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Workload, Work–Family Conflict, and Job Satisfaction for Women in Science

Elizabeth Ervin
Walden University

Walden University

College of Management and Technology

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Elizabeth A. Ervin

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Dr. Gregory Washington, Committee Chairperson, Doctor of Business Administration Faculty

Dr. Kim Critchlow, Committee Member, Doctor of Business Administration Faculty

Dr. Janet Booker, University Reviewer, Doctor of Business Administration Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

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Abstract

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Elizabeth A. Ervin

MS, University of Mount Olive, 2015

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Doctoral Study Submitted in Fulfillment

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Abstract

Job dissatisfaction among women working in science, technology, engineering, and mathematics (STEM) fields costs the United States up to $1.5 billion per year. Understanding work-life balance is important for pharmaceutical leaders to assist in enhancing job satisfaction for women in science. Grounded in the work-life balance theory, the purpose of this quantitative correlational study was to examine workload and work-family conflict in predicting job satisfaction for women in science. Survey data were collected from 76 women employed in the pharmaceutical industry who completed a combined Minnesota Satisfaction Questionnaire and Warr-Cook-Wall job satisfaction questionnaire. The multiple linear regression results were significant, $F(2, 75) = 7.62$, $p = .001$, $R^2 = .173$, with work-family conflict providing the only significant contribution ($\beta = -.39$, $p = .03$). A key recommendation is for leaders to develop strategies to regularly assess the diversity of their human resources, the advantage of diversification to their innovation goals, and employees' overall job satisfaction. The implications for positive social change may include adding insight to the under-researched pharmaceutical industry dynamics in the United States, the working dynamics of women in STEM occupations and providing a glimpse at job satisfaction during the COVID-19 pandemic.

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Section 1: Foundation of the Study

Background of the Problem

In 2018, U.S. politicians connected science, technology, engineering, and mathematics (STEM) innovation and entrepreneurship to diversify STEM programs for women and other minority populations for the integration of the U.S. workforce (White House Office of Science and Technology, 2018). The committee on STEM education of the National Science and Technology Council (2018) has highlighted that diversity in STEM professions is a necessity for sustaining U.S. leadership in STEM industries. Business leaders in rapidly growing STEM industries must continue to accelerate to engage the world's top talent. STEM organizational leaders must use their human resource (HR) practices to recruit, hire, and train women in STEM positions. However, women continue to be unrepresented in the STEM workforce due to problems transitioning into the workforce starting a career and midcareer exhaustion when advancing to STEM leadership positions (Hansen, 2020).

Limited diversity in STEM-related fields could restrict innovation and collaboration within STEM industries (Prives, 2020). Business researchers have found that 53% of all U.S. STEM employees left the science field for family-related reasons (Cech & Blair-Loy, 2019). According to Malik et al. (2016), approximately 50% of the employees in Saudi Arabian, British, Pakistani, and Indian pharmaceutical fields reported being unable to meet work demands due to job dissatisfaction. Lee et al. (2019) pointed out that the pharmaceutical industry is a highly demanding innovative industry that requires diverse knowledge exchanges for new scientific developments. Industry leaders

have recognized that new strategies for diversity in science are necessary for collaboration, innovation, and empowerment within the industry.

Problem Statement

According to Malik et al. (2016), pharmaceutical employees in India, Pakistan, Saudi Arabia, and the United Kingdom often experience job dissatisfaction due to high work demands and increased stress loads. Reilly et al. (2018) noted that turnover rates due to dissatisfaction among women working in STEM fields cost the United States up to $1.5 billion per year. The general business problem is that job dissatisfaction in STEM professions leads to significant financial losses within the STEM industry. The specific business problem is that some pharmaceutical leaders in the United States do not understand the relationship between workload, work–family conflict, and job satisfaction for women in pharmaceutical science.

Purpose Statement

The purpose of this correlational quantitative study was to examine the relationship between workload, work–family conflict, and job satisfaction among women in pharmaceutical science. The targeted population for this study consisted of women in pharmaceutical scientist positions in the southeast region of the United States. The independent variables were workload and work–family conflict. The dependent variable is job satisfaction. The results of this study could lead to positive social change by adding to the discussion of women empowerment in STEM positions and potentially contributing to the global empowerment of women in science. The findings from this research may affect positive social change by informing business leaders of approaches to

pharmaceutical work environments to include consideration of what constitutes sustainable positive environments for women in pharmaceutical science.

Nature of the Study

The research methods I considered for my study were quantitative, qualitative, and mixed. Quantitative researchers collect and analyze numerical data to develop a research conclusion through critical thinking and revealing relationships within the context of the study (Ernst & Albers, 2017). The quantitative method is appropriate for determining the relationship between workload, work–family conflict, and job satisfaction. Researchers use the qualitative method to objectively explore a problem through participants' perspectives and researcher interpretation to identify a theme (Aspers & Corte, 2019). The qualitative method is inadequate for this doctoral study because I was not exploring a problem or defining a phenomenon. Mixed-method research was not appropriate for this study because the collection of qualitative data was not within the scope of the research objectives.

The designs considered for my study were correlational, experimental, and quasi-experimental. Quantitative researchers determine the most appropriate and relevant questions to ask in a correlational study and statistically evaluate the relationships between variables (Ernst & Albers, 2017). Thus, the correlational design was adequate for my study because I am using statistical analysis to evaluate the relationship between my dependent and independent variables. Researchers use experimental and quasi-experimental designs to establish a cause-and-effect association among controlled variables within a study of a randomly sampled population (Rogers & Révész, 2019). The

experimental and quasi-experimental designs were not adequate for this study because the objective of the study did not align with the goal of finding causation or comparison of the dependent variables between different groups.

Research Question and Hypotheses

RQ1: What is the relationship between workload, work–family conflict, and job satisfaction among women in pharmaceutical science?

H_0: There is no statistically significant relationship between workload, work–family conflict, and job satisfaction among women in pharmaceutical science.

H_1: There is a statistically significant relationship between workload, work–family conflict, and job satisfaction among women in pharmaceutical science.

Theoretical Framework

Greenhaus et al. (2003) developed the work–life balance (WLB) theory. Powell and Greenhaus (2013) found more pressure on women who prioritized family life over work life. The researchers attributed the pressure on women to their social roles and found that employers were occasionally viewing that prioritization among women as insubordination. Greenhaus et al. (2003) explained in the WLB theory that employees experience work life and family life as intertwined to make up WLB. Greenhaus et al. (2003) identified WLB as a correlation between work–family balance and quality of life. The authors found that it is beneficial for employers to understand multiple factors, including work–family conflict so that employees have a balance between work, family, and leisure time. Given WLB theory, I sought to determine if workload and work–family conflict variables were viable predictors of job satisfaction measured using the Minnesota

Satisfaction Questionnaire (MSQ) and the Warr-Cook-Wall (WCW) job satisfaction questionnaire for women in pharmaceutical science positions (Malik et al., 2016). Researchers have found that almost half of their pharmaceutical employee respondents are not able to complete their job tasks due to high workloads that reduced their leisure or family time (Malik et al., 2016). Researchers further found that women perform better on the job when pharmaceutical HR managers allow flexibility with scheduling and task management so they could prioritize their work and family responsibilities (Jindal et al., 2017). Therefore, I found the WLB framework to be a suitable theoretical design to examine the specific relationship between workload, work–family conflict, and job satisfaction among women in pharmaceutical science.

Operational Definitions

Pharmaceutical scientist: A professional in the pharmaceutical industry in the areas of clinical pharmacology, pharmacological research, organic chemistry, biotechnology, biochemistry, data management, serology, microbiology, genetics and quality control, molecular biology, immunopharmacology, and pharmacoepidemiology for the purpose of pharmacological research, development, control, and innovation (Barapatre & Joglekar, 2019).

STEM organization: An organization that operates in the fields of science, technology, engineering, and mathematics (U.S. Department of Education, 2019).

STEM professional: A bachelor's degree-holding professional employed as a scientist or a technology, engineering, or mathematical specialist (IGI Global, 2020).

Work–family conflict: Interrelated role conflict between work and family responsibilities (Borgmann et al., 2019; Greenhaus & Beutell, 1985).

Work–life balance (WLB): The integration of an employee's community life and personal life and in their personal and social engagement mostly studied on the variables of stress and leisure (Pandita & Singhal, 2017).

Workload: An employee's distribution of attention and mental resources required to meet the demands of the tasks in their work environment (Hancock & Matthews, 2018).

Assumptions, Limitations, and Delimitations

Researchers make assumptions based on current knowledge, realistic attributes of the research, and the purpose of the study (Armstrong & Glaeser, 2019). Podsakoff and Podsakoff (2019) described the limitations of leadership research as the variables within a quantitative research project that a researcher has limited or no control over due to human interference. Cassiano and Borges-Andrade (2017) described delimitations in research as variables knowingly controlled by the researcher for the purposes of the scope of the research.

Assumptions

Armstrong and Glaeser (2019) discussed the importance of carefully distinguishing assumptions in theoretical, empirical research designs for validating the research and limiting variance. The quantitative methodology for this research was conducted using a web-based survey. The quantitative method can provide accurate results for the correlational research study. The method is objective with the use of

statistical data for the evaluation of the hypothesis. A quantitative correlational study was used to investigate the workload, work–family conflict, and job satisfaction relationships from the perspectives of women in the U.S. pharmaceutical industry.

The web-based survey collection method was used because it is a low-cost method for surveying a broad population of women in pharmaceutical science in the United States with little disruption from timelines or researcher location. The quantitative correlational method with the online survey collection tool was appropriate for the problem and purpose of the study. The participants were given a confidentiality guarantee to encourage them to answer the questions truthfully.

Limitations

The limitation of the study were the sample size and target population, which represented only female scientists in pharmaceutical businesses. Another limitation was that the results are reflective of situations of a specific STEM industry organization and do not reflect the operations of other market demographics. There are opportunities for future researchers to examine other STEM-related businesses and different employee populations. Another limitation was that the participants would not have direct contact with the research for an explanation of the study, questions, or be observable by the researcher. There was limited knowledge of the research participants.

Delimitations

Examples of delimitations for this study are the variables, the theoretical lens, and the sample population used for the study. The chosen variables for the study are specific to pharmaceutical business research; therefore, the study results may be most useful in

evaluating U.S. pharmaceutical practices for women as the targeted scope of this study. The delimitations of this study are that the sampling is from women in scientific positions within southeastern U.S. pharmaceutical organizations. The sampling size was determined using G*Power Version 3.1.9.7 for sample size guidance. The research only addresses women in STEM positions. Future researchers can explore women at different levels in an organization to add to the diversification of the pharmaceutical industry as it pertains to WLB and job satisfaction. Other WLB factors outside of workplace culture, workload, work–family conflict, family–work conflict, and social support were not included in this study.

Significance of the Study

This study may be significant to business practices in that it could offer insight for industry leaders to guide management practices toward sustaining job satisfaction for women in STEM roles. Leaders who understand workload, work–family conflict, and job satisfaction might be able to add to their organization's profits, efficiency, and shareholder value while meeting the goals of their employees' psychological and social needs (Pathak et al., 2019). WLB is a constraint for women in STEM leadership positions (Dutta, 2017). Leaders could use the research findings to gain positive social change insight into under researched pharmaceutical industry dynamics in the United States and women in STEM occupations, which could contribute to the global empowerment of women in science.

Contribution to Business Practice

The contribution to business practice includes the potential insight to under researched pharmaceutical industry dynamics in the United States and women in STEM positions, which could contribute to the global empowerment of women in science. Leaders in the U.S. medical industry could use the knowledge obtained from this research as a remedy for the gender gap that exists due to the inadequate career ladder for diverse talent in healthcare (Bannow, 2019). Enhancing job satisfaction via WLB for women adds to a positive organizational culture in which dedication, employee well-being, and positive work effort allow women to become resilient in reaching new leadership goals in the STEM industry (Balasubramanian & Lathabhavan, 2017).

Implications for Social Change

The implications for positive social change insight to under researched pharmaceutical industry dynamics in the United States. The implications for positive social change may also add insight to the working dynamics of women in STEM occupations but also provides a glimpse at WLB conditions during the COVID-19 pandemic. Understanding the importance of workload and work–family conflict for women in STEM positions provides industry leaders in the United States new insight on diversity issues within the industry due to the inadequate career ladder for diverse talent. Industry leaders could use the data from this research to develop a focus on the factors of workload and work life balance to create a more sustainable work environment that encourages job satisfaction. Enhancing job satisfaction via WLB for women adds to a positive organizational culture in which dedication, employee well-being, and positive

work effort could allow women to become resilient in enhancing their careers in the STEM industry and maintaining job satisfaction under extreme stress conditions. A Review of the Professional and Academic Literature

The purpose of this correlational quantitative study was to determine if there is a significant relationship between workload, work–family conflict, and job satisfaction among women in pharmaceutical science. Leaders who have diverse teams have higher results in employee job satisfaction (Vanderschuere & Birdsall, 2018). Researchers have found that recruitment, training, succession planning, promotion, and counseling are key to the engagement of employees to provide them with supportive work methods and environments to increase engagement and decrease burnout (Balasubramanian & Lathabhavan, 2017). According to Adams et al. (2016), women in sciences do not act on their intentions to leave their position when they are satisfied with their jobs. Satisfied employees engage with the job, maintain balance, and add to their organization's profits, efficiency, and shareholder value. In turn, leaders meet the organizational goals of satisfying psychological and social needs of their employees (Pathak et al., 2019).

