

Hospital Workers Readiness to Adapt Health Improving Behaviors to Reduce Stress

by

Sindy Maricela Fuentes Rodriguez

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Sindy Maricela Fuentes Rodriguez

The College of Health Science  
California Baptist University  
Riverside, California

This is to certify that the Master's Thesis of  
Sindy Maricela Fuentes Rodriguez  
has met the thesis requirements  
for the degree of  
Master of Public Health

Approved by:

*Sangmin Kim*

Sangmin Kim, Ed.D.  
Professor, Thesis Chair

*Ashley V. Parks*

Ashley Parks, Dr.P.H.  
Associate Professor, Committee Member

*Amy Miller*

Amy Miller, Dr.P.H.  
Associate Professor, Committee Member

## Abstract

High levels of stress are prevalent among hospital workers (Dyrbye, Shanafelt, Sinsky, Cipriano, Bhatt, Ommaya, West, & Meyers, 2017), but although stress is high, not many studies have investigated healthy behaviors among hospital workers to reduce stress. Therefore, the purpose of this research study was to investigate the relationship between perceived stress levels and stages of change for healthy behaviors among hospital workers. A volunteer sample of 123 hospital employees was collected in 2018 upon their approval from a hospital in Southern California. Results show that levels of stress were inversely related to stages of change for exercise. In addition, gender found to be not a significant factor in determining the level of stress among hospital workers. However, the level of stress across different demographic factors, such as ethnicity and gender, were reported to be slightly higher than that of average scores in the general population (Cohen, Kamarch, & Mermelstein, 1983).

*Keywords: perceived stress, stages of change, health improving behaviors, and hospital workers*

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## Table of Contents

List of Tables .....	ii
Introduction.....	1
Stress and Hospital Workers .....	2
Prevalence of Stress .....	2
Types of Stressors among Hospital Workers .....	2
Stress and Hospital Workers' Performance .....	3
Stress and Hospital Workers' Health .....	4
The Link between Stress and Illnesses .....	4
Healthcare Workers and Personal Health Practices .....	6
Reasons for Unhealthy Behaviors .....	6
Benefits of Healthy Behaviors .....	6
Purpose of the Study .....	8
Research Questions .....	8
Hypotheses .....	8
Method .....	10
Design .....	10
Instruments.....	10
Procedures .....	12
Participants.....	12
Independent Variable and Dependent Variable .....	12
Data Analysis .....	13
Results.....	14
Demographics and Descriptive Data .....	14
Major Findings.....	15
Discussion.....	17
Summary of Major Findings .....	17
Public Health Implications.....	18
Study Limitations.....	19
Conclusion .....	20
References.....	21
Appendix A: Demographic Table.....	30
Appendix B: Survey Questionnaire .....	31

List of Tables

Table 1. Demographics of Participants ..... 30

## **Introduction**

Stress is an inevitable aspect of life. Doctor Hans Selye (1956), “the father of stress,” described stress as a nonspecific response of the body to any demand (p. 4). According to Selye’s General Adaptation Syndrome theory, stress has three different stages: an alarm reaction, resistance, and exhaustion. Stress is known to affect humans physically, mentally, and/or emotionally (Deng, Guo, Ma, Yang, & Tian, 2019; Tan & Yip, 2018). Stress is caused by stressors, and these stressors can be attributed to different factors that originate from internal or external environments.

Numerous studies have concluded that prolonged stress in the work environment can have a significant effect on an individual’s physiology, psychology, and behavior (Deng et al. 2019; McCarthy & Bhandari, 2019; Saridi, Filippopoulou, Tzitzikos, Sarafis, Souliotis, & Karakatsani, 2019). Depending on the type of stressor, the body responds to stress by releasing cortisol, glucocorticoids, catecholamines, growth hormones, and prolactin hormones (Ranabir & Reetu, 2011).

Chronic stress can affect the cardiovascular, endocrine, reproductive, and immune systems (Schneiderman, Ironson, & Siegel, 2005). Stress can also contribute to other health concerns, including depression, diabetes, headaches, disruptive sleep, digestive problems, and susceptibility to diseases like the common cold (Hsu et al., 2019). Current research on stress confirmed that exposure to chronic stress can be detrimental to a person’s well-being (Ranabir & Reetu, 2011). Hospitals are stressful work environments (Mealer, Jones, Newman, McFann, Rothbaum, & Moss, 2012; Sallon, Katz-Eisner, Yaffe, & Bdolah-Abram, 2015) due to the different demands and



daily work routine; therefore, hospital workers should be on guard to limit their stress by adopting healthy behaviors (Mealer, Burnham, Goode, Rothbaum, & Moss, 2009).

