses may be different due to its combination of client and technical-based job description. Little research has examined effects of existing stress reducing strategies or interventions on nurses despite the growing number of these strategies, which have led to nurses facing a daunting task of choosing from a large number of existing interventions catered for different type of employees.<sup>17</sup> This is a problem because maladaptive coping, i.e., using unproven or ineffective stress coping strategies could lead to "disease of adaptation" where failure to adapt or reduce stress create negative emotional and physical effects that put additional strain on nurses who practiced them.<sup>2,9</sup> This could further exacerbate the status quo where recent evidences have demonstrated that nurses were already coping negatively with the increasing level of job-related stress by drinking alcohol, smoking, and escape

/avoiding people.<sup>2,24,25</sup> Since no reviews were found to have consolidated stress reduction interventions or coping strategies and evaluated their effectiveness for nurses, this review aimed; 1) To examine the extant literatures on job-related stress interventions, which have investigated their effects and outcomes on nurses; 2) To provide a synthesis of stress coping strategies and interventions for nurses.

## METHODS

The main search term included job stress, interventions, stress management, coping strategies, stress reduction, and nurse. The keywords were used to search in major electronic and Internet databases including ProQuest, EBSCOHost, ScienceDirect, and Ovid SP, Cochrane library, SAGE journals online, and PubMed, Google scholars, and a reference list of journal publications. The selection of articles were based on the following eligibility criteria: 1) Studies that examined job stress interventions involving nurses; 2) written in the English language; 3) published from 2005 up to and including 2016 without restrictions on study designs, geographical location, or literature types to ensure all recent literatures of previous work were covered. From 1613 titles and abstracts viewed, 33 articles were used in this paper. The method for data extraction, synthesis and analysis of this literature review followed the guideline by Baumeister (2013). Of the 33 articles selected, 19 job stress interventions were identified and presented in Table 1. In terms of country of origin, eight interventions were retrieved from the United States. Three interventions identified from Australia. Two from Canada and one each from the Netherlands, Japan, China, Israel, India, and Ireland. The study designs were mainly experimental pre-test and post-test design. These studies took place in various hospital settings including surgical and anaesthetic nursing, midwifery, long-term care, healthcare company, cancer center, oncology, paediatric, palliative care, intensive care units, emergency department, and

psychiatric and outpatient pain rehabilitation units. The effectiveness and outcomes of each intervention were then extracted and presented in Table 2. Finally, the strengths and weaknesses of the interventions were discussed and concluded.

**FINDINGS**

Table 1 provides a brief description of each intervention. The interventions were categorized into primary, secondary and tertiary levels. Primary interventions are catered toward executive nurses with authority to implement organizational changes. Secondary and tertiary interventions target groups or individual nurse users. Three interventions were identified as primary-level including E-mental health (EMH) surveillance, Organisational workload intervention, and Participatory intervention. Nine interventions were secondary-level including brief Mindfulness-Based Stress Reduction (MBSR), Integrated telephonic MBSR (tMBSR), Self-care strategies, Intergrated stress management, Cognitive-behavioral intervention, Brief psychological skill training, Work-based educational program, Wellness program, and Meaning-centered intervention. Seven interventions were tertiary-level that included Healing

the healer fitness program, Aromatherapy using essential oils, Progressive Muscle Relaxation Therapy, Aromatherapy chair massage with music, Chair massage therapy, Reiki training, and Debriefing after stress incident strategy.

Table 2 depicts the effectiveness and outcomes of each intervention. In terms of primary level interventions, only organisational workload intervention showed a host of positive change including job stress. Although EMH surveillance and Participatory intervention demonstrated improvements, they were not significantly better than baseline results. Majority of secondary level interventions showed good results including brief MBSR, tMBSR, self-care strategies,

integrated stress management, brief psychological skill training, work-based educational program, and wellness program. Cognitive-behavioural intervention showed improvements in perceived stress however no statistically significance difference was detected between control and intervention group. Meaning-centered intervention also showed no impact towards job stress in terms of job satisfaction, spiritual, and emotional quality of life. Meanwhile, all tertiary level interventions showed reduction in stress except for aromatherapy chair massage with music, chair massage therapy, and debriefing after stress incident strategy.