Dutta (2017) pointed out that women view leadership in science as a masculine position, which skewed their identity as leaders, hindering their need to move into such positions. Women are not putting themselves in STEM leadership positions despite the U.S. government administration's efforts to provide substantial new benefits and incentives for women (Committee on STEM education, 2018). Dutta determined that WLB is an identified constraint for women in STEM leadership positions. Researchers have found that women retain their positions and are committed to their organization

when their work and home life are balanced but are still in need of effectiveness at work and less work–life disruptions (Shabir & Gani, 2020). However, pharmaceutical employees in India, Pakistan, Saudi Arabia, and the United Kingdom are experiencing job dissatisfaction due to high work demands and increased stress loads (Malik et al., 2016). Furthermore, women working in STEM-related fields are leaving the field due to dissatisfaction, which costs the United States up to $1.5 billion per year (Reilly et al., 2018).

In my search for resources for this study, I reviewed 102 journal articles, seven literature reviews and doctoral dissertations, 15 national society and government reports, and six websites. Of the 130 references, 110 (85%) were published between 2017 and 2020, 118 (91%) were peer reviewed, and 101 (85%) were published within 5 years of the expected date to for chief academic officer approval. I used the following databases and sources to conduct the literature review: Walden University Library and Google Scholar, ProQuest, Business Source Complete, Emerald Management Journals, SAGE, ABI/INFORM, and Science Direct. I organized the literature review to cover the evolution of WLB, the WLB theoretical framework, the independent variables of workload and work–family conflict, the dependent variable of job satisfaction, the pharmaceutical industry dynamics, methods for job satisfaction research, and measurement tools for job satisfaction research. I used the following keywords in my search for literature: *workload, work–family conflict, job satisfaction, work–life balance, pharmaceutical companies in the United States, pharmaceutical industry, women in*

STEM, women in pharmaceutical sciences, and *job satisfaction in the pharmaceutical industry.*

Work–Life Balance Evolution

Dubin et al. (1975) began WLB research 1956 with the terminology *central life interest* (CLI). Dubin et al. used the CLI measurement scale and questionnaire to determine the CLI of men and women in the telephone and banking industries. Researchers reduced the CLI scales from 40 items to 32 in 1963 to survey technical and middle managers more effectively. Researchers used the CLI survey to collect data on formal memberships, technical environment, and general life experiences. The survey covered random scenarios on and off the job. Participants determined their preferred behavior in a specific environment to show where they prioritized their job or nonjob life. Based on the data collected, researchers evaluated organizational commitment and organizational attractiveness. Dubin et al. found that employees who were job oriented in CLI were high in organizational commitment. However, there was a significant amount of variability between CLI and organizational attraction; therefore, the researchers could not make a distinctive conclusion on that factor. CLI research marked the beginning of looking into the wants and needs of the employee rather than the institution, but the subjectivity of the research limited reliability. The questions were leading questions but did begin the discussion of the importance of job life and nonjob life correlations.

In 1977, researchers began to survey university employees on job and life satisfaction to determine if there was a correlation between gender and job and life satisfaction (Kavanagh & Halpern, 1977). The researchers found the topic relevant to the

civil rights movements of the time and the social differences between men and women. Earlier, Brayfield et al. (1957) found no correlation between job and life satisfaction for women but did find evidence for the correlation among men. Brayfield et al. (1957) determined that the different correlation for men and women was due to the higher-level positions of men and the role men had in work and home life (Kavanagh & Halpern, 1977). Kavanagh and Halpern (1977) wanted to build on Brayfield et al.'s work by evaluating different levels of job position for both men and women. The researchers also wanted to determine if there was a relationship between higher-level jobs and the level of job and life satisfaction. Kavanagh and Halpern built questionnaires based on a collaboration of surveys to measure job and life situations. The researchers found correlations between life and job satisfaction for women and men and that position on the job was a factor. The researchers were able to subjectively disprove prior research, which Kavanagh and Halpern attributed to the era and changes in family dynamics.

Greenhaus et al. (2003) viewed work–family balance from the perspective of the individual as they transition from one role to the next as a means of integrating work and family life since the researchers found it to be unrealistic that equal amounts of energy can transition between multiple roles and remain a positive resource. Many individuals become disengaged from one of the roles, causing a domino effect of negative well-being for either the individual, the organization, or the individual's personal life. Greenhaus et al.'s model of work–family balance indicates that work–family balance has a pendulum effect of positive and negative psychological and time factors between work and family satisfaction. The model also removes values and morals from the empirical equation

because the role in the family or at work is imbalanced if either commitment to work or family is negatively impacted regardless of other the individual's values or intentions (Greenhaus et al., 2003).

Work–Life Balance Theory

In 2003, Greenhaus et al. examined the relationship between WLB and the quality of life for accounting professionals. The researchers used the work–family balance variables of time, involvement, and satisfaction between the work and family domains. Greenhaus et al. found that WLB required a new perspective because past researchers were inconsistent in defining balance. Those researchers assumed balance as an equal amount of time and involvement with work and with family; however, Greenhaus et al. found that employees who spent more time with family than work had a higher quality of life than those who spent an equal amount of time at work and with family.

Work–family balance researchers have evaluated flexibility, benefits, stress, segmentation, spillover, work–family conflict, work–family enhancement, and the integration of work and family. Work–family balance became synonymous with employees limiting time at work to be with family in the best interest of the employee. Greenhaus et al. attempted to fill the gaps in work–family balance research by establishing a definition for work–family balance, developing a measurement tool for work–family balance according to the established definition, and determining the relationships that exist between work–family balance and quality of life.

Researchers have correlated work–family balance with individual well-being (Greenhaus et al., 2003). Greenhaus et al. found that imbalance increases stress levels,

which decreases quality of life and work effectiveness. This factor put the responsibility of work–family balance on the organization. Marks and MacDermid (1996) found that imbalance in the easiness of each role causes higher levels of depression and increases work–family conflict. Greenhaus et al. wanted to distinguish the difference between high total engagement and low total engagement between work and family roles to understand the positive and negative effects on quality of life. The researchers hypothesized that positive balance has a greater effect on positive quality of life than negative balance because negative balance causes individuals to detach from quality of life psychologically (Greenhaus et al., 2003). Balanced satisfaction between work and family roles is a mediator for a high quality of life and overall satisfaction with goal achievement and individual well-being.

Balanced individuals have the least amount of work–family conflict and stress. Imbalanced satisfaction in favor of personal life resulted in a high quality of life but not as substantial as time and involvement, which was not a stress mediator. Industry leaders need further research to determine the role of satisfaction balance and an individual's well-being. Greenhaus et al. (2003) reinforced that work imbalance had obvious negative consequences in WLB and quality of life with increased work–family conflict and stress. Pandu (2017) dove into the WLB of information technology employees and teachers to bridge the WLB research gap in those industries. A review of the quantitative literature indicated a relationship between work–family conflict, family-work conflict, work environment, and feelings at work that resulted in job satisfaction. The trending pattern of WLB variables and job satisfaction throughout multiple industries consistently correlates,

but evolving industry partnered with evolving lifestyles requires ongoing job satisfaction with a WLB framework.

Powell et al. (2019) recognized the need for updated uses of their WLB theory due to the advancements of technology and remote work options. Powell et al. noticed that the theory could become outdated unless researchers apply it to new world industries. Researchers have proven that employees experience a correlation between job satisfaction and WLB (Pathak et al., 2019). Employers and employees are responsible for WLB. However, specific field research continues to be necessary as industry leaders approach technological and multicultural advances in the United States (Vasumathi, 2018).

Workload

WLB is beneficial to employees and their organization (Iacovoiu, 2020). Researchers of the industrial age and governmental movements in the United States started the conversation on employee burnout. Glicken and Janka (1982) defined *burnout* as a stress induced crisis in which workers become bored, apathetic, depressed, or exhausted from no longer finding their jobs meaningful or engaging. Glicken and Janka focused on the executive population, who offered high quality, quantity, creativity, energy, and major contributions to their respective industries. Executive burnout limited the positive qualities of executives, and the researchers considered burnout a high risk for an organization (Glicken & Janka, 1982). The researchers found that the major contributors to executive burnout were work overstimulation, personal issues, job

misalignment, and low productivity within the organization that business leaders must address through organizational planning (Glicken & Janka, 1982).

Alternately, Jafari et al. (2019) realized that research gaps existed in the human-based dynamics of mental workload in environments of human–machine interactions. Mental workload ramifications result in human error and performance issues that tend to be remedied when workload is balanced (Akca & Küçükoğlu, 2020). Jafari et al. (2019) determined that the systems dynamic approach is valuable in determining mental workload interactions and behavior patterns of humans. The research team found that industry leaders could use such approaches to assess patterns and uncertainty when evaluating workload problems associated with behavior patterns. In cloud data centers, HR management presents workload challenges in which diagnostic tools are limited. Vashistha and Verma (2020) suggested that industry leaders use valid workload predictors and proper model fitting to address and evaluate time-sensitive workload predictors in the temporal and nontemporal frameworks. However, future research is needed on elevating workload problems.

Glicken and Janka (1982) found that an organizational prevention plan must include diagnostics of observation of the individual and the job because burnout is subjective to the individual. The researchers discussed the use of career enhancement therapy for emotional support on the job and in the home be built into the strategic planning of an organization (Glicken & Janka, 1982). Executives failed to use other methods due to fear of judgement in a high-level position. The main purpose of the burnout discussion was to connect the individual needs to the role in the organization

because of their influence on each other. The executive discussion did not include life circumstances of a specific gender but acknowledged that work and life roles can be sources of stress and burnout among executives. Other WLB researchers have found that employees are easier to retain if they have childcare benefits, organizational involvement in work–family conflict, and flexible work policies (Takeuchi, 2017). People become overwhelmed with family, work–related, and personal obligations, which causes a retention problem because organizational leaders do not understand the importance of WLB (Parida, 2012).

Hospitality industry researchers found that employees perceived WLB as an interrelationship between private and professional lifestyles. Industry researchers focused on the spillover effect in that a portion of an employee's work–life spills over into their personal life to create an imbalance between the separate domains of life. Employees are satisfied with their jobs when they operate in a positive work environment (Hofmann & Stokburger-Sauer, 2017). Researchers have further claimed that younger generations of the technological age value work flexibility for WLB purposes to combat the hectic schedules of the hospitality industry (Self et al., 2019).

According to Sonnentag and Fritz (2018), modern businesses need engaged, resilient, mentally and physically healthy, and critical thinking employees to handle daily high workloads. Employees in scientific careers handle different types of scheduling, deadlines, creative thinking, logical application, and work among a diverse group of other thinkers and leaders. Albrecht et al. (2018) commented that employee success depends on the employee's work–related positive outcomes, physical and mental rewards, and

accumulated achievements. Iacovoiu (2020) found that employees require flexibility in their work schedules, but employers must also account for economic changes, job duty specifications, technological advances, and globalization to offer the best WLB. Overall, rewards can take shape in benefits, compensation, flexibility, and managerial understanding.

Employees under time pressure with high workloads need to become psychological detachment from work during time out of work but the detachment required for relaxation is difficult when the workload is overwhelming. Lack of psychological detachment when not working increases social stress and decreases job satisfaction. Job stress was due to variables of control over the job and the skill level required for the job. Work–life positive management, supportive leadership, emotional support tools, work–life flexibility, and opportunities could alleviate job stress (Sonnentag & Fritz, 2018).

Employee gender role also plays into work–life management, workload stress, and job stress. Women only makeup 25% of STEM related occupations and do not have adequate representation in other industries in positions of upper management. Women are experience low job satisfaction, added pressure, and isolation when faced with the pressures of gender role mismanagement (Ahmad et al., 2018; Albrecht et al., 2018). When presented with the challenges of gender isolation, women tend to make less attempts to move into or stay in demanding careers like pharmaceutical science.

Researchers have suggested that employees and organizational leaders could respond well to flexible work schedules in which they can balance their workload and

home life needs (Pathak et al., 2019). Women experienced job autonomy based on how workload and work–family conflict balanced with other WLB factors (Vasumathi, 2018). According to Vasumathi's review, women employees view WLB as a means of organizational stability in support of their family life and are therefore more committed to their employers. Gupta and Charu (2013) found that employees experienced burnout due to poor WLB and were less satisfied with their jobs in the information technology industry.

In the healthcare industry, workload issues began at the university level. Due to lack of university level educational resources, there is a shortage in the nursing industry resulting in a substantial increase in workload (Bittner & Bechtel, 2017; Wyte-Lake et al., 2013). The increase workload resulted in nurses leaving the industry (Blodgett et al., 2018). Blodgett et al. (2018) found that nursing instructors poorly simulated workload and found through literature review that faculty workload should include properly simulated clinical, student, educational faculty, length of time, and leadership roles in order to recognize areas in which workload was a problem. Therefore, nursing students are entering into the industry underprepare for workload difficulties. The transition from student to healthcare employee should be equivalent to the workload in the field.

According to Chandola et al. (2019) flexible work schedules in addition, task arrangements could allow women to suffer less from stress-related illnesses. Researchers have correlated the independent variables of WLB and job satisfaction to organizational commitment in the administration industry. Abdirahman et al. (2020) found that employees performed better on-the-job but still required improvements to motivation

models for sustainability. Elderly healthcare industry researchers found that work–family conflict and WLB play a role in how stressed and/or satisfied employees are on-the-job. Stress, work–family conflict, and WLB play an active role in job satisfaction. The researcher's population was primarily older women working part-time (Weale et al., 2019).

Work–Family Conflict

Greenhaus and Beutell (1985) completed a literature review to examine the conflict between work and family roles in support of work–family conflict. The researchers found that dual roles create a work–family conflict because of the time, stress, and specific behaviors devoted to each, which makes it difficult to fulfill both roles. The researcher's main purpose was to find the boundaries that exist between work and family conflicts on an organizational platform. Work–family conflict is embedding in WLB (O'Neill & Follmer, 2019). According to According to Salehan et al. (2018), cultural views are changing, and a culturally supportive environment eases the stress of stakeholders and creates a more productive organization.

