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# The effectiveness of implemented interventions at the workplace to promote the mental health of working women: A systematic review

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## Abstract:

Over the last decades, a gradual increase in prevailing mental disorders in the adult population has been observed all over the world. Global estimates of anxiety, stress, depression, and mood disorders prevalence have also been high. Employed women are susceptible to experiencing some symptoms or mental disorders due to their lifestyle or working conditions. The objective of this study is to find effective interventions based on the workplace to improve the mental health of employed women. This systematic review was conducted by following PRISMA guidelines to report systematic reviews. The papers in Web of Science, Scopus, PubMed, and Google Scholar for English and SID, Magiran, and Irandoc for Persian resources were searched from 2005 to 2023. To include the final study, 15 papers were eligible to be selected. The findings of this study show that giving interventions to improve the mental health of employed women is hopeful and employers may promote their mental health through performing low-cost and effective intervention programs such as setting up supportive training groups' sessions and group exercises. The outcomes of performing this study may help to increase our knowledge concerning the necessity of giving effective health interventions to women in the workplace and to consider the shortage of giving such interventions. Therefore, giving the interventions is recommended aiming at the health and welfare improvement of employed women.

## Keywords:

Mental health, women, working, workplace

## Introduction

Mental health is a state of complete physical, mental, and social well-being, and not merely the absence of mental illness.<sup>[1,2]</sup> An individual who is mentally healthy is capable of effectively managing life's challenges, demonstrating responsibility, utilizing their cognitive abilities appropriately, fostering positive and harmonious interpersonal relationships, and engaging in meaningful and productive pursuits.<sup>[1,2]</sup> The problems of mental health in all working populations are prevalent throughout the world.<sup>[3]</sup> According to WHO reports, it is estimated that 15 percent of

adults will experience mental disorders at working age at any time.<sup>[4]</sup> Over the recent decades, a gradual increase in overcoming mental disorders has been observed in the adult population all over the world.<sup>[4-7]</sup> The global estimates of anxiety, stress, depression, and mood disorders prevalence have also been remarkably high. In 2019, WHO reported that around 970 million people have been living with one mental disorder in the world,<sup>[8,9]</sup> meaning that many people will experience some kind of anxiety or mood disorder repeatedly or continuously during a period of life. In this report, the prevalence percent of mental disorders was higher in women than the men.<sup>[9]</sup> Hence, employed women

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are susceptible to some symptoms or mental disorders due to the lifestyle or working conditions such as long working hours, being away from the children during the day, and having different roles as employee, spouse, mother, and housewife that may be resulted in stress, feeling guilty, anxiety, bad mood or individual problems and consequently, more serious mental disorders.<sup>[10]</sup> Women in full-time employment are nearly twice as likely to suffer from common mental health problems as compared to full-time employed men (19.8% vs 10.9%).<sup>[11]</sup>

Working could provide much profit according to financial resources, social position, and improved self-esteem and prepare a social network. Nevertheless, to such an extent that working could have positive effects on mental health and behavioral disorders, it may have destructive and negative effects, too.<sup>[12]</sup> The amount of work with no reward, lack of balance between working attempt and received reward, bullying and discrimination at work, and lack of job security can be associated with the risk of experiencing common mental disorders. Conversely, social support from supervisors and coworkers may have positive impacts on mental health.<sup>[13]</sup> Stress, anxiety, and depression are regarded as disorders with various complications, causing individuals' mood changes and disturbances in life. To treat these disorders, different ways have been given in which health training and interventions have had significant roles.<sup>[14,15]</sup> Many studies have evaluated interventions at the workplace to promote mental health, showing that the interventions at the workplace may help low absenteeism due to illness by protecting mental health and welfare.<sup>[16,17]</sup> In addition, workplaces in which the knowledge of mental health is promoted and the individuals suffering from mental disorders supported, could most probably lower the level of depression and absenteeism and increase productivity.<sup>[18]</sup>

