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# Improving the mental health of working women with work-life conflict: A protocol development for an explanatory mixed method study

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## Abstract:

**BACKGROUND:** Today, one problem facing working women is the conflict between work and life, and the resultant stress has a great impact on their mental health. A well-known model for stress management is Lazarus and Folkman's model. The primary goal of the present study is to improve working women's mental health through stress management.

**MATERIALS AND METHODS:** The present study employs a mixed approach and is conducted in 4 phases. The target population is women working in Birjand University (South Khorasan province/Eastern Iran). The first step is to describe the research population of a cross-sectional study. The measurement instrument used is Carlson's standard work-life conflict measurement questionnaire. The sample size in this step is 319. The second step is to conduct a qualitative study by interviewing working women with work and life conflict. The sampling will continue until data saturation and then the data will be analyzed through a content analysis. The third step will be the development of a questionnaire based on Lazarus and Folkman's model using the information obtained from the qualitative step. This questionnaire will be then validated in the target research population. Moreover, an exploratory factor analysis, a confirmatory factor analysis and a reliability test will be run. The last step is to carry out an educational intervention to measure the effect of the intervention on stress management and general health in working women with work and life conflict. The measurement instruments used in this step are Cohen's Perceived Stress Questionnaire, General Health Questionnaire, and a researcher-made stress management questionnaire.

**CONCLUSION:** It seems that the educational intervention of stress management with educational content designed based on the needs of the audience, can be effective in controlling and managing the stress caused by women's work-life conflict.

**TRIAL REGISTRATION:** IRCT (IRCT20210918052508N1) from the Iranian Registry of Clinical Trials in 2021-09-21.

## Keywords:

Work-Life Balance, Women, Working, Stress, Psychological, Mental Health

## Introduction

In recent years, women's tendency to adopt an active role in the workplace has increased. Statistical evidence in the third world countries indicates an increase in women's involvement in work

environments and different active roles in educational, nursing and service-providing contexts.<sup>[1]</sup>

Despite all the positive effects that work and its income have on an individual's personal life, the concept of work has changed subtly over time and has increasingly affected

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people's social and family relationships and raised issues for the working population. One of the biggest problems that almost every working individual complains about is the lack of balance between work and family affairs. Arguably, the lack of balance between work and life has become a fundamental issue in today's families.<sup>[2]</sup> Although men also face work and life conflict, women are more affected because they have to take care of family members and children and do the domestic chore.<sup>[3]</sup> Working women in developing countries feel more under the pressure of work-life imbalance than peers in developed countries.<sup>[4]</sup>

Research evidence has shown that failure to strike a proper work and family balance can lead to a lacking control over workload and low energy to attain personal goals and commitments. Imbalance leads to fatigue, underachievement and reduced quality of life<sup>[5]</sup>, which not only affects the employees' job satisfaction and organizational performance, but also the physical, mental and social health of an individual.<sup>[6]</sup>

As the World Health Organization (WHO) showed, the prevalence of mental disorders is increasing in developing countries. The global prevalence of mental disorders in adults is between 12.6 and 48.6%, and its 12-month prevalence is between 4.3 and 26.4%, and the prevalence of these disorders in the Eastern Mediterranean Region (EMRO) is estimated at 35.5%. The latest national study in Iran was conducted by Noorbala *et al.* It was implemented at the national level in 2013, and reported the prevalence of mental disorders in women, men, and the whole country as 19.3, 27.6, and 23.4 percent, respectively.<sup>[7]</sup>

Stress is a major cause of many mental disorders.<sup>[8]</sup> Work-family conflict affects people's physical and mental health and leads to a high level of stress in an individual. This mental pressure in the long run can adversely affect the individual's physical health through heart attacks or various diseases.<sup>[9]</sup> Research in Iran has also shown that stress is associated with many diseases, such as cardiovascular, musculoskeletal diseases, blood pressure and mental disorders.<sup>[10]</sup>

