Interventions on reducing burnout in physicians and nurses: A systematic review

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Abstract

Background: Burnout is one of the main factors in reducing the performance quality among hospital staff. Appropriate interventions can reduce burnout among physicians and nurses and result in promotion of the quality of services provided at hospitals. The present study aimed to provide a more comprehensive understanding of the interventions on burnout reduction among hospital physicians and nurses.

Methods: Studies were searched from January 2000 to June 2017 in PubMed, Embase, Scopus, Cochrane, and Web of Science. Randomized clinical trials (RCTs) and pretest-posttest studies that had interventions to reduce the burnout of physicians and nurses were included. However, studies conducted on medical and nursing students and nonmedical providers or beyond hospitals were excluded.

Results: Based on the study inclusion criteria, 12 RCTs and 6 pretest-posttest studies were included in the review. Most of the included studies were from the Netherlands, the United States, and England. The interventions included team-based program, EMT-approach, and coping and communication skills training. Most of the interventions had a positive effect on burnout reduction. Nevertheless, some studies had no significant impact.

Conclusion: The results showed that the most interventions used to improve burnout were improving communication skills, teamwork, participatory programs, and psychological interventions (Yoga, meditation, and mindfulness). The impact of these interventions can increase mental health in the long term. Burnout is a complicated problem and should be treated by combining interventions.

Keywords: Burnout, Mental health, Nurses, Physicians, Hospital, Systematic review

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Introduction

Health is a right and an important need for all human beings, and its role in promoting human development indicators is undeniable. Social determinants of health (SDH) are considered as the most important factors in achieving health goals and establishing equity in health. One of the most important SDH is the social status of people in exposure to unhealthy and stressful living and working conditions (1). Burnout is one of the factors affecting the quality of staff and worker's performance (2, 3). This phenomenon counts as a particular type of occu-

↑ What is “already known” in this topic:
Burnout is an important problem for health workforce, with a strong impact on their quality of life and a corresponding decrease in the quality of care with an evident economic burden for the health care system.

— What this article adds:
This was the first systematic review to compare the interventions on physicians and nurses’ burnout. These interventions can be used by policymakers, managers, researchers, and all those who are interested in improving mental health of physicians and nurses.

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Burnout in physicians and nurses

Burnout in physicians and nurses can have a substantial emotional and physical impact on their well-being and job satisfaction. It arises from the interaction between patients and healthcare providers, leading to daily stressors and emotional exhaustion. Burnout is particularly pronounced among healthcare providers, especially physicians and nurses, and it affects their personal and emotional well-being, increasing the risk of work-related fatigue and other adverse health effects. A comprehensive evaluation of the relationship between burnout and the quality of medical care is essential for healthcare systems. The study reviewed the literature on burnout among healthcare providers, highlighting interventions and strategies that could help mitigate its effects.

Data extraction

For this study, we searched PubMed, Embase, Scopus, and Cochrane CENTRAL databases. We included studies that identified interventions aimed at reducing burnout among healthcare providers. The search terms included burnout, interventions, and mental health. We included studies published from 2000 to 2015. The inclusion criteria were studies with a sample size of at least 50 participants who were healthcare providers. The search results were filtered by filtering terms and included studies that met the inclusion criteria.

Quality assessment

The quality of the included studies was evaluated using the Critical Appraisal Skills Programme (CASP) checklist. The checklist is a widely used tool for evaluating the quality of research studies. The quality assessment ensured that the included studies were reliable and valid.

Results

The included studies were evaluated for their intervention strategies, which included cognitive-behavioral therapy (CBT), mindfulness, and yoga. The results showed that these interventions were effective in reducing burnout among healthcare providers. The studies also showed that the interventions were cost-effective and sustainable.

EMH and OP

The study indicated that E-mental health interventions can help reduce burnout among healthcare providers. These interventions can be used to improve the mental health and job satisfaction of healthcare providers. The effectiveness of these interventions can be further improved by tailoring them to the specific needs of healthcare providers.

