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The Relationship Between Perceived Occupational Stress, Gender, Education, and Job Skill Level

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Walden University
2023

Abstract

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by

Rumena Kabir

MA, Walden University, 2016

BS, Walden University, 2014

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Clinical Psychology Program Licensure Track

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May 2023

Abstract

Occupational stress is a common problem among workers, and it may have implications

for productivity, job satisfaction, and employee wellness. The purpose of this study was

to explore different skill levels related to perceived occupational stress and whether

gender and education influence it. Publicly available secondary data for this study came

from the Public Library of Science at-risk and intervention thresholds of occupational

stress using a Perceived Stress Scale 14 survey from June 2017. The 500 participants in

the secondary data were a random sample of workers from five occupational health

centers recruited during annual work medical examinations. Findings indicated that there

were not significant correlations between gender and professional roles, indicating that

professional roles and sex did not collectively explain a significant proportion of

variation in perceived occupational stress. Additionally, there were significant

relationships between all levels of education and professional roles, such that there were

significant positive relationships between skilled workers and having a bachelor's degree,

midlevel workers and having a bachelor's degree, unskilled workers and having a high

school diploma, and senior executives and having a master's degree. The findings of this

study promote positive social change by encouraging organizations to improve current

work practices to increase the available training programs for employees to better

understand and cope with occupational stress, which may promote higher productivity

and greater satisfaction with work.

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Dedication

I dedicate this research to my family and friends who greatly supported me in this endeavor. I would like to thank my father, Mohammed Hussain; my mother, Zulhash Begum; my son, Azraf Kabir; my daughter, Nabeeha Kabir; my husband, Muhammad Kabir; my brothers, Ahmed Reza Karim and Ahmed Rajab Karim; and my friend Dr. Marion Pickering. I also share this appreciation with Dr. Delinda Mercer and Dr. Amanda Rose for their encouragement and support.

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All praises and thanks (be) to Allah, the Lord of the universe. For without whom, this would not be possible. Thank You, Allah!

I cannot express enough gratitude to my Walden committee for their dynamic expertise, guidance, outstanding mentorship, and support. I acknowledge all members of my dissertation committee who assisted in this research. I would like to thank Dr. Delinda Mercer, my committee chair; Dr. Amanda Rose, my methods expert; and Dr. Brandy Benson, my university research reviewer. I would also like to also acknowledge everyone in the Walden University Writing Center for assisting in refining my proposal submission. I am forever indebted to my clinical supervisor, Dr. Lisa Paliotta, her continued encouragement, and promotion of strategies that forced me to hold myself accountable and pushed me to proceed without ceasing.

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Chapter 1: Introduction to the Study

Occupational stress is a common problem among workers, and it may have implications for productivity, job satisfaction, and employee wellness. Research has shown that occupational stress may be associated with burnout, anxiety, posttraumatic stress disorder, and depression (Scheepstra et al., 2020). The purpose of my research was to examine the relationship between perceived occupational stress, gender, and education in senior executives, skilled workers, midlevel workers, and unskilled workers. There is a gap, then, in understanding the relationship between factors affecting perceived occupational stress by investigating how gender, education, and job skill level affect perceived occupational stress. Further research was needed to uncover how perceived occupational stress is accessed for different job-skill-level workers of various educational levels and genders and to determine whether stressors and barriers are involved in this process.

Prior researchers have questioned whether the amount of household wealth or work status is more responsive to the health of the different genders (Spijker & Gumà, 2018). In this study, the use of gender was narrowed to perceived occupational stress. Earlier studies revealed that White Americans with more education had lower levels of occupational stress (Assari & Bazargan, 2019). This study explored education level among different skill-level workers. Previous researchers had suggested to do in-depth exploration of factors contributing to perceived occupational stress (Van Der Feltz-Cornelis et al., 2020). Therefore, my goal was to investigate and address the gap concerning the relationship between factors affecting perceived occupational stress by

investigating how gender, education, and job skill level affect perceived occupational stress.

The current study provides useful information about perceived occupational stress and how it differs by gender and by occupational status. Findings are directed toward corporate employers, executives, supervisors, and human resource professionals to improve understanding of perceived occupational stress, which is a problem for senior executives, skilled workers, midlevel workers, and unskilled workers. This study may guide organizations in training employees to better understand and cope with occupational stress, which may promote higher productivity and greater satisfaction with work. This may contribute to positive social change, in that the study was designed to improve workers' quality of life by providing information on the relationship between education, gender, and skill level on perceived occupational stress. The knowledge may encourage employers to offer workshops, referrals, or other programs to reduce perceived occupational stress. This information may guide employees to realize that they are not alone and ultimately seek help to improve their quality of life.

Chapter 1 includes a description of the research topic, background, problem, and purpose of this study. I also include the research questions, theoretical foundation, and nature of this study. Then, I describe the definitions and limitations. The chapter concludes with the significance of the study and a summary.

Background of the Study

Occupational stress is recognized as one of the major challenges facing employees/workers across the globe in the 21st century (Zare et al., 2017). The

phenomenon of occupational stress is generally defined as the gradual process by which a worker's/employee's cognitive assessment of occupational stressors compromises physical and mental health (Kahn & Byosiere, 1992). The International Labor Organization (2016) observed that significant changes driven by globalization and financial crises have taken place at workplaces over time, leading to an increase in work-related demands. Accordingly, occupational stress is characterized by job demands either not matching or exceeding the capabilities, resources, or needs of the worker, or when the knowledge or abilities of an individual worker or group are inconsistent with the culture of an organization (International Labor Organization, 2016).

In the United States, 83% of workers have reported suffering from work-related stress, with occupational stress reported highest among female workers and those aged 30–49 years (American Institute of Stress, 2019). In Europe, many workers reported that work stress is common in their workplace (European Agency for Safety and Health at Work, 2020). In 2019–2020 in the United Kingdom alone, stress coupled with depression and anxiety accounted for 51% of all work-related cases of ill health (Government of the United Kingdom, 2020). In France, one quarter of workers reported being hyper-stressed and anxious due to increased work-related demands (The Local France, 2017). In South Arica, one in four workers suffers from depression, a common phenomenon closely associated with stress (Green, 2020).

The detrimental consequences of occupational stress on workers, organizations, communities, and nations have been extensively documented in occupational health research. At an individual level, occupational stress has been commonly found to be

associated with compromised physical health (Petek, 2018; Sidhu et al., 2020) and compromised mental/emotional health (Fortes et al., 2020; Kashif et al., 2017; Peasley et al., 2020), as well as fatigue/burnout (Chen, 2020; Park et al., 2020). At an organizational level, occupational stress has been commonly found to be associated with job dissatisfaction (Dartey-Baah et al., 2019; Park & Jang, 2017), low employee productivity, high rates of sickness absence (Gotz et al., 2018; Mortensen et al., 2017), as well as early exit from the labor force (Hintsa et al., 2015), among other things. Kim et al. (2019), in a study of 73,014 employees, found a relationship between gender and occupational stress and depressive symptoms. De Sio et al. (2017) found that female employees were at higher risk for work-related stress.

Owing to the detrimental consequences of occupational stress, researchers (Huang et al., 2018) have extensively studied the causes of occupational stress, and the results indicate that there are several correlates classified into three major categories—job-specific factors, organization-specific factors, and external factors. Among the vital job-specific correlates of occupational stress are workload, role ambiguity, role insufficiency, lack of job control, lack of support, and poor interpersonal relationships (Huang et al., 2018; Kosalai, 2018; Mendoza, 2019; Rasdi, 2018; Ryu, 2020; Ukil & Ullah, 2016; Xiao et al., 2017). The key organizational correlates of occupational stress include poor management, organizational system/technological challenges, occupational climate, unprofitability, and work interruption, among others (Huang et al., 2018; Ryu, 2020; Xiao et al., 2017).

A study by Deguchi et al. (2018) included 723 male and 476 female teachers to compare occupational stress in teachers and gender. Deguchi et al. did not include any other professions, different skill levels, or different educational levels of the teachers. The levels of occupational stress experienced by male and female secondary school headmasters were measured and compared by Suleman et al. (2018). The occupational stress and gender in the study by Suleman et al. evaluated workers of only one skill level—that is, secondary school headmasters. Comparing racial and ethnic groupings for the association between education and occupational stress was the goal of a study by Assari and Bazargan (2019); the study did not include the skill level of workers and occupational stress. Despite the extensive research conducted on occupational stress focusing on the antecedents and its consequences, research on whether worker gender, educational level, and job skill level have an essential bearing on perceived occupational stress remains very limited. Therefore, with this study, I sought to fill this gap and investigated the relationship between gender, educational level, job skills, and perceived occupational status.

Problem Statement

Many senior executives, skilled workers, midlevel workers, and unskilled workers experience high levels of perceived occupational stress in their work environment (Ogba et al., 2020). Functioning under stress has been shown to be associated with emotional exhaustion and depersonalization (Deater-Deckard & Panneton, 2017). Occupational stress is associated with many psychological disorders, including posttraumatic stress disorder, major depressive disorder, and mood disorders (Scheepstra et al., 2020).

Galanakis and Alamani (2020) found that gender did not affect occupational stress. This may be related to numerous factors such as organizational fit, and employee factors such as employee gender, education, and job skill level affect perceived occupational stress (Bentley et al., 2019; Wowor, 2013).

Previously, researchers investigated gender differences in work stress and satisfaction (Hwang & Ramadoss, 2017; Paoline et al., 2015), as well as age (von Hippel et al., 2015), but research is lacking for the different skill levels among workers. Researchers also found that higher education was associated with lower occupational stress levels in White Americans (Assari & Bazargan, 2019). However, the relationship between perceived occupational stress and education among workers of different skill level has not been sufficiently studied. Thus, using Karasek's (1979) model of job-demand-control theory, I conducted a correlational quantitative research study that examined the relationship between perceived occupational stress, gender, and education within this population of skilled workers, midlevel workers, and unskilled workers.

Purpose of the Study

The purpose of this quantitative research study was to examine the relationship between perceived occupational stress, gender, and education among senior executives, skilled workers, midlevel workers, and unskilled workers. I used the Statistical Package for the Social Sciences (SPSS) to analyze the data.

Research Questions and Hypotheses

Research Question 1: Is there a relationship a relationship between gender and perceived occupational stress?

$H_0 1$: There is no significant relationship between gender and perceived occupational stress.

$H_1 1$: There is a significant relationship between gender and perceived occupational stress.

Research Question 2: Does the relationship between gender and perceived occupational stress differ across the four skill levels of worker?

$H_0 2$: There is no significant relationship between gender and perceived occupational stress across four different skill levels of worker.

$H_1 2$: There is a significant relationship between gender and perceived occupational stress across four different skill levels of worker.

Research Question 3: Is there a relationship a relationship between education and perceived occupational stress?

$H_0 3$: There is no significant relationship between education and perceived occupational stress.

$H_1 3$: There is a significant relationship between education and perceived occupational stress.

Research Question 4: Does the relationship between education and perceived occupational stress differ across the four skill levels of worker?

$H_0 4$: There is no significant relationship education and perceived occupational stress across four different skill levels of worker.

$H_1 4$: There is a significant relationship between education and perceived occupational stress across four different skill levels of worker.

Theoretical Foundation

Karasek's (1979) job-demand-control theory served as the theoretical foundation for this research study. A brief overview of the theory is provided in this section, with a more detailed explanation provided in Chapter 2. Karasek's (1979) job-demand-control theory states that job stress develops from the interaction of job demands and job decision latitude. The job-demand-control theory spotlights the harmony between the wants of workers and their self-governance. According to Karasek (1979, 1989; Karasek & Theorell, 1990), the job-demand-control model indicates that any job environment can be characterized in terms of combining two dimensions: psychological work demands and the number of workers who meet these demands.

In its most basic version, the job-demand-control model proposes that the two fundamental aspects of the job itself, psychological job demands and job decision latitude, are the main causes of occupational stress (De Jonge et al., 1999). According to Karasek (1979), psychological pressures at work are described as psychological job demands, or workload (e.g., high pressure of time, high working pace, difficult and mentally exacting work). The term "job decision latitude" refers to a worker's capacity to direct his own activities and skill application (Karasek & Theorell, 1990). Decision authority and skill discretion are the two halves of decision latitude (De Jonge et al., 1999). Workers' capacity may depend on their education level and gender. The job-demand-control model states that high work demands tend to lead to high levels of stress in workers (Karasek & Theorell, 1990). Therefore, the job-demand-control theory may serve as a structure for understanding the constructs involved in the research questions.

Nature of the Study

This correlational quantitative research study examined the relationship between perceived occupational stress, gender, and education among skilled workers, midlevel workers, senior executives, and unskilled workers. The independent variables in this study were gender and education, while the dependent variable was perceived occupational stress. Accordingly, the study was conducted using a cross-sectional design. Such a design entails the collection of data on more than one variable, on more than one case and at one point in time in order to determine patterns of association between the variables (Bryman, 2016). Because I did not seek to manipulate variables as is the case with experimental designs, but rather sought to determine patterns of association between variables, the correlational design was the most appropriate for the purpose of the study (Howell, 2013). A nonexperimental design was selected because there was no random assignment of participants to control or treatment groups (Bordens & Abbott, 2008).

Methodology

The study was based on a quantitative approach in which the data collection and analysis were premised on numerically measurable variables. Quantitative research approaches involve collecting and analyzing numerical data in order to describe characteristics, find correlations, or test hypotheses (Patten & Newhart, 2017), which was exactly what this study did. The data were based on an earlier survey conducted to distinguish an at-risk population among stressed workers and to establish a threshold over which an action is urgently required (Dutheil et al., 2017).

The sources of information for this study were the following. Publicly available secondary data came from the Public Library of Science (PLOS) at-risk and intervention thresholds of occupational stress using a Perceived Stress Scale 14 (PSS14) survey from June 2017 (Cohen et al., 2017). The secondary data were collected by using a visual analog scale (VAS) and PSS14 to assess perceived stress in workers (Dutheil et al., 2017). The 500 participants in the secondary data were recruited during annual work medical examinations by a random sample of workers from five occupational health centers.

The independent variables in this study were gender, professional roles, and education, while the dependent variable was perceived occupational stress. Accordingly, the study was conducted using a cross-sectional design. Such a design entails the collection of data on more than one variable, on more than one case, and at one point in time in order to determine patterns of association between the variables (Bryman, 2016). Three independent variables were considered in this study: gender, professional roles, and education. These too constituted stratification variables in the study. Gender was measured as a categorical variable taking on two values, with 1 representing male and 2 representing female. Similarly, education was measured as a categorical variable taking on three values, with 1 representing high-school diploma, 2 representing bachelor's degree, and 3 representing master's degree.

The dependent variable of this study was perceived occupational stress. The variable was measured using 14 items contained in the VAS used by Dutheil et al. (2017). These items were amalgamated using SPSS to generate an index value

representing perceived occupational stress (Kulas et al., 2021). Ultimately, perceived occupational stress was considered as a continuous variable.

The data to be used in this study were generated using a VAS attributed to Dutheil et al. (2017). The VAS was originally a pain rating scale that was first used in 1921 by Hayes and Patterson as a method that supervisors could use to rate their workers' performance (Delgado et al., 2018). Visual analogue scales are often completed by patients, but they can as well be used in eliciting opinions from health professionals (Crichton, 2001), hence, the justification for the choice in this study.

To prepare for data analysis, a composite score was calculated for perceived occupational stress according to survey/instrument instructions. Additionally, dummy coding was implemented to prepare the categorical variables for hypothesis testing. The data was then be uploaded to SPSS Version 27 for analysis. Prior to hypothesis testing, descriptive statistics were run and presented for the demographic questions as well as variables of interest. Descriptive analysis is used to summarize basic features of data in a more meaningful way for simpler interpretation (Kemp et al., 2018). Means and standard deviations were calculated for the continuous/scale variables (perceived occupational stress), while frequencies and percentages were calculated for the categorical questions (gender, education level, etc.). Finally, a Cronbach's alpha reliability analysis was conducted on the composite score to ensure internal consistency among the dependent variable of perceived occupational stress. The Cronbach's alpha coefficient was then evaluated using the guidelines suggested by George and Mallery (2018), where $> .9 =$ excellent, $> .8 =$ good, $> .7 =$ acceptable, $> .6 =$ questionable, $> .5 =$ poor, and $\leq .5 =$

unacceptable reliability. Hypothesis testing was then conducted to address each research question. I conducted the study in accordance with the parameters established by the Walden University Institutional Review Board (IRB) to ensure the ethical protection of research participants.

Definitions

Burnout: Experiencing negative feelings toward work, demanding employee interactions, and emotional fatigue (Maslach, 1993).

Depression: A prolonged period of sadness marked by isolation, social withdrawal, poor motivation, and low energy (Gilroy et al., 2007).

Job-demand-control theory: Job-demand-control theory states that job stress develops from the interaction of job demands and job decision latitude. This theory spotlights the harmony between the wants of workers and their self-governance (Karasek 1979, 1989; Karasek & Theorell, 1990).

Occupational stress: The harmful physical and emotional responses that occur when the demands of the job exceed the capabilities, needs, or resources of the worker (Jex et al., 1992).

Perceived occupational stress: Perceived occupational stress is an imbalance between an unexpected, unknown, or unacceptable occupational demand and the body's physical and mental ability to cope with that event (Ogba et al., 2020).

Perceived Stress Scale (PSS14): The PPS items evaluate the degree to which individuals believe their life has been unpredictable, uncontrollable, and overloaded

during the previous month. The assessed items are general in nature rather than focusing on specific events or experiences (Lee, 2012).

Skilled workers: Individuals who work for an independent legal entity owned by shareholders (U.S. Small Business Administration, 2016), such as a private-sector company that contracts to do work for the U.S. government and receives federal funds. For this study, skilled workers were bachelor's or undergraduate degree holders such as technicians and cellar masters.

Midlevel workers: bachelor's or undergraduate degree holders such as shift supervisors and administrative agents.

Unskilled workers: High-school-diploma holders such as forklift operators and cleaners.

Senior executives: master's degree or postgraduate degree holders such as engineers and educators.

Workplace stress: The adverse reaction people have to excessive pressures or other types of demands placed on them at work (Health and Safety Executive, 2017a).

Visual analogue scale (VAS): A VAS is a measurement instrument that tries to measure a characteristic or attitude that is believed to range across a continuum of values and cannot easily be directly measured (Crichton, 2001).

Assumptions

I made several assumptions for this study. I started by assuming that workers experience perceived occupational stress and that workers of various genders may experience differing levels of this stress. This assumption was consistent with the limited

extant research; according to the findings of the Cho et al. (2019) study, emotional labor increased the likelihood of depression symptoms among female call center workers, and workers who experienced both emotional labor and employment uncertainty may be more likely to have depressive symptoms. I also assumed that workers experience perceived occupational stress and that this stress may vary in intensity depending on education level.