Promoting mental health in the workplace is crucial for women. Poor working environments, including discrimination and inequality, excessive workloads, low job control, and job insecurity, pose a risk to mental health. Safe and healthy working environments are not only a fundamental right but are also more likely to minimize tension and conflicts at work and improve staff retention, work performance, and productivity.<sup>[19-21]</sup> *The scientific literature suggests that it is possible to positively impact work-related outcomes, particularly absenteeism, by improving health through interventions that target the physical workplace and organizational structure.*<sup>[22]</sup> *Several systematic reviews have investigated interventions conducted in the workplace or performed on employed women. For instance, two systematic reviews have evaluated interventions aimed at improving the general health of women or employed mothers.*<sup>[23,24]</sup> *Additionally, another study has examined interventions for reducing anxiety and depression among*

*women aged 18–65.*<sup>[25]</sup> *Two other systematic reviews have evaluated interventions in the workplace aimed at improving the mental health of society, including both men and women.*<sup>[24,25]</sup>

Despite several systematic review studies investigating interventions aimed at improving general health, anxiety, and depression in women, no systematic review study has been conducted to investigate interventions aimed at improving mental health in employed women specifically. Therefore, this study aims to identify effective workplace-based interventions that can improve the mental health of employed women.

## Materials and Method

### Search strategy

*This systematic review was conducted following Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).*<sup>[26]</sup> *First, related keywords and their synonyms were recognized through MeSH, and then, the searching strategy was established accordingly. Afterward, the papers in Web of Science, Scopus, PubMed, and Google Scholar for English and SID, Magiran, and Irandoc for Persian resources were searched from 2005–2023.*

### Eligibility criteria

Inclusion criteria selected for this research included the studies conducted on employed women at the workplace, studies published in English and Persian languages, studies published from 2005 to 2023, clinical trial studies (because of the purpose of the study that was to investigate the interventions carried out in the workplace), studies surveying and performing the interventions at the workplace for improving mental health, studies in the field of health as well as studies for the possibility of accessing to the complete text.

Exclusion criteria included the studies conducted based on no control group as well as the ones not performed on employed women.

### Selection of studies

After searching, the papers were recovered and entered EndNote software version X9. After deleting repeated cases, the papers entered the title and abstract screening phases. In the first phase, all the papers were studied based on the title and abstract using two (N.T) and (Z.A) reviewers independently to recognize if the resulting studies have the inclusion criteria for the study. In the next phase, a more exact revision was made, including the complete study of papers by three (N.T), (A.V), and (Z.A) independent reviewers. Then, inclusion and exclusion criteria were applied to them again.

Disagreements of reviewers were set forth and then, evaluated by one (Z.A) reviewer by respecting inclusion and exclusion criteria.

### Quality assessment

To evaluate the quality of each study, the Joanna Briggs Institution (JBI) critical *assessment checklist of methodological quality for clinical trial studies (RCT)* and quasi-experimental studies was used.<sup>[27]</sup> The clinical trial checklist contained 13 questions and the checklist of quasi-experimental studies had nine questions in such a way that if the response was “Yes,” the score was 1, and if it was “No” or indistinct, no score was considered for them. The maximum attainable score in clinical trial studies is regarded to be 13 so if the total score gained was 8 or 9, the study was considered to be good, if 7 was medium and if 6 or lower, weak. The maximum attainable score for quasi-experimental studies was 9, so that if the total score of any study was 8, which was characterized to be good, if 7 was medium and lower than 6, weak. Each study was reviewed by two (N.T) and (Z.A) authors and the differences were surveyed and solved by the third person (A.V).

### Data extraction

Criteria of the surveyed studies (authors, year of publication, country of conducting the study, place of intervention, type of intervention, outcomes, assessment tools, period of interventions, and follow-ups) were extracted by one of the authors (N.T), and studied by another author (Z.A).

## Results

After searching, 10397 Latin and 267 Persian resources, a total of 10664 resources were recovered and entered *EndNote* software version X9. After deleting repeated cases, 9289 resources remained in total that entered the title screening phase. Then, the titles of papers were studied and 5967 papers were deleted. Afterward, the remained papers were screened firstly, by studying the abstracts and finally, by studying the texts. In this phase, screening random and trial studies as well as quasi-experimental studies, first led to the deletion of 3179 and then, 43 papers. Finally, 83 papers were deleted due to the population under study and the different outcomes of the study with the aim of study ( $n = 49$ ), place of performing intervention other than the workplace ( $n = 26$ ) as well as the other reasons such as non-English language and lack of accessing to the complete paper text ( $n = 8$ ). Figure 1 shows the results of identification processes, screening, and inclusion of studies concerning the preferred reports cases for systematic and meta-analysis studies (PRISMA).