In conclusion, healthcare providers experience burnout due to the stressors and emotional exhaustion they encounter daily. This study evaluated the effectiveness of interventions aimed at reducing burnout among healthcare providers, highlighting the importance of providing effective interventions to improve the mental health and job satisfaction of healthcare providers.

Methods

To conduct this study, we searched PubMed, Embase, Scopus, and Cochrane CENTRAL databases. We included studies with a sample size of at least 50 participants who were healthcare providers. The search terms included burnout, interventions, and mental health. The quality of the included studies was evaluated using the Critical Appraisal Skills Programme (CASP) checklist.

Inclusion and exclusion criteria

In the first stage, the titles and the abstracts of the studies were independently examined by 2 researchers through which interventional studies on physicians and nurses’ burnout were included. Noninterventional studies, studies not conducted at hospitals, studies conducted on medical and nursing students, review studies, the abstracts of the conferences, book chapters, and letters written to the editors were excluded in this study. Any disagreement between the researchers was resolved through consultation with a third researcher.

Data extraction

Data for the leading authors’ name, country, period of research, study design, year of publication, participants, sample size, type of intervention, intervention effects, and other findings of the studies were extracted by 2 members of the research team. Disagreements between the researchers were resolved through negotiation or referring to a third person as a referee.

Quality assessment

The methodological quality of studies included in the present systematic review was assessed using the “Critical Appraisal Skills Programme” (CASP) checklist.

Results

The electronic search of the databases led to identifying 2506 studies, and 5 studies were identified through hand searching of the last issues of journals, with the most papers identified through electronic database searching. After removing the duplicate studies, the titles and abstracts of 1965 studies were examined by 2 researchers independently for relevance, and finally 18 studies were included for the final analysis. The process of study identification and selection, based on the PRISMA, is presented in Figure 1.

The findings of this study indicated that only few studies have been conducted on occupational burnout of physicians and nurses. Selected studies in this paper were interventional studies, RCTs, and pretest-posttest studies.

Most included studies were from Netherlands, the United States, and England and were concluded during 2010-2017. Also, 50% of interventions had a positive impact on physicians’ burnout and 67% a positive impact on nurses’ burnout. Most interventions were similar in physicians and nurses, but the interventions performed on nurses were more diverse and sometimes the effects of the same intervention varied in different target groups.

The interventions in the included studies that were conducted to reduce burnout and to improve mental health of physicians and nurses are as follow:

EMH and OP

E-mental health interventions are aimed to reduce specific mental health complaints or to enhance well-being. In the OP-care group who were screened positive on impaired work functioning and/or on any mental health complaints, the personalized feedback was followed by an
invitation for a face-to-face preventive consultation with their own occupational physician (OP). Both groups improved over time, and no significant difference was observed between intervention groups with EMH and OP approaches.

**Team-based interventions and participatory programs**

In all included studies, team-based and participatory programs had a non-significant effect. In this study, no significant relationship was observed between superiors’ support and improvement in mental status of the staff, which indicates that improvement in mental health and symptoms of depression can be due to proper communication and participation of nurses on the same level, and not merely on the relationship with their superiors.

**Psychosocial training intervention**

Psychosocial training intervention significantly improved burnout rates. Nurse training, with broader range of interventions, helps the nurses to have more positive attitudes towards the patients.

**Psychiatric interventions**

Psychiatric interventions, such as Yoga and meditation, and mindfulness interventions led to a significant increase in self-care and a significant reduction in emotional exhaustion, stress, and burnout among physicians and nurses.

**Online programs and internet-based interventions**

Online intervention programs significantly improved mental health and reduced the symptoms of depression in the staff.

**Professional identity development program**

A professional identity development program can also reduce burnout of the nurses.

**Coping interventions**

Coping interventions led to a reduction in burnout among nurses, but the effect was no significant.

**Thankful events**

Workplace appreciation had a significant effect in increasing performance and reducing depression and burnout among nurses and physicians.

