11-8-2023

Prevalence of Anxiety and Depression Among Respiratory Therapy Professionals in The Western Region of Saudi Arabia

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ACCEPTANCE

This thesis, PREVALENCE OF ANXIETY AND DEPRESSION AMONG RESPIRATORY THERAPY PROFESSIONALS IN THE WESTERN REGION OF SAUDI ARABIA, by Ali AlQahtani, was prepared under the direction of the Master's ThesisAdvisory Committee of the Respiratory Therapy department at Georgia State University. It is accepted by the committee in partial fulfillment of requirements for the Master's of Science degree in Respiratory Therapy at Byrdine F. Lewis School of Nursing and Health Professions, Georgia State University.

The Master's Thesis Advisory Committee, as representatives of the faculty, certifies that this thesis has met all standards of excellence and scholarship as determined by the faculty.

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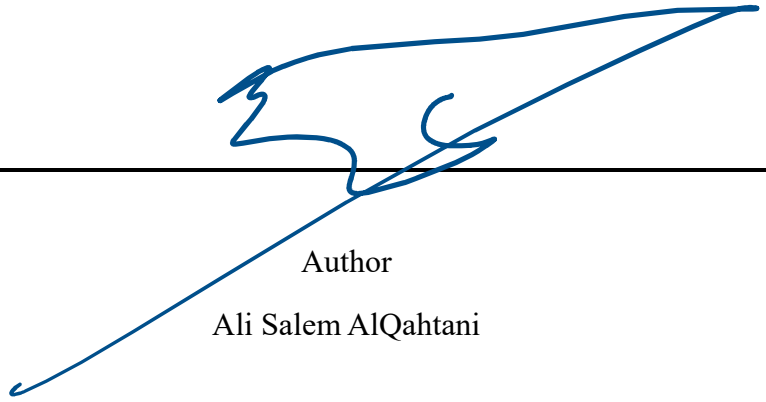

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DEDICATION

First and foremost, I dedicate the successful completion of my Master's journey to the blessings and guidance of Allah, which have been my constant source of strength and inspiration. I would also like to express my deep appreciation to my father, whose wisdom, unwavering encouragement, and belief in my abilities have been a guiding force throughout this academic pursuit. Equally pivotal has been my mother's boundless love, sacrifice, and unwavering support, which provided the emotional support to navigate the challenges of higher education. In addition to my parents, my entire family, including siblings, and extended relatives, has played a vital role in my academic success. Their unwavering faith in my potential, coupled with their prayers and sacrifices, formed the bedrock of my achievements. As I reflect on this significant milestone, I am acutely aware of the profound impact of their love and support. Therefore, I dedicate my Master's thesis to my father, my mother, and my entire family, whose unwavering belief in me has been the driving force behind my accomplishments.

ACKNOWLEDGMENTS

I am deeply grateful for the invaluable guidance and support provided by my thesis mentor, Dr. Ralph Zimmerman throughout this academic journey. His expertise, encouragement, and commitment to my success have been instrumental in shaping my research and refining my ideas. I appreciate the time and effort he dedicated to helping me navigate the challenges of my thesis, offering valuable insights that significantly enhanced the quality of my work. I would also like to express my sincere gratitude to my committee members, Dr. Doug Gardenhire and Dr. Kyle Brandenberger for their invaluable feedback and time to facilitate this process.