Stress refers to an individual's adaptation process in face of internal and external challenges.<sup>[11]</sup> The multidimensional nature of stress requires a comprehensive approach to stress management.<sup>[12]</sup> It is impossible to completely eliminate stress, but people can learn to manage it. The related literature has raised the effectiveness of interventions to promote perceived well-being and adaptive mechanisms in reducing stress and the associated risks. A combination of self-care programs, such as relaxation training, social support, improved individual skills, cognitive

techniques, sports and music can be expected to be effective.<sup>[13]</sup>

Stress management refers to a wide range of psychotherapy techniques designed to control the level of personal stress, especially chronic stress, and improve daily performance. These techniques help lower the stress level, create positive feelings and improve the physical and mental health.<sup>[14]</sup> In models based on stress response, there has been a recent shift to event-based models and the concept of adaptation.<sup>[15]</sup>

Lazarus and Folkman believed that stress is a relative concept that results from a complex and dynamic interaction between an individual and the surrounding environment.<sup>[16]</sup> To deal with stress, an efficient coping style and appropriate skills are used to solve the problem. The methods or strategies that an individual uses to deal with stressful situations play an essential role in the physical and mental health.<sup>[17]</sup> Lazarus and Folkman's interactive model is comprised of several constructs including primary appraisal, secondary appraisal, stress and adaptation. Concerning the primary evaluation, an individual may find a situation threatening or, on the contrary, safe.<sup>[18]</sup> Contrary to the primary evaluation based on the features of the stressful situation, the secondary evaluation focuses on what the individual can do about the situation.<sup>[19]</sup> Therefore, the main premise of Lazarus and Folkman's interactive model is that primary assessment, secondary assessment, and coping methods mediate between stressful factors and the consequences of stress within an individual so that they adopt an appropriate coping style in interacting with those around them and the surroundings.<sup>[18]</sup> From Lazarus and Folkman's point of view, coping styles are an individual's intellectual, emotional and behavioral efforts in the face of psychological pressures to overcome, tolerate or minimize the effects of stress. They divided the stress management styles into two overall categories, problem-centered and emotion-centered. The coping that relieves emotional pressures is known as emotion-centered, and coping with the aim of changing the factors that induce these emotional pressures is known as problem-oriented coping.<sup>[20]</sup> What makes our research unique is the development of a researcher-made questionnaire based on qualitative data as well as Lazarus Folkman's theory and specific to stress management in work-life conflicts. Then we will investigate the effect of an educational intervention and measure the stress management caused by these conflicts before and after the intervention in a representative sample of the research population.

In summary, to achieve a deep understanding of factors that cause work-life conflict in working women, we decided to design and implement a qualitative study to account for

the factors affecting work-life balance from the working women's perspective. The results of this qualitative study will be used to design and validate a stress management questionnaire based on Lazarus and Folkman's model. Then we will implement an educational intervention to promote mental health to control and manage the stress induced by work/family conflict and measure the effect of this intervention on the stress management score, perceived stress and mental health before and after the intervention.

### Objectives (primary and secondary objectives of study)

#### Primary objective

The primary objective of this study is to explore the effect of a stress management educational intervention on improving the mental health of working women with work-life conflict.

#### Secondary objectives

Here are the secondary objectives of the study:

- Understanding the causes, consequences and solutions of conflict in women through a qualitative study.
- Using the qualitative data to develop a stress management questionnaire for women with work-life conflict.

### Research hypotheses

#### Primary hypothesis

As hypothesized, the stress management program can promote the mental health of working women with work-life conflict.

#### Secondary hypotheses

1. Through a qualitative study, the causes of conflict and stress management will be explored in stressful conditions.
2. A questionnaire will be designed and psychometrically tested to substantiate its reliability and validity.
3. The work-life conflict score will decrease in the intervention group after the intervention.
4. The perceived stress score will decrease after the intervention in the experimental group.

### Study design and setting

This study has a mixed qualitative-quantitative design, and will be conducted among working women in Birjand University of Medical Sciences in eastern Iran.

### Procedure of study

1. In order to enrich the basic information of the target problem, a systematic review of the related literature will be done by the research team.
2. The descriptive phase will identify working women with work-life conflict through Carlson's standard work-life conflict questionnaire.