**Table 1: Brief description of interventions**

Level	Name of intervention; Authors	Brief Description
Primary (3)	E-Mental health (EMH) surveillance <sup>16</sup>	An online self-help system that is part of worker’s health surveillance. EMH is used to screen for impaired work functioning, stress complaints, and work-related fatigue. The system automatically generates feedback to participants via email consisting of advice and follow-ups that are tailored to the complaints they made.
	Organisational workload intervention <sup>2</sup>	The intervention consists of a nursing workload tool, long-term funded recruitment strategy, expansion of Department of Health (DoH) Nursing Graduate Program and increased access to clinical supervision and support for graduates, increase access to continuing professional development, and a recruitment campaign for new graduates and continuing employees.

	Participatory intervention <sup>27</sup>	6-months participatory program, which consists of 3-months intensive development period to understand their current situation and share good practices with key persons of the unit. Followed by 3-months implementation period where action plans were carried out immediately and continuously evaluated.	
Secondary (9)	Brief Mindfulness-Based Stress Reduction <sup>18</sup>	Brief Mindfulness-Based Stress Reduction (MBSR), a 4 weeks (traditional method was 8 weeks) program to increase awareness and tolerance towards internal or external stimuli primarily through various forms of meditations depending on the types of attention garnered, cognitive process, or underlying goal of practice.	
	Integrated telephonic MBSR <sup>9</sup> (tMBSR)	tMBSR include a full-day in-person classroom, and a weekly 1.5 hour informational group tele-conference call and a 10-minute meditation session with individual-tailored instruction and support.	
	Self-care strategies <sup>10</sup>	6-hour syllabus-based program as part of nurses' orientation and continuous training. The concept was to promote the belief of personal power of self control on life circumstances and cultivating meaning-based resilience that supports positive perspective on risk or threat, and expand coping options and promote pro-social interactions.	
	Intergrated stress management <sup>32</sup>	Class-based intervention conducted over 3 consecutive days. The components of the program integrates positive communication skills and conflict management with traditional chinese stress management strategies including muscle relaxation and breathing exercises, anger/emotion management and work-family balance, and post-incident counselling skills.	
	Cognitive-behavioral intervention <sup>17</sup>	The intervention was seminars and meetings based. The 3-hours seminars addressed job-related issues in nursing such as responsibility and unpredictability at work, job control, and job support at and outside work, role demands, and role conflicts. The meetings composed of 64 hours (4 hours per week) delivering practical interventions including breathing technique, progressive muscle training, relaxation skills, how to react to stressors, identify irrational ways of thinking, and skills to modify negative ways of thinking, and acquired problem-solving skills.	
	Brief psychological skill training <sup>11</sup>	Two-phased intervention. The qualitative assessment phase was made to understand the difficulties faced by nurses, and then categorize them into themes, and identify the training they needed. In the next phase, the overarching themes were used to develop a tailored training approach that included support nurses' psychosocial care, enhance nurses' psychological skills, incorporate case examples into training, and increase awareness of institutional resources to improve problem-solving skills.	
	Work-based educational program <sup>20</sup>	This intervention consists of six resilience workshops and a mentoring programme carried out over 6 months. The method of teaching was work-based learning where the primary outcomes were explored using arts and humanities such as drawing, collage, art and photography interpretation, music, and creative movement. Therapeutic elements such as hand massage, relaxation techniques and aromatherapy were also incorporated to promote potential strategies to reduce work-related stress.	
			This 10-week wellness program consists of an educational component and practical hands-on activity, interactive discussion, as well as