Ali Salem AlQahtani

Fall 2023

PREVALENCE OF ANXIETY AND DEPRESSION AMONG RESPIRATORY THERAPY PROFESSIONALS IN THE WESTERN REGION OF SAUDI ARABIA

By

Ali Salem AlQahtani, BSRT

A Thesis

Presented in Partial Fulfillment of Requirements for the Degree of

Master of Science

In

Health Science

In

the Department of Respiratory Therapy

Under the Supervision of Prof. Ralph Zimmerman

In

Byrdine F. Lewis School of Nursing and Health Professions

Georgia State University

Atlanta, Georgia

2023

ABSTRACT

Background: Anxiety and depression are prevalent concerns among psychologists, psychiatric professionals, and behavioral scientists across the world. Anxiety is defined as worry-filled thoughts and a pervasive sense of impending doom. It is a broad concern about what will or might occur in the future. Depression is a debilitating disorder, leading to higher death rates and a significant decline in the quality of life. It is characterized by persistent feelings of sadness, emptiness, and lack of happiness. Therefore, anxiety and depression could have a detrimental effect on the well-being and productivity of respiratory therapists. **Purpose:** The purpose of this study is to investigate the prevalence and severity of anxiety and depression among respiratory therapists employed by public and private hospitals in the western region of Saudi Arabia. **Methods:** A cross-sectional study was conducted between September 5 and October 7, 2023**.** The Hospital Anxiety and Depression Scale (HADS) was distributed electronically to respiratory therapists' email addresses through direct collaboration with RT department heads. Data were collected from RT professionals in both public and private hospitals by using a non-probability convenience sampling technique. The data analysis and statistical description provided by the participants were displayed as means, standard deviations, frequencies, and percentages. A one-way ANOVA test was used to determine the significant differences in HADS scores among categorical groups. **Results:** A total of 307 responses were received from RTs working in the western region of Saudi Arabia. The majority of them were from public hospitals (74.3%) and (25.7%) from private hospitals. The study findings showed that the prevalence of anxiety and depression among RT professionals in the western of SA were found to be 38.8% and 37.5%, respectively. In addition, HADS scores were significantly higher among RT professionals who were female, current smokers, divorced, or widowed. However, HADS showed that anxiety was significantly higher among RT professionals with clinical experience between 1-4 years as well. **Conclusion:** Anxiety and depression were common psychological disorders among respiratory therapists in the western region of Saudi Arabia. Higher odds of anxiety and depression were significantly found among females, staff with clinical experience between 1 and 4 years, smokers, and divorced/widowed staff. Further studies are required to investigate the prevalence of depression and anxiety among RTs in all regions of Saudi Arabia.

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CHAPTER I

INTRODUCTION

Anxiety and depression are popular issues facing psychologists, psychiatric professionals, and behavioral scientists worldwide. Depression is the most prevalent psychological disorder among physical and mental illnesses (Salari et al., 2020). In the general population and primary care, depression and anxiety disorders rank among the most common diseases. Anxiety disorder frequently co-occurs with depression, which often exhibits symptoms of these diseases. Both conditions may cross and fit the criteria for both simultaneously. As they are linked to severe morbidity and mortality, it can be challenging to distinguish between them. However, it is crucial to recognize and treat both disorders. Healthcare practitioners are in an excellent position to identify and treat these diseases, which can significantly improve mental health results (Tiller, 2013).

Depression is an incapacitating disorder that raises the mortality rate and severely impacts the quality of life (QOL) (Sivertsen et al., 2015). Moreover, it is characterized by enduring feelings of melancholy, emptiness, and lack of joy. It varies from the mood swings that people typically encounter as part of daily life. Depression is often brought on by significant life events such as a death in the family or a job loss. Meanwhile, it varies from the uncomfortable emotions a person would experience after a challenging life event (Miloyan et al., 2018). During a depressive episode, the person has serious difficulty functioning in one's personal, family, society, academic, occupational, and other vital areas. According to the number and severity of symptoms and how they affect the person's functioning, a depressive attack can be classified as mild, moderate, or severe. (Klein, 2008).

According to the World Health Organization, around 280 million people worldwide suffer from depression, which can increase the possibility of developing a severe medical condition. The individual may suffer considerably and perform poorly at work, school, and family. In the worst situation, depression may lead to suicide. Approximately 700,000 people commit suicide annually. Although each person is unique, some circumstances, such as working under pressure or working in a job that demands sustained intense levels of concentration, may raise a person's likelihood of developing depression and anxiety.

Even those who seem to lead relatively ideal lives might suffer from depression. Various circumstances, including biochemistry, can cause depression. For example, variations in a few brain chemicals may be a factor in the symptoms of depression. Furthermore, depression may run in families due to genetics. If one identical twin develops depression, there is a 70% probability that the other would get the disorder at some point in life. Moreover, personal factors can contribute to depression. In addition, pessimistic and individuals with low self-esteem are more likely to suffer from depression and easily stressed out. Depression can be suspected among individuals because of environmental factors. For instance, if they are constantly exposed to violence, neglect, abuse, poverty, or even being under work pressure (Kennedy, 2008).