## **Stress and Hospital Workers**

### ***Prevalence of Stress***

Health professionals' stress levels tend to vary depending on the department in which they work. According to several studies, specialties at the front lines of care, such as the emergency department and the intensive care unit, are among the most stressful departments in a hospital (Mealer et al., 2009; Mealer, et al., 2012; Koinis, Giannou, Drantaki, Angelaina, Stratou, Saridi, 2015; Dyrbye et al., 2017; Gomez-Urquiza, De la Fuente-Solana, Albendin-Garcia, Vargas-Pecino, Ortega-Campos, & Canadas-De la Fuente, 2017). Among hospital staff, physicians who work in the front lines of care units have reported a high prevalence of prolonged levels of stress when compared to other workers (Chernoff, Adedokun, O'Sullivan, McManus, & Payne, 2019). Nurses are exposed to prolonged high levels of stress in hospitals and have a higher prevalence of post-traumatic stress disorder (Mealer et al., 2012). Little is known about the stress levels with other healthcare professionals, such as medical technicians, administrative staff, physician assistants, and nurse practitioners, but studies have suggested that a similar prevalence of high level stress exists among them (Chou, Li, & Hu, 2014; Dyrbye et al., 2017).

### ***Types of Stressors among Hospital Workers***

Healthcare professionals are regularly exposed to high levels of stress that result from a combination of different factors (Chou et al., 2014; Chernoff et al., 2019). Hospital workers' stress can be attributed to poor working conditions, patient

demands, time pressure, deadlines, ethical dilemmas, conflicts between beliefs, maladministration, and interpersonal relationships (Koinis et al., 2015; Durand, Bompard, Sportiello, Michelet, & Gentile, 2019). In addition, prolonged stress experienced by healthcare professionals can also be attributed to a lack of skills, organizational factors, long work hours, and high expectations (Ruotsalainen, Verbeek, Marine, & Serra, 2015). Heavy workload, shift work, lack of staff, uncertainty regarding patient treatment, and unrealistic expectations from patients and families are also very prevalent stressors among healthcare providers (Mealer et al., 2009; Chou et al., 2014; Portoghese, Galleta, Coppola, Finco, & Campagna, 2014; Ruotsalainen et al., 2015)

### ***Stress and Hospital Workers' Performance***

Consistent high levels of stress among healthcare workers negatively correlates with working engagement and efficiency (Portoghese et al., 2014; Cordioli, Cordioli, Gazetta, Gomes da Silva, & Garcia Lourencao, 2019; McCarthy et al., 2019). High levels of stress among hospital workers can jeopardize the quality of care, high stress levels can also lead to higher medical errors, and loss of job satisfaction (Chou et al., 2014; Deng et al., 2019; Portoghese et al., 2014; Koinis et al., 2015, Ruotsalainen et al., 2015). High levels of stress harm the individual as well as organizations because highly stressed healthcare workers take sick leave or change jobs (Ruotsalainen et al., 2015; Beer, Pienaar, & Rothmann, 2016; Dyrbye et al., 2017).

### ***Stress and Hospital Workers' Health***

Among healthcare workers, stress can be associated with multiple health problems, such as coronary heart disease, diabetes, cancer, hypertension, gastrointestinal disorders, depression, mental health, and even sleeplessness (Kivimaki, Virtanen, Elovaino, Kouvonen, Vaanaen, & Vahtera, 2006; Portoghese et al., 2014; Koinis et al., 2015; Hsu, Bai, Yang, Huang, Lin, & Lin, 2019). In addition, high levels of stress may lead healthcare workers to alcohol abuse, heavier smoking habits, and pharmaceutical substance abuse (Koinis et al., 2015). In the United States, 75% of all doctor visits can be attributed to stress and stress-related ailments and complaints, which can include headaches, heart problems, sleep problems, upset stomach, and back pain (Salleh, 2008). Numerous studies have demonstrated the relationship between stress and the leading causes of death in the United States (Lin, Wang, Zhong, Huang, Peng, Shan, Wang, & Sun, 2013; Heron, 2019; Tiwari & Kumar, 2018).

### ***The Link between Stress and Illnesses***

Work stress, home stress, financial stress, and major life events are significant risk factors that may contribute to coronary heart disease and increased risk of acute myocardial infarction, the leading cause of death the United States (Rosengren, Hawken, Ounpuu, Sliwa, Zubaid, Almahmeed, Blackett, Sitthi-Amorn, Sato, & Yusuf, 2004; Salleh, 2008). Chronic stress suppresses the body's immune system, and results in an illness manifestation (Salleh, 2008). One study found that stressors, such as night shift work among hospital workers, can disrupt the body's sleeping pattern, which can lead to illnesses such as cardiovascular disease and cancer

(Lin et al., 2013). Studies have also revealed that a 57.7% increase in breast cancer among hospital healthcare workers could plausibly be attributed to long-term night work shift exposure as well as to chronic stressful life events (Lin et al 2013; Yau & Haque, 2019). Additionally, research has found that stress can spur tumor growth and that there is an interrelationship between catecholamines and prostate and pancreatic cancer (Printz, 2018; Renz, Takahashi, Tanaka, Macchini, Hayakawaka, Dantes, Maurer, Chen, Jiang, Westphalen, Ilmer, Valenti, Mohanta, Habenicht, Middelhoff, Chu, Nagar, Tailor, Casadei, & Wang, 2018).