Work–family conflict is a combination of role and interrole conflict between the employee's role at work and their role at home, as they interact in an imbalanced way. If time, stress, and behavior in one domain outweigh the time, stress, and behavior in the other domain then the employee has a work–family conflict (O'Neill & Follmer, 2019). When employees stress and leisure plummets, life within both domains suffers. In the work domain, work–family conflict could lead to insubordination and low productivity. The main conflicts on-the-job were time-based conflicts and varied by gender and role in

the organization. Time-based conflicts varied due to imbalanced work schedules, position in the organization, marital status, parental role, and spouse employment.

Work–family conflict also included strain and work stressors. Work related stress results in employee mental dysfunction that includes anxiety, depression, and other burnout symptoms. Work stress was a result of leadership conflict, co-work conflict, physical work demand, mental work demand, and task challenges. Beutell and Greenhaus (1982) found that husbands and wives with aligned occupations experienced less conflict between work and home life. In turn, work–family conflict is a predictor for the development of relationships on an individual and organizational level especial when scheduling, work demands, and the fast-pasted work environments take a mental toll on an employee (O'Neill & Follmer, 2019).

The behavior conflicts in the work–family conflict model included gender stereotypes, leadership styles, self-reliance, aggression, emotional stability, and objectivity (Schein, 1973). Researchers determined that a conflict would arise if work behavior styles spilled over into the family role behavior expectations. In conclusion, the review resulted in the need for future research because it had become obvious to the researchers that work and family life were interconnected (Greenhaus & Beutell, 1985).

Braun and Peus (2016) explained that WLB became a universal term that encompassed attributes of life, such as work, life, family, home, conflict, and enrichment. The researchers expressed that WLB was more than work–family conflict because it does not represent a full view of balance in the life of an employee. The researchers found that employees felt balanced when they were satisfied with their balance of multiple societal

roles. Murvin (2019) found a correlation between manager WLB and employee engagement using Greenhaus et al.'s (2003) WLB theoretical framework. Greenhaus' team also found that the work flexibility and time were the biggest issues for employees and found that flexibility and WLB were enablers to creating a positive work environment. Murvin suggested more review on working women and manager WLB and employee engagement that could build on past theories.

According to Bannow (2019), the healthcare industry pay gap between men and women exists mainly in higher-level positions within the organization but narrows in lower than executive positions. The gender gap exists because men are acquiring higher-level positions in the organization because there is a limited career ladder for more diverse populations. Hiring professionals are missing the importance of gaining new talent, developing on leadership potential, and planning for the next generation of talent rather than a salary benefits problem.

European researchers found gender delineation in organizational scheduling (Chung, 2018). Dahm et al. (2015) explored the relationship between work–family conflict, time allotment between work and home, mindset under the self-regulation and self-discrepancy theories. Dahm et al. used polynomial regression and response surface methodology to discover that real-time and the time employees preferred to work indiscretions were responsible for work dissatisfaction, negative mindset, and poor health. Employers could use work time flexibility to reduce work–family conflict, which the researchers found to be more prominent in women when compared to men.

Job Satisfaction

Job and life satisfaction are linked to an individual's overall happiness (Gonzalez-Mulé et al., 2017). According to Herzberg's two-factor theory of motivation, monetary compensation is valuable in the motiving employees of public sector companies. However, employees with private companies have less motivation due to job restrictions and less financial reward. It is important that organizational leaders gage job satisfaction appropriately, because it is a motivational factor for employees in both private and public sectors based on Herzberg's two-factor theory of motivation (Hur, 2017).

The theory of purposeful behavior by Barrick et al. (2013) detailed employee behavior traits and cognitive functions were primary in job satisfaction and employee turnover intentions. However, Österberg et al. (2017) found that personality had little to do with job satisfaction in military institutions possibly due to the dynamics of basic training and performance responsibilities. Employees satisfied on the job are loyal and dedicated outside of contractual agreements. Grounded theory qualitative researchers found that job satisfaction among military leaders as a means of achieving and balancing organizational commitment (Alvinius et al., 2017).

Griffeth et al. (2006) found that job satisfaction and organizational commitment are the leading causes of employee turnover in family businesses. Griffeth et al. recognized that intergenerational transfer strategies were failing. The researchers chose to compare succession to employee turnover to transition the contemporary turnover theory, career life cycle theory into a Successor Retention Model. Griffeth et al. discussed the turnover theory as when individuals evaluate the relationship between their incentives,

contributions, and intention to continue working in the organization. An employee's desire to leave an organization is influenced by the perception of what would happen once they have left the organization. The employee's desire to move is composed of perceptions of how easy or difficult it would be to leave the organization. The employee's satisfaction with alternate job searches, feelings of withdrawal, and eventual turnover decisions are all factors that drive the decision to continue with the organization.

Griffeth et al. pointed out previous literature models that focused on job satisfaction and commitment but neglect thoughts of withdrawal. The researchers also draw attention to the unfolding model of turnover, which is employee turnover decisions based on traumatic events, and embeddedness in which employees with strong links between their work and community are less likely to leave an organization. The turnover theory encapsulated job satisfaction but was general as a lens to view job satisfaction throughout an organization but was not an appropriate because WLB theory was a better lens for seeing workload and work–family conflict for women as the specific target population.

Researchers examined job satisfaction in conjunction with work–home facilitation and work–home interface based on the attachment theory in which anxious attachment created a greater disruption for employees attached to the work–home facilitation conflicts. The factors that individuals face in mediation the domains had an effect on employee well-being and job satisfaction (Chong et al., 2018). Lower job satisfaction can create family-work conflict and become a major stressor for employees over time (Shockley, 2018). Powell and Greenhaus (2013) evaluated the gender role theories of

identity, boundary, and role to determine the effect of gender on work–family conflict and positive spillover resulting from femininity. The researchers found that women who played a high family role equal femininity, which resulted in reduced work–family conflict but also reduced positive spillover. The researcher defined gender as male or female. Gender is a regular variable in work and family business research but continues due to the evolutionary nature of gender role changes. At the time of the research, there was little other research on gender, work–family conflict, and positive spillover. Past researchers found mixed evidence for gender influences on work and family exchanges leaving open questions on the subject. The researcher's survey population for the study was men and women at the same job level, function, and age range. Powell and Greenhaus examined femininity, gender role beliefs, family role values, work–family actual separation, and work–family preferred separation. The researchers investigated how the organization influences the factors. The researchers pointed out that low work–family conflict and high work–family positive spillover resulted in increased job satisfaction, increased job commitment, lower intentions to leave the organization, increased efforts on the job, and higher job performance.

Pharmaceutical Industry Conditions

According to Tulum and Lazonick (2018), $30 billion per year of U.S. government money supports life science research using talent from American universities who major in research, U.S. government agencies, and other businesses. The U.S. pharmaceutical industry requires innovative research and development (R&D) for sustainability so that employees, investors, and consumers are recipients of the financial

benefits of the industry. The U.S. pharmaceutical industry is a leader in innovation and technological competitive advantages among pharmaceutical organizations in other countries. The pharmaceutical industry is a complex industry that requires diverse talent for the execution of large projects like new product developments and open innovation practices (Lee et al., 2019).

According to the *Global Economic Impact of the Pharmaceutical Industry Report* (2020), the North American pharmaceutical market had experience growth of approximately 5.4% growth rate and the United States contributed approximately USD 532 billion to the gross domestic product (GDP) as of the year 2017 (Ostwald et al., 2020). The U.S. pharmaceutical industry is expected to reach USD 685.45 billion by 2023 (*U.S. Pharmaceuticals Industry Analysis and Trends 2023*, 2019). However, even with trade restrictions in place, other markets are quickly making strides in the development of new drugs (Hui, 2017). In 2020 the U.S. GDP in the pharmaceutical industry was selling approximately USD 514 billion which is above European and Asian pharmaceutical markets by approximately 20% (*Global pharma market revenue by regional share 2010-2018*, 2021). China expects to reach USD 161.8 billion by 2023 which is consistently and exponentially growing (*China's pharma market to gain 30% global share - China.org.cn*, 2019). European and Asian industries present a competitive market for the United States as a leader in the pharmaceutical industry. China has put a focus on continuous improvement by strengthening their competitive advantages through original research and development, technological innovation, disease research, and supply change management, which puts a strain on the U.S. industry to keep up within

the market (Hui, 2017). Competitive advantage is a result of innovation and continuous development.

Pharmaceutical industry leaders are reliant on regulated R&D for production, raw materials, purchasing, and marketing (Yuan & Lo, 2016). Pharmaceutical industry researchers recognized patterns showing that new technology, innovation efforts, and knowledge availability can result in risky spending of financial resources (Le & Sukhatme, 2020). Larger pharmaceutical organizations benefit more from marketing quality products and smaller pharmaceutical organizations benefit most from R&D of new products. Therefore, it remains critical that the pharmaceutical industry leaders understand the relevance of quality professionals in place whether they are testing and maintaining quality or developing new products.

The pharmaceutical industry is diverse in that it is composed of global employees, consumers, and stakeholders. Shaffer et al. (2012) describe diversity in a global network as an expatriate job that can be broken into three requirements: (a) physical mobility, (b) cognitive flexibility, and (c) nonwork disruption. The requirements address the employees need to potentially relocate or travel internationally, learn to adjust in a multicultural setting, and manage life adjustments outside of the job. The multicultural nature of an expatriate job separates it from a more stagnate job. Expatriate jobs are more complex, and employees make multiple shifts from foreign work practices and home-life, which presents new stress. An employee's level of stress due to balancing expatriate jobs has an effect on job satisfaction, job performance, employee turnover, organizational commitment, and employee well-being (Albrecht et al., 2018). Employees under stress

require time to unwind from the demands of a high stress job so that they remain productive and rejuvenated (Sonnentag & Fritz, 2018).

Innovation in the pharmaceutical industry requires a collective mindset among leaders. Innovation requires a dynamic culture and accumulated knowledge in an environment of sustained knowledge to product a quality product (Tulum & Lazonick, 2018). The pharmaceutical industry requires up-to-date knowledge for the evolution of the industry. The fast pace of the pharmaceutical changing dynamics needs efficient training programs and technology. Technology allows the pharmaceutical organization to grow as quickly as the competition. Blaga and Gabor (2018) found that e-learning training methods built into the organizational performance management program has a relationship to employee feedback, satisfaction, learning, confidence, and organizational footprint on the industry.

According to Bannow (2019), the healthcare industry pay gap between men and women exists mainly in higher-level positions within the organization but narrows in lower than executive positions. The gender gap exists because men are acquiring higher-level positions in the organization because there is a limited career ladder for more diverse populations. Hiring professionals are missing the importance of gaining new talent, developing on leadership potential, and planning for the next generation of talent rather than a salary benefits problem. Through strategical control, organizational integration, and strict financial management, the U.S. pharmaceutical industry could meet the social conditions required to stay an atmosphere of innovation and value creation (Tulum & Lazonick, 2018).

According to Sonnentag and Fritz (2018), modern businesses need engaged, resilient, mentally and physically healthy, and critical thinking employees to handle daily high workloads. Employees in scientific career handle different types of scheduling, deadlines, creative thinking, logical application, and work among a diverse group of other thinkers and leaders. Wille et al. (2018) added that a career is also composed of an employee's method for adding meaning to their work–life (Albrecht et al., 2018). Albrecht et al. (2018) commented that employee success depends on the employee's work–related positive outcomes, physical and mental rewards, and accumulated achievements. Rewards can take shape in benefits, compensation, flexibility, and managerial understanding, which in turn leaves employees satisfied with their jobs.

Expatriate job satisfaction researchers focused on pay and compensation packages. However, typical job satisfaction variables are still important for sustainability in an international multicultural environment given that job satisfactions in the expatriate environment have such an impact on intentions to leave an expatriate and non-expatriate organization (Albrecht et al., 2018). High turnover in the pharmaceutical industry, like other industries, is costly but also poses risk to proprietary information and other protected scientific research information. Employees balancing an expatriate job with a family-life at home may require more flexibility or understand than single employees (Albrecht et al., 2018; *Brookfield Global Relocation Services' 2014 Global Mobility Trends Survey Released*, 2014). Work–family interface researchers need to continue to identify problems, provide methods, and create tools for future expatriate management research (Shaffer et al., 2012).

Pharmaceutical industry leaders need to provide a new way to approach personnel development because of the mission industrial revolution of innovation. Researchers have suggested that organizational efficacy as a means for increasing employee commitment. Pharmaceutical leaders use organizational efficacy at the industrial and organizational level for the development of social learning and strong competition. Employees are confident and faithful if the organization evaluates efficacy from the inside. The researchers found that employees experience stress, burnt out, and underpayment. The employees were dissatisfied because of inadequate management, lack of support, a small career ladder, inadequate pay, and ethical dilemmas. The researchers concluded that organizations must be collaborative, stable, trustworthy, and innovative in order to maintain satisfied employees (Verma & Sharma, 2017). Verma and Sharma evaluated organizational efficacy and employee attrition and the sample population was from the Indian pharmaceutical industry sectors of R&D, production, and marketing. The researchers used a questionnaire to gather data on employee satisfaction, type of work performed, organizational commitment, justice, employee intent to leave the organization, and the employee's perception of other job opportunities outside of the organization.