I also assumed that prior to the Spearman's correlation analysis, the assumption of a monotonic relationship was assessed (Conover & Iman, 1981). A monotonic association means that the relationship between the variables does not change direction. This assumption was violated if the relationship between the variables shifts from positive to negative or vice versa. The assumption of monotonicity was assessed graphically with a scatterplot. Prior to running the multiple linear regression, the assumptions of normality of residuals, homoscedasticity of residuals, absence of multicollinearity, and lack of outliers were assessed. The assumption of normality of residuals requires that the residuals of the regression model follow a normal distribution (bell-shaped curve). The assumption of normality was examined using a Q-Q scatterplot of the residuals (Bates et al., 2014; DeCarlo, 1997; Field, 2017).

Limitations

There were limitations in this correlational quantitative research study. First, a limitation of the archival data was that they did not include the culture/ethnicity of the participants. Therefore, I may not have been able to examine the relationships between different cultural/ethnic groups among the skill level workers on occupational stress. In

addressing this limitation, in future research studies, it may be useful to include the culture/ethnicity of the participants to examine the relationships between different cultural/ethnic groups among the skill level workers on occupational stress.

A second limitation pertained to gender identity. The secondary data used in this study only identified gender as male and female. There are many different gender identities, including male, female, transgender, gender-neutral, nonbinary, agender, pangender, genderqueer, two-spirit, third gender, and all, none, or a combination of these, both or neither (Carpenter et al., 2020). This secondary data study population consisted of employees who attended an annual health screening at five occupational health centers. Thus, the sample limited the generalizability of the findings to other people.

A third limitation pertained to the quantitative research. The secondary data was collected by using questionnaires as a survey structure (Queirós et al., 2017). The quantitative survey structure is also rigid, where participants' emotional changes, emotions, and behaviors are not captured (Queirós et al., 2017). In future studies, additional research methods could be used, such as a mixed-methods study to get a more in-depth understanding of the problem.

<div align="center">**Significance**</div>

The findings of this study included information regarding the relationship between education, gender, and skill level on perceived occupational stress. Therefore, the insights from this research should be used by organizations to better understand the relationship between education, gender, and skill level on perceived occupational stress, and create outreach programs for employees to reduce perceived occupational stress. This

study may contribute to positive social change, as it was designed to improve the workers' quality of life by providing available information on the relationship between education, gender, and skill level on perceived occupational stress. The knowledge may encourage employers and managers to focus attention on the problem of perceived occupational stress and provide resources for workshops, referrals, or other programs to reduce perceived occupational stress. This information may help employees realize that they are not alone and ultimately prompt them to seek help to improve their quality of life. This study may help organizations train employees to better understand and cope with occupational stress, which may promote higher productivity and greater satisfaction with work. This correlational quantitative research study may contribute to the literature and advanced knowledge by filling a gap in the psychological literature with respect to perceived occupational stress in the private sectors for employees of all skill levels. This study may also influence future studies in a manner with a different population group that leads to additional research in this area. Findings from this study could be beneficial not only to the psychology field, but also to a wide array of other fields, including the fields of counseling, public policy and administration, and business administration. By examining perceived occupational stress as related to education and gender in different skill level workers, this study may be able to provide workplaces with better information to address workers' need for self-care and reduce possible workplace stressors. The findings from the study may also be applicable to many agencies and organizations, including the American Psychological Association (APA), American Sociological Association, Department of Labor, Center for International Private Enterprise, and

National Human Resources Association. These agencies and organizations may be empowered by an increased ability to identify the barriers and stressors that may impede a worker's ability to provide quality services. Such information can be used to encourage self-care in workers while maintaining their job through ongoing education. Continued research in this area was needed to tailor these strategies to meet the most current needs of different skill level workers as the work field grows and changes. This study was significant as a first step in promoting self-care within this population.

Summary

In this quantitative study, I examined the relationship, if any, between perceived occupational stress, gender, and education in private companies' employees who are of different skill levels. This study helped to fill the gap in the psychological literature on this topic. Karasek's (1979) job-demand-control theory served as the theoretical foundation for this research study. Participants of this study included a sample of 500 male and female employees of private companies who were of different skill levels and worked in different occupational sectors. The secondary data was information collected by using a VAS and PSS14 to assess perceived stress in workers (Dutheil et al., 2017). Data analysis included descriptive statistics, frequencies, percentages, means, standard deviations, a point biserial correlation analysis, Spearman's rank correlation, and multiple linear regression. Findings from the study may lead to positive social change by increasing private companies' leaders' understanding of the relationship between perceived occupational stress, gender, and education among all skill level employees.

Thus, they may focus more attention and resources to reduce perceived occupational stress among employees of all skill levels.

In Chapter 2, I include the introduction, literature search strategy, theoretical foundation, perceived occupational stress, gender, and education in private companies' employees of all skill levels, ending with a summary and conclusions.

Chapter 2: Literature Review

This chapter contains a review of the literature on previous studies related to perceived occupational stress and gender, education, and job skill level. Through this review, I aim to lay the groundwork for the current research by describing what research has been conducted previously.

Previous studies were examined to glean information about the target population to understand better the relationship between perceived occupational stress, gender, education, and skill level. Previous studies were also examined to gather information for research for this project. This study's penultimate goal was to collect the information that can be used to inform both the employees and their employers' respective institutions of the relationship between perceived occupational stress, gender, education, and skill level. The goal of this work was to see positive social change in employees and the work environment.

Literature Search Strategy

The literature was searched by accessing several research databases: Academic Search Complete, Business Source Complete, ERIC, MEDLINE with Full Text, PsycARTICLES, Ebsco, PsycInfo, and PsycTESTS. This study's background information on perceived occupational stress, skill level workers, gender, and education were gathered from peer-reviewed articles using the Walden University Library search engines. The key search terms included *perceived occupational stress*, *job-related stress*, *skill level workers*, *gender*, and *education*. Additional search terms included *prevalence of stress*, *functioning under stress*, *working without sleep*, and *dealing with stress*.

Preference was given to peer-reviewed articles published from 2016 to 2021, and only peer-reviewed material was included in the review. Google Scholar was also used to locate peer-reviewed literature using the same key terms listed above. For each search, titles were reviewed, and abstracts of those appearing to be relevant to the study were read for relevance to the study. The scholarly literature and research articles focused on occupational stress and its effect on workers.

Theoretical Foundation

The theoretical foundation used in this study was the job-demand-control theory (Karasek, 1979). Karasek (1979) developed job-demand-control theory, which holds that job stress develops from the interaction between job demands and job decision latitude. Job-demand-control theory highlights the importance of the harmony between the wants of workers and their self-governance. According to Karasek, any job environment can be characterized by combining two dimensions: psychological work demands and the amount of control workers must meet these demands. Control buffers the impact of job demands and can help enhance employees' job satisfaction with opportunities to engage in challenging tasks and learn new skills (Karasek, 1979). Job-demand-control theory can also help explain the importance of employers developing ways to help employees form the successful coping strategies needed to negate the negative effects of stress (De Lange et al., 2003; Van Der Deaf & Maes, 1999). The job-demand-control theory was suitable for this study, which had a large sample size. The larger sample size in this study and careful consideration of the types of demands and control that best match each other theoretically reduced inconsistencies.

Dutheil et al. (2020), utilizing the job-demand-control model as a framework, investigated the relationship between the risk of work addiction and health-related outcomes. The data were collected from 187 out of 1,580 (11.8%) French workers using the Karasek Job Content Questionnaire, the Work Addiction Risk Test, the Hospital Anxiety and Depression Scale, and sociodemographic. The job-demand-control model was used by Dutheil et al. (2020) in this study because it best considers the job demands an individual may face in their line of work as well as how much control they have over those demands. The fact that this approach has been applied to job design was another factor. This indicates that the model was presumptively capable of predicting or explaining the relationship between workaholism and health-related outcomes across occupational jobs, considering the job demands in such a way that occupations with more demanding designs were expected to be highly linked with work addiction risk. The study concluded that work addiction risk is highly correlated with high job demands. Greater depression and poorer sleep quality were linked to an increased likelihood of work addiction. Finding workers more susceptible to the risk of work addiction should help preventive tactics.

Karasek's (1979) job demand-control model is a well-established model for examining the relationship between job stress and health, holding that excessive work demands and loss of control at work contribute to burnout. People with occupational burnout may complain of sleeplessness, memory and concentration problems, diffuse aches, profound fatigue, irritability, and feeling emotionally drained, which they often attribute to occupational stress (Chou et al., 2016). Additionally, chronic exposure to

workplace stress has been associated with mental health problems such as depression (Conway et al., 2021).

Literature Review Related to Key Variables and Concepts

Characteristics of Stress

Stress is defined as a physical, mental, or emotional factor contributing to physical and psychological tension (Ngirande, 2021). Occupational stress refers the body's reaction to a challenge or demand between occupational expectations and unavailable support systems for the employee (Ogba et al., 2020). Research has shown that nurses, for example, with different occupational characteristics, demands, work conditions, role overload, role ambiguity, role conflict, responsibility, support from colleagues, and rational coping have different occupational stress levels (Islam et al., 2021). High levels of stress have severe consequences for the well-being of individuals and can lead to mental fatigue, difficulty in concentration, loss of immediate memory, and anxiety (Duarte et al., 2020).

In certain situations, a moderate amount of stress can help people achieve their goals and move through challenging situations (Rudland et al., 2020). In health professions education, for example, increased perceived stress has been associated with increased levels of personal achievement in nursing students (Rudland et al., 2020). Rudland et al. (2020) found that students with stress were more likely to register as nurses and less likely to burn out or leave the course. An individual's interpretation of and response to stressors can make it either a positive challenge or a hindrance to learning (Rudland et al., 2020).

Coping mechanisms help individuals to alter their sense of stress (Rudland et al., 2020). People may have a coping reservoir that enables them to deal with stress until the reservoir runs out. The idea of coping methods emphasizes that stress should be handled rather than accepted. Practice of stress coping mechanisms may be draining for many people, and regardless of any learning that takes place, acknowledging the significance of individuals' coping mechanisms is to be commended (Rudland et al., 2020).

Perceived Occupational Stress

Perceived occupational stress is an individual's perception of their occupational stress. Perceived occupational stress is not an objective measure, in that it is about how people feel about how stressed they are by work. High perceived occupational stress reflects the extent of chronic occupational stress at a certain time in a worker's life; anatomical and functional changes of the brain are regarded as stressful (Chou et al., 2016). High perceived occupational stress is a financial concern for employers as it can cause high rates of work absenteeism, high medical costs for employees, more on-the-job accidents, declines in work performance, and increased transfers of workers from their current positions to less stressful situations (Chou et al., 2016). High perceived occupational stress is a long-lasting condition that requires an understanding of the problem's history before intervention can be considered.

When investigating the root of occupational stress, it is necessary to consider the causes of stress, otherwise known as *risk factors*, the response to the stress, and the result of the life history, methods of distress, or the structure of healthy stress. Chou et al. (2016) conducted a study with 68 participants, ranging in ages from 20 to 62 (17 males

and 51 women), to examine the relationships between verbal-fluency-test-induced brain activity over the bilateral frontotemporal areas and high perceived occupational stress. Chou et al. used the Chinese versions of the Job Content Questionnaire and the Copenhagen Burnout Inventory to measure high perceived occupational stress. Chou et al. discovered statistically significant negative correlations between frontopolar and dorsolateral prefrontal cortex activity during the verbal fluency test (VFT) and occupational burnout. Chou et al.'s study showed that there may be a prefrontal cortex-wide distribution of neuronal bases for high perceived occupational stress.

Researchers have also examined perceived occupational stress in graduate employees. To investigate perceived occupational stress, Aderibigbe et al. (2020) conducted a cross-sectional (survey) study that measured levels of stress as in relation to work experience and educational qualification among graduate employees in Nigeria. Aderibigbe et al. surveyed 1,532 male and female graduate employees across Nigeria, and analyses were conducted using *t* test of independent groups and one-way analysis of variance. Aderibigbe et al. compared the occupational stress levels of graduate employees with more work experience to those of their counterparts with less work experience. Analysis revealed that a bachelor's degree, higher national diploma, and postgraduate master's degree were all significantly related to occupational stress (Aderibigbe et al., 2020). Additionally, employees with a bachelor's degree and postgraduate degrees reported more work-related stress than those with a higher national diploma (Aderibigbe et al., 2020). Aderibigbe et al. also found that graduate employees who had more job

experience than their less experienced peers reported significantly greater levels of occupational stress.

The findings of Aderibigbe et al.'s (2020) study highlighted the need for the management of business organizations and labor employers to take measures to ensure that job stress to which employees are subjected is significantly reduced. Aderibigbe et al.'s findings suggested that a yearlong required internship program should be added to the university curriculum as part of the requirements for the awarding of university degrees. As a result, university graduates would have the opportunity to experience the difficulties of the workplace, just like their polytechnic counterparts, and would be better prepared to handle the challenging circumstances that are a natural part of their job functions and responsibilities. Aderibigbe et al. also suggested that the person–job fit should be improved by human resource managers and supervisors, as work stress frequently results from individuals being in occupations they do not like or are not suited for. A mismatch between a worker's hobbies or skills and the demands of the job can be extremely unpleasant. Organizations can significantly reduce stress by carefully screening, selecting, and placing people in positions that best match their skills and personality.

The psychological and physiological responses to occupational stress may influence individuals' work performance (Lecca et al., 2020). An individual's subconscious reacts to perceived occupational stress by regulating different processes in the body to adapt to the stressor (Salingaros & Sussman, 2020). The body's regulation includes increased respiratory nervous system heartbeat, and metabolic processes

increase arousal and prepare the body for stressful encounters, such as fight-or-flight situations, by accelerating heart rates, constricting blood vessels, and raising blood pressure, while the parasympathetic nervous system slows the pulse, increases digestion, and assists the body in relaxing (Blessing & Gibbons, 2008). Many of these responses are related to the appraisal of the stressor and coping self-efficacy of the individual (Salingaros & Sussman, 2020).

Occupational Stress and Teachers

Two occupations that have had a vast amount of research conducted on the stress of employees are schoolteachers and healthcare workers. The science and mathematics teachers in primary education schools are under stress due to career development, workload, examinations, interpersonal relationships, roles, responsibilities, and unemployment (Cui et al., 2018). A study found that heads of educational organizations were unable to constructively overcome occupational crises (Bondarchuk et al., 2021). Teachers play a pivotal role in creating a classroom atmosphere that nurtures learning and social-emotional well-being. Rudland et al. (2020) explained when such high-stress intensity is not adequately relieved, some teachers lose their passion for the teaching field and show undesirable and unsympathetic behavior toward their students. Therefore, a high level of pressure can consume teachers' emotional and physical resources and lead them to a state of job burnout (Rudland et al., 2020).

Work-related stress and mental distress are also considerable problems for most teachers, which can lead to risky behaviors such as hazardous alcohol consumption (Deguchi et al., 2018). Deguchi et al. (2018) conducted a cross-sectional study among

Japanese teachers to examine gender disparities in the associations between hazardous alcohol consumption and reported individual-level occupational stress. Hazardous alcohol intake was defined as consuming 280 g or more of alcohol in a single week for male teachers and 210 g or more for female teachers (Deguchi et al., 2018). The Japanese translation of the Generic Job Stress Questionnaire was used to measure perceived personal occupational stress, which has proven to be valid and reliable (Deguchi et al., 2018). The study by Deguchi et al. (2018) included 723 male and 476 female teachers. Univariate logistic regression analyses were used to calculate odds ratios for demographic factors such as age and marital status, work-related factors such as educational background and job classification, and the seven subscales of the Generic Job Stress Questionnaire. The prevalence of hazardous alcohol consumption was 16.6% in male teachers, 12.4% in female teachers, and 14.9% in all teachers (Deguchi et al., 2018).

Additionally, Deguchi et al. (2018) found that among male teachers, supervisor support and hazardous alcohol consumption are correlated, while among female teachers, workload variability and hazardous alcohol consumption are correlated. There were no correlations, however, between role issues and hazardous alcohol consumption among male or female teachers. Deguchi et al. highlighted that occupational stress is a driving factor for excessive drinking and that teachers experience ongoing work-related stress, so a link between occupational stress among teachers and mental health issues, particularly those with risky alcohol intake, is expected. Reduced hazardous alcohol consumption among male teachers may result from supervisors providing not too much but enough help.

Work-related stress is also a considerable problem for heads of schools, which women and men can experience differently. Suleman et al. (2018) assessed and compared the levels of occupational stress experienced by male and female secondary school heads in Khyber Pakhtunkhwa. Using a multistage sampling procedure, 402 secondary school heads, 260 men and 142 women, who were employed as principals of public secondary schools in Khyber Pakhtunkhwa were chosen as the sample. Suleman et al. used a standardized tool, the Occupational Stress Index (OSI), to solicit responses from the participants. The OSI is a widely accepted instrument for measuring workplace stress, and 12 subscales make up the scale (Suleman et al., 2018). Suleman et al. found that both male and female secondary school heads were found to be occupationally stressed by work overload, role conflicts, demanding working conditions, excessive political pressure, under involvement, and unprofitability. Male and female secondary school heads' overall occupational stress did not significantly differ from one another in comparison. Additionally, secondary school heads reported that they were unable to carry out their responsibilities successfully due to an excessive workload based on role overload analysis. They ran out of time and were overloaded with work, so they were unable to finish their responsibilities to their satisfaction (Suleman et al., 2018).

Based on Suleman et al.'s (2018) research, it was advised that the departments of elementary and secondary education work with policymakers to develop strategies for secondary school heads to reduce stress so they can properly carry out their tasks. Furthermore, secondary school heads should be provided with training, seminars, and

workshops on stress management. Basic amenities may be provided for them, and a particular budget should be set aside for the purpose of enhancing working environments.

Ugwuanyi et al. (2020) used a randomized controlled trial experimental design with 68 scientific and social science education facilitators in open and distance learning centers in South-South states of Nigeria as the sample size. Data were gathered using the Perceived Stress Scale (PSS) and the Occupational Stress Index (OSI). Internal consistency reliability values of 0.81 and 0.85 for PSS and OSI, respectively, were obtained in the Nigerian setting using the Cronbach alpha approach. The participants in both the intervention group and the non-intervention group took a posttest following the 12-week cognitive behavior therapy intervention, and a follow-up assessment was given after two months. For the within-groups and between-groups effects, data were examined using mixed-design repeated-measures analysis of variance.

Werner and Springer (2021) surveyed a sample of 340 academic personnel, examining the relationship between occupational burnout and work-related risks and determining whether using active coping techniques can lessen these risks' detrimental impacts. Werner and Springer used the Oldenburg Burnout Inventory and the Psychosocial Risk Scale as instruments. Job context-related risks are the physical and social surroundings of the workplace that affect how work is done. A workplace that could be a risk setting for one or more job context-related risks. A particular task is connected to a risk situation. For example, a nurse giving a vaccine to an HIV-positive patient may experience multiple job context-related risks, fear of getting HIV from needlestick injury, may take a longer time with this patient and other patient are waiting,

has to finish on time to pick up children after work, and doesn't want to leave any work for a coworker because they were talk ill of her. Werner and Springer found the strongest correlation to job context-related risks. Those reaching for active strategies were affected by negative consequences less frequently within the relationship between job content hazards and exhaustion. Cognitive behavioral therapy (CBT) intervention led to a significant decrease in occupational stress among science and social science education facilitators (Werner & Springer, 2021).