Type 2 diabetes mellitus is also prevalent among healthcare workers and type 2 diabetes mellitus is predicted to increase 54% worldwide by 2030 (Shaw, Sicree, & Zimmet, 2010; Poulsen, Cleal, Clausen, & Andersen 2014). Numerous studies have concurred that type 2 diabetes mellitus can worsen from reduced physical activity and increased obesity (Shaw et al., 2010; Tiwari & Kumar 2018). Constant exposure to high levels of stress can alter insulin needs, and this is of concern among adults who are overweight and not physically active (Salleh, 2008; Poulsen et al., 2014; Tiwari & Kumar, 2018). The increase of type 2 diabetes is of concern among healthcare workers, because, based on previous studies, healthcare workers are in one of the most stressful occupations and tend to indulge in unhealthy eating habits and not exercise (Moustou, Panagopoulou, Montgomery, & Benos, 2010; Boyaci, Sensoy, Beydag, & Kiyak, 2014; Koinis et al., 2015; Saridi et al., 2019).

## **Healthcare Workers and Personal Health Practices**

### ***Reasons for Unhealthy Behaviors***

With the increased amount of stress and the illnesses associated with stress, it is important to analyze healthcare workers' personal health practices. Having healthy behaviors, such as exercising, managing weight, and having good sleeping habits, can help an individual manage stress (Bakhshi, Sun, Murrells, & While, 2015). Even though healthcare workers are expected to be more knowledgeable about the benefits of healthy behaviors and the consequences of unhealthy behaviors, studies have shown that healthcare professionals do not always adopt such behaviors (Bazargan, Maker, Bazargan-Hejazi, Ani, & Wolf, 2009; Maya & Simon-Tuval, 2016). The most common reasons for not adopting healthy behaviors are lack of time, lack of motivation, fatigue, and a false feeling of protection due to their medical knowledge (Blake, Malik, Mo, & Pisano, 2011; Maya et al., 2016).

### ***Benefits of Healthy Behaviors***

Adopting healthier behaviors can help some individuals combat epidemic diseases, such as coronary heart disease, cancer, and diabetes (Jonsdottir, Borjesson, & Ahlborg, 2011). Healthcare professionals are expected to act as role models for the general public and therefore, influence public health (Jonsdottir et al., 2011; Maya et al., 2016). Research has shown a linear relationship between exercise and health status (Warburton, Nicol, & Bredin, 2006). Physical activities can help improve fitness, prevent medical conditions, and reduce stress (Saridi et al., 2019). Further moderate-intensity physical activity can help prevent sickness-related absence from

work (Saridi et al., 2019). Previous researchers have recommended exercising, eating well, and slowing down to reduce stress (Hellebrand, 2017).

Consuming a healthy and balanced diet is essential to good health. Including dietary fiber and whole grains as part of a balanced nutrition plays an important role in improving health (Lattimer & Haub, 2010). Food high in fiber can help reduce stress and even prevent diseases such as cardiovascular disease, many cancers, and lower blood pressure (Lattimer & Haub, 2010; Pem & Jeewon, 2015). Good sources of dietary fiber include vegetables, fruits, and grains. The United States *Dietary Guidelines 2015-2020* stated that three-fourths of the population have low vegetable and fruit consumption and that there needs to be a movement towards healthier eating patterns (US Department of Health and Human Services [DHHS] & US Department of Agriculture [USDA], 2017). In addition, practicing good sleeping habits can help reduce weight gain, diabetes, cardiovascular diseases, and improve mental health (Grandner, 2017). In general, practicing stress reducing techniques reduces stress and may even reduce certain disease development that may be caused by stress. Practicing stress reduction habits can be beneficial to the overall health of an individual (Varvogli & Darviri, 2011).

Despite the benefits of healthy behaviors, not many healthcare professionals have consistently reported practicing health improving behaviors (Bazargan et al., 2009; Jonsdottir et al., 2011; Maya et al., 2016), and there is little research examining the relationship between the total levels of perceived stress and stages of change for health improving behaviors among hospital workers (Skaal & Pengoid, 2012).

## **Purpose of the Study**

The purpose of this study was to examine the relationship between the total levels of perceived stress based on Cohen's Perceived Stress Scale (PSS) (Cohen et al., 1983) and stages of change based on the Prochaska and DiClemente model (1982) for health improving behaviors among hospital workers. The Transtheoretical Model (TTM) proposes that change occurs in stages (Hayden, 2019; Prochaska & DiClemente, 1982). According to Prochaska's and DiClemente's stage of change model, there are five different categories of change: pre-contemplation, contemplation, preparation, action, and maintenance (Prochaska et al., 1982).