Yuan and Lo (2016) used the time, interaction, and performance (TIP) theory to evaluate the relationship between team temporal leadership and performance in Taiwanese pharmaceutical companies. Temporal leadership is a term that combines competence and fellowship to create better job performance. Teamwork and time management are issues in pharmaceutical marketing. The researchers focused on the

variables of competency, followership, team temporal leadership, and performance through the lens of the TIP theory because there are problems associated with how fast employees get work done and how employees manage time while at work. Temporal leadership is composed of scheduling, coordinating tasks and teams, use of resources as they pertain to job performance (Mohammed & Nadkarni, 2011; Yuan & Lo, 2016). Yuan and Lo (2016) concluded that pharmaceutical marketing teams in Taiwan did not have set schedules, locations, or flexibility, which left leaders unable to understand the needs of the employees. The researchers found that the temporal leaders involved in setting schedules, holding meetings, execute instructions with clarity, and actively participating in time-sensitive decision making reduced regulatory errors. The researchers also had data that supported temporal leadership and a positive correlation with fellowship, which influences job satisfaction.

Blaga and Gabor (2018) used a survey to collect data from participants of the Quality Management Department, R&D, and production in a Romanian pharmaceutical organization. The researchers determined that e-training methods were important to knowledge acquisition and competence for employees and Phillip's ROI framework was essential for assessing methods as related to employee satisfaction. ROI quantitative methodology is a four-point measurement scale best for HR training programs (Blaga & Gabor, 2018). Verma and Sharma (2017) used factor analysis to reduce the data backed up by the Bartlett's test and extracted with a varimax rotation. Sampling size was determined using the Kaiser-Meyer-Olkin (KMO) measure and the Principal component was the test for variance. According to social science researchers, approximately half of

the variance in social sciences is explicable in a reliable study (Verma & Sharma, 2017). Yuan and Lo (2016) used the 6-item scale developed by the Federal Human Capital Survey to collect fellowship data and found it reliable with prior research conducted in the United States in which researchers found that fellowship to be correlated with job satisfaction (Yuan & Lo, 2016). The Taiwanese pharmaceutical sales marketing population was predominantly middle-aged men with higher education and less than five years in their position. The researchers presented a valid perspective of the complex nature of the regulated marketing branch of the pharmaceutical industry but did not represent the scientific sector of the pharmaceutical industry that also requires a diverse team of competent employees under workload pressures of regulatory agencies and time-sensitive projects.

Measurement

Past research had measured balance on satisfied or unsatisfied scales, which created a limitation in that it was merely the employee's perception of balance rather than a measurement of balance (Greenhaus et al., 2003). Marks and MacDermid (1996) measured balance in asking a single question regarding equal enjoyment with all roles of life and studied only women. In further research, the researchers expanded into an 8-question method to evaluate equal satisfaction, equal time, and equal attention across roles (Marks & MacDermid, 1996). The research was limited because the researchers could not determine the meaning behind the responses and required a more direct tool for measuring positive balance, negative balance, and imbalance.

The participants of the Greenhaus et al. (2003) study were associated with the American Institute of Certified Public Accountants (AICPA) and are within the STEM demographic participants. The researchers distributed surveys to men and women of multiple demographics across the accounting industry. The researchers measured quality of life using a seven question, 5-point bipolar measurement scale mediated by work–family conflict and stress. Greenhaus et al. measured work–family conflict using four questions and measured family-work conflict using two questions both on a 5-point scale from strongly agree to strongly disagree. The research team measured stress using two questions on a 5-point scale; the researchers averaged the responses to give a total stress score. Greenhaus et al. used the hierarchical quadratic regression to test the hypotheses.

The researchers determined that involvement and satisfaction among the variables were a positive factor for quality of life, but work–family conflict and family-work conflict were negative factors. Little time distributed between variables of the study did not influence quality of life. More time with family increased quality of life. Low quality of life for highly committed and work imbalanced individual had the highest work–family conflict and stress. Those family imbalances with a high quality of life had the lowest work–family conflict and stress (Greenhaus et al., 2003). Quality of life was not an issue for individuals who did not put forth time and effort into work or family or who were not satisfied with their combined roles due to general disengagement.

Chang and Chang (2019) used the MSQ to investigate the correlation between job satisfaction for female nurses on shift duty and their respective sleep quality. The researchers performed the Pittsburgh Sleep Quality Index (PSQI) with a hierarchical

multiple regression (HMR) to find that job satisfaction influences sleep quality for women in nursing that perform shiftwork. Hotel industry researchers in Turkey used the MSQ as a measurement tool for 20 factors that compose job satisfaction with a 92% reliability. The researchers used SPSS 17 to calculate the results in which it was found that men are more satisfied on the job than women (Chang & Chang, 2019). Researchers in the information and communication technology (ICT) industry used the short form MSQ to determine the relationship between servant leadership (SL) and job satisfaction among industry leaders. Akdol and Arikboga (2017) used the SL theoretical framework in the Turkish ICT industry and found that the leader member exchange (LME) had a minor effect on SL and job satisfaction.

Health care industry researchers have used the WCW job satisfaction questionnaire to evaluate the effects of workload on job satisfaction for young professionals in nursing, geriatric care, physical therapy, diagnostics, and biomedical fields. The researchers analyzed the linear regression to find that employees were more satisfied with colleagues that lighten the workload. Shared job duties in the medical fields enhanced job satisfaction for young professionals (Ulrich et al., 2017). Hassell et al. (2007) published a United Kingdom literature view on job satisfaction within the pharmaceutical industry with the goal of validating the different measurement scales used for job satisfaction analysis. Researchers in Indonesia also used the WCW satisfaction scale in their exploratory study of job satisfaction among primary care physicians (PCPs) in relationship to the Jaminan Kesehatan Nasional (JKN) health care reform. The researchers found that the PCPs were satisfied with coworkers, work hours, and work

conditions but were not satisfied with the JKN health care reform (Maharani et al., 2019). The researchers found limited research on UK pharmacist satisfaction but determined that the WCW satisfaction scale was extremely reliable as a measurement tool for job satisfaction in the pharmaceutical industry and suggested that other researchers should use the method in other sectors of the pharmaceutical industry.

Malik et al. (2016) used a set of questions derived from the MSQ and WCW applications to collect data on WLB variables and job satisfaction in the Pakistani pharmaceutical industry. The researchers performed their study by asking questions relevant to different facets of the pharmaceutical industry in order to present a descriptive cross-sectional study similar to those performed in India, Saudi Arabia, and the United Kingdom. The research population consisted of experts in anthropology, pharmaceutical management academia, hospital, and private community pharmacists. The researchers evaluated the population dynamics of gender, field of practice, age, marital status, pharmaceutical sector, experience level, and salary. The researchers asked the participants to rate agree, neutral, or disagree on their job satisfaction, organizational culture, workload, work–family conflict, social support, rewards, and family-work conflict. The researchers evaluated the descriptive data using SPSS program Version 16 and ran Kruskal-Wallis ($P \leq 0.05$) test and Mann-Whitney ($P \leq 0.05$) tests for to compare the variables within the study. The research was descriptive, did not show correlational data, and limited in the researcher's language in translation to English. However, the researcher's use of tools were reliable and valid in concluding that job satisfaction, organizational culture, workload, work–family conflict, social support,

rewards, and family-work conflict were important to the pharmaceutical professionals in maintaining WLB.

Methodologies

Historically quantitative research in business management is attractive to business journals for publication (Runfola et al., 2017). Quantitative researchers collect and analyze numerical data to develop a research conclusion through critical thinking and revealing relationships within the context of the study (Ernst & Albers, 2017). According to Albers, quantitative researchers must determine the most appropriate and relevant questions to ask in study and understand how to evaluate the relationships between variables. Qualitative research, specifically case study work, is becoming more prominent as a business and management research method. However, qualitative researchers have a lack of requirements for number of participants and other aspects of validity, which has caused publishers to shy away from choosing such methods for publication (Runfola et al., 2017). Lean management researchers have called for more quantitative research to build the body of knowledge and advance the management industry. The qualitative method of research is appropriate for use when the conclusion does not require the backing of statistical date for support. In business research, qualitative research is adequate a researcher's attempt to provide a best practices-based solution. Qualitative researchers search for the how and why of a phenomenon for the purpose of implementation research (Hamilton & Finley, 2019).

Empirical management researchers use survey data collection and statistical analysis as a common research practice. However, lean management professionals have

found the tools underutilized for the collection of data to find significant correlations and potential causality between variables within the study in management. The Likert scale rating of 1-4 for level of satisfaction is useful only if the researcher has a clear understanding of the limitations of the data (Park & Wu, 2019). Researchers analyze Likert data with statistical methods like the Pearson's r correlation for the comparison of two variables. The Pearson's r correlation is a tool of variance. Researchers also use exploratory factory analysis and data mining algorithms to determine relationships among variables or predict outcomes (Pearce & Pons, 2019).

Transition

Section 1 was the background and the origin of the general business problem in pharmaceutical science and the specific business problem for women in pharmaceutical science. The problem statement was the general and specific business problems to pinpoint the identity. The purpose statement was the specific business problem, the target population, the geographical location, and the social change contribution of the quantitative correlational research. The nature of the study was a detailed description of the methodology, and design of the study. Additional subsections included the theoretical framework, operational definitions, assumptions, limitations, delimitations, the significance of the study, and an extensive review of the literature. Section 1 also consisted of the theoretical framework as the lens of the study, which establishes outcome predictions based on the relationships found between variables and the acceptance or rejection of the null hypothesis.

Section 2 highlights the technical portions of this study. These subcomponents include the role of the researcher, participants, research method and design, population and sampling, ethical research, instrumentation, data collection technique, data analysis, and study validity. A statement of the role of the researcher provides lucidity concerning the relationships with and knowledge of the participants, and the responsibility to guarantee objectivity. A detailed explanation of the research method and research design chosen is used to support the reason to validate selection. Population and sampling describes, in detail, the appropriate number of participants required for the study and describes the probabilistic sampling in the research as the technique used to retain participants.

Section 2: The Project

Section 2 includes a discussion of the role of the researcher in the study, the participants, research method and design, population and sampling, ethical research, instrumentation, data collection technique, data analysis, and study validity. An explanation of the role of the researcher will provide clarity concerning the relationships with and knowledge of the participants and the responsibility to guarantee objectivity. A detailed discussion of the research method and research design validates their selection. Detailed population and sampling plans include the appropriate number of participants required for the study and the probabilistic sampling technique for participant retention.

Purpose Statement

The purpose of this correlational quantitative study was to examine the relationship between workload, work–family conflict, and job satisfaction among women in pharmaceutical science. The targeted population for this study consisted of women in pharmaceutical scientist positions in the United States. The independent variables were workload and work–family conflict. The dependent variable was job satisfaction. The implications for positive social change include an increase in the discussion of empowering women in STEM positions and potentially contributing to diversification efforts in the field of science. The findings from this research may also effect positive social change by informing business leaders of the need for better approaches to pharmaceutical work environments to include consideration of what constitutes sustainable positive environments for women in pharmaceutical science.

Role of the Researcher

As the researcher, my intention was to answer the following research question:

RQ1: What is the relationship between workload, work–family conflict, and job satisfaction among women in pharmaceutical science?

Researchers use the qualitative method to objectively explore a problem through participants' perspectives and researcher interpretation to identify a theme (Aspers & Corte, 2019). I used a combination of the MSQ and the WCW job satisfaction questionnaire because they are standardized instruments in publication. These tools are reliable and valid instruments for collecting job satisfaction and could provide accurate statistics and high-quality research (Malik et al., 2016). Unreliable reporting increases the chances of inaccurate results and data measurement errors (Mohajan, 2017). The data collection procedure was best for evaluating whether workload and work–family conflict relate to job satisfaction for women in pharmaceutical science. According to Mohajan (2017), researchers use a reliable measurement tool to provide an accurate evaluation of the data while limiting measurement errors and disproportional theoretical results. A researcher who wishes to ensure rigor uses strategies for quality research by incorporating engagement, observations, and a well-defined research question to reduce bias, negativity, and discrediting (Nuijten, 2018). Good researchers create quality research by displaying reliable, repeatable, and valid information on the research topic.

As the researcher, I have taken the specific quality standard and ethical responsibilities associated with the role. According to Lapid et al. (2019), members of the Walden University Institutional Review Board (IRB) use *The Belmont Report* to provide

ethical guidelines to protect research participants in a research study. The principles of *The Belmont Report* include the participants' right to information, that participants are of sound mind, and that participants volunteered for the research project. Researchers must also adhere to the ethical conduct of the IRB and the additional codes of federal regulations (CFRs) that ensure ethical conduct, participant confidentiality, and participant privacy in research (U.S. Government Publishing Office, 2018). Researchers must obtain IRB approval before beginning a research study (Fawcett & AbuFannouneh, 2017).

Employed for 15 years as a pharmaceutical quality professional, I have worked side-by-side with pharmaceutical scientists and encountered others in global professional societies. Through my experience, I have accumulated information about the challenges for women in pharmaceutical science. Therefore, to inhibit any potential researcher bias, I did not discuss my experience, beliefs, perspectives, or knowledge with participants, which could have been considered leading the participants' perspectives. My survey was internet based to further limit researcher and participant contact. The integration of researcher bias puts the quality, IRB approval, reliability, accuracy, and validity of the research at risk (Lapid et al., 2019). Therefore, limiting encounters with the participants and maintaining ethical codes established in *The Belmont Report*.