Occupational Stress and Healthcare Workers

Due to the current pandemic of COVID 19, healthcare workers are under a great deal of life-threatening stress (Duarte et al., 2020). Before this pandemic situation, these professionals were already considered to be most exposed to psychosocial and physical risks. Stress is inevitable in many occupations; however, some professions produce more stress than others. Healthcare workers experience high burnout, which warrants attention and support from policymakers (Duarte et al., 2020). Exposure to these risk factors, pathogens, long working hours, increased volume and severity of patients, critical decision making, psychological distress, fatigue, and the substantial concern that professionals could be potential vectors of disease transmission to their families, can jeopardize the mental, physical, emotional, and social wellbeing of these professionals as well as the care process (Rasool et al., 2020).

The COVID-19 pandemic has disrupted healthcare systems worldwide. A prolonged response period to the pandemic was led to additional stress for healthcare workers, which were permeate further throughout the healthcare system (Duarte et al.,

2020). The wellbeing and productivity outcomes are influenced by individual differences and work environment characteristics (Ramaci et al., 2019). The study by Nguyen Ngoc et al. (2020) failed to find any significant association between the prevalence of occupational stress and heavy workload and skill level. The most stressful situations among nursing professions were dealing with death and dying patients (Chatzigianni et al., 2018). There were multiple patients dying during a single 12 hours shift of a nurse, which was difficult for many nurses to handle.

The COVID-19 epidemic was a major source of stress for healthcare professionals, and Couarraze et al. (2021) examined the high degree of stress experienced by healthcare professionals during the initial COVID-19 pandemic. The COVID-19 epidemic caused social upheaval and has been a considerable source of stress. During this health crisis, healthcare personnel, especially paramedical staff, have been on the front lines of care. Couarraze et al. surveyed 13,537 individuals online from 44 countries from January to June 2020, which included 10,051 workers, 631 medical doctors, 1379 other healthcare workers, and 748 paramedical staff.

Couarraze et al. (2021) used a non-calibrated visual analog scale, from 0 (no stress) to 100 (maximal stress), to evaluate healthcare professionals stress levels and regression analysis to analyze the data. The stress levels during the first wave of the pandemic were 57.8 ± 33 in the whole cohort, 65.3 ± 29.1 in medical doctors, and 73.6 ± 27.7 in paramedical staff. Couarraze et al. found that for healthcare professionals, especially paramedical employees, the first wave of the pandemic was a highly stressful time. The study by Couarraze et al. (2021) found that risk of high levels of stress also

increased in women (1.83, 1.61–2.09; p < 0.001 vs. men). Women were the group of people who were most at danger, while age was a protective factor. The study revealed that compared to other workers, healthcare professionals experience higher levels of stress during COVID-19 (Couarraze et al., 2021). Nurses are more stressed than doctors among healthcare professionals, and men were less impacted than women (Couarraze et al., 2021). Another population that was particularly susceptible to excessive stress was young individuals (Couarraze et al., 2021).

The findings of the Couarraze et al. (2021) study found such a spike in workplace stress could deal the already flimsy healthcare systems a second blow. During the epidemic, nurses experienced significant levels of work-related stress, which is causing more of these medical professionals to get burned out. When nurses experience burnout, their ability to provide high-quality care suffers. It may be essential to properly assess workplace stress and its impacts on healthcare personnel if post-pandemic modifications are to be planned.

In the study by Couarraze et al., (2021), Women experienced the highest levels of work-related stress during the initial worldwide shutdown of COVID 2019, regardless of their job. The study findings showed that women are more susceptible to stress and may also experience the negative psychological effects of the COVID-19 epidemic more severely. Most of the study female had dual lives that include job and family obligations. When there are more demands on their time from family and job, this becomes even harder to reconcile. Families did need to adjust to the closing of the schools. Women continue to play most roles in childcare and education even in couples that split these

responsibilities. Women are perhaps more psychologically vulnerable than men since they exhibit better psychophysiological concordance and constancy (Couarraze et al., 2021).

Occupational stress in healthcare professions and nursing, however, can be physically and psychologically taxing even without the pressures and challenges of COVID-19; such occupational stress can lead to high absenteeism, burnout, and turnover rates. Chatzigianni et al. (2018) conducted a cross-sectional study on occupational stress levels among 157 nurses and nursing assistants in Greek public general hospitals. Most participants (80.89%) were female, between the ages of 40 and 49 (52.23%) and married (75.79%). Additionally, 52 participants (33.12) had worked for more than 26 years as nurses. The Expanded Nursing Stress Scale (ENSS) was used to measure occupational stress among nurses and nursing assistants. The ENSS consists of 59 items and nine subscales. On a 5-point Likert scale, each item is rated from 1 for "never stressful" to 4 for "very stressful," with 0 for "does not apply." Statistical analysis was performed using one-way analysis of variance (ANOVA), and multivariate analysis of variance (MANOVA). Chatzigianni et al. found that the demands of patients and their families, uncertainty about treatment, and dealing with death and dying are the most stressful issues for Greek nurses and nursing aides. The study also revealed positive correlations between specialty, age, marital status, and occupational stress (Chatzigianni et al., 2018).

Chatzigianni et al.'s (2018) study revealed preventive measures must be implemented, both at the individual and management levels to combat occupational stress. Enhancing supervisor assistance, providing additional breaks, encouraging worker

rewards, and stress coping strategies are just a few examples of managerial interventions. Nurses and nursing assistants level interventions include cognitive-behavioral stress management programs, short-term educational initiatives that encourage effective communication, problem-solving, goal-setting, and physical stress management techniques.

Kakemam et al. (2019) also examined occupational stress among nurses and sought to identify the risk factors that contribute to occupational stress and the prevalence of occupational stress among Iranian nurses. The hospital system's associations were evaluated using a multi-center cross-sectional design. Thirteen provincial centers in Iran chosen at random were included in the study. Kakemam et al. distributed 5422 printed questionnaires to nurses, of which 3346 were returned. The 30-item self-reporting Iranian-designed Occupational Stress Scale was used to quantify occupational stress; the scale included five areas of duty-related stressors (9 items), role-related stressors (3 items), working environment stressors (3 items), organizational policy stressors (10 items), and interpersonal connections stressors (5 items; Kakemam et al., 2019).

Kakemam et al. (2019) found that nurses who worked more than 44 hours a week reported considerably greater stress levels ($p = .001$) than those who worked 44 hours or fewer per week. In non-teaching hospitals, nurses experienced much less occupational stress than in teaching hospitals ($p < .001$). With 78.4% of nurses in the Kakemam et al. (2019) study reporting high stress, the overall perception of occupational stress had a mean score of 3.48. Long work hours, shift work, inadequate staffing, low compensation,

workplace discrimination, unsupportive management, poor communication, and poor policies were the main contributors of occupational stress (Kakemam et al., 2019).

The findings of the Kakemam et al. (2019) study may be used to guide policy to reduce nurses' stress while enhancing hospital operations and to determine whether existing practice encourages the reduction of occupational stress. Despite current the Ministry of Health and Nursing Organization's policy in Iran to boost nurses' salary, improve working conditions, and expand the number of nurses, occupational stress among Iranian nurses is a serious problem (Kakemam et al., 2019). To ensure their continued professional survival, nurses must have access to a variety of work-place resources and clinical career prospects, all of which could affect patient outcomes, job satisfaction, and occupational stress. To combat stress, it is essential to incorporate resilience programs into pre-clinical nursing education and the workplace. Approaches for efficient stress management are supported by leadership, including mentoring and organizational policy, to help create a healthy workplace for nurses.

In another study of occupational stress and nursing, Neto et al. (2020) examined the causes of occupational stress among nursing staff in health systems; the cross-sectional, exploratory study was conducted on 126 nursing professionals randomly chosen, and most of the 126 nursing staff members were women (92.9%), 35 or younger (51.6%), self-identified black or brown (81.6%), had a vocational technical degree (43.1%), were partnered (53.1%), and had children (64.3%; Neto et al. (2020). The Karasek demand-control model was used to evaluate workplace stress, the outcome variable. Five questions examine psychological demand, while nine items evaluate job

control (six related to use of skills and three to decision-making authority). The examination of work-related stress was completed simultaneously using Poisson regression with robust variance. Neto et al. (2020) found that 77.0% of the nursing staff in Bahia's medium complexity services had occupational stress. In other words, either simultaneously (both at the same time) or separately, 77% of professionals faced stressful conditions involving either poor control or high psychological demand. When both unfavorable circumstances (poor control and high psychological demand) are present, the classification of high strain job includes 26.2% of the professionals. Only the lack of physical activity had a statistically significant positive correlation with lifestyle choices and occupational stress (p=0.157; Neto et al., 2020). In the cities in Bahia occupational stress is very common among nursing professionals working in medium-complexity facilities.

The findings of the Neto et al. (2020) study point to a worrying condition of occupational stress exposure, requiring coping mechanisms to safeguard workers' health, especially among nurses. The results showed that professionals with technical nursing degrees experience the most severe stressful situations. Therefore, this group must receive special attention. Additionally, the fact that this study specifically focuses on the variables linked to occupational stress in nursing professionals underscores the necessity for targeted interventions aimed at ensuring all-encompassing worker health. To safeguard the health of employees, coping mechanisms and stress-reduction initiatives based on workplace reform are urgently required. Stressful situations may arise because of the nature of the work.

Occupational Stress and Mental Health

Work-related stress is a negative response to demands and pressures that are not matched to the employee's knowledge and abilities (Karyotaki et al., 2020). Karyotaki et al. (2020) examined the financial situation, health, love life, relationships with family, relationships at work/school, problems experienced by loved ones 20,842 university students. The study demonstrated powerful associations of the stress measures with the odds of all mental disorders (Karyotaki et al., 2020). Emotional exhaustion related to low levels of mental health has been reported, and effective interventions to support health care professionals are needed (Duarte et al., 2020). Although medical practice demands may be a significant contributor to burnout, personal and family stressors may impose additional pressures. Occupational stress is associated with fatigue, insomnia or sleep disturbance, and exposure to levels of dust (Lee et al., 2020). Additionally, Deguchi et al. found occupational stress to be a driving factor in excessive drinking and that teachers experience ongoing work-related stress; therefore, a link between occupational stress among teachers and mental health issues, particularly those with risky alcohol intake, is expected.

Occupational Stress and Physical Health

Well-being and productivity outcomes are influenced by individual differences and work environment characteristics (Ramaci et al., 2019). A healthy job is one where the pressure on workers is equal to their aptitudes and resources, their control over their work is suitable, and they get enough support from individuals who matter to them (WHO, 2019). A healthy workplace has an absence of dangerous conditions and various

health-promoting conditions, including establishing appropriate information, training on health-related matters, and accessibility of health endorsing structural support practices (WHO, 2019). Cardiorespiratory fitness moderated the association between occupational stress, cardiovascular risk, and mental health (Schilling et al., 2019).

Occupational Stress and Gender

Spijker and Gumà (2018) conducted a study to investigate how the economic crisis can affect the health of Spanish-born male and female individuals who are between the ages of 30 and 59 and are not yet retired. Spijker and Gumà (2018) consider a gender viewpoint given the disparate roles that men and women often play at home and at work. Spijker and Gumà (2018) used secondary data from the Spanish samples of the European Union Statistics on Income and Living Conditions (EU-SILC) for the years 2006, 2010 and 2014. The study's findings indicate different factors influence men's and women's health. For example, women's health is more sensitive to household income level while men's health is more sensitive to employment status (Spijker & Gumà, 2018).

The goal of the study by Cho et al., 2019 was to analyze the relationship between emotional labor and depressed symptoms as well as the impact of both job instability and emotional labor exposure on depressive symptoms among female call-center workers. Cho et al., 2019, conducted the quantitative research with 699 female call-center workers in South Korea. The result of the study by Cho et al., 2019, showed that among female call center employees, emotional labor increased the risk of depression symptoms, and employees who experienced both emotional labor and job uncertainty may be more likely to have depressive symptoms.

Cordioli et al., 2019 conducted a descriptive quantitative, correlational, and cross-sectional study to examine the levels of occupational stress and *engagement* in primary health care workers. They recruited 85 workers from São Paulo and used self-administered instruments, Work Stress Scale (WSS); and *Utrech Work Engagement Scale* (UWES). The result of the study by Cordioli et al., 2019 showed that the main sources of stress for the employees were: a lack of professional training and communication about organizational decisions, a lack of professional growth perspectives, discrimination/favoritism at work, low regard from superiors, task distribution, a lack of understanding of responsibilities, and a lack of time to complete the work. The result of the study by Cordioli et al., 2019 also showed that the workforce was highly engaged, yet more than a third reported experiencing considerable work-related stress. High levels of work stress are associated with poorer engagement among employees.

Dartey-Baah et al. (2020) examined the relationship between workplace stress, job satisfaction, and gender disparity among Ghanaian bank tellers. Dartey-Baah et al. (2020) recruited 112 bank tellers from four different banks. According to the findings of the study, bank tellers are more prone to engage in unproductive behaviors like job discontent brought on by stress at work. The findings also indicated that among bank tellers, gender is not a significant predictor of job satisfaction and occupational stress. Results of this study suggest both male and female bank tellers may perceive and experience stress in a similar way. Additionally, both male and female bank tellers can be satisfied in their careers.

Researchers have also studied stress and gender as it relates to types of employee work contracts. De Sio et al. (2018) observed that job uncertainty, in the form of short-term contracts, might affect how employees perceive psychosocial hazards, making them more susceptible to job-related stress; additionally, the size of this effect may vary between genders. De Sio et al. surveyed 338 administrative technical workers (113 males and 225 females) to assess work-related stress. The software Health Safety Executive Analysis Tool was used to process the questionnaires that were collected, and the Wilcoxon rank-sum test was utilized to assess the statistical significance of the discrepancies discovered (De Sio et al., 2018). De Sio et al. compared the stress levels of workers with temporary contracts to workers with permanent contract and found workers with temporary contracts are more vulnerable to psychosocial risks, which increases susceptibility to occupational stress. Employees on temporary contracts need corrective interventions across the board, whereas those with permanent contracts need them in three areas: manager assistance, peer support, and relationships. De Sio et al. also found that, independent of contract typology, female workers are more susceptible to psychosocial risks, such as mental disorders, anxiety, depression, suicide attempts, sleep disorders, and chronic fatigue, leading to stress than male workers.

De Sio et al.'s (2018) findings emphasize the need for female temporary employees' corrective interventions, while male temporary employees need corrective interventions in the following areas: control, managers' assistance, peer support, relationships, and role. While male employees with permanent contracts need corrective interventions in the domain of relationships, female employees with permanent contracts

need them in the domain of manager support, peer support, relationships, and role. De Sio et al.'s findings highlight how gender differences must be considered for occupational stress assessment and prevention because female workers are more susceptible to psychological risks as it relates to contract typology. Further research is needed on the relationship between gender, occupational stress, and skill level.

Researchers have also examined stress and gender in medical students. To investigate perceived stress in medical students, Infortuna et al. (2020) conducted a cross-sectional study that measured levels of perceived stress of students pursuing a Doctor of Medicine degree and students pursuing a Doctor of Podiatric Medicine degree. Infortuna et al. examined the relationship between personality traits, optimism, self-esteem, and perceived stress in allopathic medical students ($N = 154$) and podiatric medical students ($N = 150$). The Perceived Stress Scale (PSS-10), Temperament Evaluation of Memphis, Pisa, Paris, and San Diego Auto Questionnaire (TEMPS-A), Rosenberg Self-Esteem Scale, and Life Orientation Test Revised (LOT-R) were all completed by students anonymously (Infortuna et al., 2020).

Infortuna et al. (2020) compared the stress levels of each group of medical students and found that both programs' female students (allopathic medical students: $p = 0.0.038$; podiatric medical students: $p = 0.0.038$) reported higher levels of perceived stress than males in both groups. Cyclothymic temperaments and anxious traits were positive predictors of perceived stress in both allopathic and podiatric medical students, while hyperthymic temperaments and optimistic traits were negative predictors. Students pursuing various doctoral degrees in healthcare also reported feeling stressed. Despite the

variations in the curricula, female students report higher levels of perceived stress, and suggesting gender differences in the predictors for allopathic and podiatric medical students (Infortuna et al., 2020).

Infortuna et al.'s findings (2020) suggest allopathic and podiatric medical students would be able to build greater resilience and experience less stress if a more optimistic environment was created in medical schools. Infortuna et al. study also showed that the temperament feature known as cyclothymia, which is characterized by a propensity to change emotional moods fast, was a salient predictor of stress. Supportive psychological programs are frequently used to improve medical students' psychological and emotional welfare. It would be possible to create and carry out psychological programs with optimism training that could be used by many institutions.

Employees in medical and helping professions generally are at increased risk for job-related stress. Kowalska et al. (2021) assessed the level of generalized stress, occupational burnout syndrome, and occupational stress in a group of professionally active physiotherapists. Kowalska et al. also sought to determine which psychosocial and physical factors (work characteristics) were perceived as the most stressful by the study group as a whole and by different subgroups. This study included 70 physiotherapists working in outpatient clinics and sanatoria, with a mean age of 40.1 ± 11.6. The Inventory to Measure Coping Strategies with Stress Mini-COPE, the Subjective Assessment Work Questionnaire, the Oldenburg Burnout Inventory, the Perceived Stress Scale – 10 (PSS-10), and the Authorial Survey were all utilized (Kowalska et al., 2021). The PSS-10, developed by Cohen et al. (2017), consists of 10 items and assesses coping

strategies as well as subjective perception and feelings related to stressful events. The maximum score is 40 points, and the higher the score, the more intense the stress was (Kowalska et al., 2021).

Kowalska et al. (2021) observed that physiotherapists are among the professions that face a higher risk of being exposed to psychosocial risks at work, which was demonstrated by the intense nature of workplace stresses and the high degree of stress that the participating physiotherapists reported experiencing. Participants also reported significant levels of work stress (SWAQ scores). In contrast, PSS-10 results showed a moderate amount of overall stress, even though those values were on the high side (Kowalska et al., 2021). Additionally, Kowalska et al. found that women handled challenging circumstances differently from men. Compared to male physiotherapists, female physiotherapists employed self-distraction far more frequently and frequently sought emotional and practical support (Kowalska et al., 2021). Overall, Kowalska et al. found that a moderate degree of generalized stress, a high level of occupational stress, and a moderate level of occupational burnout were present in the study group of physiotherapists. Kowalska et al. emphasized the need for designing prevention and health protection strategies based on knowledge of the degree of occupational stress experienced by health care professionals (including physiotherapists) and from assessment of stress-inducing psychosocial and physical factors present at the given workplace.