3. The qualitative phase will involve semi-structured interviews with a sample of working women who experience work-life conflict, selected purposefully with a maximum variety among the women identified in the second phase.
4. The middle phase of the study is to develop an appropriate instrument to measure stress management in working women with work-life conflict based on qualitative data. The framework for developing the researcher-made instrument will be based on the constituent constructs of Lazarus and Folkman's interactive model [Appendix 1].
5. The instrument will be psychometrically tested.
6. The stress management training intervention in the target group will involve 12 training sessions.
7. Three months after the intervention, the effect of the intervention on stress management will be measured using a researcher-made questionnaire, and the impact of this intervention on mental health and perceived stress will be measured through the standard public health and perceived stress questionnaires.

The initial step-by-step flow chart of the research is schematically shown in Figure 1.

### Study participants and sampling

The participants include women working at Birjand University of Medical Sciences (South Khorasan Province, Eastern Iran and bordering Afghanistan).

### Entry and exclusion criteria

#### Descriptive phase of study (finding women with work and life conflict)

A cross-sectional study will be conducted to explore women's work-life conflict at university and to identify the individuals to invite for interview in the qualitative phase and also to select the appropriate sample for the intervention.

In this phase, the female employees of Birjand University of Medical Sciences, who are married and have at least one year of work experience, and those who have expressed their willingness to complete the questionnaire, will be invited to complete the Carlson's questionnaire, and if they are not willing to complete the questionnaires, they will be excluded.

#### Qualitative phase of study (invitation to interview)

The criteria for entering the study include working married women with a conflict score above 40 based on the Carlson questionnaire consenting to participate in the study and signing an informed consent form. Women can withdraw from the study at any stage of research if they do not wish to continue. To enrich the collected information, the employers and husbands of