Anxiety, by comparison, is a generalized worry about what will or might occur in the future. Anxiety is characterized by worry-filled thoughts and a pervasive sense of doom (Dobson,1985). Even though it's essential to recognizethat not everyone with depression, anxiety, or both disorders will have the same symptoms, these two conditions commonly share various symptoms, such as sleep distribution, reduction in energy levels, irritability, impaired concentration, and memory (Holland K, 2022).

A range of work-related pressures impact respiratory therapists because they are responsible for the care and management of patients. Respiratory care is a branch of medicine that promotes the best possible cardiopulmonary function and health, and practitioners often deal with critically ill patients on a regular basis. Respiratory therapists (RTs) use scientific concepts to prevent, evaluate, and manage acute or chronic lung and heart dysfunctions. Patients who are suffering from deficiencies and abnormalities of the cardiopulmonary system may require respiratory care, which involves evaluation, management, control, diagnostic testing, education, and care (Geddes,2020). Respiratory therapy was initially introduced as a profession in Saudi Arabia in the mid-seventies at the military hospital in Riyadh, where some employees were sent to the United States of America to study the specialty of respiratory therapy. The first RT department was established in 1975 (Al-Otaibi and AlAhmari 2016).

Statement of Problem

Depression and anxiety have serious complications which highly affect human physical and mental health. RTs are at high risk of depression and anxiety due to long working hours and massive workloads. Until now, there is a shortage of published papers that assess the prevalence of depression and anxiety among respiratory therapists in Saudi Arabia. Thus, this research can help evaluate the prevalence rate of mental disorders among RTs in Sau Arabia.

Purpose of Study

This quantitative study aims to determine the possibility that respiratory therapists in western region Saudi Arabia would develop depression and anxiety and how that will affect their performance in work and life. This scientific study will examine the following research queries:

1- How common are anxiety and depression among respiratory therapistsin western region of Saudi Arabia?

2- What are the association between anxiety, depression, and sociodemographic variables?

Significance of Study

The study's findings will assist in determining how depression and anxiety affect the performance of respiratory therapy staff in the western region Saudi Arabia. Many researchers have examined the incidence of anxiety and depression among healthcare workers, but there have not been enough published studies that look specifically at respiratory therapists in Saudi Arabia. The results of this analysis will pay special attention to the mental health of RTs working in western region of Saudi Arabian hospitals and will discuss ways to prevent these disorders.

Definition of Terms

QOL: Quality of life.

WHO: World Health Organization.

RT: Respiratory Therapy.

HADS: Hospital Anxiety and Depression Scale

HCPs: Healthcare Practitioners

Assumption

Given that this study's goal is to evaluate the respondents' psychological health,it is highly presumed that they will be able to respond to the research questions honestlyand truly. The data collection process was carefully carried out to ensure the participants' privacy and confidentiality as well as the validity of the study. The researchuses a brief and valuable questionnaire that will not be boring for the participants. Thus, I anticipate good reliability from participants.

Limitation

This study involves a target population from several cities to generalize the research results across governmental and private hospitals in western of Saudi Arabia. Respiratory therapy staff around western region of Saudi Arabia hospitals in both sectors will be included. Furthermore, the survey relied on self-report, which may have introduced systematic bias and led to different outcomes.

Summary

In summary, depression and anxiety are widespread diseases that significantly impact the mental health of healthcare professionals. As a result, this study investigatesthe prevalence of depression and anxiety among respiratory therapists in Saudi Arabia. The research will also examine the elements that substantially increase the chance of developing these disorders.

CHAPTER II

LITERATURE REVIEW

Anxiety and depression are common mental health conditions that affect many individuals worldwide. Understanding the magnitude and potential extent of anxiety and depression symptoms among respiratory therapists is crucial to developing effective interventions that promote their mental health and well-being. This literature review explores the existing research on anxiety and depression (referred to in this literature review as A&D) among respiratory therapists, including existing knowledge on the prevalence, risk factors, and impacts of these mental health conditions. The comprehensive analysis of the literature includes insights from the Kingdom of Saudi Arabia (KSA) and the challenges faced by respiratory therapists in the nation, with the potential of identifying potential areas for future research and intervention.