Researchers have also examined stress and gender among university lecturers. Solanki and Mandaviya (2021) studied whether the perceived levels of stress among

university lecturers in India varied by gender. Overall, 86 participants, 51 men and 35 women completed the General Health Questionnaire (GHQ-12) and the Maslach Burnout Inventory. Solanki and Mandaviya found that when compared to male university lecturers, female university lecturers show a stronger correlation between job pressure and job stress. Compared to female university lecturers, men university lecturers tend to report greater health-related problems because of work stress. Female university lecturers' emotional distress and emotional weariness have an impact on their job stress, which causes emotional burnout in female responses. Emotional reticence scores show that male candidates are more likely to experience health problems, such as headaches, hypertension, and cardiac problems. Due to their various responsibilities in both their personal and professional lives, married women have reported more psychological anguish than other female responders. Compared to female respondents, male respondents are more likely to report having health-related concerns (Solanki & Mahdavia, 2021). Solanki and Mandaviya's study demonstrated the intricacy of cultural expectations and underlying gender stereotypes for both men and women. This could offer guidance on policy to lessen discrimination against women in the workplace. Organizations should, for instance, implement employee well-being practices like flexible scheduling, encourage supervisor assistance, and promote a compassionate and cooperative workplace atmosphere.

In a cross-sectional by Schadenhofer et al., (2018), 491 employees (311 female, 180 male) used Maslach Burnout Inventory to assess perceived occupational stress. When compared to men working with patients, women were more likely to experience

emotional weariness (25% vs. 18%, p = 0.003). The lack of task control and job decision latitude that are frequently encountered by employees with low education levels related to higher stress levels if the job demand is high (Schadenhofer et al., 2018). The study found that there is a need for gender-specific preventive tactics because of the distinct effects that gender has on how stressful the workplace is viewed.

<div align="center">**Occupational Stress and Education**</div>

Assari & Bazargan, (2019) conducted a study with American adults to compare racial and ethnic groupings for the relationship between educational attainment and occupational stress. The dependent variable was the level of education. Stress at work was the result. The moderators used were race and ethnicity. The covariates included age, gender, number of employees, and years in each position. Higher educational attainment has been shown to be associated with lower occupational stress levels (Assari & Bazargan, 2019). Job role, job demands, and work characteristics have a considerable impact on the stress among workers. Unpredictable, uncertain, unfamiliar, ambiguous, or uncontrollable situations at work may cause stress, and employees with higher education and knowledge of the situation may experience less stress.

Education, like other demographic variables, can contribute to occupational stress among mental health workers. Schadenhofer et al. (2018) examined the impact of factors such as gender, age, working field, family structure, education, and length of employment on occupational stress. To accomplish this Schadenhofer et al. surveyed 311 female and 180 male staff of an Austrian mental health facility and used a cross-sectional approach. The Maslach Burnout Inventory, a standardized, psychometrically validated

questionnaire, which includes measures for emotional exhaustion, depersonalization, and personal accomplishment, was used to determine the level of perceived work stress. Participants were split into groups based on whether they worked with or without patients in their line of employment (Schadenhofer et al., 2018).

Schadenhofer et al. (2018) reported when compared to men working with patients, women were more likely to experience emotional weariness (25% vs. 18%, p = 0.003). Men over the age of 45 were considerably less likely to experience burnout than women, but not women. Both sexes experienced significantly more depersonalization when their education was lower (p = 0.001 for men and p = 0.048 for women). The amount of time spent on the job had a significant impact on emotional weariness. The association between family structure and susceptibility to burnout was not found to be significant. The lack of task control and job decision latitude that are frequently encountered by employees with low education levels related to higher stress levels if the job demand is high (Schadenhofer et al., 2018). According to the findings of the Schadenhofer et al. (2018) study, gender, education, and occupational groupings have different levels of burnout vulnerability. Targeting groups at high risk for burnout and designing preventive programs to meet their unique needs are implications for occupational health promotion. Particular attention should be given to gender-specific coping mechanisms, disparities in how various genders perceive health issues, and variations in how people report their health. Schadenhofer et al. (2018), findings also point to the importance of concentrating health-promoting initiatives on the prevention of exhaustion in female nurses and employees over the age of 45. Preventive stress

reduction strategies for male employees should focus on avoidance behaviors and strengthen their informal and private networks.

Researchers have also studied stress and educational attainment as they relate to racial and ethnic differences. Assari and Bazargan (2019) posited that individual with higher educational attainment tend to be in better health and experience less workplace stress and that varied racial and ethnic groupings have different relationships between educational attainment and job-related stress. Assari and Bazargan conducted a cross-sectional study using archival data from 2015 American national health surveys conducted by the Centers for Disease Control and Prevention (CDC). Assari and Bazargan (2019) used the surveys from 15,726 employed adults to compare racial and ethnic groupings for the relationship between educational attainment and occupational stress. They analyzed the data using SPSS and linear regression models.

Assari and Bazargan (2019) compared the occupational stress levels of African Americans, Hispanics, and Whites with educational attainment and found that lower levels of work stress were linked to better educational attainment for all groups. The results of the study by Assari and Bazargan (2019) showed the relationship between high educational achievement and decreased occupational stress is systemically less for African Americans and Hispanics than it is for Whites, according to research on how race and ethnicity interact with educational attainment. These findings highlight the need to create policies and initiatives to remove institutional and structural hurdles from African Americans' and Hispanics' daily lives. Innovative social and economic policies are required. Policymakers may conduct an analysis of their employment and labor laws to

see how these laws affect not only the general populace but also how they contribute to or eliminate racial and ethnic disparities in health. It is possible to equalize employment of racial and ethnic groups by enforcing antidiscrimination laws and punishing the portions of the labor market that do not comply with them. To assist African Americans and Hispanics in obtaining better employment, policies and initiatives are also required.

Researchers have also examined educational attainment in hotel and information technology workers. Mohla (2021) conducted a quantitative study to examine the relationship between education (an independent variable) and occupational stress (a dependent variable) in employees of hotel and information technology industries. Mohla (2021) targeted study sample of 278 associates from Indian Information Technology Companies and 282 associates from Indian five-star hotels was selected. Data collection was done using the Shailendra Kumar's Occupational Stress Scale, and statistical analysis was done using MANOVA and ANOVA. The data were analyzed using the Duncan technique, ANOVA, and MANOVA, with high scores indicating low stress levels and low scores indicating higher stress levels. Mohla found that educational background of the employees had a significant impact on the combined dependent variable occupational stressor, according to the results of a two-way MANOVA. Additionally, ANOVA analysis of each dependent variable revealed that all occupational stress factors differed considerably depending on the employees' educational backgrounds.

The overall findings of Mohla's study (2021) indicated that high school diploma holders have the least stress, followed by those with a Bachelor of Technology, Master of Business Administration, and Master of Computer Applications degrees, with associates

who hold Master of Technology degrees experiencing the most stress of any group. Further analysis revealed that employees in the hospitality sector were found to be less stressed in relation to Role Clarity, Managerial Support, Context Sensitive, Job Capability Fit, Role Autonomy, and Overall Stress, while employees in the information technology sector were found to be less stressed on just two factors: Adequate Workload and Fair Compensation (Mohla, 2021). High school diploma holders have less stress because they have jobs that are less demanding than those with advanced degrees have.

Employees in the hotel and information technology sectors experience average levels of stress related to context sensitivity, comfort, role clarity, fair compensation, consistent role expectations, acceptable workload, managerial assistance, and role (Mohla, 2021). To reduce individual stress in the job, it is necessary to offer employees an appropriate, conducive environment and assistance. To improve their functional skills and reduce stress, employees should approach obstacles with positivity, protecting their job in the process of reducing stress. As a preventive precaution, it is advised that the stress level be regularly assessed.

Obtaining a formal education may pay off in terms of job satisfaction, which can lead to reduced occupational stress. Solomon et al. (2022) examined the relationship between educational attainment and work satisfaction ($k = 74$, $N = 134,924$) and the researchers found an effect size close to zero using a meta-analytical method. By highlighting potential trade-offs related to educational investments, the goal of Solomon et al.'s study was to better understand the relationship between education and work satisfaction. The job demands-resources (JD-R) model and research make a distinction

between working conditions and perceived stress, and they support the theory that there are significant trade-offs associated with achieving a higher educational degree. According to the job demands-resources model, highly educated workers are more likely to land occupations that offer them more resources but also come with higher demands than less educated workers (Solomon et al., 2022).

Solomon et al. (2022) found that education is positively associated with resources, which are negatively associated with stress. Education is specifically positively associated with income, autonomy, and variety, while there are negative correlations between autonomy and variety and job stress (Solomon et al., 2022). Additionally, job resources and job stress are mediators through which education is indirectly and favorably related to job satisfaction (Solomon et al., 2022). These findings suggest that those with higher levels of education experience higher job satisfaction, as there is a positive correlation between income and job stress.

The findings of Solomon et al. (2022) study emphasize the need for leaders to have more effective strategies to handle the increased demands placed on the highly educated workers. Solomon et al. (2022), did not advocate avoiding higher education to achieve higher job satisfaction. Organizations can prevent unintentionally pressuring employees to experience stress that lowers job satisfaction by eliminating incentives to adopt excessive work hours. It may be more effective for organizations to redefine the ideal employee as someone who is not completely always devoted to their work and available (Solomon et al., 2022). The highly educated employee may profit from

redefining the ideal worker because they are more likely to face demands and deal with work-related stress. Such development might aid in luring and keeping top talent.

Implications for Reducing Occupational Stress

There are many implications for reducing occupational stress including, reducing person-work interference due to stress, and improving organizational, and personal well-being. The capacity to bounce back quickly from hardship is resilience. Cognitive Behavior Therapy (CBT) can build, improve, and enhance the resilience, needed to shield individuals against the development of psychopathology at the public health level in humanitarian crises in healthcare workers (Irfan et al., 2020). To reduce individual stress on the job, it is necessary to offer employees an appropriate, conducive environment and assistance (Kowalska et al., 2021). To improve their functional skills and reduce stress, employees should approach obstacles with positivity, protecting their job in the process of reducing stress. As a preventive precaution, it is advised that the stress level be regularly assessed (Solomon et al., 2022).

Summary and Conclusions

The major themes presented in this literature review include perceived occupational stress and gender, education, and job skill level. Research has indicated that occupational stress is associated with wellbeing, and productivity outcomes are influenced by individual differences and work environment characteristics, job dissatisfaction, cardiorespiratory illness, and mental health (Ramaci et al., 2019; Schilling et al., 2019; Ugwuanyi et al., 2020).

The literature also indicates that Cognitive Behavior Therapy can build, improve, enhance resilience, needed to shield individuals against the development of psychopathology at the public health level in humanitarian crises in healthcare workers (Irfan et al., 2020; Ugwuanyi et al., 2020). Stress management methods can be used by the organization and the employee to manage stress if it's identified and treated effectively. However, various coping skills could help ease the discomfort or tension that results from exposure to the stressors that exceed the employees' ability to cope. Coping mechanisms, such as favorable comparison, can significantly differ in how one adapts (Ngirande, 2021).

There is a notable literature gap on the relationship between education, gender, and skill level on perceived occupational stress. Identifying the individual and environmental causes of stress is essential to develop strategies and coping skills to reduce stress this quantitative study involved utilizing secondary data and survey design. The researcher explored the relationship the variables gender, education, and work skill level as independent variables and perceived occupational stress as the dependent variable. The dependent variable is perceived occupational stress on the PSS14 scale (Cohen et al., 2017). As a result, this study can contribute to our understanding of the relationship between perceived occupational stress, gender, education, and work skill level.

This study's remaining chapters addressed methods and methodology, data analysis, findings, and recommendations. Chapter 3 provides a description of the research design and methodology that guided this research. A quantitative research approach is

explained as necessary to understand the data. My role as the researcher, data collection

method, participant demographics, and ethical procedures are also outlined in the

following chapter.

Chapter 3: Research Method

The study examined the relationship between gender, education, and perceived occupational stress among workers. This chapter presented information under the following sections: research design and rationale, study population, sampling procedure, instrumentation and operationalization of constructs, data analysis, threats to validity, and ethical considerations. Gender and education were the independent variables, while perceived occupational stress was the dependent variable. Gender was categorical, and perceived occupational stress was continuous.

Research Design and Rationale

This correlational quantitative research study examined the relationship between perceived occupational stress, gender, and education among skilled workers, midlevel workers, senior executives, and unskilled workers. The independent variables in this study were gender and education, while the dependent variable was perceived occupational stress. Accordingly, the study was conducted using a cross-sectional design. Such a design entails the collection of data on more than one variable, on more than one case, and at one point in time in order to determine patterns of association between the variables (Bryman, 2016). Because this study did not seek to manipulate variables as is the case with experimental designs, but rather determined patterns of association between variables, it rendered the correlational design the most appropriate for the purpose of the study.

Research Questions

The objectives of this study were to examine the relationship between perceived occupational stress, gender, and education among skilled workers, midlevel workers, senior executives, and unskilled workers. The study was based on four major research questions, and the null and alternative hypotheses corresponding to the research questions as specified below.

Research Question 1: Is there a relationship a relationship between gender and perceived occupational stress?

$H_0 1_:$ There is no significant relationship between gender and perceived occupational stress.

$H_1 1_:$ There is a significant relationship between gender and perceived occupational stress.

Research Question 2: Does the relationship between gender and perceived occupational stress differ across the four skill levels of worker?

$H_0 2_:$ There is no significant relationship between gender and perceived occupational stress across four different skill levels of worker.

$H_1 2_:$ There is a significant relationship between gender and perceived occupational stress across four different skill levels of worker.

Research Question 3: Is there a relationship between education and perceived occupational stress?

$H_0 3_:$ There is no significant relationship between education and perceived occupational stress.

$H_1 3_:$ There is a significant relationship between education and perceived occupational stress.

Research Question 4: Does the relationship between education and perceived occupational stress differ across the four skill levels of worker?

$H_0 4_:$ There is no significant relationship education and perceived occupational stress across four different skill levels of worker.

$H_1 4_:$ There is a significant relationship between education and perceived occupational stress across four different skill levels of worker.

Methodology

The study was based on a quantitative approach in which the data collection and analysis were premised on numerically measurable variables. Quantitative research approaches involve collecting and analyzing numerical data in order to describe characteristics, find correlations, or test hypotheses (Patten & Newhart, 2017), which was exactly what I sought to do in this study. The data were based on an earlier survey conducted to distinguish an at-risk population among stressed workers and to establish a threshold over which an action is urgently required (Dutheil et al., 2017).

Population

The target population comprised workers. The workers were divided into four distinct categories: skilled (technicians/mechanics, educators, butcher, etc.), midlevel skilled (consultants, managers, administrative agent, etc.), unskilled workers (drivers/forklift operators, storekeepers, etc.), and senior executives.

Sampling and Sampling Procedures

The study was based on a reanalysis of the Dutheil et al. (2017) original data. The data were generated from 500 workers (248 men and 252 women). The population of this study was categorized into four groups, that is, skilled, midlevel skilled, senior executives, and unskilled workers. The total sample size was 500, with 110 individuals in the skilled group, 139 in the midlevel group, 175 in the unskilled group, and 76 in the senior executives group.

Procedures for Recruitment, Participation, and Data Collection

The study was based on archival data generated by Dutheil et al. (2017). In this study, workers were recruited during annual work medical examinations, which are evaluations intended to review family history, vital signs, and heart and lung health, as well as to conduct a full physical check.

Participation

In the study by Dutheil et al. (2017), no consent was required by participants because they used anonymous data from standard clinical records and only accessed responses in questionnaires. Dutheil et al. (2017) used data that was collected as part of a standard yearly evaluation.

Archival Data

The data for this study was archival in nature and obtained through Dutheil et al. (2017). The data included anonymous data from standard clinical records, which were collected using a VAS. The VAS was originally developed and used to assess pain perceptions (Rosas et al., 2017), and it has been used for assessing diverse subjective

feelings (Boshuizen et al., 2013; Dutheil et al., 2012; Dutheil et al., 2017), including

perceived stress (Barré et al., 2017).

Instrumentation and Operationalization of Constructs

The data to be used in this study were generated using a VAS attributed to Dutheil

et al. (2017). The VAS was originally a pain rating scale that was first used in 1921 by

Hayes and Patterson as a method that supervisors could use to rate their workers'

performance (Delgado et al., 2018). The instrument is commonly used in epidemiological

and clinical research environments to measure and assess the frequency and intensity of

various symptoms (Langley & Sheppeard, 1985). The scale is designed in such a way that

it can capture the amount of pain that a patient feels across a continuum ranging from

none to an extreme amount of pain (Langley & Sheppeard, 1985). VASs are often

completed by patients, but they can as well be used in eliciting opinions from health

professionals (Crichton, 2001), hence the justification for the choice of a VAS in this

study. Permission to use the data generated using the VAS for this study was sought from

Dutheil et al. (2017).

Independent Variables

Three independent variables were considered in this study: gender, skill level, and

education. These too constituted stratification variables in the study. Gender was

measured as a categorical variable taking on two values, with 1 representing male and 2

representing female. Similarly, education was measured as a categorical variable taking

on three values, with 1 representing high-school diploma, 2 representing bachelor's

degree, and 3 representing master's degree. Finally, skill level was be measured as a

categorical variable with four separate values, 1 representing unskilled workers, 2 representing midlevel workers, 3 representing skilled workers, and 4 representing senior executives. Skill level was an independent variable as it was a predictor variable for the regression analyses. While skill level is used to describe the population, it is also a predictor variable. Skill level (unskilled, midlevel, skilled, and/or senior executive) was also looked at to see how well it predicted the dependent variable (perceived occupational stress).

Dependent Variable

The dependent variable of this study was perceived occupational stress. The variable was measured using 14 items contained in the VAS used by Dutheil et al. (2017). These items were amalgamated using a statistical software (SPSS) to generate an index value representing perceived occupational stress. Ultimately, perceived occupational stress was considered as a continuous variable.

Data Analysis Plan

Once the archival data was obtained, they were cleaned to ensure consistency and useability. Before computing scores, I evaluated the internal reliability with Cronbach's alpha scale. When every item measures the same attribute or construct, the Cronbach's alpha scale is said to have internal consistency (Gliem & Gliem, 2003). A Cronbach's alpha reliability analysis was conducted on the composite score to ensure internal consistency among the dependent variable of perceived occupational stress. The Cronbach's alpha coefficient was then evaluated using the guidelines suggested by George and Mallery (2018) where $> .9$ = excellent, $> .8$ = good, $> .7$ = acceptable, $> .6$ =

questionable, $> .5 =$ poor, and $\leq .5 =$ unacceptable reliability. To prepare for data

analysis, a composite score was calculated for perceived occupational stress according to

survey/instrument instructions. The data were on Microsoft Excel. The data was then

uploaded to SPSS Version 27 for analysis.

