

Effect of Mental Health Promotion Program Application on Workplace Stress Parameters among Academic Working Staff Women

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ABSTRACT

Background: Workplace stress is a well-documented problem in a number of professions. However, recent studies have shown that women are more likely to be affected by stress than men. Excessive pressure or performance expectations at work are believed to lead to stress. Emotional, physical, and mental symptoms and indicators are all part of this reaction. Office stress develops when demands on employees are greater than their ability to cope with them. Because women being female, their career objectives can be influenced. It can be difficult for women to advance their careers and careers as doctors in various faculties because they lack the inner motivation to overcome the many challenges that stand in their way, identification of protective factors for resiliency and overcoming the barriers for women to achieve their academic success beside their family and life responsibilities. **Objectives:** To assess work related stress parameters among a group of female postgraduate staff workers, train them to mitigate stress by workplace mental health promotion program and test its feedback. **Subjects and Methods:** A-Assessment of stress among study group at a baseline using Workplace Stress Model, which measure 5 parameters. B- Measurement of stress hormone (cortisol) in the study group. C- Training and application of workplace health promotion program for 3 months before reassessment of work stress and compare its results. **Results:** Improvement of work stress parameters and cortisol level was detected after application of the WorkProMentH's Program among participants. **Conclusion:** Working staff women are vulnerable to workstress. Adaptation on special exercises and coping skills can relieve stress and prevent its drawbacks.

Keywords: Workstress, Working female, Promotion, Program.

INTRODUCTION

As more women have shared in the workforce over the past decades, employment patterns have undergone a significant change. The percentage of women who were in the labour force climbed over the past ten years, reaching 57.8% in December 2006. Their position in the workforce has also altered subsequently, with more women taking on roles that were filled by males only. The difficulties faced by professional women in a male-dominated workplace are compounded by additional stresses that are unique to women ⁽¹⁾.

Gender-role stereotypes, occupational sex discrimination, social isolation, sexual harassment, and work-home conflict are largely reported by professional women ⁽²⁾. Postgraduate study for women is constrained by a number of issues. Students around the world struggle with balancing familial and academic obligations, particularly when their studies overlap with key life events like childbearing years ⁽³⁾.

This evidence makes it evident why there has been so much interest in the topic of women's roles at the workplace. However, prior studies revealed that little emphasis had been paid to stress management and coping strategies for female office workers. It is intended that a more balanced approach must be adopted to the stress problem that female employees face in the modern workplace to be more appropriately addressed ⁽⁴⁾.

In recent years, work-related stress (WRS) has significantly increased in importance as a public health issue that has adverse effects on human health. Understanding its responses, linked circumstances, and effects is thus quite difficult. To better understand and

manage the stress, many models relating to stress have been created. The WRS model defines stress as all responses that cause any modification of an individual's cognitive, physical, psychological, and emotional state⁽⁵⁾. Due to differences in biological and psychosocial processes, females are more disadvantaged and vulnerable than males when it comes to the impacts of stress ⁽⁶⁾. Compared to males, women are twice as likely to experience stress-related symptoms, according to research. The biological and psychological structure of women, all of these elements have been taken into account as a possible cause. One's cultural attitude has a considerable impact on the prevention and management of WRS ⁽⁷⁾.

However, recently, employees have faced greater challenges as a result of the economy and working conditions. Therefore, it is essential to reduce occupational stress as much as possible before it leads to problems on the long run for the employees, particularly women employees ⁽⁴⁾.

Aim of the study was to prevent stress among working females for better life on the long run.

Objectives: 1-To address work related stress among a sample of female working staff in Zagazig University and train them to overcome stress by workplace mental health promotion program. 2- To detect the impact of the Workplace Mental Health Promotion Program (Work-ProMentH) application on participating females' stress that is related to jobs and cortisol level (stress hormone).

SUBJECTS AND METHODS

Inclusion Criteria:

1- Working female staff at different stages of post-graduate development.

Exclusion Criteria

1. Using of any medicine affecting the quantity of cortisol in blood.
2. Diagnosed psychiatric health problems or diseases affecting cortisol level i.e. Cushing disease.