## **Research Questions**

The study focused on the following four research questions:

1. Is there any difference between gender and levels of stress?
2. Is there a relationship between levels of stress and stages of change for a higher fiber diet?
3. Is there a relationship between levels of stress and stages of change to exercise three times a week for at least 20 minutes each day?
4. Is there a relationship between levels of stress and stages of change to reduce stress on a daily basis?

## **Hypotheses**

For the first research question, it was hypothesized that there is a difference between gender and levels of stress. For the second research question, it was hypothesized that there is a relationship between levels of stress and stages of change for a higher fiber diet. For the third research question, it was hypothesized that there

is a relationship between levels of stress and stages of change to exercise three times a week for at least 20 minutes each day. For the fourth research question, it was hypothesized that there is a relationship between levels of stress and stages of change to reduce stress on a daily basis. Stress was measured based on Cohen's PSS (Cohen et al., 1983) and the stages of change were measured based on Prochaska's and DiClemente's (1982) stages of change model.



## **Method**

### **Design**

This study used a cross-sectional design to examine the relationship between the level of stress as measured by Cohen's Perceived Stress Scale (Cohen et al., 1983) and stages of change based on Prochaska's and DiClemente's (1982) model for health improving behaviors among hospital workers.

### **Instruments**

Cohen's PSS is a 10-item questionnaire was used to measure the participants' stress levels. The PSS 10-item was developed by Sheldon Cohen in 1983, and it is one the most widely used psychological instruments for measuring perceptions of stress (Cohen et al, 1983; Cohen,1994). The PSS 10-item score ranges from 0 to 40, and the PSS score does not produce an objective stress result of an individual. According to Cohen and his colleagues study (1994) interpretations of PSS scores should be based on the following method. Those who score 0-7 on the test experience much lower than average, those who score 8-11 exhibit slightly lower than average, those who score 12-15 were considered as average, those who score 16-20 were slightly higher than average, and those with a score of 21 or higher have much high stress levels (Cohen, 1994).

In addition, Prochaska's and DiClemente's (1982) stages of change model was used to measure participants' stage of change, which were classified into five different categories. The first stage is the pre-contemplation stage in which an individual does not recognize their behavior is unhealthy and needs to change. The second stage is the contemplation stage in which an individual recognizes that there is

a problem and starts thinking of making a change. After the contemplation stage is the preparation stage, which begins once an individual has made the decision to change. Deciding to change leads to the action stage, which is when an individual actively modifies their behavior to address the problem. Finally, there is the maintenance stage, which is when an individual continues the active stage for at least six more months (Hayden, 2019; Prochaska et al., 1982). Prochaska's and DiClemente's stage of change questionnaire was used to measure participants' stages of readiness for their health improving behaviors, including being physically active, having high fiber diet, and reducing stress. This research selected three common health improving behaviors that are known to be closely related to levels of stress in the general population. In addition, these are the common health improving behaviors that are officially recommended from the Centers for Diseases Prevention and Control (CDC) and the USDA to reduce stress and prevent it from developing into chronic diseases (CDC, 2020 & USDA, 2015).

Based on the stage of change model, the participants' readiness for change was collapsed into two categories "no action stage" (pre-contemplation, contemplation, and preparation) and "action stage" (action and maintenance). The rationale for regrouping the five different stages of change into two was rooted in the fact that people in the pre-contemplation, contemplation, and preparation stages are not currently engaged in healthy behaviors. However, people in the action and maintenance stage are currently practicing healthy behaviors. Thus, the main purpose of using the stages of change was not primarily focused on specific classifications of

the five stages. Rather emphasis was placed on whether or not hospital workers were practicing any health improving behaviors to manage their level of stress.

### **Procedures**

A volunteer sample of 123 hospital employees were recruited from the study population size of 650 hospital employees, and prior to their participation in this research, an electronic consent was obtained from the participants. The participants were asked to fill out a five-page survey questionnaire via SurveyMonkey during March 2018, and the survey questionnaires were divided into three sections: (1) demographics, (2) stages of change, and (3) health improving behaviors (see Appendix B).

### **Participants**

Participants were comprised of hospital employees at a hospital in Southern California. Participants were randomly selected and provided electronic consent to participate in the study. They agreed to complete the self-report questionnaires regarding their perceived stress levels and readiness to adapt healthy behaviors, for which all data would be analyzed anonymously.

### **Independent Variable and Dependent Variable**

The independent variable for the first hypothesis was gender, and the level of measurement was nominal, while the dependent variable was the levels of stress and the level of measurement was continuous. For the second, third, and fourth hypotheses, the independent variable was level of stress and the dependent variables were the stages of change for exercise habits, eating habits, and stress reducing habits.

The independent variable was measured at the ratio level of measurement, and the dependent variable was measured at the interval level of measurement.