Participants

Selecting the right participants has a direct impact on a research study. Eligible participants for this research study included those who met the following criteria: (a) employment as a pharmaceutical scientist, (b) full-time employment at a pharmaceutical manufacturing facility in the United States, and (c) 2 years of work experience in a

position that meets the pharmaceutical science definition at their current pharmaceutical facility. Women make up 25% of STEM industries and should have the knowledge to improve their integration and advancements of women in the workforce (Abdirahman et al., 2020). Through strategical control, organizational integration, and strict financial management, the U.S. pharmaceutical industry could meet the social conditions required to maintain an atmosphere of innovation and value creation (Tulum & Lazonick, 2018). Women in pharmaceutical science represent the appropriate population for this research study.

To recruit prospective participants, I conducted a call for participants on the social media outlet LinkedIn. I called for participants from groups on the social media platform designated for members of the pharmaceutical communities to make sure I was reaching out to my target population appropriately. Random sampling on social media provided access to individuals of all genders, race, age, and levels of education within the pharmaceutical industry. Voluntary participants received a link to the electronic survey packet in the invitation to participate. The electronic packet included (a) a digital informed consent letter, (b) the combined survey (MSQ and the WCW job satisfaction questionnaire), and (c) a demographic survey.

To build a relationship with participants, I provided a link to survey in the introduction letter in which I presented the topic of the research study. I also introduced myself as the researcher. I made participants aware that the informed consent provided pertinent information, such as the benefits, risks, and withdrawal options for the research study. I explained the contents of the online survey and provided information on the

combined MSQ and the WCW job satisfaction questionnaire surveys. To meet IRB guidelines, all participants were required to give informed consent to participate in my study. To further establish a working relationship with participants, I provided the participants with my contact information.

Research Method and Design

Researchers select the appropriate research method and design to establish a valid and reliable research study. Researchers use the qualitative method to objectively explore a problem through participant perspectives and researcher interpretations to identify a theme (Aspers & Corte, 2019). Quantitative research methods, on the other hand, involve examining the relationships between target variables in a population and enable researchers to determine a correlation (Zyphur & Pierides, 2017). Because the purpose of this study was to determine whether workload and work–family conflict predict job satisfaction for women in pharmaceutical science, a quantitative correlational method was most appropriate. A research method affects the conclusion and results of a study. Therefore, in the following sections, I justify the use of a quantitative methodology instead of the qualitative or mixed research methods.

Research Method

The purpose of this quantitative correlational study was to determine whether workload and work–family conflict predicts job satisfaction for women in pharmaceutical science. Quantitative researchers collect and analyze numerical data to develop a research conclusion through critical thinking and revealing relationships within the context of the study (Ernst & Albers, 2017). A quantitative researcher presents descriptive statistics,

analyzes assumptions, produces inferential statistic results, and concludes with a concise summary of data. Therefore, the quantitative method was appropriate for determining the relationship between workload, work–family conflict, and job satisfaction.

In contrast, researchers use the qualitative method to objectively explore a problem through participants' perspectives and researcher interpretations to identify a theme (Aspers & Corte, 2019). Qualitative research is appropriate when the conclusion does not require the backing of statistical data for support. In business research, qualitative research is adequate in a researcher's attempt to provide a best practices-based solution. Qualitative researchers search for the how and why of a phenomenon for the purpose of implementation research (Hamilton & Finley, 2019). The qualitative method was inadequate for this doctoral study because I did not intend to explore a problem or define a phenomenon. The mixed-methods style was not appropriate for my study because the collection of qualitative data was not within the scope of my research objectives.

Research Design

The designs considered for my study were correlational, experimental, and quasi-experimental. Quantitative researchers determine the most appropriate and relevant questions to ask in a correlational study and statistically evaluate the relationships between variables (Ernst & Albers, 2017). According to Bennett and Stanley (2019), researchers use the quantitative correlational design to determine to what degree a relationship exists between variables. Thus, the correlational design was adequate for my study because I used statistical analysis to evaluate the relationship between my

dependent and independent variables. Researchers use experimental and quasi-experimental designs to establish a cause-and-effect association among controlled variables within a study of a randomly sampled population (Rogers & Révész, 2019). Experimental researchers complete a research study in a controlled environment to evaluate a forecast model or a hypothesis (Arvan et al., 2019). However, the experimental methods may not provide real-world data as required for the purpose of this study. The experimental and quasi-experimental designs were not adequate for this study because the objective of the study did not align with the goal of finding causation or comparison of the dependent variables between different groups.

Population and Sampling

The population of this study will consist of women employed full-time in a position of pharmaceutical science in a pharmaceutical manufacturing organization located in the United States. The population should have been with their current pharmaceutical company at the time of data collection for a minimum of 2 years. Choosing the wrong target population could slow down the research timeline, reduce the accuracy of the research, and cost the researcher. The target population represents the beliefs of a larger population (Rahi, 2017). To investigate variables that could affect job satisfaction among women in pharmaceutical science, I selected women in pharmaceutical science positions in pharmaceutical companies in the United States. According to the U.S. Pharmaceuticals Industry Analysis and Trends (2023), the United States is the largest market in the world and accounts for approximately 40% of total pharmaceutical sales which is expected to be worth USD 685.45 billion by 2023 (*U.S.*

Pharmaceuticals Industry Analysis and Trends 2023, 2019).Selecting women in pharmaceutical science from the United States is an opportunity to gather a small, relevant population from a large, global population for data collection in this doctoral study.

Sampling

I selected participants using a probabilistic sampling technique. I recruited pharmaceutical science participants with the following characteristics: (a) employment as a pharmaceutical scientist, (b) full-time employment at a pharmaceutical manufacturing facility in the southeast region of the United States, and (c) 2 years of work experience in a position that falls within the definition of pharmaceutical science at their current pharmaceutical facility. Choosing the wrong target population could slow down the research timeline, reduce the accuracy of the research, and cost the researcher. The target population represents the beliefs of a larger population (Rahi, 2017). Probabilistic sampling is an effective sampling method for recruiting participants who represent a larger population.

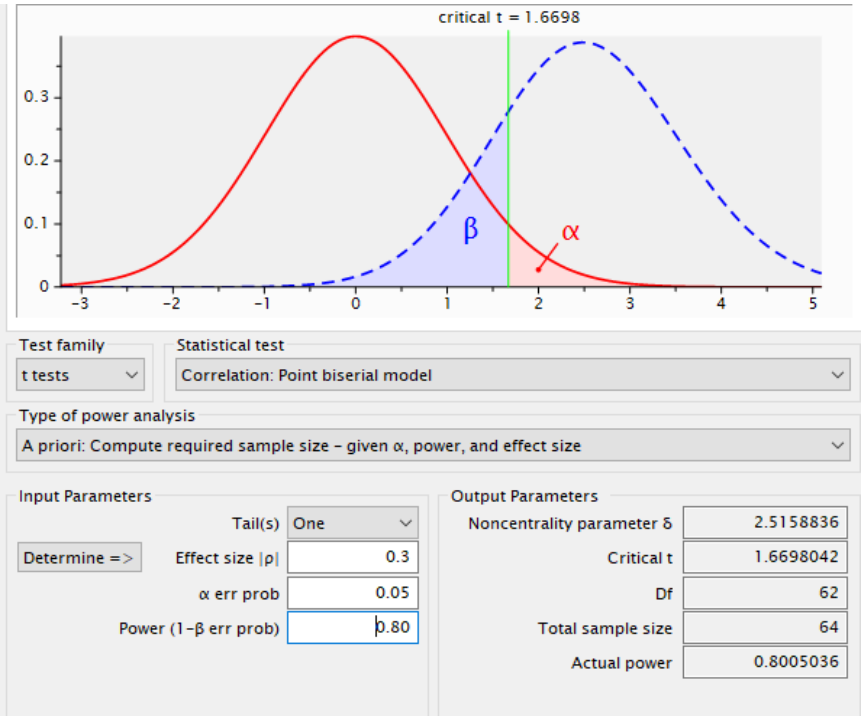
Probability sampling is an accurate, simple random sampling method in which each participant has an equal chance for participant selection (Sharma, 2017). According to Sharma, simple random sampling is advantageous becomes it is an equal opportunity for participants, it is a small sample for the representation of the larger population, and it is unbiased for the generalization of research data. However, simple random sampling does not provide information for every member of a research population and therefore researchers must accurately address generalized assumptions and limitations based on the

random sampling size. An appropriate sample size increases the validity of the research (Gibson et al., 2017).

A power analysis, using G*Power Version 3.1.9.7 software, was conducted to determine the appropriate sample size for this study. An a priori power analysis, assuming a medium effect size ($f^2 = .3$), $\alpha = .05$, and two predictor variables identified that a minimum sample size of 64 participants was required to achieve a power of .80. Increasing the sample size to 161 would increase power to .99. Therefore, I sought between 64 and 161 participants for the study (see Figure 1). The use of a medium effect size ($f^2 = .30$) was appropriate for this study.

Figure 1

Power as a Function of Sample Size



The pharmaceutical manufacturing industry consists of many facets, from customer service marketing to research, production, and new product development. Inclusion criteria for this study was used to identify the characteristics of the target population. The inclusion criteria for this study included (a) employment as a pharmaceutical scientist, (b) full-time employment at a pharmaceutical manufacturing facility in the southeast region of the United States, and (c) 2 years of work experience in a position with the pharmaceutical science definition at their current pharmaceutical facility. The exclusion criteria for this study were (a) pharmaceutical employees outside the area of pharmaceutical scientist as listed in the operational definitions of this doctoral study, (b) pharmaceutical scientists with fewer than 2 years' work experience, (c) interns in pharmaceutical science, and (d) pregnant women.

Ethical Research

An ethical researcher is required to be compliant with ethical guidelines and research regulations (Gomes & Duarte, 2018). Ethical compliance includes reduction of researcher bias, participant confidentiality, participant privacy in addition to participants' right to informed consent, that the participant is of sound mind, and the participant has volunteered for the research project. Informed consent is a participant agreement that indicates that the participant is participating in the project of their own freewill and comprehend the research purpose and the consequences of participating in the research project. The informed consent is a disclosure of the research information to the participant for their protection (Metselaar, 2019).

Participants in this study have the option to willfully withdraw at any time. The participants have the option to participate voluntarily. The voluntary nature of participation and withdrawal information is in the informed consent form. The informed consent also contains the steps participants may take to withdraw from the study which include (a) not agreeing with the consent information, (b) not answering the survey questions, and (c) removing themselves from the online survey. I used codes, instead of personal identification, to assign participants in the study to protect their identity. The use of an online survey offers additional anonymity (Nayak & Narayan, 2019). I used the online survey method to collect data and protect participants. I informed participants on the informed consent form that they will not receive incentives or compensation for participating in the study. However, I disclosed how the study may benefit the problem in the problem statement.

Long-term data storage protection is necessary to assuring participant confidentiality and data originality (Braun et al., 2017). I will store the study data for 5-years on the Microsoft One Drive in a secondary secured vault to protect the confidentiality of the participants and so that data can be retrieved up to 5-years post-doctoral study. The cloud storage is double password protected for additional security of the confidential information.

Researchers must adhere to the ethical conduct of the IRB, *The Belmont Report*, and the additional CFRs that ensure research ethical conduct, participant confidentiality, and participant privacy (U.S. Government Publishing Office, 2018). Social scientist researchers in violation of ethical compliance risk the credibility of the research and the

research institution. The ethical regulatory system is a form of protection that balances social science researcher and the participants for the purpose of public knowledge acquisition (Narasimha, 2018).

The U.S. government designed the IRB in accordance with federal regulations as a sector for monitoring and enforcing guidelines to protect human participants. The IRB meets U.S. Food and Drug (FDA) regulations under 21CFR56. IRB reviewers consist of scientific and nonscientific reviewers in accordance with 21CFR56.107 (Lapid et al., 2019). Failure to meet research compliance by not providing informed consent threatens the participants, the reliability of the research, the validity of the research, the integrity of the researcher, and the reputation of the researcher's institution.

Walden University's IRB requires all doctoral students to partake in the National Institute of Health Web-based training program entitled "Protecting Human Research Participants." I included the Walden IRB approval number, 04-29-21-0657637, and the expiration date of April 28, 2022. It is imperative that social science researchers follow ethical standards because social science researchers handle the public for providing research in the independent social disciplines within an economic structure (Narasimha, 2018). Social science researchers handle human participants and produce research for social change. Researchers that do not follow ethical university and federal guidelines could face penalties, loss of funding, and skepticism even if human participants the researcher does not cause harm. Furthermore, the ethical guidelines protect the dignity of the participants, increase the benefits of the research, and lower the risks associated with the research (Sugiura et al., 2016).

According to Sugiura et al. (2016), researchers must use informed consent when the rights of the participant maybe at risk and is especially essential when the participants are considered part of a vulnerable population. The informed consent practices also apply web-based data collection for privacy and data protection. Metselaar (2019) conducted a review of 227 papers on the use of interviews to collect conservation science data. The review team found that the use of interviews for data collection was popular in social science research but had some areas for improvement. Interviews are effective tools used by researchers to understand the knowledge, values, and beliefs of the participants. The researchers concluded that some researchers were not clearly identifying the importance of the interview method for the study design and did not provide proper ethical considerations for the use of the tools. Therefore, Metselaar suggested that researchers make sure that interview-based researchers are transparent, robust, and credible. Researchers can use checklists, clear consent, and supplemental information in order to produce ethical and quality research (Metselaar, 2019a).

To address concerns that maybe presented by the research participants, I provided contact information for a Walden University representative and myself. Providing a multichannel communication method helps participants feel informed and comfortable in participating in the doctoral study and maintains ethical standards of the informed consent process (U.S. Department of Health and Human Services, 2017). The regulatory training, informed consent, and enforcement of ethical guidelines for my research will ensure a compliant and safe doctoral study.