Sample size:

The minimal study sample size was calculated to be 77, using Open Epi, Statistical Program assuming that mean \pm S.D of physical reactions in intervention group versus control group was 19.25 ± 4.48 versus 22.4 ± 4.8 ⁽⁷⁾, at 95% confidence interval and 80% power of test.

The Zagazig University Faculty of Nursing was chosen as a group from several other faculties to host the program. Out of 130 academic female assessed for eligibility from Faculty of Nursing, 101 female employees who fit the study's requirements were invited to participate. 80 subjects agreed to participate, they were divided into intervention group (40) and control group (40).

-Tools

1- Sociodemographic factors (age, education, marital status, perception of economic state and mean working hours/week) are the focus of the Descriptive Workers Assessment Form.

11-Work related stress WRS model:

In the WRS model, researchers identify and design five parameters that they believe are important to consider: a- stress of the job, b- reactions of stress, c- profiles of coping, d- job performance and e- absenteeism.

A. The Brief Job Stress Questionnaire (BJSQ)⁽⁸⁾:

The BJSQ has 57 items that can be used to measure stress: (a) stressors of the job (There are 17 items in total: like psychological demands of the job, job control), (b) physical as well as psychological reactions to stress (twenty nine points), and (c) the presence of social support at work serves as a good influence (eleven points). In the program manual, the BJSQ is used to identify high-stress personnel. The term "high-stress" refers to someone who is under a great deal of mental and physical strain. (A higher-than-average score on the work-related stress subscale (med=45), indicate that WRS is at an elevated level. (d) **The work absenteeism.** Using the reported checklist hours for each participant, we were able to compute the total amount of time that each person was absent from work. (e) **Performance:** Questions established by the World Health Organization that range from 1 to 10, with 1 representing the worst job performance and 10 representing the best job performance, were used in the original perceived job performance questionnaire.

B. The Brief Stress Coping Profile (BSCP), using a 4-point Likert-type scale to rank 18 related things in order of importance (never, seldom, sometimes and often), an assessment tool for examining the coping patterns of workers. For the purpose of the questionnaire that was

produced by **Kageyama et al.**⁽⁹⁾, the following six subscales were included: active solution (items 1, 2, and 3; for example, "I'm trying to figure out what's going on and come up with a solution"); requesting assistance in locating a solution (items 4, 5, and 6; for example, "I consult with someone I can trust"); a shift in mood (items 7, 8, and 9; for example, "I attempt to do something that relieves my tensions"); changing one's point of view (items 10, 11, and 12; for example, "I'm making an effort to focus my thoughts").

Each of these three subscales has a 3–12 point scoring range and three items. High subscale scores indicate that the respondent frequently employs that coping strategy.

Cortisol (stress hormone) levels:

In the event of stress, cortisol plays a significant role in order to deal with stress-provoking stimuli or to free from a danger, cortisol levels rise to offer the energy and substrate essential⁽¹⁰⁾. A blood sample was used to measure cortisol levels for the women participating in the intervention program before starting and after three months. The pathologist took a morning appointment at 8 am to 9 am for sampling of blood:

The blood samples of all study's participants were drawn in early morning hours and collected into plain vacutainer tubes or tubes containing separating gel. Sera were separated by centrifugation and stored at -20°C until analysis with a stability of 12 months.

Cortisol level in samples was measured by electrochemiluminescence immunoassay“ competition principle“ on Cobas 6000 analyzer, Roche diagnostics, Germany with expected values of 6.02-18.4 microgram/dl during morning hours from 6 to 10 am.

Workplace mental health promotion program intervention (WorkProMentH's) by Houtman and Jettinghoff⁽¹¹⁾.

A program to promote mental health called **Work-ProMentH** is based on the WRS concept and it was applied as a trial to compete stress in these working staff. The permission and follow-up procedures used was consented by the collages administration and Dean of the faculty of nursing prior to WorkProMentH's application. The researchers applied the program on women staff workers who were agreed to participate in the intervention. The program consisted of effective coping skills i.e. stress management techniques and relaxation exercises. These steps must be repeated three times/day (about 30-40 minutes each time) for three months^(12, 13):

-Stress management Techniques:

- Identify the problem (s).
- How to solve the problems.
- Talk about your problems clearly.
- Learn more about stress management.
- Reduce tension (Physical activity can be a great stress reducer).
- Take your mind off away from your problems.