### **Data Analysis**

Descriptive statistics were calculated to report the mean distribution of participants' perceived stress levels. G\*Power analysis was run before testing a Pearson correlation coefficient, and the suggested minimum sample size was 100 based on 80% power and 5% significance level. In addition, normality of the data was checked before running a Pearson's correlation coefficient, and the data was normally distributed. A Pearson's correlation coefficient was used to measure the relationship between the level of stress and stages of change for participants' health improving behaviors. An independent sample *t*-test was used to compare the means of gender and levels of stress among hospital workers. The two assumptions for the independent samples *t*-test were met. The normally distributed data and homogeneity of variance were checked.

## Results

### Demographics and Descriptive Data

The sample consisted of 105 females and 17 males, and one undeclared. The participants' age ranges were 20 to 29 (19.5%), 30 to 39 (24.2%), 40 to 49 (15.4%), 50 to 59 (26.8%), and 60 years and older (13.8%). The participants' race/ethnicity consisted of Hispanic/Latino (35.8%), White/Caucasian (43.1%), Asian or Pacific Islander (7.3%), Black/African American (6.5%), American Indian/Native American (3.3%), and other (4.1%). Participants' education levels were high school or GED (14.6%), some college (30.1%), vocational degree (20.3%), associate degree (15.4%), bachelor's degree (9.8%), and graduate degree (8.9%). See Table 1 for complete demographic statistics (see Appendix A).

The mean perceived stress level for male participants was 15.53 ( $sd = 6.87$ ), and the mean for female participants was 16.48 ( $sd = 8.06$ ). When perceived stress scores were stratified by age, then participants between 20 to 29 had a mean of 17.50 ( $sd = 7.78$ ), 30 to 39 had a mean of 17.13 ( $sd = 7.49$ ), 40 to 49 had a mean of 16.26 ( $sd = 7.04$ ), 50 to 59 had a mean of 14.48 ( $sd = 7.34$ ), and 60 years and older had a mean of 16.47 ( $sd = 10.99$ ). Scores were also stratified by race/ethnicity. The mean for American Indian/Native American participants was 20.25 ( $sd = 5.19$ ), Asian or Pacific Islander was 18.89 ( $sd = 5.62$ ), Black/African American was 14.13 ( $sd = 7.88$ ), Hispanic/Latino was 16.09 ( $sd = 7.73$ ), White/Caucasian was 16.41 ( $sd = 8.42$ ), and Other was 11.80 ( $sd = 9.03$ ). Finally, levels of stress were stratified by education levels. The mean for hospital workers with a high school degree or GED was 17.17 ( $sd = 8.30$ ), some college was 16.22, ( $sd = 8.56$ ), vocational degree was 17.92 ( $sd =$

7.54), associate degree was 14.05 ( $sd = 6.55$ ), bachelor's degree was 16.08 ( $sd = 6.40$ ), and graduate degree was 14.18 ( $sd = 9.25$ ).

### **Major Findings**

The first hypothesis stated, *“There is a difference between gender and levels of stress.”* The null hypothesis stated, *“There is no difference between gender and levels of stress.”* An independent sample  $t$ -test was calculated comparing the mean score of male and female participants and their level of stress. No significant difference was found ( $t(120) = -0.458, p > 0.05$ ). The mean of the males ( $M = 15.53, sd = 6.86$ ) was not significantly different from the mean of females ( $M = 16.48, sd = 8.06$ ).

The second hypothesis stated, *“There is a relationship between levels of stress and stages of change for a high fiber diet.”* The null hypothesis stated, *“There is no relationship between levels of stress and stages of change for a high fiber diet.”* A Pearson correlation was calculated examining the relationship between participants' level of stress and stages of change for a high fiber diet. A weak negative correlation that was not significant was found ( $r(121) = -0.134, p > 0.05$ ). Stress level does not relate to stages of stages of change for a high fiber diet.

The third hypothesis stated, *“There is a relationship between levels of stress and stages of change to exercise three times a week for at least 20 minutes per day.”* The null hypothesis stated, *“There is no relationship between levels of stress and stages of change to exercise three times a week at least 20 minutes per day.”* A Pearson correlation coefficient was calculated for the relationship between hospital workers' level of stress and stages of change to exercise three times a week for at

least 20 minutes per day. A weak negative correlation was found ( $r(121) = -0.239, p < 0.05$ ), indicating a significant linear relationship between the two variables. Stress level does negatively relate to the stages of change to exercise at least three times a week for at least 20 minutes per day. Among healthcare workers, levels of stress negatively relate to stages of change to exercise.