Healthcare System in KSA

Several critical variables in Saudi's healthcare system offer compelling insights into the practicalities associated with healthcare in the nation. According to Al-Hanawi et al. (2019), KSA's Ministry of Health (MOH) has shown significant improvements in key health indices through its annual data book reports. For example, to increase accessibility to medical resources, the government raised hospital beds to 487 hospitals, "offering 72,981 healthcare beds, equivalent to around 2.2 beds per 1000 people" (p3).

Limitations in the number of healthcare professionals (HCPs) per patient in the KSA have been associated with excessive fatigue and burnout by existing practitioners. Al-Hanawi et al. (2019) posit that there were approximately 11 healthcare professionals per 1000 individuals in KSA in 2019, translating to half the globally acceptable mean of 22 HCPs for every 1000 individuals. According to Al Owa et al. (2021), a study with 408 participants that investigated the

number of reported burnout cases among HCPs in the country's Eastern Province reported findingsin "three critical thematic subscales; Exhaustion (67%), Professional Efficacy (15%), and Cynicism (60%)". The research identified statistical predictor factors that showed significant differences in reported findings for age, gender, and educational attainment (Al Owa et al., 2021). Therefore, according to Al Owa et al. (2021), there exists an exciting possibility of burnout amongHCPs in KSA, with emotional and psychological outcomes.

Respiratory Therapists

The recent COVID-19 pandemic has highlighted respiratory therapists' roles in caring for critically ill patients. According to Rickards and Kitts (2018), the traditional definition of respiratory therapists implies that they are HCPs with specialized training in critical care, cardio-pulmonary medicine, and pulmonary illness, working with patients who report these symptoms and problems to a healthcare institution. Rickards and Kitts (2018) assert that the healthcare systemneeds to be more efficient in integrating the roles of different HCPs, including respiratory therapists. Because of the need to optimize various healthcare outcomes, many healthcare systemshave considered employing multidisciplinary teams to provide primary healthcare (Rickards & Kitts, 2018). This innovative approach to primary healthcare has been successful in several healthcare systems. The practical concept of this system is that instead of waiting until a patient is in critical condition before intervening, respiratory therapists (RTs) focus on illness prevention and health promotion within multidisciplinary teams (Rickards & Kitts, 2018). Hence, this approach helps patients maintain their quality of life despite their condition. Accordingly, Rickards and Kitts (2018) assert that despite retaining the traditional definition of critical roles in the healthcare sector, several changes in the healthcare systems could have influential results in the future of respiratory therapists in global healthcare systems.

There are several challenges facing respiratory therapists. Alqahtani et al. (2021) researched to investigate how respiratory therapists in KSA manage ventilatory support for COVID-19 patients and outline the challenges they encounter. The research used a validated questionnaire "distributed to all registered critical care respiratory therapists affiliated with the Saudi Society for Respiratory Care as the primary mode of data collection" (Alqahtani et al., 2021,p117). The research revealed that the clinical approach to ventilatory support for patients in Saudi Arabia was divergent from international standards, with limited use of established treatment and a general lack of standardization (Alqahtani et al., 2021). Other primary challenges encountered by respiratory therapists in the KSA healthcare system included an overburdened workload from healthcare institutions, inadequate staff, limited personal protective equipment (PPE), and insufficient training (Alqahtani et al., 2021). Thus, Alqahtani et al. (2021) research allows a compelling foundation for some of the psychological manifestations of challenges facing respiratory therapists in Saudi Arabia.

Mental Health among HCPs

Comparing psychological and emotional elements among HCPs requires the consideration of outcomes both similar and different as well as findings that are unique to specific disciplines. According to Wilson et al. (2020), frontline HCPs face a significant risk of experiencing psychological stress because of the pandemic. In this regard, Wilson et al. (2020) found the prevalence rates of high-stress levels, treatment-required depressive symptoms, and additional evaluation-required anxiety symptoms among Indian HCPs to be 3.7%, 11.4%, and 17.7%, respectively. Wilson et al. (2020) compared these results with other nations and found convincing similarities, meaning they are not exceptionally high, given India's relatively weak healthcare system. These findings could be attributed to the pandemic's early stages and the resilience of Indian HCPs (Wilson et al., 2020). However, the study's critical unique finding is that women HCPs in India are at roughly twice the risk of experiencing moderate or high levels of anxiety anddepressive