I have included appendices as visual references for information within the research study for reader understanding and clarity. Appendix A is the letter of invitation to call for participants on social media. Appendix B displays the Combined MSQ and WCW survey for workload, work–family conflict, and job satisfaction.

Data Collection Instruments

Quantitative researchers examine variables using validated instruments for data collection. Researchers use the quantitative correlational design in order to determine to what degree a relationship exists between variables (Bennett & Stanley, 2019). For this study, I generated data from the MSQ, WCW job satisfaction questionnaire, and demographic questions to measure and examine the relationships between the independent and dependent variables. The independent variables are the predicting variables used to determine if a relationship exists to produce an outcome related to the dependent variable. Researchers use the data collected with the measurement instruments of the independent and dependent variables to make a prediction about future behaviors (Kite, 2017). The MSQ is a measurement instrument used to measure employee job satisfaction as a reflection of how employees feel about the responsibilities of their jobs and the effect of the job on factors outside of the work environment (Al-Haroon & Al-Qahtani, 2020). The WCW job satisfaction questionnaire is a measurement that consists of job satisfaction questions on facets of the work environment, flexibility, hours worked, and job recognition (Ali Jadoo, 2020). Researchers have used the MSQ and WCW job satisfaction questionnaire instruments individually and combined in multiple STEM industry research projects, including pharmaceutical industry, and therefore, are the most

appropriate measurement tools for examining the relationship between workload, work–family conflict, and job satisfaction among women in pharmaceutical science.

The survey instrument will consist of section 1, demographic information, and section 2, combined WLB, and job satisfaction survey ordinal data (see Appendix B). Section 2 will specifically contain Likert-type scale questions on the variables of workload, work–family conflict, and job satisfaction. Quantitative researchers use Likert-type scales to gather subjective data from participants. The Likert-type scale is an ordinal scale of measurement tool used but quantitative researchers for data collection (Park & Wu, 2019). I will use a 5-point Likert-style scale may include response options such as: 1 = *strongly agree*, 2 = *agree*; 3 = *neutral*, 4 = *disagree*, and 5 = *strongly disagree* to collect data on workload, work–family conflict, and job satisfaction.

I used questions 1 to 7 of the instruments to gather demographic information on the age of participants, gender, marital status, field of practice, sector of practice, level of experience, and current salary. Questions 8 and 9 were Likert-type scale questions on workload and questions 10 and 11 to obtain data on work–family conflict. I asked participants to respond to questions 12 to 18 on job satisfaction. I asked participants to select the response options that best represents their opinion for each statement. I used the SurveyMonkey system to distribute the electronic survey to participants online. Participants should expect to complete the online survey in approximately 20 minutes.

MSQ

Weiss et al. developed the MSQ in 1967. The MSQ is a measurement instrument used to measure employee job satisfaction as a reflection of how employees feel about

the responsibilities of their jobs and the effect of the job on factors outside of the work environment (Al-Haroon & Al-Qahtani, 2020). Chang and Chang (2019) used the MSQ to investigate the correlation between job satisfaction for female nurses on shift duty and their respective sleep quality. The researchers performed the Pittsburgh Sleep Quality Index (PSQI) with a hierarchical multiple regression (HMR) to find that job satisfaction influences sleep quality for women in nursing that perform shiftwork. Resort industry researchers used the MSQ as a measurement tool (short version) for 20 factors that compose job satisfaction and received results at 76-90% reliability (Glaveli et al., 2019). Researchers in the Information and Communication Technology (ICT) industry used the short form MSQ to determine the relationship between SL and job satisfaction among industry leaders. Akdol and Arikboga (2017) used the SL theoretical framework in the Turkish ICT industry and found that the LME had a minor effect on SL and job satisfaction. The MSQ data is collected on an ordinal scale of measurement.

WCW Job Satisfaction Questionnaire

Warr et al. (1979) developed the job satisfaction measurement scale in 1979. The WCW job satisfaction questionnaire is a measurement that consists of job satisfaction questions on facets of the work environment, flexibility, hours worked, and job recognition (Ali Jadoo, 2020). Health care industry researchers have used the WCW job satisfaction questionnaire to evaluate the effects of workload on job satisfaction for young professionals in nursing, geriatric care, physical therapy, diagnostics, and biomedical fields (Ulrich et al., 2017). Researchers in Indonesia also used the WCW satisfaction scale in their exploratory study of job satisfaction among PCPs in relationship

to the JKN health care reform. The researchers found that the PCPs were satisfied with coworkers, work hours, and work conditions but were not satisfied with the JKN health care reform (Maharani et al., 2019). The researchers determined that the WCW satisfaction scale was extremely reliable as a measurement tool for job satisfaction in the pharmaceutical industry and suggested that other researchers should use the method in other sectors of the pharmaceutical industry (Hassell et al., 2007). The WCW data is collected on an ordinal scale of measurement.

Combined Survey

Malik et al. (2016) used a set of questions derived from the MSQ and WCW applications to collect data on WLB variables and job satisfaction in the Pakistani pharmaceutical industry. The researchers performed their study by asking questions relevant to different facets of the pharmaceutical industry in order to present a descriptive cross-sectional study similar to those performed in India, Saudi Arabia, and the United Kingdom. The research population consisted of experts in anthropology, pharmaceutical management academia, hospital, and private community pharmacists. The researchers evaluated the population dynamics of gender, field of practice, age, marital status, pharmaceutical sector, experience level, and salary. The researchers asked the participants to provide ratings on their job satisfaction, organizational culture, workload, work–family conflict, social support, rewards, and family-work conflict. The data collected was ordinal. The researchers evaluated the descriptive data using SPSS program Version 16 and ran Kruskal-Wallis ($p \leq 0.05$) test and Mann-Whitney ($p \leq 0.05$) tests to compare the variables within the study. The research was descriptive, did not show

correlational data, and limited in the researcher's language in translation to English. However, the researcher's use of tools based on the pilot study using the 5-scale Likert scale where 1 = *strongly agree* and 5 = *strongly disagree* resulting in a Cronbach alpha value of 0.76 confirmed the reliability and validity of the questionnaire. The researchers concluded that job satisfaction, organizational culture, workload, work–family conflict, social support, rewards, and family–work conflict was important to the pharmaceutical professionals in maintaining WLB.

Data Collection Technique

Data collection starts when the participant provides informed consent. Empirical management researchers use survey data collection and statistical analysis as a common research practice (Pearce & Pons, 2019). I issued a web-based survey packet appealing to female participants employed full-time in a position of pharmaceutical science in a pharmaceutical manufacturing organization located in southeast region of the United States. The population should be with their current pharmaceutical company at the time of data collection for a minimum of 2 years. The electronic packet will include (a) a digital informed consent letter; (b) the combined survey (MSQ and the WCW job satisfaction questionnaire); and (c) a demographic survey.

Electronic survey data collection consists of computer based, web-based, and electronic mail delivery based (Nayak & Narayan, 2019). For survey collection, I used a web-based survey application like Survey Monkey. Web-based surveys have a convenient design for distribution and reporting, are available at a low cost, and provide anonymous reporting for the protection of the participants' identity. Online surveys are

practical for quantitative correlational research and participants can access web-based surveys on multiple devices. However, researchers have found that web-based surveys come with standard online technological disadvantages when internet usage is limited, especially during times of crisis. Web-based surveys present a challenge if the population sampling is not properly controlled and if ethical practices informed consent is missing (Nayak & Narayan, 2019). I have reduced the challenges and disadvantages of web-based survey collection by openly distributing the surveys to pharmaceutical professionals but in an open forum to limit population discrepancies and protect individual pharmaceutical companies.

Data Analysis

The focus of this study examined the relationships between workload, work–family conflict, and job satisfaction among women in pharmaceutical sciences. Thus, examining the relationship between workload and work–family conflict may help recognize some variables that affect the job satisfaction for women in pharmaceutical science, which could contribute to the pharmaceutical industry body of knowledge by presenting the WLB information as an active tool for job satisfaction with a focus on women in STEM positions. The research question and hypotheses directing the research study follow.

Research Question and Hypotheses

RQ: Do workload and work–family conflict predict job satisfaction among women in pharmaceutical sciences?

$H_0$1: Workload is not a statistically significant predictor of job satisfaction among women in pharmaceutical sciences.

H_a1: Workload is a statistically significant predictor of job satisfaction among women in pharmaceutical sciences.

$H_0$2: Work–family conflict is not a statistically significant predictor of job satisfaction among women in pharmaceutical sciences.

H_a2: Work–family conflict is a statistically significant predictor of job satisfaction among women in pharmaceutical sciences.

Multiple Linear Regression

For this research study, I used the summarized ordinal data from the survey scales and the interval data was used in a multiple linear regression analysis. Multiple linear regression is reliable in examining two or more independent variables and a dependent variable outcome (Aliahmadi, et al., 2016). Multiple linear regression is an appropriate statistical measurement tool for examining relations between variables is among a large population. Therefore, it is appropriate for this doctoral study. I used multiple linear regression to determine if workload and work–family conflict are predictors of job satisfaction among women in pharmaceutical science.

Advantages of Multiple Linear Regression

Multiple linear regression is an appropriate statistical measurement tool for examining relations between variables is among a large population. The *R* represents the values of the variables while *R2* represents the variance between the predictor and dependent variables. *R2* is indicative of the appropriate fit of variables based on variable

values. If the *R2* value is large, then there is a strong predicted relationship whereas a small *R2* value reflects a weak relationship between variables and a prediction is weak. The adjusted *R2* guarantees that the variables are reflective of the population model and predictive of the results. Multiple linear regression is the best method for examining the relationship between predictor and dependent variables.

Alternative Statistical Tests

Statistical tests not consistent with multiple linear regression were not the best fit for this doctoral study. A t-test can be dependent or independent but compares the mean between variables. The Mann-Whitney U test compares the medians of two groups and seeks the evolution between groups within the distribution samples. Analysis of variance (ANOVA) represents is a linear statistical model used to evaluate the statistical differences between three or more independent variables. An analysis of variance F test may prevent the researcher from meeting the logical assumptions for the study and was not the best statistical method for this doctoral study. Spearman's rank correlation statistic test ranks variables but the current study requires a correlation evaluation between independent and dependent variables, which makes multiple linear regression the best statistical method of analysis.

Data Cleaning and Screening

For this study, I collected data from one survey that combined MSQ and the WCW job satisfaction questionnaires. After data collection, I looked through each survey response to make sure there are no indications of missed data required for analysis that would impede data reliability and quality. I removed incomplete responses and invalid

surveys. The data cleaning process increases the quality of the study so that the results are accurate and results in a viable conclusion (Chu, 2019; Hossen et al., 2018).

Data Assumptions

Assumptions of the multiple linear regression include linearity, multicollinearity, outliers, independence, normality, and homoscedasticity. Researchers use assumptions to determine what violations exist before the data is processed and analyzed. The data analysis with assumptions allows for the examination of the relationships between the variables for linearity (Ernst & Albers, 2017). The use of scatterplots could visually represent the presence of a linear relationship between variables and show if the variables meet or violate assumptions. Multicollinearity represents a strong correlational relationship between the dependent variables. Outliers can also be seen in visual representations and show the presence of abnormal values. There were no outliers in this research study.

For the assumption of independence in which the errors are not related to the variables or each other, I tested for normality. Normality assumes that the data is of normal distribution, which is required. Homoscedasticity is another assumption for data analysis, represents an equal variance among data points, and would be evident in the scatter plot diagrams. The data met the rules of assumption for multiple linear regression analysis.

Interpreting Inferential Results

Quantitative researchers use descriptive and inferential statistics to evaluate and interpret data. Descriptive statistics results in the statistical data in the form of medians,

modes, variances, and standard deviations. Inferential statistics results in the statistical data in the form of *t*-test and ANOVA data representing the relationship between hypotheses relevant to the population (Roy, 2018). I will use Pearson's correlation to find the relationships between workload, work–family conflict, and job satisfaction among women in pharmaceutical science. Researchers use the Pearson's correlation coefficient (PCC) to determine the relationship between two variables and is widely used in linear correlation tests. The ρ value represents the total correlation coefficient and COR represents the degree of linearity of the correlation between variables (Tian et al., 2019). According to Tian et al., if $\rho < \alpha$ and $\alpha = 0.05$ then the correlation is nominal. Also, I will use the scatterplots to assess linear relationships and outliers. I will use descriptive statistics identify the demographic trends (i.e., age, gender, and time on the job) in the data.

Excel and Statistical Package Social Sciences

For this study, I used IBM's Statistical Package Social Science (SPSS) Version 25 to analyze the statistical data. I entered the survey-imported data from an Excel spreadsheet into SPSS. SPSS is a common statistical tool for social science data analysis and descriptive statistic research. SPSS is user friendly, convenient, and is a validated software system used for data analysis.

Study Validity

Researchers must produce valid and reliable research. The validity of the research instrumentation is important for producing quality research. However, a valid instrument does not always indication that the research is accurate. Therefore, quantitative

researchers must understand and address the threats to the statistical conclusion validity and external validity implications. Research validity plays an important role in how researchers assess, present, conduct, and conclude equality research projects (Xu et al., 2019).

Threats to Validity

Threats to the statistical conclusion validity reduce the accuracy required to predict the relationship among variables. The reduce the threats to statistical conclusion validity, researchers must determine if they are missing data or inappropriately accounting for data by addressing issues of content validity and instrument validity. Threats to the statistical conclusion validity include low reliability of measures, poor reliability of treatment implementation, random irrelevancies in the setting, or random heterogeneity of respondents which all cause low statistical power within the study. Researchers also threaten the statistical conclusion validity by failing to adjust the error rate or violating the assumptions of the statistical tests (Schmidt et al., 2018).