The fourth hypothesis stated, *“There is a relationship between levels of stress and stages of change to reduce stress on a daily basis.”* The null hypothesis stated, *“There is no relationship between levels of stress and stages of change to reduce stress on a daily basis.”* A Pearson correlation was calculated examining the relationship between hospital workers’ levels of stress and stages of change to reduce the amount of stress in their daily lives. A weak negative correlation that was not significant was found ( $r(121) = -0.126, p > 0.05$ ). Levels of stress do not relate to the stages of change to reduce stress in daily life.

## Discussion

### Summary of Major Findings

This study investigated the relationship between stress and stages of change for health improving behaviors among hospital workers. Based on the stages of change model, the participants' readiness of change was collapsed into two categories: action stage and no action stage. The majority of hospital workers in the sample were female (85.4%,  $n = 105$ ), and males represented 13.8% of the sample ( $n = 17$ ). On average, among the hospital workers the stress level mean was 16.28 ( $sd = 7.90$ ), which indicates slightly higher than average stress levels based on Cohen's perceived stress scale. The results of this study demonstrated that perceived levels of stress were medium among hospital workers, but there was no gender difference in determining the perceived level of stress among hospital workers. Gender was not a factor in determining the level of stress; however, it was found that there is a negative relationship between perceived levels of stress and exercising for at least 20 minutes a day.

When investigating the perceived levels of stress and the stages of change for health improving behaviors, it was found that as hospital workers' perceived level of stress increased, they tend to eat less fiber, they engage in less physical activities, and do not take steps to reduce the stress on a daily basis. Results for the second hypothesis showed an inverse relationship; as perceived stress levels increased, hospital workers tend to have lower fiber diets. Results for the third hypothesis were found to be statistically significant. There was an inverse relationship between perceived levels of stress and exercising at least 20 minutes a day. The coefficient of



determination was 5.7% having a small to moderate effect size. The results for the fourth hypothesis results found an inverse relationship; as perceived stress levels increased, hospital workers did not take steps to reduce the stress on the daily basis. The study aligns with previous research that found hospital workers generally do not routinely practice self-care measures (Saridi et al., 2019; Sallon et al., 2015). Further research is needed to study stress factors hindering stages of change to improve healthy behaviors.

### **Public Health Implications**

These findings are important for public health professionals and policy-makers because healthcare workers are role models to the public. It is important that healthcare workers sustain their own health as they recommend healthy behaviors to the public. From a public health perspective, it is important to implement stress-management interventions for hospital workers as well as to provide them with regular training to teach them how to effectively deal with stress. It would also be beneficial for healthcare institutions to implement health and wellness coaching programs for their employees to encourage engagement in health improving behaviors. Having health and wellness programs for hospital employees would help to boost productivity and help reduce stress among hospital workers. For example, at Johns Hopkins School of Medicine (2017), they have been implementing a program known as Mindfulness-Based Stress Reduction (MBSR) which has proven effective in reducing stress. The program has also been implemented by the County of Riverside (2019) to reduce stress. The program is an eight-week course, and participants meet two and a half hours each week, have a full day silent retreat, and

practice guided meditations at home. This evidence-base program has proven to reduce stress as well as to aid participants in improving their quality of life. Other ways to reduce stress are to implement health and wellness programs at hospitals and other businesses. These programs should then be incorporated into benefits packages as has been done at Kaiser Permanente (2018), Providence Health (2018), and UCLA (2018). These three organizations have incorporated health and wellness coaching programs into their employee benefits which are tailored to the employee. Also, wellness coaching can be done over the phone and last about 20 minutes. An experienced health and wellness coach guides a person to a healthier lifestyle.

The CDC (2013) and the National Institute for Occupational Safety and Health ([NIOSH] 2014) recommends individuals prevent occupational stress by establishing a support network, having a positive outlook, and establishing a balance between work and personal life. It is important to recognize the early signs of occupational stress so that it can be to addressed at an early stage before it can be detrimental to the employee and the employer. This study's findings are important for public health because occupational stress is high among healthcare workers, and it can affect their daily performance. As stated by the CDC and the NIOH, a combination of stress management and organizational change should be implemented in combination as the best approach to reduce stress in the workplace.

### **Study Limitations**

There were several study limitations. One of the threats to internal validity of the study can be attributed to instrumentation. The instrument used to measure the individual levels of stress was based on the PSS, and responses might change over

time. A more precise instrumentation could have been used to have a more accurate level stress. Another limitation of the study could be self-report bias. Individuals might have purposely under- or over-reported their stress levels. Self-reported bias could have also led to under- or over-reported readiness to make a positive behavior change. It is important to find an alternative way to validate the respondents' answers to ensure the accuracy of the responses.

An additional study limitation was not being able to identify stress levels of specific healthcare occupations. Further research needs to be done to identify the relationship between hospital workers' occupation and stress levels. In addition, further research needs to be done in order to identify stressors directly associated with type of healthcare occupation, patient load, work hours, job satisfaction, training, paperwork, and work management.