### Characteristics of studies

In general, 17 eligible studies were included in the final study [Table 1]. In this regard, two studies had no follow-ups or it was not referred to exactly in the paper,<sup>[28,29]</sup> and the intervention time of the two studies had not also been characterized.<sup>[30,31]</sup> In addition, nine studies had a one-year follow-up period or more.<sup>[31-39]</sup> Two studies investigated the effect of interventions on the subject

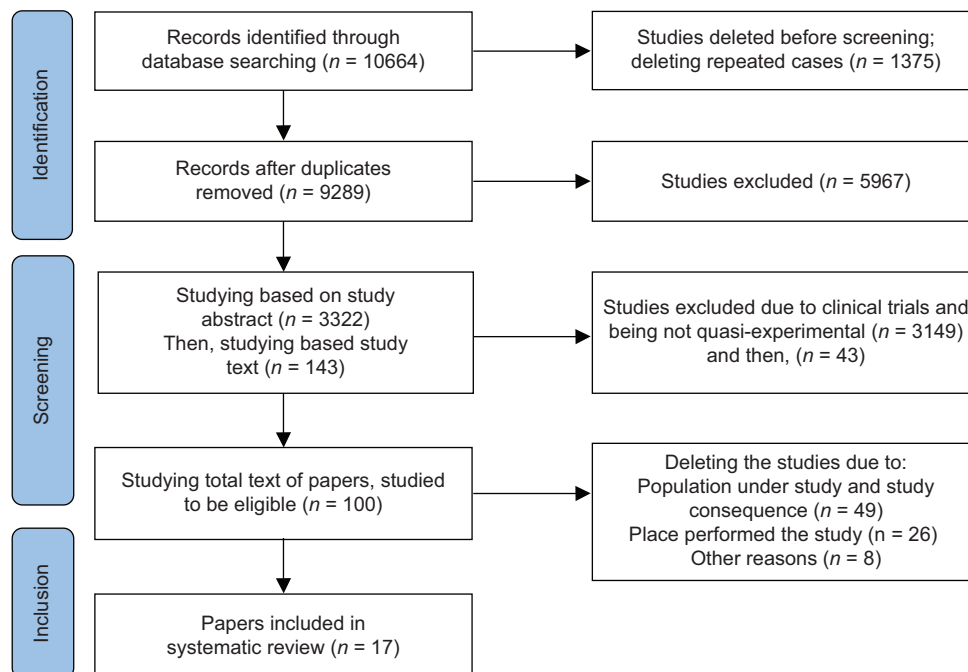


Figure 1: The process of studies selection

Table 1: Characteristics of the selected studies

| Author   | Year | Country            | Participants and sample size                   |  | Study design       | Intervention(s)  | Duration of intervention | Duration follow-up       | Results  | Quality of studies |
|--|------|--------------------|--|--|--------------------|--|--------------------------|--------------------------|--|--------------------|
|  |      |                    | Intervention group                             | Control group                                  |                    |  |                          |                          |  |                    |
| Andersen L.L. <i>et al.</i> <sup>[40]</sup>    | 2017 | Denmark            | 33 slaughterhouse workers (25 men and 8 women) | 33 slaughterhouse workers (26 men and 7 women) | RCT                | Strength training dedicated based on a group (physical training group) or ergonomic and personal training (reference group)  | 10 weeks                 | 10 weeks                 | Implementing physical training at the workplace together with coworkers improves the social environment and exhilaration among workers, but, mental health remains without change  | Good               |
| Burmester K.B. <i>et al.</i> <sup>[28]</sup>   | 2015 | Dominican Republic | 99 workers in a clothing factory               | 105 workers in a clothing factory              | quasi-experimental | Including 350% increases in wages and significant improvement in the workplace   | 15–16 months             | –                        | Providing life wage and improving workplace to increase income and welfare in a deprived population is accompanied by lowered depression symptoms  | Medium             |
| Eklund M. <sup>[32]</sup>                      | 2013 | Sweden             | 42 working women                               | 42 working women                               | quasi-experimental | Redesigning Daily Occupations (ReDO) is an intervention designed for females with disorders related to stress  | 16 weeks                 | 16 weeks                 | ReDO intervention may affect the perceived anxiety and depression in women   | Good               |
| Eklund M. <sup>[33]</sup>                      | 2017 | Sweden             | 42 working women and 24 interviewees           | 42 working women and 31 interviewees           | quasi-experimental | Redesigning Daily Occupations (ReDO)   | 16 weeks                 | 16 weeks                 | Although ReDO intervention had accelerated back to work in perspective of sudden follow-up, ReDO women showed better balance in the field of working   | Good               |
| Eklund M. and L. K. Erlandsson <sup>[34]</sup> | 2011 | Sweden             | 42 women                                       | 42 women                                       | quasi-experimental | Redesigning Daily Occupations (ReDO)   | 16 weeks                 | 16 weeks                 | More proportion of women backed to work by redesigning of daily jobs, reducing their sick leave, and increasing their self-esteem more than the care group as usual, but the groups had no difference in lowering the stress | Good               |
| Eklund M. and L. K. Erlandsson <sup>[35]</sup> | 2013 | Sweden             | 42 women                                       | 42 women                                       | quasi-experimental | Redesigning Daily Occupations (ReDO)   | 16 weeks                 | 16 weeks                 | ReDO is a hopeful work rehabilitation way to improve the quality of work and self-mastery for the target group   | Good               |