# Procedure

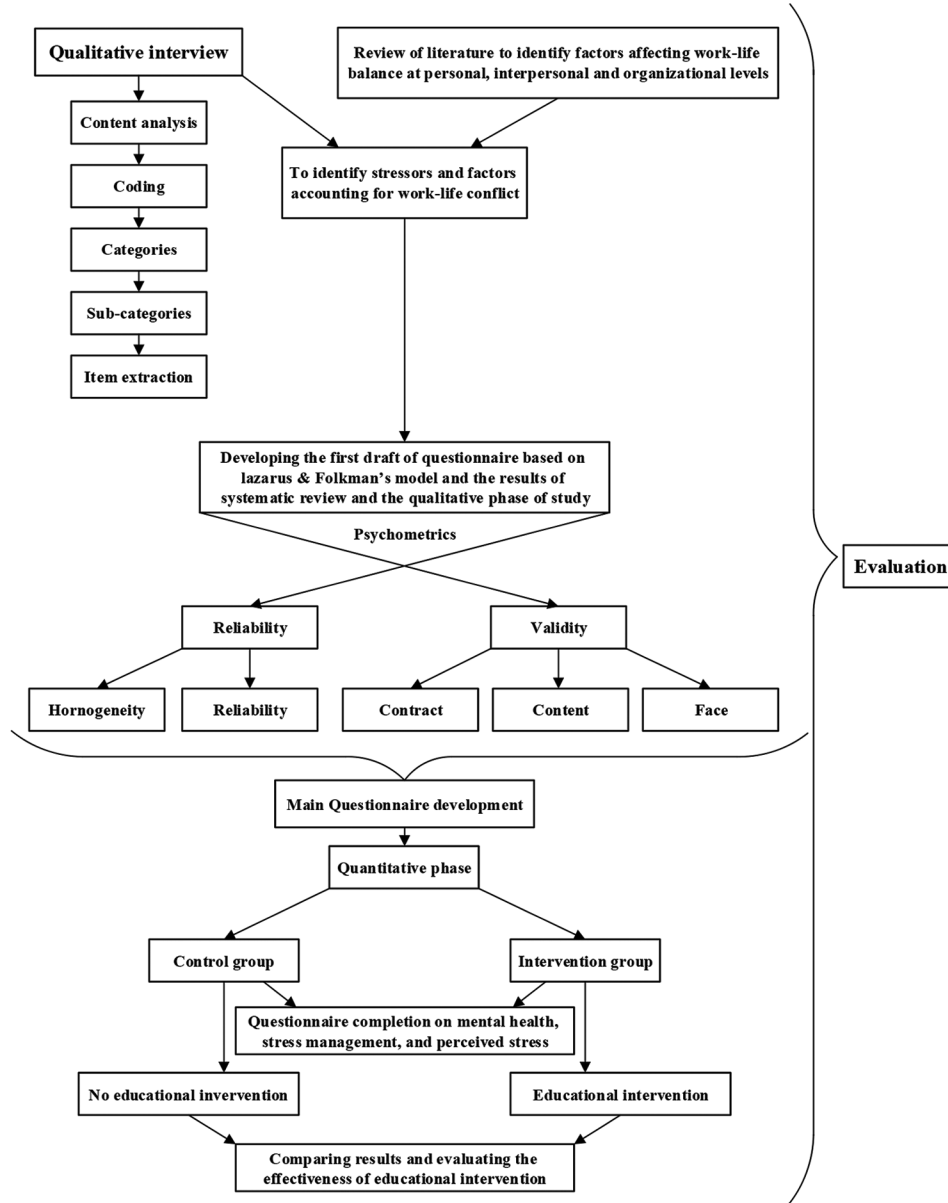


Figure 1: Flowchart of study steps

some women will also be included too. The participants will be selected from a maximum variety of education levels, work experience, type of job, place of service and family size.

### Questionnaire development and psychometrics

Different work areas in the University of Medical Sciences will be considered as clusters. In each cluster, married female employees with at least one year of work experience willing to complete the researcher-made questionnaire and the stress management questionnaire will be included. If they are unwillingness to complete the questionnaire for some reason, they will be excluded.

### Educational intervention phase of study

The inclusion criteria are being married, having work experience, a conflict score above 40 (based on the Carlson's questionnaire), and signing an informed consent to participate in the study. If they are absent from the training classes for more than two sessions or if they do not wish to continue, they will be excluded from the study.

### Sample size estimation

#### Descriptive phase of study (identification of women with work and life conflict)

The sample size is estimated at 319, considering a type I error of 0.05, a test power of 80%, and the absolute error

of 0.065, based on a study conducted by Taghizadeh et al.<sup>[21]</sup>

$$n = \frac{\left( z_{1-\frac{\alpha}{2}} + z_{1-\beta} \right)^2 p(1-p)}{d^2} = \frac{(1.96 + 0.84)^2 \cdot 0.78(1-0.78)}{0.065^2} \approx 319$$

### Qualitative phase of study (invitation to interview)

In the qualitative phase, the quality of data collected from each respondent is more important than the quantity of information. There is no specific rule for the sample size required for this type of research; thus, the sample size is determined during the actual conduction of research.

### Questionnaire validation

The number of items within the instrument is important in estimating the sample size required for the instrument validation. Bentler et al. (1987) provided a general rule of at least 5 and at most 10 respondents per item.<sup>[22]</sup> Since the number of stress management items in this study is not yet known, we will use another common rule in studies dealing with instrument validation to estimate the sample size. Therefore, to perform an exploratory factor analysis, in most cases, a sample size of at least 150 people is recommended.<sup>[23]</sup> The minimum sample size required for confirmatory analysis is 200.<sup>[24]</sup> Therefore, the minimum sample size in this study will be 350 people, Also, as the sampling method in this phase of study is clustered, with a cluster correction factor of 1.5-2.5, about 450 to 750 people will be included in the study. This size should be confirmed by sampling adequacy tests.

### Educational intervention phase of study

In the quantitative phase, according to the results of a study conducted by Maleklha et al.<sup>[25]</sup>, the post-test scores of the intervention and control groups were taken as  $183.4 \pm 36.93$  and  $103.86 \pm 32.99$ , respectively. With a type I error of 0.05, a test power of 90% and the absolute error of 25 in each group, a sample size of 42 people is estimated. An attrition rate of 10% will lead to a sample size of 47 in each group.