	Wellness program <sup>12</sup>	<p>presentation of case-related wellness topic. The participants requested the topics of the program and the researcher recruited experts to lead the session.</p>
Tertiary	Meaning-centered intervention <sup>19</sup>	<p>The intervention was carried out as training sessions over four weekly meetings. The content of the intervention was based on five principal themes by Viktor Frankl, which consisted - characteristics of meaning, source of meaning, creative values explored from personal historical perspective and sense of accomplishment at work, suffering as source of attitudinal change, and affective experiences and humor as experiential avenues to finding meaning.</p>
	Healing the healer fitness program <sup>33</sup>	<p>6-week program deals with four basic principles: 1) Balance gives them a sense of physical and psychological completeness; 2) Pacing is to get into the rhythm of activities to make health a priority; 3) Joy gives the sense of “pure release” and contentment; 4) Discipline to help ease through the difficulties of work life.</p>
	Aromatherapy using essential oils <sup>13</sup>	<p>The essential oils <i>L angustifolia</i> and <i>S sclaria</i> have documented properties to calm stress and anxiety. The participants applied the oil on the inner aspect of their forearm and rubbed with opposite arm during their work shifts.</p>
	Progressive Muscle Relaxation Therapy <sup>22</sup>	<p>Participants were trained to deliberately induce alternating relaxation and tension to a specific group of muscles and slowly progress through all the muscle groups to create a deep sense of calm.</p>
	Aromatherapy chair massage with music <sup>21,34</sup>	<p>The massage session was carried out by a certified therapist twice a week. The therapy include a 15-minutes chair massage of shoulders, mid back, neck, scalp, forehead and temples. Before it started, aromatherapy mist was sprayed lightly over the participants who were listening to music through headphones.</p>
	Chair massage therapy <sup>14</sup>	<p>A 15 minutes chair massage at work once a week for 10 weeks, provided by certified massage therapists.</p>
	Reiki training <sup>15</sup>	<p>Reiki training is a form of ancient oriental “energy work” or energy medicine for healing. Previous literature has documented a positive effect of practicing this technique. The intervention was carried out in an 8-hour session. The Reiki Master demonstrated the technique and participants were given handout instructions on how they could further self-practice for 21 days.</p>
	Debriefing after stress incident strategy <sup>35</sup>	<p>Critical incident stress debriefing aims to deepen and reinforce social support among nurses who have just experienced traumatic acute or abnormal stress events. The session could take between two to three hours. Following seven steps: introduce the session, describe what happened, describe their emotions, how they were affected, identify personal symptoms of stress, teaching phase, and closing.</p>

**Table 2: Effectiveness and outcomes of interventions**

Level	Name of interventions	Result
Primary	E-Mental health (EMH) surveillance	Improvements in impaired work functioning ( $p=0.008$ ) and work-related fatigue ( $p=0.003$ ) but failed to show significant improvements on stress complaints ( $p=0.102$ )
	Organisational workload intervention	Improvement in job demand, control and support from supervisor and co-worker, job satisfaction, flexible and adaptable culture, communication, and psychosocial safety climate. Reduction in staff turnover, psychological distress and emotional exhaustion ( $p<0.001$ ).
	Participatory intervention	Psychosocial working environments improved significantly in terms of participatory management ( $p=0.014$ ), job control ( $p=0.024$ ), and Co-worker Support ( $p=0.024$ ). No significant improvement on mental health ( $p=0.122$ ).
Secondary	Brief MBSR	Intervention group had significant reduction ( $p<0.05$ ) in emotional exhaustion and depersonalization compared to control group
	tMBSR	Reduction of perceived stress levels from 20.64 (SD 7.61) at baseline to 12.39 (5.71) after 2-months follow up and 12.50 (5.56) after 4-months follow up, suggesting that stress reduction was maintained over time
	Self-care strategies	Reduction in emotional exhaustion (38% to 26%), and depersonalization (13% to 9%). Feeling of personal accomplishment was improved from 45% to 52%
	Integrated stress management	Significant reduction ( $p<0.001$ ) in burnout variables. Significant improvements ( $p<0.001$ ) was detected in work well-being variables: perceived work stress, physical/psychological symptoms, and job satisfaction.
	Cognitive-behavioral intervention	Intervention group underwent both meetings and seminars. Control group only participated in seminars. Improvement was seen in perceived stress, fatigue, and sense of coherence. But no statistically significance between intervention group and control group.