## **Conclusion**

It is important to study the factors that are hindering stages of change among healthcare workers. It is important to encourage healthcare workers to participate in self-care measures to reduce stress. It would be useful for hospital policymakers to create employee health and wellness coaching programs to help motivate healthcare workers to adapt healthier behaviors. Understanding the stage of change to adapt health improving behaviors among healthcare workers is of importance because healthcare institutions have an obligation to support and promote healthy habits as their employees are role models to the general public.

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## Appendix A: Demographic Table

**Table 1**

*Demographics of Participants*

		<i>n</i>	%
Gender	Male	17	13.8
	Female	105	85.4
Race	American Indian/ Native American	4	3.3
	Asian or Pacific Islander	9	7.3
	Black/African American	8	6.5
	Hispanic/Latino	44	35.8
	White/Caucasian	53	43.1
	Other	5	4.1
Age	20-29	24	19.9
	30-39	30	24.4
	40-49	19	15.4
	50-59	33	26.8
	60 years and older	17	13.8
Education	High School/GED	18	14.6
	Some College	37	30.1
	Vocational Degree	25	20.3
	Associate Degree	19	15.4
	Bachelor Degree	12	9.8
	Graduate Degree	11	8.9

*Note.* Demographic of participants, gender, age, race, education. The total number of participants was 123.

## Appendix B: Survey Questionnaire

### Demographic Questions

1. What is your gender?

1) Male

2) Female

2. What is your age?

1) 20-29

2) 30-39

3) 40-49

4) 50-59

5) 60 years and older

3. What is your race/ethnicity?

1) White/Caucasian

2) Asian or Pacific Islander

3) Black/African American

4) Hispanic/Latino

5) American Indian/Native American

6) Other

4. What is your household's estimated yearly income?

1) Less than \$10,000

2) \$10,000 to \$14,999

3) \$15,000 to \$24,999

- 4) \$25,000 to \$34,999
- 5) \$35,000 to \$49,999
- 6) \$50,000 to \$74,999
- 7) \$75,000 to \$99,999
- 8) \$100,000 to \$149,999
- 9) \$150,000 to \$199,999
- 10) \$200,000 or more

5. What is the highest level of education you have?

- 1) Did not finish High School
- 2) High School Diploma or GED
- 3) Associates Degree (2-year degree)
- 4) Vocational Degree
- 5) Some College
- 6) Bachelor's Degree (4-year degree)
- 7) Graduate Degree (Masters, Ph.D, JD, MD, etc)

**Section 1: General Health Survey (Adopted from Nigg, et al., 1999)**

1. Do you consistently avoid eating high-fat foods?

- 1) Yes, I have been for more than 6 months.
- 2) Yes, I have been, but for LESS than 6 months.
- 3) No, but I intend to in the next 30 days.
- 4) No, but I intend to in the next 6 months.
- 5) No, and I do NOT intend to in the next 6 months.

2. Have you been eating a diet high in fiber?

- 1) Yes, I have been for more than 6 months.
- 2) Yes, I have been, but for LESS than 6 months.
- 3) No, but I intend to in the next 30 days.
- 4) No, but I intend to in the next 6 months.
- 5) No, and I do NOT intend to in the next 6 months.

3. Have you been trying to lose weight?

- 1) Yes, I have been for more than 6 months.
- 2) Yes, I have been, but for LESS than 6 months.
- 3) No, but I intend to in the next 30 days.
- 4) No, but I intend to in the next 6 months.
- 5) No, and I do NOT intend to in the next 6 months.

4. Do you exercise three times a week for at least 20 minutes each time?

- 1) Yes, I have been for more than 6 months.
- 2) Yes, I have been, but for LESS than 6 months.
- 3) No, but I intend to in the next 30 days.
- 4) No, but I intend to in the next 6 months.
- 5) No, and I do NOT intend to in the next 6 months.

5. Have you attempted to reduce the amount of stress in your daily life?

- 1) Yes, I have been for more than 6 months.
- 2) Yes, I have been, but for LESS than 6 months.
- 3) No, but I intend to in the next 30 days.



4) No, but I intend to in the next 6 months.

5) No, and I do NOT intend to in the next 6 months.

6. Have you quit smoking cigarettes?

1) Yes, I have been for more than 6 months.

2) Yes, I have been, but for LESS than 6 months.

3) No, but I intend to in the next 30 days.

4) No, but I intend to in the next 6 months.

5) No, and I do NOT intend to in the next 6 months.

6) I was never a cigarette smoker

7. Do you examine yourself for warning signs of cancer (for example, breast, testicles, skin)?

1) Yes, I have been for more than 6 months.

2) Yes, I have been, but for LESS than 6 months.

3) No, but I intend to in the next 30 days.

4) No, but I intend to in the next 6 months.

5) No, and I do NOT intend to in the next 6 months.

8. In the last month have you had 5 or more drinks in a row? (Females use 4 or more in a row)?

1) Yes, and I do not intend to stop drinking 5 or more drinks in a row.