- Avoid putting things off and make a weekly schedule, including leisure activities.
- Make decisions. Do not let them to cause worry or stress.
- Ask for help if you need support⁽¹³⁾.

-Techniques for relaxation:

a- Yoga. A form of physical activity, but also a form of meditation, can be achieved through this method. There are a variety of yogas. Relaxation techniques that emphasis deep breathing and slow, deliberate movement, however, are the most effective.

b- Meditation. Since at least 5,000 years ago, many people find it beneficial and effective to practice meditation. Lowering stress and anxiety as well as boosting energy levels can help alleviate chronic pain. To meditate, you'll need to turn your attention within:

1. Place yourself in a peaceful location.
2. Get used to the position you're in (sitting or lying down).
3. Your breath or a single word can be the object of your focus.
4. Allow your thoughts to flow freely and uninhibited.

-Exercises that help you relax:

These can be as easy as following:

- 1-Slowly inhaling via the nose until you can't take in any more air, and then exhaling through the mouth are both examples of deep breathing.
- 2- Take a few deep breaths before and after you stretch and relax each portion of your body, beginning with your neck and working your way down.

Before they began using the application, workers were given a visual presentation and video instruction. Other topics covered in the course included: what stress, what it feels like to be under stress, what diseases and conditions can be caused by stress, and how to deal with it effectively, such as deep breathing exercises and relaxation techniques. In the context of stress management interactive training, these easy exercises were demonstrated to the intervention group (IG) together with adequate abdominal deep breathing techniques. With the help of the working women, the WRS components were explained and comprehensively addressed in an interactive training session. During the workshop, participants practiced the exercises in groups and recorded their progress. As soon as possible following the 45-minute training session, it was repeated three times per day at home.

Following the training, the employees handed a pamphlet outlining the program's structure and content as well as a video outlining the exercises.

The exercise session was planned with the help of the female staff while taking into account their work schedules. A weekly self-reported checklist was sanded for a 12-week period of the program. Motivating participants during three months follow up was done regularly using sent reminder messages and videos via their mobile applications. The program's feedback was evaluated after the first month and after three months and was compared to the obtained baseline data.

Ethical consent:

An approval of the study was obtained from Zagazig University Academic and Ethical Committee. Every patient signed an informed written consent for acceptance of participation in the study. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Statistical Analysis

SPSS version 22 for Windows was used to conduct the statistical analysis (SPSS, Inc., Chicago, IL, USA). Averages and standard deviations were used to show descriptive statistics about the worker population, as well as their health and working conditions. The difference between the group means was examined using an independent samples t test, and the difference between the pre-post mean scores of the variables was examined using a paired sample t test. Repeated measures ANOVA was performed to examine the relationship between the means of each group over time.

RESULTS

It was shown that both the intervention (IG) and control groups (CG) had similar sociodemographic and occupational traits, such as their mean age, marital status, perceived wealth, job qualifications, and daily working hours. For a period of three months, the IG monitored the implementation of the Work-ProMentH. All work-related stress measures were compared between the female employees of the IG and the CG at baseline and in the first and third months, respectively (WRS) i.e. in the study of job stress, physical and mental reactions to it, social support, coping characteristics, job performance, absence from work, and so on. Only morning blood cortisol levels were assessed at baseline and after three months.

When it came to occupational stress, physical reactions, and social support, there were notable disparities between the two groups, as seen in the table. There were significant differences in group A between different periods as regard job stress, stress reactions (mental and physical), and social support (Table 1).