Statistical power for conclusion validity is composed of alpha level, power, sample size, and effect size in order to avoid Type I and Type II errors that would inhibit the accuracy of the null hypothesis (Schmidt et al., 2018). I used a statistical power $\geq$ 0.95 to lower the probability of a Type II error. I will use an alpha error probability of α = 0.05 to decrease the potential for a Type I error. A type I error occurs when the researcher rejects a null hypothesis by mistake. The opposite is true for a Type II error in which a researcher accepts a null hypothesis in error (Stoltzfus & Kaur, 2017).

Researchers can reduce Type II errors by adjusting sample in order to find the appropriate affect size and statistical power (Stoltzfus & Kaur, 2017). An appropriate sample size increases the validity of the research statistical data. Small sample sizes reduce validity and threaten to statistical power. However, large sample sizes tamper with assumptions and affect the normality of distribution. A sampling error is a guide for precision. If the sampling error is low, then the variability is low. The standard deviation is used to represent sampling error. A large sample size could result in a small standard error (Schmidt et al., 2018).

I will conduct a power analysis using G*Power Version 3.1.9.7 software to determine the appropriate sample size for the study. An a priori power analysis, assuming a medium effect size ($f^2 = .3$), $\alpha = .05$, and 2 predictor variables, identified that a minimum sample size of 64 participants is required to achieve a power of .80. Increasing the sample size to 161 will increase power to .99. Therefore, between 64 and 161 participants were sought for the study.

Probability sampling is an accurate, simple random sampling method in which each participant has an equal chance for participant selection (Sharma, 2017). According to Sharma, simple random sampling is advantageous becomes it is an equal opportunity for participants, it is a small sample for the representation of the larger population, and it is unbiased for the generalization of research data. However, simple random sampling does not provide information for every member of a research population and therefore researchers must accurately address generalized assumptions and limitations based on the

random sampling size. An appropriate sample size increases the validity of the research statistical data (Gibson et al., 2017).

Reliability of the Instrument

Reliability of a study establishes that the study instrument is high quality in supporting the concluding results of the study (Hidayat et al., 2018). In this research study, I used reliable and valid instruments. I used SPSS to determine the Cronbach's alpha to determine if the survey instrument is reliable in this study. A Cronbach's alpha coefficient measurement greater than 0.70 indicates that the survey instrument is reliable (Taber, 2017).

Transition and Summary

Section 2 was a broad explanation of the research processes required for a quantitative correlational study on the relationship between workload, work–family conflict, and job satisfaction for women in pharmaceutical science. The purpose statement consisted of a description of the geographical location, population, and the implications of social change.

Section 2 was also an explanation of my role as the researcher, the recruiting process for viable participants, the qualifications for participation, and the regulatory standards for piloting ethical research that involves human to avoid ethical research malpractice. The selected population included women in pharmaceutical science located in southeast region of the United States.

Section 2 was an in-depth description of the research method, design, and data collection instrumentation reliability and validity. The tool used for data analysis was

SPSS. Statistical analysis by multiple linear regressions will determine the relationship between the workload, work–family conflict, and job satisfaction for women in pharmaceutical science. The acceptance or rejection of the null hypothesis is determined using the statistical analysis results. Section 2 represented the different types of validity in the research. Section 3 consists of an interpretation of the data to produce conclusive results. Also, in Section 3, I further discuss the data as relevant to business practices and social change for the purpose of making recommendations for industry implications and potential future research opportunities.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this correlational quantitative study was to examine the relationship between workload, work–family conflict, and job satisfaction among women in pharmaceutical science. Data were collected from surveys completed by 76 women in pharmaceutical scientist positions to answer the research question. The research question and related null hypotheses were:

RQ: What is the relationship between workload, work–family conflict, and job satisfaction among women in pharmaceutical science?

$H_0$1: Workload is not a statistically significant predictor of job satisfaction among women in pharmaceutical sciences.

$H_0$2: Work–family conflict is not a statistically significant predictor of job satisfaction among women in pharmaceutical sciences.

Presentation of the Findings

Descriptive Statistics

The descriptive statics were collected and analyzed to evaluate the demographic patterns of the population as in relation to the pharmaceutical industry. Table 1 displays the frequency counts for the demographic variables in the study. The women's ages ranged from 25–34 years (28.9%) to 55–64 years (10.5%) with a median age of 39.5 years. Most of the women were married (68.4%), and 16 women reported being single, never married (21.1%). The majority worked in either quality control (47.4%) or R&D (31.6%). Respondents were divided somewhat evenly between the public (51.3%) and

private (44.7%) sectors. Years in the organization ranged from 2–5 years (53.9%) to greater than 10 years (27.6%), with a median of 3.5 years. Nearly all respondents had salaries greater than $50,000 annually (97.4%). Over half the scientists held bachelor's degrees (53.9%) as their highest degree, with the rest holding master's degrees (46.1%) (see Table 1).

Table 1

Frequency Counts for Selected Variables

Variable and category	n	%
Age[a]		
25–34	22	28.9
35–44	26	34.2
45–54	20	26.3
55–64	8	10.5
Gender		
Female	76	100.0
Marital status		
Married	52	68.4
Single, never married	16	21.1
Other relationship status	8	10.5
Field of practice		
Clinical study	7	9.2
Research and development	24	31.6
Quality control	36	47.4
Data management	9	11.8
Sector		
Public	39	51.3
Private	34	44.7
Unknown	3	3.9
Years in organization[b]		
2–5	41	53.9
6–10	14	18.4
Greater than 10	21	27.6
Salary range		
$30,000–$50,000	2	2.6
Greater than $50,000	74	97.4
Highest degree		
Bachelor’s	41	53.9
Master’s	35	46.1

Note. $N = 76$. [a]$Mdn = 39.5$ years. [b]$Mdn = 3.5$ years.

Table 2 displays the psychometric characteristics for the three summated scale scores: satisfaction, workload, and work–family conflict. The Cronbach alpha reliability coefficients ranged in size from $\alpha = .70$ to $\alpha = .73$, with a median sized alpha of $\alpha = .73$. Thus, the analysis indicated that all scales had adequate levels of internal reliability (Taber, 2017).

Table 2

Psychometric Characteristics for Summated Scale Scores

Score	Items	M	SD	Low	High	α
Satisfaction	7	3.75	0.70	2.43	5.00	.73
Workload	2	3.30	1.10	1.00	5.00	.70
Work–family conflict	2	3.39	1.10	1.00	5.00	.73

Note. $N = 76$.

Research Question and Hypotheses Testing

To answer the research question, Table 3 displays the Pearson and Spearman intercorrelations for satisfaction with workload and work–family conflict. For satisfaction with workload, both the Pearson correlation ($r = –.35$, $p = .002$) and Spearman correlation ($r_s = –.33$, $p = .004$) show that higher scores for workload were significantly related to lower scores for satisfaction, providing support to reject $H_0 1$. For satisfaction with work–family conflict, both the Pearson correlation ($r = –.42$, $p = .001$) and Spearman correlation ($r_s = –.40$, $p = .001$) show that higher scores for work–family conflict were significantly related to lower scores for satisfaction, providing support to reject $H_0 2$ (see Table 3).

Table 3

Intercorrelations Among the Summated Scale Scores

Score	1	2	3
Pearson correlations			
1. Satisfaction	1.00		
2. Workload	–.35***	1.00	
3. Work–family conflict	–.42****	.80****	1.00
Spearman correlations			
1. Satisfaction	1.00		
2. Workload	–.33***	1.00	
3. Work–family conflict	–.40****	.76****	1.00

Note. $N = 76$. *$p < .05$. **$p < .01$. ***$p < .005$. ****$p < .001$.

In addition, Table 4 displays the results of the standard multiple regression model that predicted satisfaction based on workload and work–family conflict. The final model was statistically significant ($p = .001$) and accounted for 17.3% of the variance in the dependent variable satisfaction. Specifically, greater scores for satisfaction were related to lower scores for work–family conflict ($\beta = –.39$, $p = .03$), providing further support to reject $H_0 2$. However, workload was not a significant predictor of satisfaction after controlling for the work–family conflict score ($\beta = –.04$, $p = .84$).

Table 4

Prediction of Satisfaction Based on Based on Workload and Work–Family Conflict

Variable	B	SE	β	p	VIF
Intercept	4.66	0.25		.001	
Workload	–0.02	0.11	–.04	.84	2.80
Work–family conflict	–0.24	0.11	–.39	.03	2.80

Note. $N = 76$. Final model: $F(2, 75) = 7.62$, $p = .001$. $R^2 = .173$. Durbin-Watson = 1.88.

Summary and Comparison to Literature

Hypothesis 1 “Workload is a statistically significant predictor of job satisfaction among women in pharmaceutical sciences” was partially supported in this research (see Tables 3 and 4). Modern businesses need engaged, resilient, mentally and physically healthy, and critical thinking employees to handle daily high workloads (Sonnentag & Fritz, 2018). Some WLB researchers have found that employees are easier to retain if they have childcare benefits, organizational involvement in work–family conflict, and flexible work policies (Takeuchi, 2017). WLB continuously needs improvements in flexible work time and location (Ridic et al., 2016). Blaga and Gabor (2018) found that e-learning training methods built into the organizational performance management program has a relationship to employee feedback, satisfaction, learning, confidence, and organizational footprint on an industry. Further research is needed on the effects of flex time, remote scheduling, and e-learning in the pharmaceutical industry. Development and further research on workload constraints in the pharmaceutical industry and remote work data could provide more data in support of Hypothesis 1 and the effects of workload on job satisfaction.

Hypothesis 2 “Work–family conflict is not a statistically significant predictor of job satisfaction among women in pharmaceutical sciences” was fully supported in this research (see Tables 3 and 4). Past researchers found that WLB required a new perspective because past researchers were inconsistent in defining *balance*. This research is a new perspective in the pharmaceutical industry in the United States, filling the social science need for new perspective in an evolving industry. Greenhaus and Beutell (1985)

found the cross between work–family conflict and job satisfaction. Involvement and satisfaction among the WLB variables were a positive factor for quality of life but work–family conflict and family–work conflict were negative factors. The researchers reinforced that work imbalance has obvious negative consequences on WLB, quality of life with increased work–family conflict and stress (Greenhaus et al., 2003). According to Vasumathi's review (2018), women employees view WLB as a means of organizational stability in support of their family life and are therefore more committed to their employers. Powell and Greenhaus (2013) pointed out that low work–family conflict and high work–family positive spillover resulted in increased job satisfaction, increased job commitment, lower intentions to leave the organization, increased efforts on the job, and higher job performance. Work–family conflict is a combination of role and multiple role conflict between the employee's role at work and their role at home, as they interact in an imbalanced way. Hypothesis 2 on work–family conflict and job satisfaction support previous WLB research and Greenhaus et al.'s theory of WLB that work–family conflict is a significant predictor of job satisfaction.

Glicken and Janka (1982) discussed the use of career enhancement therapy for emotional support on the job and in the home be built into the strategic planning of the organization. The turnover theory encapsulates job satisfaction but is general as a lens to view job satisfaction throughout an organization and was not an appropriate because WLB theory was a better lens for seeing workload and work–family conflict for women as the specific target population. Yuan and Lo (2016) focused on the variables of competency, followership, team temporal leadership, and performance through the lens

of the TIP theory because there are problems associated with how fast employees get work done and how employees manage time while at work. The researchers found that the temporal leaders involved in setting schedules, holding meetings, executing instructions with clarity, and actively participating in time-sensitive decision making reduced regulatory errors. The career enhancement therapy theory, TIP theory, and turnover theory could be alternative theoretical frameworks for future studies on workload, work–family conflict, and job satisfaction for women in pharmaceutical science.

According to Bannow (2019), the healthcare industry pay gap between men and women exists mainly in higher-level positions within the organization but narrows in lower positions. The gender gap exists because men are acquiring higher-level positions in the organization because there is a limited career ladder for more diverse populations. Beutell and Greenhaus (1982) found that husbands and wives with aligned occupations experienced less conflict between work and home life. Gender is a regular variable in work and family business research but continues due to the evolutionary nature of gender role changes. Women experience low job satisfaction and added pressure and isolation when faced with the pressures of gender role mismanagement (Albrecht et al., 2018). Future researchers could repeat this study by surveying men in the pharmaceutical industry in the United States for comparative analysis on workload, work–family conflict, and job satisfaction to represent both genders in the pharmaceutical industry.

Applications to Professional Practice

According to the U.S. Department of Homeland Security, essential critical infrastructure workers are in positions of protecting their communities and function as critical to public health and safety in which the workers serve a purpose in economic and national security (Folbre et al., 2020; *Guidance on the Essential Critical Infrastructure Workforce | CISA*, 2020). Folbre et al. found that half of the essential workers, as defined by the DOHS, were professional women with a bachelor's degree or higher. This definition supports that the participants of this study were essential workers during the COVID-19 pandemic and were in higher demand to support essential critical infrastructure businesses during the COVID-19 pandemic. The participants of this study present a unique and valuable input on WLB research in the pharmaceutical industry.

This study is significant to business practices as it offers insight to pharmaceutical industry leaders that can be used to guide management practices toward sustaining job satisfaction for women in STEM roles. This study used survey data from 76 respondents to examine the relationship between workload, work–family conflict, and job satisfaction. The population was sampled during the COVID-19 pandemic. The population median population had worked in the industry approximately 3.5 years. The global COVID-19 pandemic began in January 2020 and data collection began in March 2021. Much of the sample population has spent most of their time working in the industry during the pandemic. Industry professionals during this time are facing new work–family conflict and workload challenges not faced by women in the pharmaceutical sciences in the past. Data collected during this time provide insight into the pharmaceutical industry during a

critical time of new product development like the COVID-19 vaccines and the stress of hybrid work and family environments under extreme circumstances in history.