### Data collection tool and technique

#### Descriptive phase (i.e., identifying women with work-life conflict)

In this phase, the data will be collected using Carlson's standard work-life balance questionnaire. This 18-item questionnaire was developed Carlson et al. (2000).<sup>[26]</sup> The ratings range from 1 for never to 5 for always as a Likert scale. A higher score indicates more work-family conflict. The maximum score that a participant can receive is 90, and the minimum score is 18. A score of  $\geq 40$  is considered as a cut-off point among researchers. Such a

score is interpreted as the need for intervention to reduce the conflict.

The reliability of Carlson's conflict questionnaire in Iran has been confirmed through the estimation of Cronbach's alpha coefficient (0.80) in Alavi Arjmand's study.<sup>[27]</sup> Also, the reliability of this questionnaire has been confirmed by Dargahi et al.<sup>[28]</sup> with a Cronbach's alpha coefficient of 84.5%.

### Qualitative phase (i.e., invitation to interview)

Semi-structured in-depth interviews will be the data collection instrument. At the beginning of each session, the interviewer will ask the participants about their demographic information, including age, education level, employment status, number of children, etc. The interview will be recorded with a voice recorder. During the interview, notes will be taken wherever necessary.

### Questionnaire validation

In this phase, different items of stress management questionnaires will be developed. There are two different approaches to item construction. The first approach is the deductive the second one is inductive. The first approach is used when there are different theories about the phenomenon of interest and there are specific definitions for that. In this method, through a literature review, the theoretical construct under research is defined. This definition is then used as a guide for item construction. The inductive approach is used when we are faced with an unknown phenomenon without a specific theory to describe its different aspects. In this method, researchers ask a sample of the target group to share their thoughts about the issue under research. Then the responses will be classified and coded in a content analysis.<sup>[29]</sup> In the present study, the inductive method will be used for item construction. The primary framework for developing the questionnaire is based on Lazarus and Folkman's stress management model. The questionnaire will be psychometrically tested.

### Educational intervention phase of study

In addition to the questionnaire developed by the researcher based on Lazarus and Folkman's model in the quantitative phase, the standard Carlson's questionnaire will be used to measure the overall work-life conflict before and after the intervention. Also, Cohen's Perceived Stress Questionnaire and Goldberg's General Health Questionnaire will be used for mental health assessment.

The 14-item perceived stress questionnaire was developed by by Cohen et al.<sup>[30]</sup> to measure general perceived stress. The items are rated on a 5-point Likert scale ranging from never to always to be rated between 0 and 5. In this scale, after a reverse scoring of items 4,

5, 6, 7, 9, 10 and 13, a total score is obtained by summing up the scores of all items for each respondent. In this scale, the minimum perceived stress score is 0 and the maximum score is 56. A higher score means more perceived stress. The validity and reliability of this questionnaire have been substantiated in another study by Behrouzi *et al.*<sup>[31]</sup>

Goldberg's questionnaire measures an individual's mental state within the past month and includes symptoms such as abnormal thoughts and feelings and aspects of observable behavior with an emphasis on the individual's current state. This measurement instrument consists of 4 dimensions or subscales.

Each of these components has seven questions that evaluate four categories of disorders including physical symptoms, anxiety and insomnia, symptoms of social dysfunction and depression.

In all choices, a low score shows a good health and a high score shows poor health and discomfort. The items in this questionnaire are all rated on a Likert scale. The validity and reliability have been confirmed in Iran by Qanbarnejad *et al.*<sup>[32]</sup>

## Intervention

### Educational content

Before the intervention, the educational content was given to 10 working women to express their opinions about the presented content. Are the sentences and concepts understandable? Do they need to be modified? Is what the researchers intend the same as what is perceived? Also, 3 professors of health education and health promotion and two psychologists talked about the educational content presented in a joint meeting and reached an agreement about it.

Based on the final goal and specific goals, the designers decided on the most appropriate means of achieving the overall as well as specific goals. The designers have designed and predicted an activity or a set of activities that will show the possibility of implementing the most effective and efficient measures to achieve the results stated in the overall goal and specific goals. Intervention is a theory-based experience that the target group is exposed to or plays a role in. There are many different strategies that designers can use as part of an intervention, but in practice, the variety of strategies used depends on the designers' imagination and mentality.