Threats to Validity

According to Patino and Ferreira (2018), a research study's validity is determined

by how accurately the findings among its participants reflect those of comparable people

outside the study. Both internal and external validity are factors in a research study's

validity. The degree to which the observed results truly reflect the state of the population

and are not the consequence of methodological flaws is known as internal validity. Many

elements, including flaws in measurement or participant selection, can jeopardize a

study's internal validity. While a study's internal validity refers to how thoroughly it was

done, external validity refers to how generalizable the results are across different

populations, environments, contexts, and historical periods. Selection bias and situational

factors, such as time and place, that may alter the generalizability of results are threats to

external validity. All quantitative research designs are vulnerable to risks to internal and

external validity, according to Mertler (2016). To prevent the validity and accuracy of the

research findings and conclusions from being compromised by any potential errors that

these dangers might introduce into the research study, they must be regulated or

considered.

Internal validity refers to the experimental procedures or experiences of the

participants that threaten the researcher's ability to make accurate assumptions about the

data, such as if causal relationships in the data exist (Creswell & Creswell, 2018). Due to the nature of the research design, the internal validity of the study may be lower than that of a true experimental design. For the purposes of this study, a nonexperimental archival design was used. This means that the independent variables within the data were not manipulated, and instead were based on pre-existing groups. Additionally, the data was taken from an archival dataset. These factors may indicate that a causal relationship may not be present within the data. External validity, on the other hand, refers to a researcher's ability to extend inferences drawn from a study or generalize to other persons, other settings, or past or future situations (Creswell & Creswell, 2016). For the purposes of this study, the external validity of the data was high. This was due to the use of pre-existing groups, as well as the act of administering a survey in a more naturalistic environment. Therefore, it is possible to generalize the results among workers.

Prior to hypothesis testing, descriptive statistics were run and presented for the demographic questions as well as gender, education, and four skill-level variables. Descriptive analyses are used to summarize basic features of the data in a more meaningful way for simpler interpretation (Kemp et al., 2018). Means and standard deviations were calculated for the continuous/scale variables (perceived occupational stress), while frequencies and percentages were calculated for the categorical questions (gender and education level). Hypothesis testing was conducted to address each research question.

Research Question 1

The first study question addressed whether there is a relationship between gender and perceived occupational stress. To answer the first research question, a point biserial correlation analysis was conducted to assess the relationship between gender (male vs. female) and perceived occupational stress. A point biserial correlation is a special case of the Pearson correlation and is the appropriate analysis when the goal of the researcher is to assess the relationship between a continuous variable (perceived occupational stress) and a dichotomous variable (gender). Cohen's standard was used to evaluate the strength of the relationship, where .1, .24, and .37 represent small, medium, and large effect sizes (Cohen, 1988). These effect size thresholds assume that both values of the binary variable are equally likely to occur (McGrath & Meyer, 2006; Rice & Harris, 2005). The correlation coefficient (r) is a bivariate measure of association (or strength) of the relationship between two variables, and the direction of that relationship. Correlation coefficients range from 0 (no relationship) to the absolute value of 1 (perfect linear relationship). A positive coefficient indicates that as one variable increases, the other variable also increases. A negative coefficient, on the other hand, indicates that as one variable increases, the other variable decreases. Cohen's standard effect sizes were used to evaluate the effect size of the correlation coefficient, where 0.10 to .29 represents a weak association between the variables, 0.30 to 0.49 represents a moderate association, and 0.50 or larger represents a strong association (Cohen, 1988).

Research Question 2

The second study question addressed whether the relationship between gender and perceived occupational stress differs across the four skill levels of workers. A regression analysis was conducted to examine this question with perceived occupational stress as the dependent variable, gender as the independent variable, and skill level as the moderating variable. A multiple linear regression assesses the relationship among a set of nominal, ordinal, or interval/ratio predictor variables (gender and skill level) on an interval/ratio criterion variable (perceived occupational stress). The F-test was used to assess whether the set of independent variables collectively predicts the dependent variable. R-squared, the multiple correlation coefficient of determination, was reported and used to determine how much variance in the dependent variable can be accounted for by the set of independent variables collectively. If the overall model is significant, additional t tests were used to determine the significance of each individual predictor and beta coefficients were used to determine the magnitude of prediction for each independent variable. For significant predictors, for every one-unit increase in the predictor (gender, skill level), perceived occupational stress increased or decreased by the magnitude of the unstandardized beta coefficient.

Assumptions

Prior to running the multiple linear regression, the assumptions of normality of residuals, homoscedasticity of residuals, absence of multicollinearity, and lack of outliers were assessed. The assumption of normality of residuals requires that the residuals of the regression model follow a normal distribution (bell-shaped curve). The assumption of

normality was examined using a Q-Q scatterplot of the residuals (Bates et al., 2014; DeCarlo, 1997; Field, 2017). For the assumption of normality to be met, the quantiles of the residuals must not strongly deviate from the theoretical quantiles (aka a straight line). Strong deviations could indicate that the parameter estimates were unreliable. Next, the assumption of homoscedasticity requires that there is no underlying relationship between the residuals and the fitted values. The assumption was examined with a scatterplot of the residuals and the fitted values (Bates et al., 2014; Field, 2017; Osborne & Walters, 2002). The assumption of homoscedasticity is met if the points appear randomly distributed with a mean of zero and no apparent curvature. The absence of multicollinearity assumption implies that the predictor variables are not too highly correlated with one another and was assessed using variance inflation factors (VIF). VIF values over 10 suggest the presence of multicollinearity (Menard, 2009). Finally, lack of outliers determined as any observation that has a studentized residual (Field, 2017; Pituch & Stevens, 2015) that exceeds the .999 quantile of a t-distribution, with the degrees of freedom being n-1, where n is the sample size.

Research Question 3

The third study question is, is there a relationship a relationship between education and perceived occupational stress. A Spearman's rank correlation was conducted to determine if a significant relationship exists between education and perceived occupational stress. A Spearman's correlation is the appropriate analysis when one variable is categorical (education) and one is continuous (perceived occupational stress). The correlation coefficient (r) is a bivariate measure of association (or strength) of

the relationship between two variables, and the direction of that relationship. Correlation coefficients, range from 0 (no relationship) to the absolute value of 1 (perfect linear relationship). A positive coefficient indicates that as one variable increases, the other variable also increases. A negative coefficient, on the other hand, indicates that as one variable increases, the other variable decreases. Cohen's standard effect sizes was used to evaluate the effect size of the correlation coefficient, where 0.10 to .29 represents a weak association between the variables, 0.30 to 0.49 represents a moderate association, and 0.50 or larger represents a strong association (Cohen, 1988).

Prior to the Spearman's correlation analysis, the assumption of a monotonic relationship was assessed (Conover & Iman, 1981). A monotonic association means that the relationship between the variables does not change direction. This assumption was violated if the relationship between the variables shifts from positive to negative or vice versa. The assumption of monotonicity was assessed graphically with a scatterplot.

Research Question 4

The fourth study question is, does the relationship between education and perceived occupational stress differ across the four skill levels of worker. A regression analysis was conducted to examine this question with perceived occupational stress as the dependent variable, education as the independent variable, and skill level as the moderating variable. A multiple linear regression assesses the relationship among a set of nominal, ordinal, or interval/ratio predictor variables (education and skill level) on an interval/ratio criterion variable (perceived occupational stress). The F-test was used to assess whether the set of independent variables collectively predicts the dependent

variable. *R*-squared, the multiple correlation coefficient of determination, was reported and used to determine how much variance in the dependent variable can be accounted for by the set of independent variables collectively. If the overall model is significant, additional *t*-tests are used to determine the significance of each individual predictor and beta coefficients are used to determine the magnitude of prediction for each independent variable. For significant predictors, every one unit increase in the predictor (education, skill level), perceived occupational stress will increase or decrease by the magnitude of the unstandardized beta coefficient.

Assumptions

Prior to running the multiple linear regression, the assumptions of normality of residuals, homoscedasticity of residuals, absence of multicollinearity, and lack of outliers were assessed. The assumption of normality was examined using a Q-Q scatterplot of the residuals (Field, 2017; Bates et al., 2014; DeCarlo, 1997). The assumption of homoscedasticity was examined with a scatterplot of the residuals and the fitted values (Field, 2017; Bates et al., 2014; Osborne & Walters, 2002). The assumption of multicollinearity was assessed using VIF factors, in which any VIF over 10 suggests the presence of multicollinearity. Finally, lack of outliers was determined as any observation that has a studentized residual (Field, 2017; Pituch & Stevens, 2015) that exceeds the .999 quantile of a *t*-distribution, with the degrees of freedom being *n*-1, where *n* is the sample size.

Ethical Procedures

When conducting research, it is important that researchers execute their duties

without deception or manipulation to enhance the validity of their research. In conducting

this research, ethical guidelines suggested by the Institutional Review Board (IRB) and

Federal regulations were followed. Although the study was based on archival data,

permission to conduct the research was sought from IRB at Walden University. The other

guideline entails treating the owner of the data ethically. Written permission expressing

interest in using archival data was not sought from Dutheil et al. (2017), as this was a

publicly available data.

Summary

In summary, the purpose of this study is to determine if there are any significant

relationships between gender, education and perceived occupational stress among skilled,

mid-level, and unskilled workers. To accomplish this, an archival dataset was obtained

from Dutheil et al. (2017). The dataset included participants occupation, skill level,

gender, education, and responses to 14 VAS questions relating to perceived occupational

stress. To prepare for data analysis, the data was cleaned for any missing data or outliers.

Additionally, a composite score was calculated for perceived occupational stress using

the 14 VAS questions according to instrument instructions. Four research questions were

examined for this study. To answer the first research question, a point biserial correlation

analysis was conducted to assess the relationship between gender (male vs female) and

perceived occupational stress. A point biserial correlation is a special case of the Pearson

correlation and is the appropriate analysis when the goal of the researcher is to assess the

relationship between a continuous variable (perceived occupational stress) and a dichotomous variable (gender).

To answer the second research question, a multiple linear regression was conducted to determine if gender and skill level significantly predicted perceived occupational stress. To address research question three, a Spearman's correlation was conducted to determine if a significant relationship existed between education, skill level, and perceived occupational stress. To answer the fourth research question, a final multiple linear regression was conducted to determine if education and skill level significantly predicted perceived occupational stress. Prior to Spearman's correlation analysis, the assumption of a monotonic relationship was assessed. Finally, prior to each regression, the assumptions of normality, homoscedasticity, multicollinearity, and lack of outliers was assessed. The next chapter analyzed and presented these results.

Chapter 4: Results

Introduction

The purpose of this correlational quantitative research study was to examine the

relationship between perceived occupational stress, gender, and education among senior

executives, skilled workers, midlevel workers, and unskilled workers. To accomplish

this, archival data was obtained through Dutheil et al. (2017). The data included

anonymized standard clinical records including a VAS as well as demographic

information on each patient. To prepare for data analysis, any outliers or missing data

were removed from the dataset. Outliers were assessed using boxplots, and an outlier was

defined as any variable that exceeds the box and whiskers of the plot. A composite score

for perceived occupational stress was calculated according to the instrument instructions.

Specifically, all items in the 14-item questionnaire were summed together to create a total

stress score for each participant. Additionally, a Cronbach's alpha reliability analysis was

conducted and presented. Prior to hypothesis testing, summary statistics were conducted

for the variables of interest. Means and standard deviations were presented for continuous

variables, while frequencies and percentages were calculated for the categorical variables.

Four hypothesis tests, two correlations and two multiple linear regressions, were

conducted and presented to answer the research questions.

Research Questions and Hypotheses

The following research questions and hypotheses are examined throughout the

chapter:

Research Question 1: Is there a relationship between gender and perceived

occupational stress?

H_01:   There is no significant relationship between gender and perceived

occupational stress.

H_11:   There is a significant relationship between gender and perceived

occupational stress.

Research Question 2: Does the relationship between gender and perceived

occupational stress differ across the four skill levels of worker?

H_02:   There is no significant relationship between gender and perceived

occupational stress across four different skill levels of worker.

H_12:   There is a significant relationship between gender and perceived

occupational stress across four different skill levels of worker.

Research Question 3: Is there a relationship between education and perceived

occupational stress?

H_03:   There is no significant relationship between education and

perceived occupational stress.

H_13:   There is a significant relationship between education and perceived

occupational stress.

Research Question 4: Does the relationship between education and perceived

occupational stress differ across the four skill levels of worker?

H_04:   There is no significant relationship education and perceived

occupational stress across four different skill levels of worker.

H_14: There is a significant relationship between education and perceived occupational stress across four different skill levels of worker.

Summary Statistics

Prior to the hypothesis testing, summary statistics were conducted for the variables of interest. Frequencies and percentages were conducted for the categorical variables (sex, professional roles, and education). For the category of sex, most participants identified themselves as female ($n = 252$, 50%). For professional roles, the most common response among participants was unskilled workers ($n = 176$, 35.20%). Finally, the most frequently observed category of education was high-school diploma (US)/A-level (UK) or less ($n = 224$, 44.8%). Frequencies and percentages are presented in Table 1.

Additional means and standard deviations were conducted for the continuous variables (perceived occupational stress and age of participants). The results indicated that the average age of workers was approximately 40 years. Additionally, perceived occupational stress had an average of approximately 35. This means that the current study data set with 500 participants had perceived occupational stress with the mean of approximately 35, and the standard deviation was 7.62.

The summary statistics can be found in Table 2.

Table 1

Frequency Table for Sex, Professional Roles, and Education

Variable	*n*	*%*
Sex		
Male	248	49.6
Female	252	50.4
Missing	0	0.00
Professional roles		
Unskilled workers	176	35.20
Skilled workers	110	22.00
Midlevel workers	139	27.80
Senior executives	75	15.00
Missing	0	0.00
Education		
High-school diploma (US)/A-level (UK) or less	224	44.80
Bachelor/undergraduate	177	35.40
Master's degree / postgraduate	99	19.80
Missing	0	0.00

Table 2

Means and Standard Deviations for Age and Perceived Occupational Stress

Variable	*M*	*SD*	*n*
Age	40.38	11.24	500
Perceived occupational stress	35.20	7.62	500

Reliability Analysis

A Cronbach's alpha coefficient was calculated for the perceived occupational stress scale. The Cronbach's alpha coefficient was evaluated using the guidelines suggested by George and Mallery (2018), where $> .9$ = excellent, $> .8$ = good, $> .7$ = acceptable, $> .6$ = questionable, $> .5$ = poor, and $\leq .5$ = unacceptable. The items for perceived occupational stress had good reliability according to these guidelines. Table 3 presents the results of the reliability analysis.

Table 3

Reliability Table for Perceived Occupational Stress

| Scale	No. of items	α	Lower bound	Upper bound
Perceived occupational stress	14	.84	.82	.86

Tests of Assumptions

Prior to hypothesis testing for Research Question 2, the assumptions of normality, homoscedasticity, multicollinearity, and lack of outliers were tested.

Normality

The assumption of normality was assessed by plotting a P-P scatterplot (DeCarlo, 1997). For the assumption of normality to be met, the quantiles of the residuals must not strongly deviate from a straight line. Strong deviations could indicate that the parameter estimates are unreliable. The scatterplot suggests that the assumption was met. Figure 1 presents a P-P scatterplot of the model residuals.

Figure 1

P-P Scatterplot for Normality of the Residuals for Research Question 2
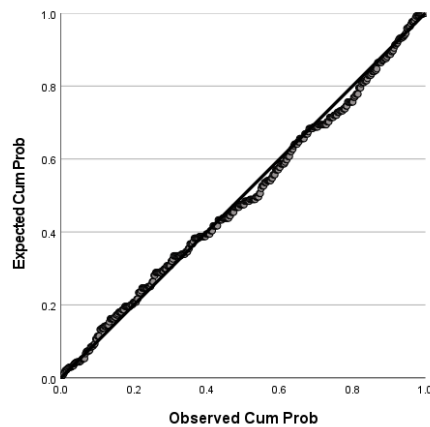
Homoscedasticity

Homoscedasticity was evaluated by plotting the residuals against the predicted values (Bates et al., 2014; Field, 2017; Osborne & Walters, 2002). The assumption of homoscedasticity is met if the points appear randomly distributed with a mean of zero and no apparent curvature. The scatterplot suggests that the assumption was met. Figure 2 presents a scatterplot of predicted values and model residuals.

Figure 2

Residuals Scatterplot Testing Homoscedasticity for Research Question 2
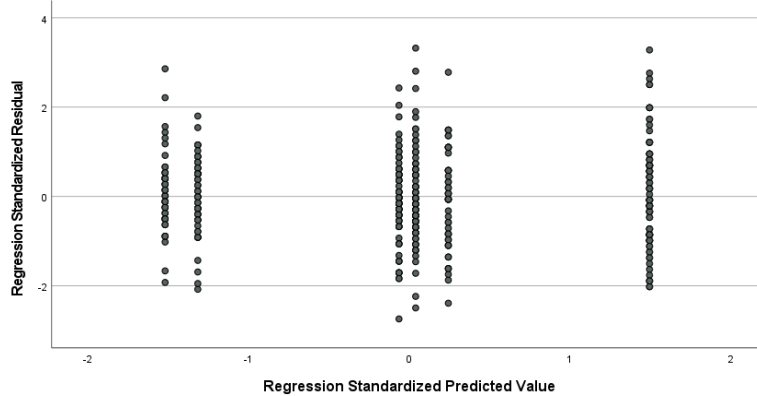
Multicollinearity

VIFs were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the model. VIFs greater than 5 are cause for concern, whereas VIFs of 10 should be considered the maximum upper limit (Menard, 2009). All predictors in the regression model have VIFs less than 10. Table 4 presents the VIF for each predictor in the model.

Table 4

Variance Inflation Factors for Professional Roles and Sex

Variable	VIF
Professional role (reference cat. unskilled workers)	
Skilled workers	1.27
Midlevel workers	1.31
Senior executives	1.26
Sex (reference cat. male)	
Female	1.08

Outliers

To identify influential points, Cook's distances were calculated and assessed. An outlier was defined as any value over the 50th percentile (Cook, 1977). There were two outliers present in the data. The outliers were identified and removed from the analysis.

Prior to hypothesis testing for Research Question 4, the assumptions of normality, homoscedasticity, multicollinearity, and lack of outliers were conducted.

Normality

The assumption of normality was assessed by plotting a P-P scatterplot (DeCarlo, 1997). The scatterplot suggests that the assumption was met. Figure 3 presents a P-P scatterplot of the model residuals.

Figure 3

*P-P Scatterplot for Normality of the Residuals for Research Question 4*
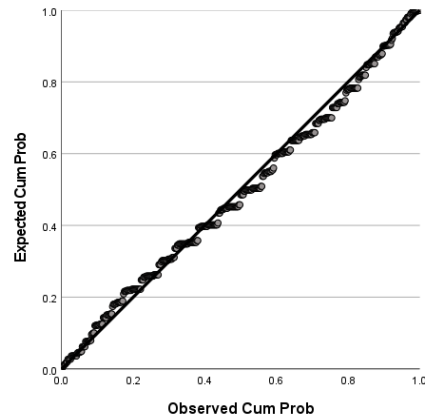
Homoscedasticity

Homoscedasticity was evaluated by plotting the residuals against the predicted values (Bates et al., 2014; Field, 2017; Osborne & Walters, 2002). The scatterplot suggests that the assumption was met. Figure 4 presents a scatterplot of predicted values and model residuals.