| El Khamali R. <i>et al.</i> <sup>[36]</sup>    | 2018 | France             | 101 individuals, 61 women                      | 97 individuals, 54 women                       | RCT                | Evaluating the effect of a multi-dimension training program including, simulation scenarios in lowering job pressure within 6 months. Secondary aims include the evaluation of intervention effects on other mental-social factors at work (such as evaluating job burnout) together with absenteeism and turnover | 6 months                 | 6 months and then 1 year | Among ICU nurses, an intervention including, training, role play, and justification sessions, resulted in a lower prevalence of job pressure in 6 months in comparison with the nurses not under this program                | Good               |

Contd...

Table 1: Contd...

| Author  | Year | Country | Participants and sample size |  | Study design       | Intervention(s)  | Duration of intervention   | Duration follow-up | Results   | Quality of studies |
|---|------|---------|------------------------------|--|--------------------|--|----------------------------|--------------------|---|--------------------|
| Garcia G. A. R. <i>et al.</i> <sup>[42]</sup> | 2017 | Spain   | Intervention group           | 190 supervisors of multinational companies | quasi-experimental | Intensive Program of Emotional Intelligence (IPEI)   | 16 h in 3 consecutive days | 3 months           | Results support the training of administrators in the field of emotional competencies via efficient, short, and economical programs of an Intensive Program of Emotional Intelligence (IPEI) on the emotional intelligence of administrators                    | Good               |
|   |      |         | Control group                | 92 supervisors of multinational companies  |                    |  |                            |                    |   |                    |
| Kettunen O. <i>et al.</i> <sup>[37]</sup>     | 2015 | Finland | 212 women and 126 men        | 9 women                                    | RCT                | 12-month training program including, two-day training camps in Finland sport institute   | 12 months                  | 12 months          | The one-year physical exercising intervention resulted in improving mental rehabilitation among working adults, accompanied by improved cardiovascular preparation  | Weak               |
| Kim S.B <sup>[29]</sup>                       | 2009 | Korea   | 9 women                      | 9 women                                    | RCT                | Scientific methods implemented to test the Gestalt group meditation therapy program as a treatment for working women at the age of 30–40 to lower their job stress and anxiety | 8 weeks                    | –                  | Gestalt group meditation therapy program for working women between the ages of 30–49 in Korea may reduce job stress and anxiety   | Weak               |
| Luthar S.S. <i>et al.</i> <sup>[41]</sup>     | 2017 | USA     | 21 individuals               | 19 individuals                             | RCT                | Support group-based intervention for working women with a high risk of distress and burnout  | 12 weeks                   | 3 months           | Support groups may be a preventive, low-cost, and durable intervention to lower burnout and distress of women at the workplace with high stress, resulting in personal usefulness, more participation at the workplace, and lower stress related to the parents | Weak               |
| Muller A. <i>et al.</i> <sup>[38]</sup>       | 2016 | Germany | 36 nurses                    | 34 nurses                                  | RCT                | SOC training (a professional health intervention based on a theoretical model of Selection, Optimization, and Compensation) including, 6 sessions (16.5 h) within 9 months     | 9 months                   | One year           | Proposed SOC training increases mental well-being, especially in employees who have a strong commitment to the intervention   | Medium             |