Table (1): Job stress, stress reactions, and social support of intervention and control groups

	Group A Intervention group (n=40)	Group B Control group (n=40)	P value (t-test)
Job stress			
Before intervention	47.85± 5.82	45.50± 4.24	0.04
1 st month	40.61± 4.45	46.2± 5.51	< 0.0001
3 rd month	38.32± 4.13	46.33± 4.40	< 0.0001
P value (repeated measurement ANOVA)	0.0001	0.70	
P value (post hoc)	P1 < 0.0001 P2 < 0.0001 P3 0.02		
Mental reactions			
Before intervention	42.42± 7.10	38.35±10.20	0.04
1 st month	37.2 ± 7.40	39.20± 8.30	0.2
3 rd month	37.77± 8.45	39.12± 8.31	0.4
P value (repeated measurement ANOVA)	0.004	0.89	
P value (post hoc)	P1 0.0019 P2 0.009 P3 0.75		
Physical reactions			
Before intervention	24.12± 5.10	23.22 ± 5.20	0.4
1 st month	20.87± 4.75	23.45 ± 5.81	0.03
3 rd month	19.15± 4.58	22.40 ± 4.90	0.003
P value (repeated measurement ANOVA)	< 0.0001	0.65	
P value (post hoc)	P1 0.004 P2 < 0.0001 P3 0.10		
Social support			
Before intervention	30.27± 4.81	32.47 ± 4.28	0.03
1 st month	34.94± 4.13	32.85 ± 4.85	0.04
3 rd month	37.38± 3.52	32.89 ± 5.33	< 0.0001
P value (repeated measurement ANOVA)	< 0.0001	0.91	
P value (post hoc)	P1 < 0.0001 P2 < 0.0001 P3 0.0057		

Data are presented as mean±standard deviation

P1: p value for comparing between before intervention and 1st month, P2: p value for comparing between before intervention and 3rd month, P3: p value for comparing between 1st month and 3rd month

Table 2 shows that there were significant difference between both groups as regard perceived job performance before and after 3rd month of intervention and as regard work-absenteeism (hours/month). There were significant difference in group A between different periods as regard job performance, and work absenteeism.

Table (2): The comparison of job performance, work absenteeism between intervention and control groups

	Group A Intervention group (n=40)	Group B Control group (n=40)	P value (t-test)
Perceived job performance			
Before intervention	8.01 ± 2.02	8.84 ± 1.13	0.03
1 st month	8.53 ± 1.34	8.50 ± 1.52	0.9
3 rd month	9.09 ± 1.09	8.22 ± 1.25	0.001
P value (repeated measurement ANOVA)	0.008	0.11	
P value (post hoc)	P1 0.2 P2 0.004 P3 0.04		
Work-absenteeism (hours/month)			
Before intervention	12.85±1.00	13.72±1.96	0.01
1 st month	11.17 ± 3.82	9.79 ± 1.71	0.04
3 rd month	7.65 ± 2.17	13.05±1.48	< 0.0001
P value (repeated measurement ANOVA)	< 0.0001	< 0.0001	
P value (post hoc)	P1 0.009 P2 < 0.0001 P3 < 0.0001	P1< 0.0001 P2 0.09 P3 < 0.0001	

Data are presented as mean±standard deviation. P1: p value for comparing between before intervention and 1st month. P2: p value for comparing between before intervention and 3rd month. P3: p value for comparing between 1st month and 3rd month

Table 3 shows that there were significant difference between both groups regarding seeking help for solution, changing a point of view and changing mood after 1st month and 3rd month of intervention. There were significant differences in group A between different periods as regard active solution, seeking help for solution, changing mood, changing a point of view.

Table (3): The brief stress coping profiles of both intervention and control groups

	Group A Intervention group (n=40)	Group B Control group (n=40)	P value (t-test)
Active solution			
Before intervention	8.90 ± 2.09	9.60 ± 1.60	0.09
1 st month	9.74 ± 1.59	9.67 ± 1.51	0.84
3 rd month	9.90 ± 1.51	9.45 ± 1.21	0.14
P value (repeated measurement ANOVA)	0.02	0.2	
P value (post hoc)	P1 0.05 P2 0.02 P3 0.6		
Seeking help for solution			
Before intervention	9.57 ± 2.07	9.17 ± 1.79	0.36
1 st month	10.51± 1.35	8.48 ± 1.52	< 0.0001
3 rd month	10.38± 1.37	9.01 ± 1.61	< 0.0001
P value (repeated measurement ANOVA)	0.02	0.14	
P value (post hoc)	P1 0.02 P2 0.04 P3 0.67		
Changing mood			
Before intervention	8.67 ± 2.51	8.88 ± 2.01	0.68
1 st month	9.71 ± 1.34	8.69 ± 1.12	0.023
3 rd month	9.91 ± 1.45	8.21 ± 1.41	< 0.0001
P value (repeated measurement ANOVA)	0.0067	0.39	
P value (post hoc)	P1 0.023 P2 0.008 P3 0.52		
Changing a point of view			
Before intervention	9.93 ± 1.90	10.05± 1.61	0.76
1 st month	10.56± 1.09	9.73 ± 1.75	0.01
3 rd month	10.75± 0.89	9.21 ± 1.60	< 0.0001
P value (repeated measurement ANOVA)	0.02	0.076	
P value (post hoc)	P1 0.072 P2 0.02 P3 0.39		