Furthermore, the pharmaceutical industry is a global industry growing in diversity through their employees, consumers, and stakeholders. Pharmaceutical industry leaders are reliant on regulated R&D for production, raw materials, purchasing, and marketing of critical products for consumers (Yuan & Lo, 2016). High turnover in the pharmaceutical industry is costly and poses risk to proprietary information and other protected scientific research information. Malik et al. (2016) concluded that job satisfaction, organizational culture, workload, work–family conflict, social support, rewards, and family–work conflict were important to the pharmaceutical professionals in maintaining WLB. This research adds to the body of knowledge on WLB for women in the pharmaceutical industry. This research was conducted during a global pandemic, at a critical time for quality professionals to be in place throughout the industry in areas of testing, maintaining quality, and/or developing new products.

Pharmaceutical industry leaders need to provide a new way to approach personnel development because of the mission industrial revolution of innovation. Yuan and Lo (2016), found that employees are stressed, burnt out, and underpaid and concluded that organizations must be collaborative, stable, trustworthy, and innovative in order to maintain satisfied employees (Verma & Sharma, 2017). Sustainability within the industry is needed in pandemic and non-pandemic times within the industry and other areas where high demand STEM professionals could be needed. Leaders who understand workload, work–family conflict, and job satisfaction can add to their organization’s profits,

efficiency, and shareholder value while meeting the goals of their employee's psychological and social needs. WLB has been a constraint for women in STEM leadership positions and is still a factor for women in sciences. The research findings provide positive social change insight to under researched pharmaceutical industry dynamics in the United States and women in STEM occupations, which contributes to the global empowerment of women in science but also provides insight to WLB conditions during the COVID-19 pandemic.

Implications for Social Change

The implications for positive social change insight to under researched pharmaceutical industry dynamics in the United States. The implications for positive social change may also add insight to the working dynamics of women in STEM occupations, which could contribute to the global empowerment of women in science but also provides a glimpse at WLB conditions during the COVID-19 pandemic. Leaders in the United States medical industry can use the knowledge obtained from this research as new insight on the gender gap that exists due to the inadequate career ladder for diverse talent in healthcare by understanding the importance of workload and work–family conflict for women in STEM positions. The data shows that workload and work–family conflict are significant predictors of job satisfaction for women in pharmaceutical science positions. Women in STEM positions are still facing gender-based hardships. Industry leaders should focus on the factors of workload and work life balance presented in the research to create a more sustainable work environment that encourages job satisfaction. Enhancing job satisfaction via WLB for women adds to a positive organizational culture

in which dedication, employee well-being, and positive work effort will allow women to become resilient in enhancing their careers in the STEM industry and maintaining job satisfaction under extreme stress conditions.

Recommendations for Action

The findings of this research indicate that workload and work–family conflict can have a significant influence on the job satisfaction for women in pharmaceutical science. Workload, work–family conflict, and job satisfaction, as measured by the workload, work–family conflict, and job satisfaction portions of the combined MSQ and WCW instrument for the evaluation of WLB. The survey instrument consists of eight primary job-related constructs. The eight job-related constructs were (a) job satisfaction, (b) organizational culture, (c) workload, (d) work–family conflict, (e) social support, (f) rewards, and (g) family–work conflict. Leaders of the pharmaceutical industry continue to be focused on innovation and competitive advantages; however, I suggest that leaders develop strategies to continuously assess the diversity of their human resources, the advantages of diversification on their innovation goals, and the overall job satisfaction of all employees. I recommend annual WLB and job satisfaction surveys using a valid survey instruments such as the combined MSQ and WCW survey instrument.

Additionally, managers and supervisors should have access to training on how to observe, identify, and address an employee when showing signs of burnout indicative of workload, work–family conflict, and job satisfaction imbalance. In addition to surveys, employees should be encouraged to communicate their WLB needs with their leadership teams to establish and open line of communication in a way that is safe yet productive for

the organization. The results of the surveys and the feedback provide to and from leadership teams should then be used to develop HR strategies to address individual and group dissatisfactions and work–life imbalances. The feedback would also assist organizational leaders and HR managers in assessing the effectiveness of implemented WLB strategies that are currently used in the industry or that will be used as a result of employee and leadership team feedback.

I will share the findings of this research with the leadership of the American Society for Quality, with the National Society of Leadership and Success, and with the pharmaceutical groups on LinkedIn to be exposed to global leaders in the pharmaceutical industry. I hope that members and followers of these groups and organizations will use and distribute my recommendations along to pharmaceutical organization leaders, who may use them as a guide to identify WLB problem areas among their teams and develop strategic plans and benefit for increasing job satisfaction for women in pharmaceutical sciences. I will also provide an executive summary of my findings to women in pharmaceutical sciences, of various pharmaceutical industries in the United States to be shared with their leadership teams and HR managers. As agreed, I will also make my research available LinkedIn and ResearchGate for participants in the study to access at their convenience. Lastly, I plan to find other professional, academic, diversity and inclusion, and pharmaceutical HR development forums, within the STEM community that would be ideal for sharing and distributing this research.

Recommendations for Further Research

I recommend that this research be replicated to see if the results would be similar in other STEM based organizations and in other countries. I would also suggest that a replication of the study be completed for men to determine if similar results would be obtained for evaluating workload, work–family conflict, and job satisfaction for men in STEM occupations given that the family dynamics have changed and benefits for women have slightly evolved in the United States It would also be productive to conduct similar research using the other factors in the combined MSQ and WCW survey to determine the correlation between the WLB categories of (a) organizational culture, (b) social support, (c) rewards, and (d) family-work conflict to determine if WLB in its entirety has a significant impact on job satisfaction for women in pharmaceutical sciences since we have determined in this research that workload and work–family conflict only account for approximately 17% on the job satisfaction scale. The method and design of this research could also be used to examine the behavior of different types of employees in the pharmaceutical industry or other industries of other types of organizations.

The data for my research were gathered from a single period of time during a global pandemic. The results yield significant findings, but longitudinal research could yield additional insights into the relationship between workload, work–family conflict, and job satisfaction for women in science. I used combined MSQ and MCM surveys in my research. However, more development on the demographic portion of these surveys could be useful to future researchers to include specific questions on if participants were teleworking or onsite and if the participants had children.

Reflections

In my own experience in pharmaceutical quality management, I have witnessed and experienced the stress of balancing workload, work–family conflict, and job satisfaction. As a trainer in the industry, I have had many men and women speak to me about their WLB struggles. I learned that the frustrations for women were discussed openly with me because of my personal understanding of the struggle. I decided to study women to bring attention to women in science, problems in the understudied industry, and to offer value to the topic of diversity in the U.S. pharmaceutical industry. It is my intention to build on the efforts the U.S. government has made in promoting young women in STEM education and women in STEM leadership by bringing forth the pharmaceutical industry as a valuable place for women with a STEM education and helping the industry identify places of concern in their policies in regard to WLB and job satisfaction.

The DBA doctoral research process provided an opportunity to build knowledge and evaluate, with research, factors that may help to identify the challenges faced by women in pharmaceutical sciences. I initially believed that women in the pharmaceutical industry in the United States were overall more overwhelmed with workload and the general demands of working in a STEM field. However, after conducting this research, it became evident that most job satisfaction came from the combination of workload and work–family conflict with more significance derived from work–family conflict. Women in the pharmaceutical sciences were generally satisfied with their positions and valued most the balance between work and family overlap. These issues deserve the attention of

pharmaceutical leaders and HR managers because diversity in the pharmaceutical industry has a significant impact on innovation and collaboration. The importance of satisfaction in a diversified team provides security in the areas of turnover, employee engagement, and productivity in the workforce. The development of a sustainable WLB strategy starts with research like this to enhance understanding of diverse teams in a multicultural organization as seen in the very dynamic pharmaceutical industry.

Conclusion

The pharmaceutical industry has a significant impact on the economics of the United States and yet policies within the industry outside of product research and development have been understudied in the past. The pharmaceutical industry encompasses many facets of STEM opportunities for women. Therefore, STEM organizational leaders must use their HR practices to recruit, hire, and train women in STEM positions ~~like positions~~ in the pharmaceutical industry. Women have been unrepresented in the STEM workforce due to problems transitioning into the workforce due to starting the~~a~~ career and midcareer exhaustion when advancing to STEM leadership positions (Hansen, 2020). However, the United States has made strides in promoting the STEM educational and career fields to young women and for women in leadership positions. It is important that calling women into STEM positions is met with the understanding of their specific needs in such a demanding demographic of work and that the STEM industries have the tools necessary to sustain such efforts.

The onset of the COVID-19 pandemic has also brought new public focus to the pharmaceutical industry and the need for flexible yet available workforces, innovation,

and quality. The pandemic also renewed public awareness of the struggles with work–family conflict during times of stress. Job satisfaction and WLB play a critical role in maintaining a viable workforce under normal economic conditions but the pharmaceutical industry could be facing a critically significant disadvantage during economic distress caused by a global pandemic if employees are not able to be balanced, satisfied, and sustained. The pharmaceutical industry during a pandemic faces a unique set of challenges of creating remedies to combat the pandemic that meet regulations but with a turnover time that could be critical to the survival of patients. However, since the pharmaceutical industry is a frontline force in the fight against a global pandemic their employees and the threats against their employees are also high risk. The combination of internal and external demands on the pharmaceutical industry employees during a pandemic crisis creates an imbalance of many job satisfaction and competitive advantage variables. A better understanding of these variables could play a crucial role in how pharmaceutical organizations maintain their advantages in product development and internal HR sustainability.

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Appendix A: Letter of Invitation

Call for research participants:

#CallforParticipants I am seeking 68-146 women to participate in a research study about an evaluation of workload, work-family conflict, and job satisfaction for women in science. I am inviting women of the pharmaceutical science community, who are employed full-time with a pharmaceutical organization in the United States for not less than (NLT) 2 years. Participants must be 18 years of age or older and hold a bachelor's degree in a science field. The attached form is a part of a process called "informed consent" to allow you to understand this study before deciding whether to take part. You can withdraw from the survey at any time during the survey by exiting out of the survey. Click on the link to proceed to survey https://lnkd.in/dtWmf5s. Thank you for your time!

Appendix B: Survey Instrument

Combined MSQ and WCW Survey for Workload, Work-family Conflict, and Job Satisfaction

Section 1: Demographic Information

Please answer the following questions

1. Your age:

(i) 20-30 years ( ) (ii) 31-40 years ( ) (iii) 41-50 years ( )

(iv) above 50 years ( )

2. What is your gender?

(i) Male ( ) (ii) Female ( ) (iii) Other ( )

3. What is your marital status?

(i) Married ( ) (ii) Not Married ( )

4. What is your field of practice in the pharmaceutical industry? Field of Practice

(i) Clinical study ( ) (ii) Research & Development ( ) (iii) Quality Control ( ) (iv) Data Management ( )

5. What is sector is your pharmaceutical company?

(i) Public ( ) (ii) Private ( ) (iii) Unknown ( )

6. How long have you been with your current organization?

(i) 2-5 years ( ) (ii) 6-10 years ( ) (iii) >10 years ( )

7. What is your salary range?

(i) 20,000-30,000 ( ) (ii) 30,000-50,000 ( ) (iii) >50,000 ( )

Section 2: MSQ and WCW Survey for Workload, Work-family Conflict, and Job Satisfaction

Please put a check mark (X) on the statement that best reflects your opinion.

Workload

8. I am unable to meet all the conflicting work demands on my time.

1:strongly agree ( ) 2:agree ( ) 3:neutral ( ) 4:disagree ( ) 5:strongly disagree ( )

9. I often work late or at weekends to deal with work-load.

1:strongly agree ( ) 2:agree ( ) 3:neutral ( ) 4:disagree ( ) 5:strongly disagree ( )

Work-family Conflict

10. The demands of my work interfere with my home and family life.

1:strongly agree ( ) 2:agree ( ) 3:neutral ( ) 4:disagree ( ) 5:strongly disagree ( )

11. Due to work-related duties, I have to make changes to my plans for leisure activities.

1:strongly agree ( ) 2:agree ( ) 3:neutral ( ) 4:disagree ( ) 5:strongly disagree ( )

Job Satisfaction

12. I am satisfied with working hours each week.

1:strongly agree ( ) 2:agree ( ) 3:neutral ( ) 4:disagree ( ) 5:strongly disagree ( )

13. I am generally satisfied with the kind of work I do at my job.

1:strongly agree ( ) 2:agree ( ) 3:neutral ( ) 4:disagree ( ) 5:strongly disagree ( )

14. I am satisfied with relationship with my co-workers.

1:strongly agree ( ) 2:agree ( ) 3:neutral ( ) 4:disagree ( ) 5:strongly disagree ( )

15. I am satisfied with relationship with my supervisor/manager.

1:strongly agree ( ) 2:agree ( ) 3:neutral ( ) 4:disagree ( ) 5:strongly disagree ( )

16. I am satisfied with the amount of benefits provided by the company like annual or sick leave, life or health insurance etc.

1:strongly agree ( ) 2:agree ( ) 3:neutral ( ) 4:disagree ( ) 5:strongly disagree ( )

17. I am satisfied with the amount of rewards such as bonuses provided by the company according to quality of my performance.

1:strongly agree ( ) 2:agree ( ) 3:neutral ( ) 4:disagree ( ) 5:strongly disagree ( )

18. I am satisfied with opportunity for promotion.

1:strongly agree ( ) 2:agree ( ) 3:neutral ( ) 4:disagree ( ) 5:strongly disagree ( )