Figure 4

Residuals Scatterplot Testing Homoscedasticity for Research Question 4
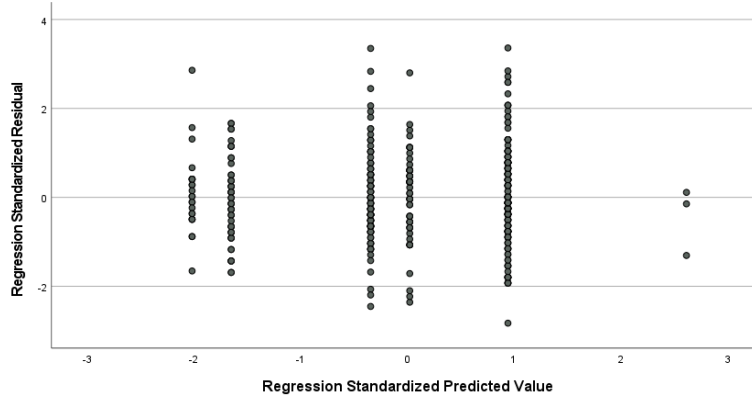
Multicollinearity

VIFs were calculated to detect the presence of multicollinearity between predictors. There were no variables with a VIF over 10. Therefore, the assumption was met. Table 5 presents the VIF for each predictor in the model.

Table 5

Variance Inflation Factors for Education and Professional Roles

Variable	VIF
Education (ref cat. high school diploma)	
Bachelor's degree/ undergraduate	3.77
Master's degree/ postgraduate	6.62
Professional role (ref cat. unskilled workers)	
Skilled workers	2.03
Midlevel workers	4.64
Senior executives	6.65

Outliers

To identify influential points, Cooks distances were calculated and assessed. An outlier was defined as any value over the 50th percentile (Cook, 1977). There were two outliers present in the data. The outliers were identified and removed from the analysis.

Results

Research Question 1

To answer the first research question, a point biserial correlation analysis was conducted to assess the relationship between gender (male vs female) and perceived occupational stress. A point biserial correlation is a special case of the Pearson correlation and is the appropriate analysis when the goal of the researcher is to assess the relationship between a continuous variable (perceived occupational stress) and a

dichotomous variable (gender). Cohen's standard was used to evaluate the strength of the relationship, where .1, .24, and .37 represent small, medium, and large effect sizes (Cohen, 1988). These effect size thresholds are based on the assumption that both values of the binary variable are equally likely to occur (Rice & Harris, 2005; McGrath & Meyer, 2006).

The result of the point biserial correlation was examined based on an alpha value of .05. There were no significant correlations between any pairs of variables. This suggests that there was not a significant relationship between someone's gender and their levels of perceived stress at the workplace. Table 1 presents the results of the correlation.

Table 6

Point Biserial Correlations for Gender and Perceived Occupational Stress

Combination	*r*	*n*	*p*
Gender–Perceived occupational stress	.06	498	.219

Research Question 2

To answer the second research question, a multiple linear regression was conducted to determine if gender and skill level significantly predicted perceived occupational stress. The results of the linear regression model were not significant, $F(4,495) = 1.23$, $p = .293$, $R^2 = .01$, indicating professional roles and sex did not collectively explain a significant proportion of variation in perceived occupational stress.

Additionally, none of the individual predictors in the model were significant (*p*-values for all coefficients > .05). Table 7 summarizes the results of the regression model.

Table 7

Results for Linear Regression With Professional Roles and Sex Predicting Perceived Occupational Stress

DV = stress	*B*	*SE*	β	*t*	*p*
(Intercept)	35.39	0.69	0.00	51.64	< .001
Professional roles (ref cat. unskilled workers)					
Skilled workers	-1.16	0.93	-0.06	-1.25	.212
Midlevel workers	-1.27	0.87	-0.08	-1.47	.142
Senior executives	-0.76	1.07	-0.04	-0.71	.477
Sex (ref cat. male)					
Female	1.08	0.71	0.07	1.51	.130

Research Question 3

To address research question three, a Spearman's rank correlation was conducted to determine if a significant relationship existed between education, skill level, and perceived occupational stress.

The results of the Spearman's correlation indicated that there were eight significant comparisons between the variables of interest. Specifically, there were significant relationships between all levels of professional role and education. These

results suggest that there were significant positive relationships between skilled workers and having a bachelor's degree, mid-level workers and having a bachelor's degree, unskilled workers and having a high school diploma, and senior executives and having a master's degree. Additionally, there were significant negative correlations between being a skilled worker and having a master's degrees, between being a mid-level worker and having a high school diploma, being a unskilled worker and having a bachelor's or master's degree, being a senior executive and being a high school graduate, and being a senior executive and having a bachelor's degree. Table 8 presents the results of the correlations.

Table 8

Spearman's Correlation Results Among Perceived Occupational Stress, Education, and Professional Role

Variable	1	2	3	4	5	6	7
1. Perceived occupational stress	-						
2. Skilled workers	-0.01	-					
3. Midlevel workers	-0.05	0.33**	-				

	1	2	3	4	5	6	7
4. Unskilled workers	0.07	-0.39**	-0.46**	-			
5. Senior executives	-0.02	-0.22**	-0.26**	-0.31**	-		
6. High school diploma	0.03	0.02	-0.56**	0.79**	-0.38**	-	
7. Bachelor's degree	0.00	0.20**	0.61**	-0.52**	-0.31*	-0.67**	-
8. Master's degree	-0.03	-0.26**	-0.04	-0.37**	0.85**	-0.45**	-0.37*

**$p < .01$.

Research Question 4

   To answer the fourth research question, a final multiple linear regression was conducted to determine if education and skill level significantly predicted perceived occupational stress. The results of the linear regression model were not significant, *F*

$(5,494) = 1.05$, $p = .382$, $R^2 = .01$, indicating education and professional roles did not explain a significant proportion of variation in perceived occupational stress. Additionally, none of the individual predictors in the model were significant (p-values for all coefficients $> .05$). Table 9 summarizes the results of the regression model.

Table 9

Results for Linear Regression with Education and Professional Roles Predicting

Perceived Occupational Stress

DV = stress	B	SE	β	t	p
(Intercept)	35.92	0.59	0.00	61.35	$< .001$
Education (ref cat. high school diploma)					
Bachelor's degree/undergraduate	1.88	1.38	0.12	1.36	.174
Master's degree/postgraduate	1.76	2.20	0.09	0.80	.424
Professional role (ref cat. unskilled workers)					
Skilled workers	-2.21	1.17	-0.12	-1.88	.061
Midlevel workers	-2.98	1.64	-0.18	-1.81	.070
Senior executives	-2.98	1.64	-0.13	-1.16	.246

Summary

Overall, the purpose of this quantitative correlational study was to determine the relationship between perceived occupational stress, gender, and education among skilled workers, mid-level workers, and unskilled workers. The data for this study were archival

in nature and were obtained through Dutheil et al. (2017). To prepare the data for analysis, dummy coding was used on the categorical variables and a composite score was created for perceived occupational stress according to instrument instructions. Prior to hypothesis testing, summary statistics were conducted for each of the variables of interest, and a reliability analysis was conducted on the composite score variable. The Cronbach alpha reliability analysis indicated that the scale had a good reliability. Additionally, prior to each regression analysis, the assumptions of normality, homoscedasticity, multicollinearity, and lack of outliers were assessed and met. To answer the first research question, a point biserial correlation analysis was conducted to assess the relationship between gender (male vs female) and perceived occupational stress. The result of the correlation was examined based on an alpha value of .05. There were no significant correlations between any pairs of variables that is gender (male vs female) and perceived occupational stress. To answer the second research question, a multiple linear regression was conducted and presented. The results of the regression were not significant, suggesting that there was no predictive relationship of professional role and gender on perceived occupational stress. To answer the third research question, a Spearman's correlation was conducted. The results of the Spearman's correlation indicated that there were eight significant comparisons between the variables of interest. Specifically, there were significant relationships between all levels of professional role and education. These results suggest that there were significant positive relationships between skilled workers and having a bachelor's degree, mid-level workers and having a bachelor's degree, unskilled workers and having a high school diploma, and senior

executives and having a master's degree. Additionally, there were significant negative correlations between being a skilled worker and having a master's degrees, between being a mid-level worker and having a high school diploma, being a unskilled worker and having a bachelor's or master's degree, being a senior executive and being a high school graduate, and being a senior executive and having a bachelor's degree. Finally, to answer the final research question, an additional multiple linear regression analysis was conducted. The results of the regression were not significant, suggesting that there was no predictive relationship of professional role and education on perceived occupational stress. The next chapter will discuss the implications of these results in relation to the previous literature.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

Occupational stress is a common problem among workers, and it may have implications for productivity, job satisfaction, and employee wellness. Occupational stress is recognized as one of the major challenges facing employees/workers across the globe in the 21st century (Zare et al., 2017). Many senior executives, skilled workers, midlevel workers, and unskilled workers experience high levels of perceived occupational stress in their work environment (Ogba et al., 2020). Research shows that occupational stress may be associated with burnout, anxiety, posttraumatic stress disorder, and depression (Scheepstra et al., 2020). The purpose of this study was to examine the relationships between perceived occupational stress, gender, and education among senior executives, skilled workers, midlevel workers, and unskilled workers. I used publicly available secondary data from the Public Library of Science's at-risk and intervention thresholds of occupational stress using a PSS14 survey of 500 participants during annual work medical examinations by a random sample of workers from five occupational health centers from June 2017 (Dutheil et al., 2017).

The independent variables in the study were gender, occupational skill levels, and education, while the dependent variable was perceived occupational stress. I used a correlational quantitative approach with a cross-sectional study design to examine the relationships between the independent and dependent variables. The first research question was analyzed with a point biserial correlation analysis to assess the relationship between gender (male vs. female) and perceived occupational stress. The third research

question was analyzed with a Spearman's correlation. The second and fourth research questions were analyzed with multiple linear regression.

The results for the first research question indicated that there was not a significant relationship between someone's gender and their levels of perceived stress at the workplace. The results for the second research question were not significant, suggesting that there was no predictive relationship of occupational skill level and gender on perceived occupational stress. The results of the third research question indicated that there were between all levels of education and professional skill level. The results of the fourth research question were not significant, suggesting that there was no predictive relationship of professional skill level and education on perceived occupational stress.

The secondary data used in this study only identify gender as male and female, which is a limitation. This secondary data study population consisted of employees who attended an annual health screening at five occupational health centers. Thus, the sample limits the generalizability of the findings to other gender. Identification and examination of these barriers may aid researchers in understanding the reasons for the perceived occupational stress among all genders.

Interpretation of Findings

I analyzed the results from a total of 500 male and female participants. employees of private companies who were of different skill levels and worked in different occupational sectors. The secondary data were information collected by using a VAS and PSS14 to assess perceived stress in workers (Dutheil et al., 2017). I used point biserial correlation for the first research questions. I used Spearman's correlation for third

research questions, and for the second and fourth research questions I used multiple linear regression to examine the association between the independent and dependent variables. Findings from this research were based on the following variables: gender, education, skill levels, and perceived occupational stress.

Gender, Skill Levels, and Perceived Occupational Stress

The point biserial correlation analysis indicated that there were no significant correlations between gender and perceived occupational stress. This suggests that there was not a significant relationship between someone's gender and their levels of perceived occupational stress at the workplace. The results for the second research question were not significant, suggesting that there was no predictive relationship of occupational skill level and gender on perceived occupational stress. These results are consistent with those previously published in the literature in which Dartey-Baah et al. (2020) found that gender is not a significant predictor of job satisfaction or occupational stress. The researchers also explained that both male and female bank tellers may perceive and experience stress in a similar way (Dartey-Baah et al. 2020). Bank tellers are more prone to engage in unproductive behaviors such as job discontent brought on by stress at work. The findings also indicated that among bank tellers, gender is not a significant predictor of job satisfaction and occupational stress.

According to current literature, Suleman et al. (2018) found that both male and female secondary school heads were occupationally stressed by work overload, role conflicts, demanding working conditions, excessive political pressure, underinvolvement,

and unprofitability. Male and female secondary school heads' overall occupational stress did not significantly differ from one another in comparison (Suleman et al., 2018).

However, contrary to the current study where there were no significant correlations between gender and perceived occupational stress, Solanki and Mandaviya (2021) found that male university lecturers have greater perceived occupational stress than female university lecturers. The study by Solanki and Mandaviya had 86 participants, 51 men and 35 women, who completed the General Health Questionnaire (GHQ-12) and the Maslach Burnout Inventory. Solanki and Mandaviya found that compared to female university lecturers, male university lecturers tend to report greater health-related problems because of work stress. The current study captured that there were no significant correlations between gender and perceived occupational stress. These results are not consistent with those of Solanki and Mahdavia previously published in the literature, which indicated that there was a significant association between male gender and higher perceived occupational stress.

The major findings from the multiple linear regression analysis for this current study revealed that professional skill level and gender did not collectively explain a significant proportion of variation in perceived occupational stress. This is consistent with earlier research showing that occupational skill level and gender did not collectively explain a significant proportion of variation in perceived occupational stress (Dartey-Baah et al., 2020). The results of the linear regression model were not significant; none of the individual predictors in the model were significant (*p*-values for all coefficients > .05). Dartey-Baah et al. (2020) examined the relationship between workplace stress, job

satisfaction, and gender disparity among the professional roles of bank teller. This study (Dartey-Baah et al., 2020) also indicated that among bank tellers, gender is not a significant predictor of job satisfaction and occupational stress.

Education, Skill Levels, and Perceived Occupational Stress

Findings from the Spearman's correlation for this study revealed several key points. The correlational analysis indicated that there was a significant positive correlation between levels of education and professional skill level. There were significant positive relationships between skilled workers and having a bachelor's degree, midlevel workers and having a bachelor's degree, unskilled workers and having a high school diploma, and senior executives and having a master's degree. This is consistent with earlier research, as well as my study, showing that higher educational attainment has been shown to be associated with lower occupational stress levels (Assari & Bazargan, 2019).

Solomon et al. (2022) found that education is positively associated with resources, which are negatively associated with stress. The study by Solomon et al. (2022) suggested that those with higher levels of education experience higher job satisfaction, as there is a positive correlation between income and job stress. The findings of the Solomon et al. (2022) study emphasized the need for leaders to have more effective strategies to handle the increased demands placed on the highly educated workers. Solomon et al. (2022) suggested that organizations prevent unintentionally pressuring employees to experience stress that lowers job satisfaction by eliminating incentives to adopt excessive work hours. It may be more effective for organizations to redefine the

ideal employee as someone who is not completely devoted to their work and always available (Solomon et al., 2022).

Additionally, there were significant negative correlations between being a skilled worker and having a master's degree, between being a midlevel worker and having a high school diploma, being an unskilled worker and having a bachelor's or master's degree, being a senior executive and being a high school graduate, and being a senior executive and having a bachelor's degree. This is consistent with earlier cross-sectional research by Schadenhofer et al. (2018) with 491 employees, which used the Maslach Burnout Inventory to assess perceived occupational stress. Schadenhofer et al. found that employees with low educational levels have less occupational stress when compared with employees with high educational levels. Schadenhofer et al. further explained the study findings by stating that employees with low education levels often have a lack of task control and job decision latitude that are rarely experienced by employees with high education levels. A study by Mohla (2021) indicated that high school diploma holders had the least stress, followed by those with a Bachelor of Technology, Master of Business Administration, and Master of Computer Application degree, with associates who hold Master of Technology degrees experiencing the most stress of any group.

The findings from the last multiple linear regression analysis for this current study indicated that education and professional roles did not explain a significant proportion of variation in perceived occupational stress. The results of the linear regression model were not significant. A study by Nguyen Ngoc et al. (2020) failed to find any significant association between the prevalence of occupational stress and heavy workload and skill

level. Nguyen Ngoc et al. conducted a cross-sectional study with 171 doctors and nurses to assess the prevalence of occupational stress and to explore the association with some associated factors among them. The results of the study by Nguyen Ngoc et al. found that there was no statistically significant relationship between the occupational stress rate and some factors such as qualification and workload status.

Comparison with Theoretical Framework

Karasek's (1979) job-demand-control model served as the conceptual framework for this study. According to Karasek (1979, 1989; Karasek & Theorell, 1990), the job demand-control model indicates that any job environment can be characterized in terms of combining two dimensions: psychological work demands and the number of workers who meet these demands. The job-demand-control model proposes that the two fundamental aspects of the job itself, which are psychological job demands and job decision latitude, are the main causes of occupational stress (De Jonge et al., 1999). According to Karasek (1979), psychological pressures at work are described as psychological job demands, or workload (e.g., high pressure of time, high working pace, difficult and mentally exacting work). The term "job decision latitude" refers to a worker's capacity to direct their own activities and skill application (Karasek & Theorell, 1990). The job-demand-control model states that high work demands tend to lead to high levels of stress in workers, and this is modulated by the worker's capacity to direct their own activities and skill application (Karasek & Theorell, 1990). My study indicated that level of education was positively correlated with occupational skill level, but that these factors were not significantly related to perceived occupational stress.

Limitations

Although my study possesses many strengths, such as a large sample and reliable data, it is subject to limitations. First, a limitation of these archival data is that they do not include the culture/ethnicity of the participants. Therefore, I could not examine the relationships between different cultural/ethnic groups among the skill levels of workers on perceived occupational stress.

A second limitation is concerning gender identity. The secondary data used in this study only identify gender as male and female. There are many different gender identities, including male, female, transgender, gender-neutral, nonbinary, agender, pangender, genderqueer, two-spirit, third gender, and all, none, or a combination of these, both or neither (Carpenter et al. 2020). This secondary data study population consisted of employees who attended an annual health screening at five occupational health centers. Thus, the sample limits the generalizability of the findings to other people.

A third limitation pertained to the quantitative research. The secondary data were collected by using questionnaires as a survey structure (Queirós et al., 2017). The quantitative survey structure is also rigid, where participants' emotional changes, emotions, and behaviors are not captured (Queirós et al., 2017). In future studies, additional research methods could be used, such as a mixed-methods study to get a more in-depth understanding of the problem.

Recommendations for Future Research

In this study, I identify and examine the relationships between education, gender, and skill level on perceived occupational stress. The findings indicate a statistically

significant relationship between gender, skill level, and perceived occupational stress. Further research should be done to include the culture/ethnicity of the participants to examine the relationships between different cultural/ethnic groups among the skill level workers on occupational stress to see if any conclusions are comparable.

My study, as quantitative research, did not capture participants' emotional changes, emotions, and behaviors. Future research should be conducted to include interviews to study participants' emotional changes, emotions, and behaviors. Additional research methods could be used, such as a mixed-methods study to get a more in-depth understanding of the relationships between education, gender, and skill level on perceived occupational stress.