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	Brief psychological skill training	Significant improvement to perceived stress ( $p=0.04$ ) and emotional exhaustion ( $p=0.02$ ).
	Work-based educational program	Participants generally found the intervention to be beneficial; their confidence was enhanced, they became more self-aware, being more assertive at work, and recognised self-care strategies to manage workplace adversity.
	Wellness program	Participants felt their work skills were enhanced. Majority of the feedback was positive
	Meaning-centered intervention	Intervention had no impact on general job satisfaction, and spiritual and emotional quality of life
Tertiary	Healing the healer fitness program	Post-class survey indicated that 98% of participants felt their wellness goals improved.  57.1% recorded reduction in perceived stress.
	Aromatherapy using essential oils	Significant reduction ( $p<0.001$ ) on work stress variables including patient care, problems with peers and supervisors, and workload.
	Progressive Muscle Relaxation Therapy	Significant reduction in anxiety levels ( $p<0.001$ ) but no significant changes were found for occupational stress levels
	Aromatherapy chair massage with music	Nurses working 12-hour shift reported significantly more benefit than nurses working an 8-hour shift. Perceived stress levels were also significantly reduced from baseline (17.85) to week-5 (15.29, $p=0.005$ ) and week-10 (14.92, $p=0.002$ ).
	Chair massage therapy	Significant reduction on perceived stress levels from 17.9 to 12.0 ( $p=0.006$ ).
	Reiki training	
	Debriefing after stress incident strategy	Nurses recognised the importance of debriefing mainly as emotional or psychological support, to improve clinical practice, and foster team spirit but evidence on its effectiveness and impact on stress is scarce.

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## DISCUSSION

### Primary-level interventions

Primary-level interventions are preventive, proactive measures directed at the organisational level to reduce potential risk factors or modify the nature of the stressor before nurses experience job stress related symptoms.<sup>2,23</sup> Out of the three primary-level interventions, organisational workload intervention had achieved its aim of modifying risk factors for job stress at work and demonstrated its effectiveness in a widest range of work variables including staff turnover, job satisfaction, and support from supervisor and co-worker, improved job control, reduction in job demands, and increase in flexible and adaptable culture, communication and psychosocial safety climate. It required deployment of large-scale organisational-level reforms such as expansion of their Department of Health (DoH). It also included long-term funded recruitment strategy such as increased supervision and support for new nurse graduates, and increase access to continuing professional development, and improved recruitment strategies.<sup>2</sup> It had significantly reduced job stress variables among nurses particularly psychological distress and emotional exhaustion. The sweeping changes in both organisational and individual level may well have been the main driver for the successful implementation.

Benefits were also indicated in the other two primary-level interventions, i.e., EMH surveillance and participatory intervention. Improvements were found in work functionings, work-related fatigue, and psychosocial work environment. Although these interventions involved the participants actively, not enough changes were made at the organisational-level to influence individual stress levels. This could be due to restrictions in resources and level of authority.<sup>16,27</sup> Despite these improvements, it is reasonable to point out that stress is an inevitable part of nursing work life, and it may have positive effects on work performance.<sup>28</sup> Thus the aim of primary-level interventions

to prevent it may seem to be a counter-productive and unsustainable long-term effort. However, healthcare organisations need to continue the endeavor to minimize stress related financial losses and to continue obligated priority towards workplace safety.

### Secondary-level interventions

Stress management aimed to provide nurses with the knowledge, skills, and resources necessary to deal with potentially harmful working conditions.<sup>2,23</sup> Secondary-level interventions were the most frequently investigated stress reduction strategy among nurses probably because it was inexpensive and the effects could be benefited by the participants directly after the interventions. They mainly consisted of two components. Firstly, an educational component through workshops, seminar, meetings or classroom-based learning, which provided new knowledge on how to identify and cope with potential or existing sources of stress. Secondly, a practical component that may include meditation, local traditional stress reduction strategies, positive thinking approach, using arts and music, humour, and photography.

The most common type of programs in this level were psycho-educational and cognitive-behavioural programs. These programs are particularly useful for nurses who have negative coping styles. As stated in the Transactional model of stress by Lazarus and Folkman (1984), the eventual coping response to stress depends on the person's initial perception whether positively (leading to eustress), negatively (leading to distress) or benign.<sup>29</sup> The change of perception through cognitive remodeling and change in negative behaviour could prevent harmful long term consequences such as lung cancer from smoking, liver disease from alcohol abuse, and depression from social withdrawal.

But the downside of some of these interventions was that they were resource-laden approaches. For instance, cognitive-behavioral intervention by Orly, Rivka (2012)

showed that a great deal of time and efforts were spent to understand and master the coping skills. It required five seminars and 16 meetings (64 hours, 4 hours per week) to conclude the session. Although, their findings showed significant reduction in perceived stress levels, no difference was found between the intervention group who attended both seminars and meetings, and the control group who attended only the seminars. This may suggest that the seminars alone could have produced the intended result.