2) Yes, but I intend to stop drinking 5 or more drinks in a row during the next 6 months.

3) Yes, but I intend to stop drinking 5 more drinks in a row during in the next 30 days.

4) No, but I have had 5 or more drinks in a row in the past 6 months.

5) No, and I have not had 5 or more drinks in a row in the past 6 months.

6) No, I have never had 5 or more drinks in a row.

## **Section 2. Perceived Stress Scale**

Instructions: Please use the scale below to answer the questions.

0-Never 1-Almost never 2-Sometimes 3-Fairly often 4-Very often

1. In the last month, how often have you been upset because of something that happened unexpectedly?

2. In the last month, how often have you felt that you were unable to control the important things in your life?

3. In the last month, how often have you felt nervous and “stressed”?

4. In the last month, how often have you felt confident about your ability to handle your personal problems?

5. In the last month, how often have you felt that things were going your way?

6. In the last month, how often have you found that you could not cope with all the things that you had to do?

7. In the last month, how often have you been able to control irritations in your life?

8. In the last month, how often have you felt that you were on top of things?

9. In the last month, how often have you been angered because of things that were outside of your control?

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

## **Section 3: Nutrition**

1. I eat at least five servings of fruits and vegetables every day (one serving equals one half-cup).

- a. Never or Almost Never
- b. Occasionally
- c. Often
- d. Very often
- e. Always or almost always

2. I eat at fast food restaurants less than three times per week.

- a. Never or Almost Never
- b. Occasionally
- c. Often
- d. Very often
- e. Always or almost always

3. I include foods that are high in fiber in my diet on a daily basis (i.e. whole grain breads and cereals, beans, etc.)

- a. Never or Almost Never
- b. Occasionally
- c. Often
- d. Very often
- e. Always or almost always

4. I maintain a healthy weight within the recommendations specified by a health-care professional.

- a. Never or Almost Never
- b. Occasionally
- c. Often

- d. Very often
- e. Always or almost always

5. I avoid eating foods that are high in fat such as whole milk, fried foods, fatty meats, etc.

- a. Never or Almost Never
- b. Occasionally
- c. Often
- d. Very often
- e. Always or almost always

**Section 4: Physical Activity**

1. During the last 7 days, on how many days did you do vigorous physical activities?

- a. Days per week \_\_\_\_\_ (enter in number)
- b. Don't Know/Not Sure

2. How much time did you usually spend doing vigorous physical activities on one of those days?

- a. Hours per day \_\_\_\_\_ (enter in number)
- b. Minutes per day \_\_\_\_\_ (enter in number)
- c. Don't w/ Not sure

3. During the last 7 days, on how many days did you do moderate physical activities?

- a. Days per week \_\_\_\_\_ (enter in number)
- b. Don't Know/Not Sure

4. How much time did you usually spend doing moderate physical activities on one of those days?

a. Hours per day \_\_\_\_\_ (enter in number)

b. Minutes per day \_\_\_\_\_ (enter in number)

5. During the last 7 days, on how many days did you walk for at least 10 minutes at a time?

a. Days per week \_\_\_\_\_ (enter in number)

b. Don't Know/Not Sure

6. How much time did you usually spend walking on one of those days?

a. Hours per day \_\_\_\_\_ (enter in number)

b. Minutes per day \_\_\_\_\_ (enter in number)

c. Don't Know/Not sure

7. During the last 7 days, how much time did you usually spend sitting on a week day?

a. Hours per week day \_\_\_\_\_ (enter in number)

b. Minutes per weekday \_\_\_\_\_ (enter in number)

c. Don't know/Not sure

### **Section 5: Quality of Work Life (Sirgy et al, 2001)**

Instructions: Please use the scale below to ask the questions.

1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, and 5- Strongly Disagree

\_\_\_\_\_ 1. My place of work is safe and sanitary.

\_\_\_\_\_ 2. Everyone at work seems to talk about fitness, health and eating right.

\_\_\_\_\_ 3. I do not hear much griping from my fellow co-workers about their pay.

\_\_\_\_\_ 4. My organization cares for its employees and their families.

\_\_\_\_\_ 5. My place of work is pleasant.

\_\_\_\_\_ 6. Almost everyone at my organization is rewarded based on performance.

\_\_\_\_\_ 7. Almost everyone at my organization is recognized expert in his or her field.

\_\_\_\_\_ 8. My organization helps its employees realize their potential.

\_\_\_\_\_ 9. My organization tries hard to help its employees be the best they can

professionally.

\_\_\_\_\_ 10. My organization helps its employees learn the need job skills.

\_\_\_\_\_ 11. My organization tries hard to educate its employees to become better

professionals

\_\_\_\_\_ 12. At my organization, everyone is encouraged to express his or her creativity.

\_\_\_\_\_ 13. The culture of my organization encourages employees to express creativity on the job and outside