Additionally, the study findings indicated that there is a significant negative correlation between female gender and skilled workers, and female gender and senior executives, and perceived occupational stress. Future research should be conducted to look at other variables that female and skilled workers, and female and senior executives, have in addition to occupation. For example, a female skilled worker, or female senior executive, may be the only parent of the house, taking care of children and household work in addition to working a full-time job.

Significance

This study may be significant because it may help to create a better understanding of the relationship between education, gender, and skill level on perceived occupational stress. Positive changes can be influenced by the findings of my study at both the individual and organizational levels. This information may help employees realize that

they are not alone and ultimately seek help to improve their quality of life. This study may help organizations train employees to better understand and cope with occupational stress, which may promote higher productivity and greater satisfaction with work.

This correlational quantitative research study may contribute to the literature and advanced knowledge by filling a gap in the psychological literature with respect to perceived occupational stress in employees at all skill levels in the private sector. This study may also influence researchers conducting future studies to involve different population groups, leading to additional research in this area. Findings from this study could be beneficial not only to the psychology field, but also to a wide array of other fields, including the fields of counseling, public policy and administration, and business administration. By examining perceived occupational stress as it relates to education and gender in different skill level workers, this study may be able to provide workplaces with better information to address workers' need for self-care and reduce possible workplace stressors.

The findings from the study may also be applicable to many agencies and organizations, including the APA, American Sociological Association, Department of Labor, Center for International Private Enterprise, and National Human Resources Association. These agencies and organizations will be empowered by the increased ability to identify the barriers and stressors that may impede a worker's ability to provide quality services. Such information can be used to encourage self-care in workers while maintaining their job through ongoing education. Continued research in this area will be needed to tailor these strategies to meet the most current needs of different skill level

workers as the work field grows and changes. This study will be significant as a first step in promoting self-care within this population.

Positive Social Change

My study fills a gap in understanding by identifying the factors that have contributed to the reduction of perceived occupational stress. This study may contribute to positive social change as it is designed to improve the workers' quality of life by providing available information on the relationship between education, gender, and skill level on perceived occupational stress. As a result, the research can serve as a foundation for the creation of public health initiatives and policies. The knowledge may encourage employers and managers to focus attention on the problem of perceived occupational stress, and provide resources for workshops, referrals, or other programs to reduce perceived occupational stress. Therefore, the study's implications for positive social change could encourage policymakers to propose legislation that would support and/or increase public funding for perceived occupational stress -related initiatives aimed at enhancing workforce health, retention, and motivation. These regulations may ultimately encourage healthy behavioral and lifestyle changes that would support a steady workforce and boost the health of employees and productivity of organizations.

Conclusion

In this study, I explored the relationship between perceived occupational stress, gender, and education in senior executives, skilled workers, mid-level workers, and unskilled workers. While findings from previous literature have indicated that perceived occupational stress may be associated with burnout, anxiety, post-traumatic stress

disorder, and depression (Scheepstra et al., 2020), my study provides insight into the factors contributing to perceived occupational stress. My results reveal there were no significant correlations between gender and perceived occupational stress. The multiple linear regression analysis in this study also revealed that there was no relationship between professional role and gender on perceived occupational stress. The results of Spearman's correlation indicated that there were significant relationships between all levels of professional roles and education. These results suggest that there were significant positive relationships between skilled workers and having a bachelor's degree, mid-level workers and having a bachelor's degree, unskilled workers and having a high school diploma, and senior executives and having a master's degree. The study also revealed that there was no significant relationship between professional role and education on perceived occupational stress. My findings reveal a need to implement process improvement strategies to minimize perceived occupational stress to maintain optimal workflow and employee health. Based on the knowledge gained from my study, I would encourage the development of educational strategies, to promote self-care in workers, through ongoing education, and work policy enhancements to reduce perceived occupational stress.

References

Aderibigbe, J. K., Nwokolo, E. E., & Solomon, O. (2020). Occupational stress among some Nigerian graduate employees: The impact of work experience and education. *Cogent Psychology*, *7*(1), Article 1802948. https://doi.org/10.1080/23311908.2020.1802948

American Institute of Stress. (2019). *Worrying workplace stress statistics*. Retrieved October 8, 2021, from https://www.stress.org/42-worrying-workplace-stress-statistics

Assari, S., & Bazargan, M. (2019). Unequal associations between educational attainment and occupational stress across racial and ethnic groups. *International Journal of Environmental Research and Public Health*, *16*(19), Article 3539. https://doi.org/10.3390/ijerph16193539

Barré, R., Brunel, G., Barthet, P., & Laurencin-Dalicieux, S. (2017). The visual analogue scale: An easy and reliable way of assessing perceived stress. *Quality in Primary Health Care*, *1*(1), 1–5.

Bates, D., Mächler, M., Bolker, B., & Walker, S. (2014). Fitting linear mixed-effects models using lme4: arXiv preprint arXiv, *Journal of Statistical Software*. https://doi.org/10.18637/jss.v067.io1

Bentley, T. A., Teo, S. T., Catley, B., Blackwood, K., Roche, M., & O'Driscoll, M. P. (2019). Factors influencing leave intentions among older workers: A moderated-mediation model. *Personnel Review*, *48*(4), 898–914. https://doi.org/10.1108/PR-03-2018-0095

Blessing, B., & Gibbons, I. (2008). Autonomic nervous system. In *Scholarpedia*.

    https://www.scholarpedia.org/article/Autonomic_nervous_system#Sympathetic_P

    athways

Bondarchuk, O., Balakhtar, V., Moskaljova, A., Moskalov, M., & Balakhtar, K. (2021,

    January). Peculiarities of the occupational crisis of heads of educational

    organizations. In S. A. R. Khan & T. Hauer (Eds.), *2020 3rd International*

    Seminar on Education Research and Social Science (ISERSS 2020; pp. 267-272).

    Atlantis Press. https://doi.org/10.2991/assehr.k.210120.051

Bordens, K. S., & Abbott, B. B. (2008). *Research design and methods: A process*

    approach (7th ed.). McGraw-Hill.

Boshuizen, R. C., Vincent, A. D., & Van-den-Heuvel, M. M. (2013). Comparison of

    modified Borg scale and visual analog scale dyspnea scores in predicting re-

    intervention after drainage of malignant pleural effusion. *Supportive Care in*

    Cancer, *21*(11), 3109–3116. https://doi.org/10.1007/s00520-013-1895-3

Bresesti, I., Folgori, L., & De Bartolo, P. (2020). Interventions to reduce occupational

    stress and burn out within neonatal intensive care units: A systematic review.

    Occupational and Environmental Medicine, *77*(8), 515–519.

    https://doi.org/10.1136/oemed-2019-106256

Bryman, A. (2016). *Social research methods*. Oxford University Press.

Buselli, R., Carmassi, C., Corsi, M., Baldanzi, S., Battistini, G., Chiumiento, M.,

    Massimetti, G., Dell'Osso, L., & Cristaudo, A. (2020). Post-traumatic stress

symptoms in an Italian cohort of subjects complaining occupational stress. *CNS Spectrums*, *26*(5), 513–520. https://doi.org/10.1017/S1092852920001595

Carpenter, C. S., Eppink, S. T., & Gonzales, G. (2020). Transgender status, gender identity, and socioeconomic outcomes in the United States. *ILR Review*, *73*(3), 573–599. https://doi.org/0.1177/0019793920902776

Chatzigianni, D., Tsounis, A., Markopoulos, N., & Sarafis, P. (2018). Occupational stress experienced by nurses working in a Greek regional hospital: A cross-sectional study. *Iranian Journal of Nursing and Midwifery Research*, *23*(6), 450–457. https://doi.org/10.4103/ijnmr.IJNMR_120_17

Chen, J. (2020). Relationship between psychological capital, job stress and job burnout of special education workers. *Revista Argentina de Clinica Psicological, 19*(1), 1325–1331. https://doi.org/10.24205/03276716.2020.191

Cho, S.-S., Kim, H., Lee, J., Lim, S., & Jeong, W. C. (2019). Combined exposure of emotional labor and job insecurity on depressive symptoms among female call-center workers: A cross-sectional study. *Medicine*, *98*(12), Article e14894. https://doi.org/10.1097/MD.0000000000014894

Chou, P. H., Lin, W. H., Hung, C. A., Chang, C. C., Li, W. R., Lan, T. H., & Huang, M. W. (2016). Perceived occupational stress is associated with decreased cortical activity of the prefrontal cortex: A multichannel near-infrared spectroscopy study. *Scientific Reports*, *6*(1), Article 39089. https://doi.org/10.1038/srep39089

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). West Publishing Company.

Cohen, S., Mullen, P. R., Morris, C., & Lord, M. (2017). Perceived Stress Scale--14. *Counseling and Values*, *62*, 37–56. https://doi.org/10.1002/cvj.12048

Cohen, S., Thomas, J. J., & Borrayo, E. A. (2016). Perceived Stress Scale--14. *Journal of College Counseling*, *19*, 246–260. https://doi.org/10.1002/jocc.12047

Conover, W. J., & Iman, R. L. (1981). Rank transformations as a bridge between parametric and nonparametric statistics. *The American Statistician, 35*(3), 124-129. https://doi.org/10.1080/00031305.1981.10479327

Conway, P. M., Høgh, A., Balducci, C., & Ebbesen, D. K. (2021). Workplace bullying and mental health. *Pathways of job-related negative behavior*, 101-128.

Cordioli, D. F. C., Cordioli Junior, J. R., Gazetta, C. E., Silva, A. G. D., & Lourenção, L. G. (2019). Occupational stress and engagement in primary health care workers. *Revista brasileira de enfermagem*, *72*(6), 1580-1587. https://doi.org/10.1590/0034-7167-2018-0681

Couarraze, S., Delamarre, L., Marhar, F., Quach, B., Jiao, J., Avilés Dorlhiac, R., ... & Dutheil, F. (2021). The major worldwide stress of healthcare professionals during the first wave of the COVID-19 pandemic–the international COVISTRESS survey. *PloS one*, *16*(10), e0257840. https://doi.org/10.1371/journal.pone.0257840

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approach* (5th ed.). Sage.

Crichton, N. (2001). Visual analogue scale (VAS). *J Clin Nurs*, *10*(5), 706-6.

Cui, Q., Chao, Q., Han, J., Zhang, X., Ren, Y., & Shi, J. (2018). Job stress, burnout and the relationship among the science and mathematics teachers in basic education schools. *EURASIA Journal of Mathematics, Science and Technology Education*, *14*(7), 3235-3244.

Dartey-Baah, K., Quartey, S. H., & Osafo, G. A. (2019). Examining occupational stress, job satisfaction and gender difference among bank tellers: Evidence from Ghana. *International Journal of Productivity and Performance Management, 69*(7), 1437–1454.

DeCarlo, L. T. (1997). On the meaning and use of kurtosis. *Psychological Methods,* 2(3), 292-307. https://doi.org/10.1037/1082-989X.2.3.292

De Jonge, J., Mulder, M. J., & Nijhuis, F. J. (1999). The incorporation of different demand concepts in the job demand-control model: effects on health care professionals. *Social Science & Medicine*, *48*(9), 1149-1160.

De Lange, A. H., Taris, T. W., Kompier, M. A., Houtman, I. L., & Bongers, P. M. (2003). " The very best of the millennium": longitudinal research and the demand-control-(support) model. *Journal of occupational health psychology*, *8*(4), 282. https://doi.org/10.1037/1076-8998.8.4.282

De Sio, S., Cedrone, F., Trovato Battagliola, E., Buomprisco, G., Perri, R., & Greco, E. (2018). The perception of psychosocial risks and work-related stress in relation to job insecurity and gender differences: a cross-sectional study. *BioMed research international, 2018*. https://doi.org/10.1155/2018/7649085

De Sio, S., Cedrone, F., Sanità, D., Ricci, P., Corbosiero, P., Di Traglia, M., Greco, E., & Stansfeld, S. (2017). Quality of Life in Workers and Stress: Gender Differences in Exposure to Psychosocial Risks and Perceived Well-Being. *BioMed Research International*, *2017*, 1–6. https://doi.org/10.1155/2017/7340781

Deater-Deckard, K., & Panneton, R. (2017). Unearthing the developmental and intergenerational dynamics of stress in parent and child functioning. In K. Deater-Deckard & R. Panneton (Eds.), *Parental stress and early child development: Adaptive and maladaptive outcomes.* (pp. 1–11). Springer International Publishing. https://doi.org/10.1007/978-3-319-55376-4_1

Deguchi, Y., Iwasaki, S., Kanchika, M., Nitta, T., Mitake, T., Nogi, Y., ... & Inoue, K. (2018). Gender differences in the relationships between perceived individual-level occupational stress and hazardous alcohol consumption among Japanese teachers: A cross-sectional study. *PloS one*, *13*(9), e0204248. https://doi.org/10.1371/journal.pone.0204248

Delgado, D. A., Lambert, B. S., Boutris, N., McCulloch, P. C., Robbins, A. B., Moreno, M. R., & Harris, J. D. (2018). Validation of digital visual analog scale pain scoring with a traditional paper-based visual analog scale in adults. *Journal of the American Academy of Orthopaedic Surgeons. Global research & reviews*, *2*(3), 1 - 6.

Dror, I. (2005). Perception is far from perfection: The role of the brain and mind in constructing realities. *Brain and Behavioral Sciences 28*(6). https://doi.org/10.1017/S0140525X05270139

Duarte, I., Teixeira, A., Castro, L., Marina, S., Ribeiro, C., Jácome, C., ... & Serrão, C. (2020). Burnout among Portuguese healthcare workers during the COVID-19 pandemic. *BMC public health*, *20*(1), 1-10. https://doi.org/10.1186/s12889-020-09980-z

Dutheil, F., Boudet, G., Perrier, C., Lac, G., Ouchchane, L., & Chamoux, A. (2012). JOBSTRESS study: comparison of heart rate variability in emergency physicians working a 24-hour shift or a 14-hour night shift—a randomized trial. *Int J Cardiol*, *158*, 322–325.

Dutheil, F., Marhar, F., Boudet, G., Perrier, C., Naughton, G., Chamoux, A., Huguet, P., Mermillod, M., Saâdaoui, F., & Moustafa, F. (2017). Maximal tachycardia and high cardiac strain during night shifts of emergency physicians. *International archives of occupational and environmental health*, *90*(6), 467-480. https://doi.org/10.1007/s00420-017-1211-5

Dutheil, F., Pereira, B., Moustafa, F., Naughton, G., Lesage, F.-X., & Lambert, C. (2017). At-risk and intervention thresholds of occupational stress using a visual analogue scale. *PLoS ONE*, *12*(6), 1–13. https://doi.org/10.1371/journal.pone.0178948

Etemadinezhad, S., Samaei, S. E., Charatti, J. Y., & Astarabadi, Z. M. (2018). Structural Equation Modeling of the Relationship Between Occupational Stress and Job Performance of Health Care Workers in one of the General Hospitals in Gorgan (2017). *International Journal of Occupational Hygiene*, *10*(1), 52-59.

European Agency for Safety and Health at Work. (2020). Psychosocial risks and stress at

work. Retrieved October 8th, 2021, from

https://osha.europa.eu/en/themes/psychosocial-risks-and-stress

Faraji, A., Karimi, M., Azizi, S. M., Janatolmakan, M., & Khatony, A. (2019).

Occupational stress and its related demographic factors among Iranian CCU

Nurses: a cross-sectional study. *BMC research notes*, *12*(1), 1-5.

https://doi.org/10.1186/s13104-019-4674-5

Field, A. (2017). *Discovering statistics using IBM SPSS statistics: North American

edition.* Sage Publications

Fortes, A. M., Tian, L., & Huebner, E. S. (2020). Occupational stress and employees

complete mental health: A cross-cultural empirical study . *International Journal

of Environmental Research and Public Health, 17*(101), 1 – 18.

https://doi.org/10.3390/ijerph17103629

Galanakis, M., & Alamani, E. (2020). How gender and working conditions affect

occupational stress and job satisfaction of general education's preschool and

elementary teachers in Greek Public Schools. *Psychology*, *11*(2), 364-372.

https://doi.org/10.4236/psych.2020.112023

Galanakis, M., Alexandri, E., Kika, K., Lelekanou, X., Papantonopoulou, M.,

Stougiannou, D., & Tzani, M. (2020). What Is the Source of Occupational Stress

and Burnout? *Psychology*, *11*(05), 647.

https://doi.org/10.4236/psych.2020.115044

George, D., & Mallery, P. (2018). IBM SPSS Statistics 25 Step by Step.

https://doi.org/10.4324/9781351033909

Gerber, M., Schilling, R., Colledge, F., Ludyga, S., Pühse, U., & Brand, S. (2020). More than a simple pastime? The potential of physical activity to moderate the relationship between occupational stress and burnout symptoms. *International Journal of Stress Management*, *27*(1), 53–64. https://doi.org/10.1037/str0000129

Gliem, J. A., & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. *Midwest research-to-Practice Conference in Adult, Continuing, and community education*. https://hdl.handle.net/1805/344

Gilroy, P. J., Carrol, L., & Murra, J. (2007). A preliminary survey of counseling psychologists' personal experiences with depression and treatment. *Professional Psychology: Research and Practice, 33*, 402–407. https://doi.org/10.1037/0735-7028.33.4.402

Gogtay, N. J., & Thatte, U. M. (2017). Principles of correlation analysis. *Journal of the Association of Physicians of India*, *65*(3), 78-81.

Gotz, S., Hoven, H., Muller, A., Dragano, N., & Wahrendorf, M. (2018). Age differences in the association between stressful work and sickness absence among full-time employed workers: Evidence from the German socio-economic panel. *Int Arch Occup Environ Health, 91*(4), 479 - 496. https://doi.org/10.1007/s00420-018-1298-3

Government of the United Kingdom. (2020, March). Work-related stress, anxiety or depression stattisitics in Great Britain 2020. Retrieved October 8th, 2021, from

https://www.hse.gov.uk/statistics/causdis/stress.pdf

Green, A. (2020, July 27th). *Maverick Citizen*. Retrieved October 8th, 2021, from

https://www.dailymaverick.co.za/article/2020-07-27-extremely-high-levels-of-

stress-among-employees-in-sa/

Health and Safety Executive. (2017). What is stress?

https://www.hse.gov.uk/stress/furtheradvice/whatisstress.htm

Hintsa, T., Kouvonen, A., McCann, M., Jokela, M., Elovainio, M., & Demakakos, P.

(2015). Higher effort-reward imbalance and lower job control predict exit from

the labor market at the age of 61 years or younger: evidence from the English

Longitudinal Study of Ageing. *J Epidemiol Commun Health, 69*(6), 543 - 549.

https://doi.org/10.1136/jech-2014-205148

Howell, D. C. (2013). *Statistical methods for psychology* (8th ed.). Wadsworth Cengage

Learning.

Huang, S. S., Van der Veen, R., & & Song, Z. (2018). The impact of coping strategies on

occupational stress and turnover intentions among hotel employees. *Journal of

Hospitality Marketing & Management*, 1 - 20.