Data are presented as mean±standard deviation

P1: p value for comparing between before intervention and 1st month

P2: p value for comparing between before intervention and 3rd month

P3: p value for comparing between 1st month and 3rd month

Both groups differed significantly in their use of other people to communicate their emotions and their avoidance and suppression of their own feelings after just the first month of treatment and again after three months. In group A, there was a substantial difference in emotional expression involving others, avoidance and suppression, and serum cortisol levels between the different periods (Table 4).

Table (4): The brief stress coping profiles of both intervention and control groups and serum cortisol level of intervention group

	Group A Intervention group (n=40)	Group B Control group (n=40)	P value (t-test)
Emotional expression involving others			
Before intervention	7.74 ± 1.65	7.42 ± 1.74	0.5
1 st month	6.55 ± 1.48	7.53 ± 1.91	0.02
3 rd month	5.30 ± 1.57	7.40 ± 1.76	< 0.0001
P value between different periods	< 0.0001	0.950	
P value (post hoc)	P1 0.004 P2 < 0.0001 P3 < 0.0001		
Avoidance and suppression			
Before intervention	7.11 ± 1.58	8.04 ± 1.76	0.07
1 st month	7.12 ± 1.94	8.01 ± 1.84	0.05
3 rd month	5.88 ± 1.23	8.24 ± 1.41	< 0.0001
P value between different periods	0.005	0.84	
P value (post hoc)	P1 0.98 P2 0.003 P3 0.003		
Serum cortisol (ng/ml)			
Before intervention	12.3 ± 3.9		
3rd month	10.8 ± 2.6		
P value (paired t- test)	0.046		

Data are presented as mean±standard deviation

P1: p value for comparing between before intervention and 1st month of IG

P2: p value for comparing between before intervention and 3rd month of IG

P3: p value for comparing between 1st month and 3rd month of IG

DISCUSSION

This study was conducted between two equal number matched groups of post-graduate female staff workers (intervention and control group) as regard to socio-demographic and occupational characteristics. The mean age of both groups was nearly equal to 31years old, nearly 53 percent of the intervention group and half of the control group were married. Both groups have the same career and occupational characteristics, matched perception of economic level and same range of working hours and qualifications.

In our study there were significant differences between both groups on application of work-related stress model including: job stress, physical reactions and social support. There were significant differences in intervention group between different periods as regard job stress, stress reactions (mental and physical), and social support. According to **Ornek and Esin** ⁽⁷⁾ also, the average ratings for occupational stress, mental stress reactions like sadness and irritability, and social support are all higher than the national average. Workers in the intervention group reported decreased physical reactions to their jobs as well as decreased working stress, according to the data from the WorkProMentH follow-up. The Program improved the intervention group's overall work performance and social support. Program effects were also confirmed in 2004 by **Atlantis and coworkers** ⁽¹⁴⁾. Employees who

participated in a fitness and behaviour modification program reported significantly reduced levels of stress, better mental health, and improved physical function.

Providing techniques for dealing with stress as an intervention, programs customise stress-reduction methods to each employee's unique situation. A variety of mental health services, such as stress management and mindfulness instruction, may be available through these programs. In addition, they offer therapy for those who have manifested physical symptoms of burnout ⁽¹⁵⁾. In addition, **Ornek and Esin** ⁽⁷⁾ demonstrated that exercise-based intervention programs have typically been proven to be helpful for work related stress, its causes, and effects. **Yeh et al.** ⁽¹⁶⁾ recommended using Tai Chi intervention program as an anti-stress exercise program twice a week for a period of 12 weeks. It was successful for males working in ambulatory clinic.