MBSR was another common secondary-level intervention where a growing number of studies have suggested promising and significant prophylactic effect on stress, anxiety, and burnout in a variety of clinical population. But MBSR has yet to be thoroughly examined with practicing nurses due to the substantial time commitment where traditionally participants were required to attend classes for 8-weeks.<sup>18,30,31</sup> The MBSR adopted by nurses today was of different versions such as tMBSR and brief-MBSR that required only 4-weeks to implement.<sup>31</sup> They were effective, at the individual-level, in reducing perceived stress, emotional exhaustion, and depersonalization.<sup>23</sup> But this probably was a short-term improvement since the findings generally did not extend to long-term variables such as job satisfaction, health and physical functioning, and spiritual and emotional quality of life.<sup>9,18,19,30</sup>

The only intervention that managed to demonstrate a significant positive impact on perceived stress as well as job satisfaction and wellbeing was the integrated stress management program for Chinese nurses by Jia-yan, Oi-ling (2010). The reasons behind this success were probably due to easy to learn techniques since they were extracted from traditional Chinese strategies that the participants would have been familiar with. The program has a short time period where it was easier to incorporate it into the nurses' working schedules. This suggested that the effectiveness of a particular secondary-level program may depend on the length and socio-cultural nature of the intervention. But

this success at the individual-level should not be construed as directly proportionate to success at the organisational level as Lamontagne, Keegel (2007) showed that individual-level approach was not effective when translated into organisational-level.

#### Tertiary-level interventions

Tertiary-level interventions provide reactive measures to treat, compensate, and rehabilitate people who have been harmed in some way by work related stress, i.e., the 'working wounded'.<sup>2,23</sup> This level of intervention mainly consisted of practical components only. They usually were not just for the nurses but the health care professionals as a group because they share the same unique problems associated with this field particularly compassion fatigue, i.e., dulling of the senses due to constantly need to show compassion for others. However, the effectiveness of these interventions varied too widely to reach any specific conclusions. Furthermore, Rickard, Lenthall (2012) reported that tertiary-level interventions were the least effective when tackling job stress. But in this review, it was found that interventions such as Reiki training, Nordic walking, muscle relaxation therapy, and debriefing were under-researched thus evidence for their effectiveness were sparse and a fair conclusion could not possibly be reached. These studies showed promising effects on work stress among nurses and possibly a potential breakthrough on methods to equip nurses with the support skills needed to withstand adversities in their daily occupational and personal life.

#### Limitations

The major limitations of this paper were inherent by the number of studies available. There were insufficient studies to make direct comparison between respective level interventions, as mainly there was only one study in each intervention. The absence of longitudinal studies and lack of findings with significant effects on long term

variables meant that the long-term benefit and implications have not been established. In addition, there are still plenty of interventions that have yet examined their effects on nurses. Therefore, more longitudinal and replication studies for existing interventions, and experimental studies for new adaptive studies are still needed in order to achieve conclusive evidence of their findings, and clearer understanding of their short and long term implications on work-related stress amongst nurses.

Secondly, only limited generalizability could be attained from the findings in this paper thus the result should be taken with caution. Some of the studies have small sample sizes and low response rate such as Orly, Rivka (2012), which may lead to lower power to detect significance of results, if any. Only a few studies achieved true randomization of sample such as Uchiyama, Odagiri (2013). Some studies have less rigorous randomization sampling technique<sup>21</sup> and used non-probability sampling such as convenience sampling.<sup>19</sup> Some studies have issues with unmatched pre-post assessment.<sup>2</sup> Therefore, rigorous methodological strategies should strictly be adhered to in

any future research studies to achieve reliable generalization and validity of findings.

Finally, there was little standardization in the tools or measures used to measure job stress. The different operationalized definitions of job stress have led to different measures being used to measure the same variable such as utilizing the popular perceived stress scale, measuring job stress separately as physical, psychological and emotional exhaustion, or measuring job strain as indicator of job stress. Therefore, direct comparison across studies, settings, or geographical region was limited.

This review has provided a comprehensive picture of job stress interventions for nurses throughout the world. It is important for nurses to avoid worsening their physical and psychological sufferings by utilizing evidence-based interventions. The description of each intervention provides nurses with a starting point for embarking onto suitable strategies. But nurses should ensure selection of appropriate level of intervention as each level has their

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