Contd...



Table 1: Contd...

| Author                                      | Year | Country | Participants and sample size              |                 | Study design       | Intervention(s)  | Duration of intervention   | Duration follow-up | Results   | Quality of studies |
|---|------|---------|---|-----------------|--------------------|--|--|--------------------|---|--------------------|
| Ornek O.K.<br><i>et al.</i> <sup>[30]</sup> | 2020 | Turkey  | 35 individuals                            | 35 individuals  | RCT                | Studying the effects of Work-ProMentH based on the Work-related stress model   | –  | 3 months           | Work-ProMentH was useful in managing job stress and promoting effective confrontation profiles and makes the users proficient to evaluate the stress of workers and to plan and study intervention programs via a systematic approach   | Good               |
| Peterson U. <sup>[39]</sup>                 | 2008 | India   | 51 individuals                            | 80 individuals  | RCT                | The method used is based on the developed problem by Ekberg (1995)   | 7 months   | 12 months          | Support-equality groups may be useful and relatively cheap tools for lowering stress and burnout using the problem-based method   | Medium             |
| Wu S.Y <sup>[31]</sup>                      | 2006 | China   | 459 individuals                           | 502 individuals | RCT                | Three dimensions of job compatibility (including: job stress, mental pressure, and coping resources) were measured using the Occupational Stress Inventory-Revised Edition (OSI-R), and working ability was evaluated using the Working Ability Index (WAI) among teachers | –  | 12 months          | Interventions have been effective in lowering the job stress of teachers, increasing confrontation resources, and improving the ability of teachers to work   | Weak               |
| Wang <sup>[43]</sup>                        | 2021 | China   | two intervention groups, each of them: 41 | 40              | quasi-experimental | The initial intervention incorporated a moderate physical activity program and an individual-based counseling intervention, while the second included the same physical activity program, but supplemented with group counseling sessions                                  | 12 weeks   | 12 weeks           | An intervention involving physical activity and counseling, delivered either individually or in a group, could help working women in Shanghai reduce stress and burnout, and enhance their Health-Related Quality of Life. Furthermore, group interventions are more effective than individual ones | Good               |
| Dahlgren <sup>[44]</sup>                    | 2021 | Sweden  | 99  | 108             | RCT                | A recovery program includes three group sessions with 2 weeks between each session, focusing on preventive strategies for sleep and recovery related to work stress and shift work.  | three group sessions (2.5 h), with one session every second week (i.e., 4 weeks from the first session to the third) | 6 months           | A proactive recovery program, administered by a group, could potentially enhance recovery and ward off adverse health outcomes  | Good               |