A total number of 12 training sessions will be designed to promote mental health based on the constructs of the interactive model of stress management. Some stress factors cannot be controlled. What can be modified is

one's knowledge of stressors and how to control the stress induced by these factors to increase the quality of life.

The order and content of stress management training sessions for women with work-life conflict are as described below [Table 1].

## Teaching methods and media

A single strategy intervention is likely to be easier and cost-effective to implement, and its evaluation is also easy, but there are advantages to using several strategies at the same time. These advantages are: confronting the target group with one message and with several methods, using different methods of learning in each target group, ensuring the continuity of the health measures in the target population, hoping that at least one strategy will be used for the target group to achieve the desired outcomes, using the different perceptions of each person in the target group, increasing the possibility that the combination of strategies will help to achieve specific goals and the final goal of the program. The research population is comprised of working women, expected to be all literate. Thus, an appropriate method to be used in the educational sessions will be PowerPoint presentation, lecture and Q and A. In some sessions, for example those related to interpersonal relationships and emotional control, role-play and demonstration will be used with predetermined scenarios. The material to be taught contains the "Gold strategies for work-life balance" and the "Forbidden stress" books. In the booklets, exercises are described in a practical way, which will involve one or more exercises in each session. These exercises include learning time management skills, communication skills, controlling immediate emotions, planning to prioritize tasks, etc., In the meditation and yoga session, simple relaxation techniques will be taught.

## Random sampling

Working women whose work-life conflict score was above 40 after completing Carlson's standard questionnaire are known as the target group of the study. The random assignment of people into two control and intervention groups will be done without revealing the identity of these people and only based on the code assigned to each respondent by someone not directly involved in the research.

## Blinding

Research analysts and evaluators will be blind to the classification and grouping of people and identifying the identity of people in all stages of design, implementation and data analysis in order to avoid any prejudice towards the program and its results.

**Table 1: Titles, educational content and how to present content in educational intervention sessions**

Session number	presentation method	Content	Title	Time
1	Speech, group discussion, question and answer	Getting to know the members, expressing the logic, framework and goals of the training sessions, getting to know the issue of work-life conflict and the scope and importance of the issue.	Introduction, statement of goals, discussion and general discussion about the conflict between work and life	90 min
2	PowerPoint, group discussion, presentation of a practical booklet of solutions to achieve balance between work and life	A review of the last meeting, the relationship between the existence of conflict between work and life and stress, and providing examples of successful conflict control Expression of experiences	The importance of conflict control and practical solutions to solve the problem	90 min
3	PowerPoint, group discussion, beginning exercises of the balance book	Symptoms of stress, physiological, psychological and behavioral symptoms - the roots and internal and external factors causing stress - the impact of stress on health and the onset and continuation of mental disorders	Stress and related diseases	90 min
4	Showing animation of balance and survey, expression of experiences, continuation of conflict booklet exercises	Evaluations regarding exposure and different reactions to stressful situations and the importance of dealing with stressful situations appropriately	Work-life balance and the need to face stress	90 min
5	Presentation of the book "Forbidden Stress", teaching problem solving skills	Teaching problem-solving techniques and appropriate reaction against inconsistent behavior and managing the pressures caused by conflicts	Problem-oriented coping	90 min
6	Speech and question and answer	Solutions to achieve peace according to the Quran, the role of trust and recourse in achieving peace	Spiritual confrontation	90 min
7	Holding a virtual meeting live	Defining interpersonal relationships, the importance of interpersonal support, types and sources of support and understanding its benefits	Interpersonal relationships and social support	90 min
8	Lectures, practical exercises and role playing	Teaching emotion control skills, the correct way of expressing emotions, ways to recognize irrational thoughts and their role in creating stress, and practice challenges with irrational thoughts using a predetermined scenario.	Emotion Regulation	90 min
9	Lecture, practical exercise in conflict booklet	Time management training with goal setting training, list of daily tasks and administrative tasks, prioritization based on importance and urgency, independent behavior and obstacles to time management	Time Management	90 min
10	Practical training	Calming with psychosomatic method	Yoga and meditation	90 min
11	Lectures and practical exercises	Knowing what causes stress in the work environment and ways to control it	Controlling physical stressors in the workplace	90 min
12	Lecture, group discussion and question and answer	Review of presented topics, practice of planned topics, conclusion	Summary and practice	90 min

**Expected outcomes of research**

*Primary outcome*

- The stressors that cause work and life conflict in women can be explored from their own perspective to better recognize the effective aspects of intervention.
- A stress management questionnaire can be developed for working women to be used in future studies.