**Mix methods**

The use of integrated methods was shown to have a significant effect on reducing physicians and nurses’ burnout. Overall, most interventions intended to investigate the impact of training communication skills on burnout of physicians and nurses. In two thirds of the studies, the
interventions had a positive impact on reducing burnout. In 50% of the cases, communication skills training with EMH approach had a significant effect on burnout. In 75% of studies, psychiatric interventions had a significant effect on burnout. Also, in all studies, online interventions and professional identity development programs had significant effects on burnout. However, team-based and coping skills training had no significant effect on burnout. Nevertheless, mix methods had a significant effect on burnout in all studies.

Characteristics of the included studies on the interventions of physicians’ burnout are presented in Tables 1 and 2.

Interventions and effects on burnout of physicians and nurses

<table>
<thead>
<tr>
<th>Author</th>
<th>Country</th>
<th>Participant</th>
<th>Intervention</th>
<th>Effect of the intervention</th>
<th>Main finding</th>
<th>Quality Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contratto</td>
<td>UK</td>
<td>7 physicians</td>
<td>Computerized physician order entry, electronic health records</td>
<td>Positive</td>
<td>Four months after the intervention, improvements were found in physicians’ burnout. This study supports the use of physician order entry clerical personnel as a simple, cost-effective intervention to improve the work lives of physicians.</td>
<td>9</td>
</tr>
<tr>
<td>Butow</td>
<td>Australia/New Zealand, Switzerland/Germany/Austria</td>
<td>95 physicians</td>
<td>Consultation skills training</td>
<td>Nonsignificant</td>
<td>There were no significant differences in burnout scores between the experimental and control groups.</td>
<td>9</td>
</tr>
<tr>
<td>Noben</td>
<td>Netherlands</td>
<td>617 physicians</td>
<td>EMH-approach consultation with an occupational physician (OP)</td>
<td>Positive</td>
<td>A significant improvement in work functioning occurred in the participating physicians. The median incremental cost-effectiveness ratio for the occupational physician condition versus the control condition was dominant.</td>
<td>9</td>
</tr>
<tr>
<td>Linzer</td>
<td>USA</td>
<td>166 physicians</td>
<td>Improved communication; changes in workflow, and targeted quality improvement (QI) projects</td>
<td>Positive</td>
<td>More intervention showed significant effects on reducing burnout. All 3 of the following types of interventions led to improvements in some staff outcomes: workflow, redesign, and improved communication, especially among physicians and staff.</td>
<td>9</td>
</tr>
<tr>
<td>Oman</td>
<td>USA</td>
<td>58 physicians</td>
<td>Eight-point program (EPP), a meditation-based intervention</td>
<td>Nonsignificant</td>
<td>A beneficial treatment effects were observed on stress and mental health. Treatment effects on stress were mediated by adherence to practices. Evidence suggests this program reduces stress and may enhance mental health.</td>
<td>9</td>
</tr>
<tr>
<td>Weight</td>
<td>USA</td>
<td>628 physicians</td>
<td>Team-based, incentivized exercise program</td>
<td>Nonsignificant</td>
<td>No significant differences were found between program participants and nonparticipants. Burnout was lower in participants than in nonparticipants, although the difference was not statistically significant. Residents and fellows may be much more sedentary than previously reported.</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Author</th>
<th>Country</th>
<th>Participant</th>
<th>Intervention</th>
<th>Effect of the intervention</th>
<th>Main finding</th>
<th>Quality Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheng</td>
<td>China</td>
<td>102 nurses</td>
<td>Thankful events</td>
<td>Positive</td>
<td>The result shows a decrease in symptoms of depression. However, this rate became less pronounced as time progressed. At follow-up, the gratitude group reported lower depressive symptoms than control group.</td>
<td>8</td>
</tr>
<tr>
<td>Ketelaar</td>
<td>Netherlands</td>
<td>1140 nurses</td>
<td>Electronic-mental health care (EMH approach)</td>
<td>Non-significant</td>
<td>The OP-care approach trended towards better performance in targeting work functioning, but findings showed that the EMH care approach was noninferior. However, the high dropout rate and low compliance to EMH interventions should be considered.</td>
<td>9</td>
</tr>
<tr>
<td>Ketelaar</td>
<td>Netherlands</td>
<td>1170 nurses</td>
<td>Consultation with an occupational physician (OP)</td>
<td>Non-significant</td>
<td>It was not demonstrated that an EMH approach to WHS is more effective to improve WF and MH. The effect found in the complete sample of participants could not be easily interpreted. Reported results may be useful for future meta-analytic work.</td>
<td>9</td>
</tr>
<tr>
<td>Uchiyama</td>
<td>Japan</td>
<td>434 nurses</td>
<td>Participatory program</td>
<td>Non-significant</td>
<td>It is suggested that a 6-month intervention is effective in improving psychosocial work environment, but it is not effective in improving mental health of the nurses.</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 1. Characteristics of the included studies on the interventions of physicians’ burnout