**Table 2: Table scoring the questions of the RCT studies checklist**

|                             | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Total score |
|-----------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-------------|
| Andersen LL. <i>et al.</i>  | 1  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1   | 1   | 1   | 1   | 8           |
| El Khamali R. <i>et al.</i> | 1  | 1  | 0  | 0  | 0  | 1  | 0  | 1  | 1  | 1   | 1   | 1   | 1   | 9           |
| Kettunen O. <i>et al.</i>   | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 1   | 1   | 1   | 1   | 6           |
| Kim SB.                     | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 1   | 1   | 1   | 5           |
| Muller A. <i>et al.</i>     | 0  | 1  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 1   | 1   | 1   | 1   | 7           |
| Suniya SL. <i>et al.</i>    | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 1   | 1   | 1   | 1   | 6           |
| Ornek OK. <i>et al.</i>     | 0  | 0  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 1   | 1   | 1   | 1   | 9           |
| Peterson U.                 | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 1   | 1   | 1   | 1   | 7           |
| Wu SY.                      | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 1   | 1   | 1   | 1   | 6           |
| Dahlgren.A <i>et al.</i>    | 1  | 0  | 1  | 0  | 0  | 0  | 1  | 1  | 1  | 1   | 1   | 1   | 1   | 9           |

Scored by numbers: 0=Unclear, No=0, Yes=1

**Table 3: Scoring the questions of the quasi-experimental studies checklist**

|                                       | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Total score |
|---------------------------------------|----|----|----|----|----|----|----|----|----|-------------|
| Burmaster KB. <i>et al.</i>           | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 0  | 1  | 7           |
| Eklund M.(2013)                       | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 8           |
| Eklund M.(2017)                       | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 8           |
| Eklund M. and L. K. Erlandsson (2011) | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 8           |
| Eklund M. and L. K. Erlandsson (2013) | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 8           |
| Garcia GAR. <i>et al.</i>             | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 8           |
| Wang H. <i>et al.</i>                 | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 8           |

Scored by numbers: 0=Unclear, No=0, Yes=1

of stress,<sup>[31,36]</sup> one study investigated depression,<sup>[28]</sup> and the other studies explored multiple disorders including stress, depression, anxiety, and other disorders. Also, one study investigated the emotional intelligence of employees.<sup>[32]</sup> The duration of the interventions for all the studies was from three days to 16 months.<sup>[31,40]</sup>

### Type of interventions

In four studies, the intervention was of ReDO type as training programs and support groups. Moreover, the interventions of four studies were conducted by holding training programs.<sup>[32,35]</sup> Other types of interventions were performed as two studies by holding sports,<sup>[37,40]</sup> two studies by establishing support groups,<sup>[39,41]</sup> one by meditation,<sup>[37]</sup> one by increasing the wage,<sup>[28]</sup> and one by concise emotional intelligence program.<sup>[42]</sup> another study administered two physical interventions with counseling for individuals and groups<sup>[43]</sup> and the intervention of one study was a group-administered proactive recovery program.<sup>[44]</sup>

### Studies of ReDO type

In four quasi-experimental studies conducted in Sweden country, half of the participants received working rehabilitation interventions with re-established designs for daily jobs. These studies contained two 44-individual groups of working rehabilitation interventions with re-established design (RoDO) and care-as-usual (CAU) receivers. These interventions include training programs and support groups. One of these studies showed that this intervention may affect the anxiety and depression of employed women.<sup>[32]</sup> The results of the other two

studies reported lower sick leave time and higher self-esteem.<sup>[33,34]</sup> Additionally, in another study, increased quality of life and self-mastery were observed in the ReDO group.<sup>[35]</sup>

### Studies with training session interventions

Among four studies having training session interventions, the results of three cases indicated lower job stress levels.<sup>[30,31]</sup> In a study conducted in France, 115 employed women participated in one intervention with 198 nurses in ICU in which four nurses from the intervention group and 12 nurses from the control group left the research during the follow-up period.<sup>[36]</sup> This intervention was composed of training, role play, and briefing session. In this research, the prevalence of job pressure (evaluated using a questionnaire, containing the assessment of psychological request and decision making) was reduced significantly in 6-month follow-ups among the nurses in the five-day intervention group (13%) compared with the control group (67%).