*Secondary outcome*

- The results of the study can be used to develop an educational package based on to manage stress and manage life conflicts in women.
- If a positive relationship is found between the training program and the improvement of stress management and work-life balance in female employees, promoting this training package can help maintain working women’s physical, mental

and social health and increase the productivity of administrative organizations.

- The results of this study can be used in educational planning for stress management and improving work-life balance in universities and administrative organizations of the country.

**Setting of study and participation schedule**

This study is expected to be completed within 18 months.

- In the descriptive phase, it will take ten minutes for each participant to complete Carlson’s questionnaire.
- In the qualitative phase, each interview will take between 45-60 minutes.
- For the researcher-made stress management questionnaire, as the exact number of items is not known yet, no accurate time can be estimated.
- In the planned intervention phase, 12 sessions of 90 minutes will be held in 6 weeks.

- Three months later, the questionnaires will be completed again by those in both research groups, and they will be rewarded for participating in the program.

## Statistical analysis

### Descriptive phase

In the descriptive phase of study, the central tendency measures and measures of variability will describe the quantitative variables, including the conflict score. Frequency and percentage will be used for the qualitative variables (e.g., the employment type). Also, a logistic model will be used to calculate the odds of conflict in the participants based on the predictor variables. All the statistical procedure will be done in SPSS26.

### Qualitative phase

The second phase of this research is a qualitative content analysis to categorize themes into categories and sub-categories and then describe and explain them. The information in this step will be analyzed in MaxQDA2020 statistical package.

### Instrument development phase

The collected data will be analyzed in SPSS26. Exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and reliability assessment will be done. The construct validity of the questionnaire is determined by EFA and confirmed by CFA. Amos8.8 will be used to evaluate the factorial structure of data.

### Intervention phase

In the data analysis, to describe the quantitative data, mean, standard deviation, and for qualitative data, frequency, percentage, as well as independent-samples T-test, paired-samples T-test, and Chi-square test will be run. First, the normality of quantitative data is checked using the Kolmogorov-Smirnov test. The significance level will be 0.05 for all the statistical tests.

## Discussion

The ultimate goal of this study is to investigate the impact of the educational intervention of stress management caused by the conflict between work and life on the mental health of working women. Various studies confirm the effect of specific interventions such as time management or communication skills on controlling the stress caused by the imbalance between work and life, Alavi Arajmand explored the effect of stress management training on work stress and work-life conflict among nurses. They found a significant difference in conflict and work stress scores in two research groups, and the effect of emotion management was significant in this research<sup>[31]</sup>. Morovati *et al.* (2020) explored the effect of education based on Lazarus and Folkman's model on the stress assessment of hemodialysis patients showed

the effect of education on improving people's correct assessment of stressful situations.<sup>[30]</sup> A similar study was conducted by Faryabi *et al.* in the south of Iran based on the framework of Lazarus and Folkman's interactive model on stress coping skills in health workers. This study showed the increased use of problem-oriented coping methods, the decreased use of emotion-oriented coping styles and the increased level of health in the intervention group.<sup>[33]</sup> Another study in 2011 explored the effective ways to manage stress in line with the work-life balance among female teachers. This study drew attention to the ways to use time effectively and the effective role of spousal support. The significance of spiritual methods in controlling stress was also emphasized in this study<sup>[34]</sup>, but our research team has decided to carry out broader interventions. In addition to learning skills such as time management and interpersonal communication, these interventions include learning to achieve peace through spirituality or releasing negative energies through meditation. It can be helpful to share women's experiences in training sessions. The present intervention helps working women to reduce the stress caused by the conflict between work and life and to have a better adaptation to life. It is expected to positively affect the perceived psychological coherence and enable them to re-evaluate stressors and acquire adaptive coping skills. Antonovsky contended that people with a strong sense of coherence are more flexible in stressful conditions; In other words, they are more aware of their feelings and emotions and perceive stress less as a threat.<sup>[35]</sup> Therefore, by increasing the sense of psychological coherence, it is expected that there will be a decrease in the amount of stress; in addition, those with a strong sense of coherence better manage tensions. As a result, it can affect their health status. Participants in the model-based stress management intervention program will find more opportunities to engage and re-evaluate the environmental stressors related to the living environment caused by the disease and the required care. We hope this research will end in beneficial outcomes and contribute to women's health.