Table 2. Characteristics of the included studies with interventions for reducing burnout in nurses

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nurses are demonstrated in Table 3.

Discussion

Burnout syndrome is an important health problem affecting many people, especially physicians and nurses and should be addressed globally with interventions at organizational and individual levels (32). Appropriate strategies to control burnout can be found in a range of identified interventions. The aim of this systematic review was to investigate the impact of conducted interventions on physicians and nurses' burnout.

The identified interventions to reduce burnout and to improve mental health of physicians and nurses are as follow: motivational programs, communication training skills, electronic methods, psychiatric programs, and combined methods. Overall, most of studied interventions had reported positive impacts on reducing burnout and improving mental health.

Motivational programs, such as gratitude and thankful events, for physicians and nurses as well as professional
Burnout in physicians and nurses

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Physicians Effect</th>
<th>Nurses Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gratitude and thankful events</td>
<td>* Positive</td>
<td>* Positive</td>
</tr>
<tr>
<td>Professional identity development program</td>
<td>* Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Communication skills training</td>
<td>* Non-significant</td>
<td>* Non-significant</td>
</tr>
<tr>
<td>Participatory program</td>
<td>* Positive</td>
<td>* Positive</td>
</tr>
<tr>
<td>Team-based program</td>
<td>* Non-significant</td>
<td>* Positive</td>
</tr>
<tr>
<td>Consultation skills training</td>
<td>* Positive</td>
<td>* Non-significant</td>
</tr>
<tr>
<td>EMH approach and OP approach</td>
<td>* Positive</td>
<td>* Positive</td>
</tr>
<tr>
<td>Online programs and internet-based interventions</td>
<td>* Positive</td>
<td>* Positive</td>
</tr>
<tr>
<td>Psychosocial training intervention (PSI)</td>
<td>* Positive</td>
<td>* Positive</td>
</tr>
<tr>
<td>Coping skills training</td>
<td>* Non-significant</td>
<td>* Positive</td>
</tr>
<tr>
<td>Mindfulness training Yoga, meditation, relaxation,</td>
<td>* Non-significant</td>
<td>* Positive</td>
</tr>
<tr>
<td>touch therapy, energy healing (Reiki)</td>
<td>* Non-significant</td>
<td>* Positive</td>
</tr>
<tr>
<td>Combination of above methods</td>
<td>* Non-significant</td>
<td>* Positive</td>
</tr>
</tbody>
</table>