Analyzing the study of training program intervention with the theoretical model of selection, optimization, and compensation (SOC) showed that this training is suitable for increasing rehabilitation, especially when the job control is low. But, in this study, the perceived ability to work was not improved by training. In addition, this study reported that SOC may be a hopeful approach for job health and stress prevention.<sup>[38]</sup>

Nevertheless, the study of the concise emotional intelligence program, accompanied by holding 16-h

sessions in three days, reported a significant improvement in perception and adjustment of inner feelings of individuals even for a short period.<sup>[42]</sup>

A program developed by psychologists aims to reduce work stress and the effects of shift work through three biweekly 2.5-h group sessions held during work hours at hospitals. The program uses cognitive behavioral therapy and motivational interviewing techniques, focusing on stress, homeostatic, and circadian factors affecting sleep. The study indicates that physical activity and counseling interventions can lessen stress and burnout, and improve Health-Related Quality of Life for working women in Shanghai, with group interventions potentially being more effective.<sup>[43]</sup>

### Studies using exercise and meditation interventions

The studies conducted in Finland and Korea aiming at the effect of exercise and meditation interventions were accompanied by lower stress,<sup>[29,37]</sup> while, in the study conducted in Denmark, the scores of evaluating mental health remained with no change.<sup>[40]</sup>

### Studies with supportive groups

Two studies conducted by establishing supportive group interventions on healthcare employees showed the improvement of depression in their analyses.<sup>[39,41]</sup>

### Other studies

After analyzing the results of a quasi-experimental study, a reduction of depression symptoms was observed after increasing the wage and comparing with a similar local factory.<sup>[28]</sup>

The study involved two interventions: physical activity and counseling. The physical activity was either group-based or individual-based, with the same intensity, and included warm-up, cardiovascular training, and cooldown. The group format also had team activities. The counseling aimed to motivate participants for physical activity, addressing individual needs and various topics. Both interventions were conducted weekly for an hour. The control group had no specific exercise or counseling. The group-administered recovery program showed preventive effects on somatic symptoms and reduced burnout and fatigue in newly graduated nurses.<sup>[44]</sup>

### Quality measurement method

The studies were evaluated using JBI checklists by two groups of authors [Tables 2 and 3]. In clinical trial studies based on the scoring method, three studies were characterized as good, two as medium, and four as weak, while, in quasi-experimental studies, five studies were regarded as good and one as medium.

## Discussion

In this study, controlled random trials and quasi-experimental trials, studying the effects of interventions at the workplace for promoting mental health levels, were identified. The findings of the study show that providing interventions to improve the mental health of employed women is hopeful. These interventions including supportive training programs and sports were regarded as the most effective interventions.

The studies withholding training programs and supportive training groups had the highest numbers among the types of interventions. Scientific and exact evidence also shows the effectiveness of supportive and programmatic groups.<sup>[45]</sup> In addition, positive results were evaluated regarding lowered stress, reduced job pressure, higher self-esteem, faster going back to work, and better working balance by establishing supportive training groups.<sup>[31,32,36,41]</sup>

Although the findings indicated the effectiveness of exercise and meditation interventions on lowered stress,<sup>[29,37]</sup> mental health indexes remained without any change in one study.<sup>[40]</sup>

Nevertheless, in the study containing the sports exercise interventions, improved cardiorespiratory preparation and mental skills were observed, too. The reason for this contradiction may be due to the ceiling effect, that is, the score of mental health in O. Kettunen's study was relatively high firstly,<sup>[37]</sup> so the participants had no weak and disturbed mood, accordingly. But, in Andersen *et al.*'s study, the participants, who had the highest rate of stress symptoms and lowest mental skills, took the best benefits from interventions.<sup>[40]</sup> Moreover, several studies indicated the positive effects of exercise activities as well as yoga at the workplace on health and stress reduction.<sup>[46-49]</sup>

According to previous research, the changes in income probably affect the mental health level.<sup>[50]</sup> The intervention of Burmaster *et al.*'s study showed the reduction of depression symptoms after increasing the wages of workers.<sup>[28]</sup>