Hwang, W. H., & Ramadoss, K. (2017). The job demands–control–support model and

job satisfaction across gender. Journal of Family Issues, 38(1), 52–72.

https://doi.org/10.1177/0192513x16647983

Infortuna, C., Gratteri, F., Benotakeia, A., Patel, S., Fleischman, A., Muscatello, M. R.

A., ... & Battaglia, F. (2020). Exploring the gender difference and predictors of

perceived stress among students enrolled in different medical programs: a cross-

sectional study. *International Journal of Environmental Research and Public Health*, *17*(18), 6647. https://doi.org/10.3390/ijerph17186647

Intellectus Statistics [Online computer software]. (2022). Intellectus Statistics. https://analyze.intellectusstatistics.com/

International Labor Organization. (2016). *Workplace Stress: A Collective Challenge.* Geneva: International Labor Organization. Retrieved October 6th, 2021, from https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/publication/wcms_466547.pdf

Irfan, M., Naeem, F., Afridi, M. I., & Javed, A. (2020). Prevention of occupational stress in health-care workers during COVID-19 pandemic. *Indian Journal of Psychiatry*, *62*(Suppl 3), S495. https://doi.org/10.4103/psychiatry.IndianJPsychiatry_844_20

Islam, M. I., Alam, K. M. W., Keramat, S. A., Murshid, M. E., Haque, R., Kabir, E., ... & Khan, M. H. (2021). Working conditions and occupational stress among nurses in Bangladesh: a cross-sectional pilot study. *Journal of Public Health*, 1-9. https://doi.org/10.1007/s10389-020-01415-8

Jex, S. M., Beehr, T. A., & Roberts, C. K. (1992). The meaning of occupational stress items to survey respondents. *Journal of applied psychology*, *77*(5), 623.

Kahn, R. L., & Byosiere, P. (1992). *Stress in organizations.* . California: Consulting Psychologists Press.

Kakemam, E., Raeissi, P., Raoofi, S., Soltani, A., Sokhanvar, M., Visentin, D. C., & Cleary, M. (2019). Occupational stress and associated risk factors among nurses:

a cross-sectional study. *Contemporary nurse*, *55*(2-3), 237-249. https://doi.org/10.1080/10376178.2019.1647791

Karasek, R. A. (1979). Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign. *Administrative Science Quarterly*, *24*(2), 285–308. https://doi.org/10.2307/2392498

Karasek, R. A., & Parkes, K. R. (2003). Job Demand Scale. *Journal of Occupational Health Psychology*, *8*, 266–281. https://doi.org/10.1037/1076-8998.8.4.266

Karyotaki, E., Cuijpers, P., Albor, Y., Alonso, J., Auerbach, R. P., Bantjes, J., ... & Kessler, R. C. (2020). Sources of stress and their associations with mental disorders among college students: results of the world health organization world mental health surveys international College student initiative. *Frontiers in psychology*, *11*, 1759. https://doi.org/10.3389/fpsyg.2020.01759

Kashif, M., Braganca, E., Awang, Z., & Cyril De Run, E. (2017). You abuse but I will stay: The combined effects of job stress, customer abuse, and emotional intelligence on employee turnover. *Journal of Management Development, 36*(7), 899 - 914. https://doi.org/10.1108/JMD-06-2016-0095

Keith, T. Z. (2019). *Multiple regression and beyond: An introduction to multiple regression and structural equation modeling*. Routledge. https://doi.org/10.4324/9781315162348

Kemp, S. E., Ng, M., Hollowood, T., & Hort, J. (2018). Introduction to descriptive analysis. *Descriptive analysis in sensory evaluation*, *1*, 22 - 38.

Kim, K. B., Lee, J. H., Lee, Y., Noh, J. W., & Kwon, Y. D. (2018). Factors affecting

level of perceived stress by gender. *The Journal of the Korea Contents

Association*, *18*(3), 235-245. https://doi.org/10.5392/JKCA.2018.18.03.235

Kim, S.-Y., Shin, Y.-C., Oh, K.-S., Shin, D.-W., Lim, W.-J., Cho, S. J., & Jeon, S.-W.

(2020). Gender and age differences in the association between work stress and

incident depressive symptoms among Korean employees: a cohort

study. *International Archives of Occupational and Environmental Health*, *93*(4),

457–467. https://doi.org/10.1007/s00420-019-01487-4

Kosalai, S. &. (2018). Stress level and coping strategies of IT sectors. *Asia Pacific

Management Review, 26*(3), 113 – 119.

https://doi.org/10.1016/j.apmrv.2020.10.001

Kowalska, J., Chybowski, D., & Wójtowicz, D. (2021). Analysis of the Sense of

Occupational Stress and Burnout Syndrome among Working Physiotherapists—A

Pilot Study. *Medicina*, *57*(12), 1290. https://doi.org/10.3390/medicina57121290

Kulas, J. T., Roji, R. G. P. P., & Smith, A. M. (2021). *IBM SPSS Essentials: Managing

and Analyzing Social Sciences Data*. John Wiley & Sons.

Langley, G., & Sheppeard, H. (1985). The visual analogue scale: its use in pain

measurement. *Rheumatology international*, *5*(4), 145-148.

Lecca, L. I., Finstad, G. L., Traversini, V., Lulli, L. G., Gualco, B., & Taddei, G. (2020).

The Role of Job Support as a Target for the Management of Work-Related Stress:

The State of Art. *Quality-Access to Success*, *21*(174).

Lee, E. H. (2012). Review of the psychometric evidence of the perceived stress scale. *Asian nursing research*, *6*(4), 121-127.

Lee, W., Lee, J. G., Yoon, J. H., & Lee, J. H. (2020). Relationship between occupational dust exposure levels and mental health symptoms among Korean workers. *PloS one*, *15*(2), e0228853. https://doi.org/10.1371/journal.pone.0228853

Magnavita, N., Tripepi, G., & Di Prinzio, R. R. (2020). Symptoms in health care workers during the COVID-19 epidemic. A cross-sectional survey. *International journal of environmental research and public health*, *17*(14), 5218. https://doi.org/10.3390/ijerph17145218

Maslach, C. (1993). Burnout: A multi-dimensional perspective. In W. B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 19–32). Taylor & Francis.

McGrath, R. E., & Meyer, G. J. (2006). When effect sizes disagree: The case of r and d. *Psychological Methods, 11*(4), 386–401. https://doi.org/10.1037/1082-989X.11.4.386

Menard, S. (2009). *Logistic regression: From introductory to advanced concepts and applications.* Sage Publications. https://doi.org/10.4135/9781483348964

Mendoza, R. D. (2019). Verbal English fluency, workplace stress and coping mechanism of secondary school faculty in Sulu. *The Asian EFL Journal, 21*(2), 78 - 100.

Mertler, C. A. (2016). Introduction to educational research. Thousand Oaks, CA: SAGE.

Mohla, C. (2021). Impact of Education Level on Occupational Stress. *Abhigyan*, *39*(1), 13. https://www.proquest.com/openview/2db06c4849b5d1283932ab4e3b7e554f/1?pq -origsite=gscholar&cbl=5403485

Mortensen, J., Dich, N., Lange, T., Alexanderson, K., Goldberg, M., Head, J., . . . Rod, N. (2017). Job strain and informal caregiving as predictors of long-term sickness absence: a longitudinal multi-cohort study. *Scand J Work Environ Health, 43*(1), 5 - 14. https://doi.org/10.5271/sjweh.3587

Naoum, S. G., Harris, J., Rizzuto, J., & Egbu, C. (2020). Gender in the construction industry: Literature review and comparative survey of men's and women's perceptions in UK construction consultancies. *Journal of Management in Engineering*, *36*(2), 04019042. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000731

Ngirande, H. (2021). Occupational stress, uncertainty and organizational commitment in higher education: Job satisfaction as a moderator. *SA Journal of Human Resource Management*, *19*, 11. https://doi.org/10.4102/sajhrm.v19i0.1376

Nguyen Ngoc, A., Le Thi Thanh, X., Le Thi, H., Vu Tuan, A., & Nguyen Van, T. (2020). Occupational Stress Among Health Worker in a National Dermatology Hospital in Vietnam, 2018. *Frontiers in Psychiatry*, *10*, 950. https://doi.org/10.3389/fpsyt.2019.00950

Novaes Neto, E. M., Xavier, A. S. G., & Araújo, T. M. D. (2020). Factors associated with occupational stress among nursing professionals in health services of medium

complexity. *Revista Brasileira de Enfermagem*, *73*. Doi:

https://doi.org/10.1590/0034-7167-2018-0913

Ogba, F. N., Onyishi, C. N., Victor-Aigbodion, V., Abada, I. M., Eze, U. N.,

Obiweluozo, P. E., ... & Eze, A. (2020). Managing job stress in teachers of

children with autism: A rational emotive occupational health coaching control

trial. *Medicine*, *99*(36). https://doi.org/10.1097/MD.0000000000021651

Osborne, J., & Waters, E. (2002). Four assumptions of multiple regression that

researchers should always test. *Practical Assessment, Research & Evaluation,*

8(2), 1-9.

Paoline, E. A., Lambert, E. G., & Hogan, N. L. (2015). Job stress and job satisfaction

among jail staff: Exploring gendered effects. Women and Criminal Justice, 25(5),

339–359. https://doi.org/10.1080/08974454.2014.989302

Park, I. J., Kim, P. B., Hai, S., & Dong, L. (2020). Relax from job, don't feel stress! The

detrimental effects of job stress and buffering effects of co-worker trust on

burnout and turnover intention. *Journal of Hospitality and Tourism Management,*

45, 559 - 568. https://doi.org/10.1016/j.jhtm.2020.10.018

Park, R., & Jang, S. J. (2017). Family role overload's relationship with stress and

satisfaction. *Journal of Managerial Psychology, 32*(1), 61 - 74.

https://doi.org/10.1108/JMP-01-2016-0020

Patino, C. M., & Ferreira, J. C. (2018). Inclusion and exclusion criteria in research

studies: Definitions and why they matter. Jornal Brasileiro de Pneumologia,

44(2), 84. https://doi.org/10.1590/S1806-37562018000000088

Patten, M. L., & Newhart, M. (2017). *Understanding research methods: An overview of the essentials*. Routledge. https://doi.org/10.4324/9781315213033

Peasley, M. C., Hochstein, B., Britton, B. P., Srivastava, R. V., & Stewart, G. T. (2020). Can't leave it at home? The effects of personal stress on burnout and salesperson performance. *Journal of Business Research, 117*, 58 - 70. https://doi.org/10.1016/j.jbusres.2020.05.014

Petek, M. (2018). Stress among reference library staff in academic and public libraries. *Reference Services Review, 46*(1), 128 – 145. https://doi.org/10.1108/RSR-01-2017-0002

Pituch, K. A., & Stevens, J. P. (2015). *Applied multivariate statistics for the social sciences* (6th ed.). Routledge Academic. https://doi.org/10.4324/9781315814919

Queirós, A., Faria, D., & Almeida, F. (2017). Strengths and limitations of qualitative and quantitative research methods. European Journal of Education Studies, 3(9), 369–387. https://doi.org/10.5281/zenodo.887089

Ramaci, T., Bellini, D., Presti, G., & Santisi, G. (2019). Psychological Flexibility and Mindfulness as predictors of individual outcomes in hospital health workers. *Frontiers in Psychology*, *10*, 1302. https://doi.org/10.3389/fpsyg.2019.01302

Ramaci, T., Pellerone, M., Ledda, C., Presti, G., Squatrito, V., & Rapisarda, V. (2017). Gender stereotypes in occupational choice: a cross-sectional study on a group of Italian adolescents. *Psychology Research and Behavior Management*, *10*, 109. https://doi.org/10.2147/PRBM.S134132

Rasdi, I. &. (2018). The association between noise, work stress and coping with sleep quality among cable manufacturing workers. Future of food. *Journal of food, agriculture and society, 6*, 108 - 111.

Rasool, S. F., Wang, M., Zhang, Y., & Samma, M. (2020). Sustainable work performance: the roles of workplace violence and occupational stress. *International journal of environmental research and public health*, *17*(3), 912. https://doi.org/10.3390/ijerph17030912

Rice, M. E., & Harris, G. T. (2005). Comparing effect sizes in follow-up studies: ROC Area, Cohen's d, and r. *Law and Human Behavior, 29*(5), 615–620. https://doi.org/10.1007/s10979-005-6832-7

Rosas, S., Paço, M., Lemos, C., & Pinho, T. (2017). Comparison between the Visual Analog Scale and the Numerical Rating Scale in the perception of esthetics and pain. *International orthodontics*, *15*(4), 5435- 5460. https://doi.org/10.1016/j.ortho.2017.09.027

Rudland, J. R., Golding, C., & Wilkinson, T. J. (2020). The stress paradox: how stress can be good for learning. *Medical education*, *54*(1), 40-45. https://doi.org/10.1111/medu.13830

Ryu, G. W. (2020). Mediating role of coping style on the relationship between job stress and subjective well-being among Korean police officers. *BMC Public Health, 20*, 470. https://doi.org/10.1186/s12889-020-08546-3

Salingaros, N. A., & Sussman, A. (2020). Biometric pilot-studies reveal the arrangement and shape of windows on a traditional façade to be implicitly "engaging", whereas contemporary façades are not. *Urban Science*, *4*(2), 26.

Schadenhofer, P., Kundi, M., Abrahamian, H., Stummer, H., & Kautzky-Willer, A. (2018). Influence of gender, working field and psychosocial factors on the vulnerability for burnout in mental hospital staff: results of an Austrian cross-sectional study. *Scandinavian journal of caring sciences*, *32*(1), 335-345. https://doi.org/10.1111/scs.12467

Scheepstra, K. W. F., Pauw, H. S., van Steijn, M. E., Stramrood, C. A. I., Olff, M., & van Pampus, M. G. (2020). Potential traumatic events in the workplace and depression, anxiety and post-traumatic stress: a cross-sectional study among Dutch gynecologists, pediatricians and orthopedic surgeons. *BMJ Open*, *10*(9), e033816. https://doi.org/10.1136/bmjopen-2019-033816

Schilling, R., Colledge, F., Ludyga, S., Pühse, U., Brand, S., & Gerber, M. (2019). Does cardiorespiratory fitness moderate the association between occupational stress, cardiovascular risk, and mental health in police officers? *International journal of environmental research and public health*, *16*(13), 2349. https://doi.org/10.3390/ijerph16132349

Sidhu, A. K., Singh, H., Virdi, S. S., & Kumar, R. (2020). Job stress and its impact on health of employees: A study among officers and supervisors. *Journal of Management Development, 39*(2), 125 - 144. https://doi.org/10.1108/JMD-01-2019-0004

Solanki, S., & Mandaviya, M. (2021). Does Gender Matter? Job Stress, Work-Life

Balance, Health and Job Satisfaction among University Teachers in India. *Journal

of International Women's Studies*, *22*(7), 121-134.

https://vc.bridgew.edu/jiws/vol22/iss7/10

Solomon, B. C., Nikolaev, B. N., & Shepherd, D. A. (2022). Does educational attainment

promote job satisfaction? The bittersweet trade-offs between job resources,

demands, and stress. *Journal of Applied Psychology*, *107*(7), 1227.

https://doi.org/10.1037/apl0000904

Spijker, J., & Gumà, J. (2018). The effect of the economic crisis on health in Spain

according to educational level and employment status: Does the duration of the

crisis also matter? *Salud Colectiva*, *14*, 655-670.

https://doi.org/10.18294/sc.2018.1297

Suleman, Q., Hussain, I., & Jumani, N. B. (2018). Occupational stress among secondary

school heads: A gender based comparative study. *Journal of education and

educational development*, *5*(2).

https://jmsnew.iobmresearch.com/index.php/joeed/article/view/138

The Local France. (2017, November 27th). *https://www.thelocal.fr*. Retrieved October

8th, 2021, from https://www.thelocal.fr/20171127/one-quarter-of-french-

employees-are-hyperstressed/

Ugwuanyi, C. S., Okeke, C. I., Agboeze, M. U., Igwe, N. J., Eya, N. M., Ejimonye, J. C.,

... & Ugwuanyi, C. K. (2020). Impacts of cognitive behavior therapy on

occupational stress among science and social science education facilitators in

open and distance learning centers and its implications for community

development: A randomized trial group. *Medicine*, *99*(41).

https://doi.org/10.1097/MD.0000000000022677

Ukil, M. I., & Ullah, M. S. (2016). Effect of occupational stress on personal and

professional life of bank employees in Bangladesh: Do coping strategies matter.

Journal of Psychology and Educational Research, 24(2), 75 - 100.

Van Bokhorst-de van der Schueren, M. A., van Leeuwen, P. A., Kuik, D. J., Klop, W. M.

C., Sauerwein, H. P., Snow, G. B., & Quak, J. J. (1999). The impact of nutritional

status on the prognoses of patients with advanced head and neck

cancer. *Cancer*, *86*(3), 519-527. https://doi.org/10.1002/(SICI)1097-

0142(19990801)86:3<519::AID-CNCR22>3.0.CO;2-S

Van Der Feltz-Cornelis, C. M., Varley, D., Allgar, V. L., & De Beurs, E. (2020).

Workplace stress, presenteeism, absenteeism, and resilience amongst university

staff and students in the COVID-19 lockdown. *Frontiers in psychiatry*, *11*,

588803. https://doi.org/10.3389/fpsyt.2020.588803

Von Hippel, C., Sekaquaptewa, D., & McFarlane, M. (2015). Stereotype threat among

women in finance. Psychology of Women Quarterly, 39(3), 405–414.

https://doi.org/10.1177/0361684315574501

Werner, I., & Springer, A. (2021). Relationships between work-related hazards and

occupational burnout among academics: are active coping strategies

important? *International Journal of Management in Education*, *15*(1), 23-40.

https://doi.org/10.1504/IJMIE.2021.111813

Westfall, P. H., & Henning, K. S. S. (2013). Texts in statistical science: Understanding advanced statistical methods. Taylor & Francis.

World Health Organization (WHO). (2019). Stress at the workplace. https://www.who.int/occupational_health/topics/stressatwp/en/

Wowor, K. (2013). Analysis of Person-organization Fit and Person-organization Misfit in Ernst & Young Indonesia. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi*, *1*(4).

Xiao, J., Guan, S., Ge, H., Tao, N., Zhang, Y., Jiang, Y., . . . Lian, Y. (2017). The impact of changes in work stressors and coping resources on the risk of new-onset suicide ideation among Chinese petroleum industry workers. *Journal of Psychiatric Research, 88*, 1 - 8. https://doi.org/10.1016/j.jpsychires.2016.12.014

Zare, R., Choobineh, A., & Keshavarzi, S. (2017). Association of amplitude and stability of circadian rhythm, sleep quality, and occupational stress with sickness absence among a gas company employee—A cross sectional study from Iran. *Safety and Health at Work*, *8*(3), 276-281. https://doi.org/10.1016/j.shaw.2016.09.007