In this study, after application of the program, the intervention group reported significantly improved job performance, and reduced absenteeism from work significantly. Between the two groups, there was a considerable difference as regard perceived job performance before and after 3rd month of intervention and as regard work-absenteeism.

Mental responses are significant WRS symptoms ⁽¹⁴⁾. But unfortunately, when **Ornek and Esin** ⁽⁷⁾ compared the coping profile, work absenteeism, and job performance mean scores in the IG and CG after

application of the WorkProMentH program, the IG and CG were statistically different ($p < 0.05$) for all previous WRS parameters except for the mental reactions ($p = 0.487$).

Therefore, the notion that workers who take part in the WorkProMentH intervention will experience fewer mental stress reactions has been disproved by **Ornek and Esin** ⁽⁷⁾. The third follow-up showed that this program had a significant impact on IG reactions but did not lead to statistically significant differences between the groups due to the mental reaction score being lower than at the first follow-up (end of the third month). That is because, the changes in mental health need longer follow-up period to be detected. WRS-related physical reactions take a lot longer to recover from than mental health gains. The model utilised in this study indicates that the long-term effects of WRS are job performance and general work absenteeism. The relationship between these two factors and the intensity of occupational stress and its effects varies.

In the **Ornek and Esin** ⁽⁷⁾ study, the IG and CG had significantly different rates of work absenteeism at the two post-WorkProMentH follow-ups. The IG's average work absence score dropped, while the CG's increased. Only three CG employees left their jobs in the third month due to workplace stress, which could be linked to the current study's findings about the severity of work-related stress. A new study confirms what was already known about employee absenteeism.

In terms of the coping profile, our study found a significant difference between intervention and control groups in terms of mean scores of seeking help for solution, active solution, changing a perspective and changing mood, emotional expression involving others, avoidance and suppression at the first month and third month of the intervention. There were significant difference in intervention group between different periods as regard coping profile mean values; we noticed a significant decrease in mean scores of emotional expression involving others, and avoidance and suppression. Same findings were shown by **Ornek and Esin** ⁽⁷⁾: The mean coping profile ratings for emotional expression involving others, avoidance, and suppression decreased significantly following the program follow-up. But the mean scores for the coping profiles of seeking help, changing mood, and altering perspective all rose significantly. There were no statistically significant differences in the active solution profiles between the IG and CG when compared. At follow-up, the worker profiles showed considerable improvement.

There were significant differences in intervention group between before intervention and 3rd month of intervention as regard serum (S) cortisol level, which denotes decreased level of stress. Cortisol hormone is an important biological responses to stress, and its amount changes with the degree of stress. S-

cortisol levels, for instance, rise in response to stress. The immunological system of the body is negatively affected over time by persistently elevated cortisol levels. So, it was agreed that workers who take part in the Work-ProMentH intervention will have reduced S-cortisol levels ⁽¹⁷⁾. Bone and muscle damage, exhaustion, depression, discomfort, memory deficits, sodium-potassium dysregulation and orthostatic hypotension are all signs and symptoms of stress-induced cortisol dysfunction.

On the same line, **Ornek and Esin** ⁽⁷⁾ found significant decrease in the mean S. cortisol score after application of Work-ProMentH follow-up Program.

LIMITATIONS

- Only three months were used in this study to evaluate the intervention's effects.
- There was lagging from the participants to continue at home exercises needing more efforts and motivations from the researchers.

CONCLUSION

The effects of the intervention program in this study were evaluated during 3 months, which proved that women workers who participated in the Work-ProMentH experienced improved and decreased all measured stress parameters: prevalence of job stress, physical and mental stress reactions, work absenteeism, and S-cortisol levels, increased levels of social support and job performance and improved coping profiles.

RECOMMENDATIONS

- Using this model-based intervention program that is both cost effective and simple, can help workers compete better and reduce stress at work.
- Taking into account the impact of work-family conflicts on women's mental health in future studies is recommended. This means that further research is needed, but it is expected that this particular intervention can be employed for a lengthy period of time.
- Researchers should look for funding opportunities and collect data for a longer length of time.

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