identity development programs can increase motivation and interest in caring for patients and can improve depression, burnout, and well-being. A study by Zhao et al. showed that proper human resource management, such as new approaches to encouragement and motivation, can reduce burnout in nurses and improve their mental health (33). The study of Ebrahimzadehpezeski showed that the use of motivational methods can be effective in reducing the burnout of nurses, which is consistent with the findings of the present study (34). The role of communication skills training is important in reducing specific mental health complaints or enhancing well-being (26). The findings of the present study revealed that strengthening communication skills is more effective in reducing burnout in physicians than in nurses. In this context, Penberthy study is consistent with the present study which aimed at improving the communication skills of physicians (35). Team-based and participatory programs can help reduce symptoms of depression and improve mental health. A study conducted by Uchiyama suggested that the symptoms of depression and mental health can be improved in the hospitals where the possibility of visiting patients, receiving required information, and participation is high. Nevertheless, this finding should be interpreted with caution. The symptoms of depression appear in high stress conditions, so if milder symptoms, such as irritation, anger, and anxiety, are also examined, this intervention can have positive effects (24). In another study by Weight et al., the symptoms of burnout were milder in intervention group, using teamwork, compared to control group (21). Psychiatric programs (Yoga, meditation, and mindfulness programs) can help reduce burnout and improve mental health. Yoga practice may be an effective strategy to improve the health of nurses (12). Coping interventions can also lead to a reduction in burnout among nurses (30). Moreover, individual interventions can reduce emotional exhaustion. These findings were confirmed in a study by Lee et al., in which the role of copying strategies in reducing burnout of the nurses was examined. Lee's study showed that using copying interventions for 6 to 12 months can lead to a reduction in emotional exhaustion, depression, and ultimately burnout among nurses (9).

However, further research is required to confirm these results. Using larger sample sizes, more active control groups, dedicating more time to intervention, and using other interventions and comparing them with mentioned interventions, can make the study results more reliable. Also, as burnout is a complex subject, it is better to use multiple methods to improve it. In Salton study, with the aim of reducing burnout and improving mental health of nurses, mix interventions were used which resulted in a reduction in burnout among nurses (28). On the other hand, various studies have shown that burnout is affected by several factors that can act as facilitators or barriers of interventions to improve burnout, which should be considered. Age, sex, work experience, work environment, type of specialization, and income can affect the severity and weakness of job burnout. In this regard, some studies were shown that higher burnout levels could be increased due to the high demands, long working hours, insufficient income, a perceived mismatch between effort and reward, and poor organizational administration (36,37). Workplace appreciation can also be effective in increasing performance, reducing depression, and improving burnout of nurses and physicians. Furthermore, the study of Viotti et al. showed no statistically significant differences in the emotional exhaustion value between Intensive Care Unit (ICU) and non-intensive care unit (non-ICU) workers, although the average score is higher for non-ICU workers (38). The survey conducted by Medscape showed that specialties with the highest percentage of burnout are those that deal with severely ill patients (emergency medicine and critical care register 55% burnouts), and their physicians also reported a greater degree of severity in their burnout (39,40).

Additionally, the results of this study indicated that various interventions can be used to improve the burnout of physicians and nurses, and their application should take into account the individual, organizational, specialty, and relevant aspects of the program. Therefore, these findings are not universal and their effect on burnout should be followed up across other health care personnel in different contexts over a longer period of time.

**Limitations**

The number of studies using the same interventions was too small, so generalizing the results should be done with caution. The number of participants in some studies was too low, which has led to a reduction in their statistical strength and an increase in inconsistency, reducing the effects of intervention. However, in some studies in which the sample size was large, no significant relationship was observed between intervention and burnout reduction. Demographic characteristics of the participants and heter-

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ogeneity of the groups can also affect the outcomes. In some cases, improving undesirable work conditions (staff shortage and insufficient salaries and benefits) were more effective in reducing the symptoms of depression and burnout than improving psychological conditions. The dispersion and multiplicity of mental health indices could also affect the outcomes of the study.

Conclusion
Different strategies, such as training and improving communication skills, yoga, and spiritual programs based on meditation, teamwork, computer programs, staff appreciation, and coping strategies can be used to reduce burnout among physicians and nurses. Training and improving communication skills were the most effective interventions to improve burnout in nurses and physicians. Undoubtedly, the results of interventions to reduce burnout and the indices related to mental health improvement will appear in the long run, and more follow-up studies are needed to trace the durability of the changes. Also, burnout in physicians and nurses is a complex problem that should be taken into consideration in interventions and if possible, combined and multidimensional interventions should be used. On the other hand, full implementation of these interventions can be costly and providing the necessary conditions, such as commitment of key individuals and preparing participants before the intervention, is highly important. Therefore, time, space, and feasibility limitations are the priority issues in applying such interventions.

Conflict of Interests
The authors declare that they have no competing interests.

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