## List of abbreviations

WHO: world health organization  
EFA: Exploratory factor analysis  
CFA: confirmatory factor analysis.

## Ethical consideration

This Ph.D. thesis was approved by the Ethics Committee of Hormozgan University of Medical Sciences (IR. HUMS.REC.1400.214) and has a clinical trial code from the Iranian Trials Registration Center under the number IRCT (IRCT20210918052508N1). Written informed consent will be obtained from each respondent before data collection. In all phases of the research, an informed consent will be obtained from the participants



to participate in the research, and they can withdraw whenever they do not want to continue the study. Information about the participants will only be available to the researchers. The confidentiality of the data is preserved. No demographic information will be revealed about the participants to let out their identity. Neither will any information be exposed about their contact, interviews, etc.

### Financial support and sponsorship

Hormozgan university of medical science.

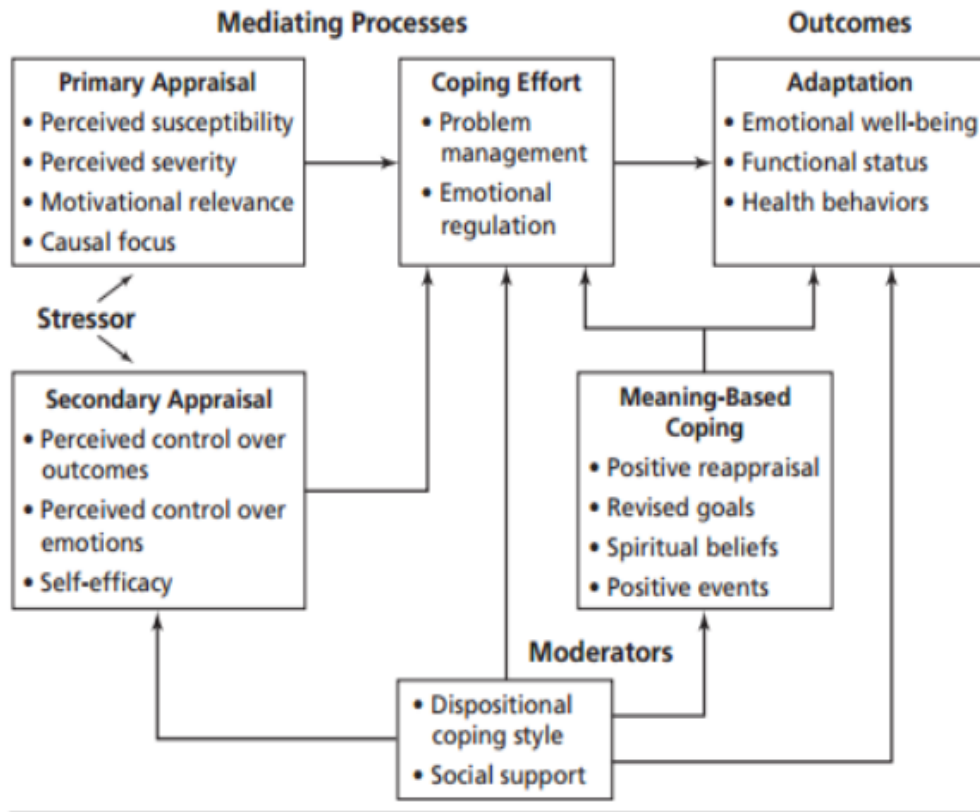
### Conflicts of interest

There are no conflicts of interest.

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## Appendix 1



Lazarus and Folkman's interactive model