In similar systematic studies, the focus was on practical interventions for one or two types of mental states such as depression, anxiety, stress, and other cases. In contrast, the present research reviews all the random trials and quasi-experimental interventions on all mental states of employed women. In other states, the focus of studies was not on performing the interventions at the workplace, and the target population was not only the employed women. For instance, the results of Ernavati, E *et al.*'s study<sup>[51]</sup> conducted on employed mothers



showed that performing fitness programs for employed mothers at the workplace had positive effects on health problems and expenses and their participation in a health program at the workplace resulted in some benefits such as stress reduction.<sup>[49]</sup> In addition, Jiménez-Mérida, M.R *et al.*'s study<sup>[23]</sup> was conducted aiming at reviewing the interventions for promoting the health of women in which they came to two essential interventions: supporting breastfeeding and promoting physical activity and other healthy lifestyles, and consequently, they indicated a lack of studies and weak quality of papers as well as the continuation of studies.<sup>[23]</sup> In the systematic review study by Wagner, S. L *et al.*,<sup>[52]</sup> there were medium results based on the effectiveness of mental health interventions at the workplace on improving the outcomes of the workplace, but the gender parameter was not investigated in this study.<sup>[52]</sup>

The implementation of physical activity and counseling interventions has been shown to be a viable strategy in mitigating the effects of burnout among newly graduated nurses. A study revealed that a group-administered recovery program, which included these interventions, had a significant impact in preventing somatic symptoms and reducing burnout and fatigue.

Interestingly, the study found that the individual-administered recovery program did not yield significant results, suggesting that the group format's inherent social support and interaction may have been key contributing factors to the observed positive outcomes. Furthermore, the counseling sessions within the program were instrumental in equipping participants with the necessary tools to manage stress, bolster self-efficacy, and foster motivation for physical activity.<sup>[43]</sup> Another study highlights the positive effects of physical activity and counseling on the well-being of newly graduated nurses. The interventions, either group or individual-based, included physical exercises and team activities, fostering camaraderie and support. The counseling component, personalized to individual needs, emphasized the importance of mental health. The group-administered program showed preventive effects on somatic symptoms and reduced burnout and fatigue. However, the control group's lack of specific exercise or counseling might have influenced the results. The study suggests a holistic approach combining physical activity and counseling could enhance the well-being of newly graduated nurses. Further research is needed to explore this topic and the long-term effects of such interventions.<sup>[44]</sup>

Respecting the results of the present study, employers could promote the mental health of employed women through performing low-cost and efficient intervention programs like holding supportive training sessions

and group exercises. Accordingly, employers may also provide free training, support, and counseling by establishing training workshops, and supportive groups for the lifestyle of their personnel with the aid of mental health specialists.

### Limitations

One of the restrictions of the present study was its focus on interventions at the workplace, including the employed women, but, in some investigated trials, intervention groups consisted of men, too. Hence, it was ignored to omit them due to the above correspondence with the subject of this study.

### Conclusions

In conclusion, this comprehensive study underscores the promising potential of workplace interventions in enhancing the mental health of employed women. The most effective interventions identified were supportive training programs and sports activities. These interventions have been shown to reduce stress, and job pressure, and improve self-esteem, work-life balance, and return-to-work rates.

Despite some inconsistencies in the results, particularly with exercise and meditation interventions, the overall evidence suggests a positive impact on stress reduction and mental health indices. The discrepancies observed could be attributed to the initial mental health scores of the participants, indicating that those with higher stress symptoms and lower mental skills benefitted the most from the interventions.

The study also highlighted the positive effects of wage increases on reducing depression symptoms, reinforcing the role of financial stability in mental health. Unlike previous studies that focused on specific mental states or did not target employed women specifically, this study provides a holistic view of the impact of various interventions on the mental health of employed women.

Furthermore, the study emphasizes the effectiveness of physical activity and counseling interventions in mitigating burnout among newly graduated nurses. However, it was found that group-administered recovery programs were more impactful than individual ones.

This research contributes significantly to the understanding of mental health promotion at the workplace, particularly for employed women, and underscores the need for continued studies in this area. It is hoped that these findings will guide the development of effective strategies and interventions to foster a mentally healthy work environment.

The outcomes of conducting this study may be the increased knowledge of the necessity to perform effective health interventions for women in the workplace; however, it is necessary to consider the shortage of these interventions. Therefore, performing the interventions aiming at the improvement of the health and welfare of women is recommended.

Nevertheless, it is vital to perform these interventions by cooperating and coordinating with authorities and health institutes for this change in professional and public health policies.

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### Conflicts of interest

There are no conflicts of interest.

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