necessitating medical assessment and treatment (Wilson et al., 2020). The study opens a significant literature gap assessing the validity of gender as a predictor for psychological and emotional outcomes among HCPs. Wilson et al. (2020) suggests that the gender and occupational differences in mental health outcomes may be due to several factors, including social roles, work conditions, and stress-coping mechanisms. In addition, Wilson et al. (2020) research findings highlight the need for interventions to address the mental health needs of HCPs, particularly women. According to Wilson et al. (2020), providing access to mental health resources, including psychological support and counseling, and addressing gender-based disparities in the workplace may be crucial in India.

The general nature of health work and HCP careers relates to several ubiquitous stresses. According to Walton et al. (2020), the COVID-19 pandemic has imposed significant physical and mental strains on medical personnel and healthcare professionals. Previous research on the psychological impact of infectious disease outbreaks identified common patterns of reactions among staff members who have experienced these outbreaks, including those who worked on-site, was in quarantine, or returned to work following illness (Walton et al., 2020). Healthcare workers face challenges during such outbreaks, including the required adaptability with healthcare systems issuing new protocols for HCPs (Walton et al., 2020). Also, HCPs are engaged in treatment modalities and caring systems for seriously ill patients, including several colleagues who may have fallen victim to significant infections (Walton et al., 2020). Beside to the increased workload, these factors contribute to staff members' psychological and emotional challenges during infectious disease outbreaks (Walton et al., 2020). Therefore, according to Walton et al. (2020), frontline medical staffs risk experiencing various psychological symptoms during pandemics.

Studies on mental health among KSA HCPs indicate congruent findings with the abovementioned literature. According to AlAteeq et al. (2020), the country's first contact with COVID-19 was reported in March 2020, meaning it was a new infection. AlAteeq et al. (2020) assessed levels of A&D among HCPs in the KSA healthcare system during the pandemic. The study encompassed a cross-sectional survey with a sample of 502 healthcare professionals from the MOH (AlAteeq et al., 2020). The findings indicated that medical professionals commonly experience symptoms of depression and anxiety (AlAteeq et al., 2020). The research findings suggest that promoting healthcare as a humanitarian and civic obligation and encouraging camaraderie, charity, and social inclusion could help make the healthcare experience more fulfilling (AlAteeq et al., 2020). Furthermore, AlAteeq et al. (2020) assert that longitudinal research studies are necessary to monitor the mental health symptoms of HCPs and provide evidence-based therapies.

The comparability of mental health outcomes, specifically anxiety, and depression, is a significant consideration in research to explore potential independent variables impacting the mental health of healthcare practitioners. Wilson et al. (2020) conducted a study to assess the occurrence and factors associated with stress, depression, and anxiety symptoms HCPs in India. The survey was conducted using an online cross-sectional approach among HCPs with direct and regular patient access, including active involvement in treatment modalities (Wilson et al., 2020). The researchers utilized Cohen's subjective stress scale to evaluate stress (Wilson et al., 2020). The potential predictors in this study were analyzed using binary logistic regression, both univariate and multivariate (Wilson et al., 2020).

Physicians

Numerous young physicians frequently experience elevated anxiety, depression, and deteriorating mental health. Gramstad et al. (2013) examined the relationship between personality traits evaluated early in a student's education and levels of depression and anxiety symptoms among junior physicians in early practice years in Norway. This personality-based study utilized the Hospital A&D Scale (HADS) and Neuroticism levels as indirect predictors for A&D, with higher anxiety symptoms associated with neuroticism and reality deficiency (Gramstad et al., 2013). According to Gramstad et al. (2013), the findings elucidate that job stress levels for youngphysicians positively correlated with A&D symptoms.

Another study assessed A&D symptoms among Chinese doctors and investigated several associated risk factors (Gong et al., 2014). The research interviewed 2641 doctors employed by public hospitals in Shenzhen using a standardized questionnaire and scales to assess A&D symptoms (Gong et al., 2014). The results showed that 25.67% of doctors reported anxiety symptoms, 28.13% had depressive symptoms, and 19.01% had both (Gong et al., 2014). The study elucidated several predictor elements that can explain these emotional and psychological statistics, including physical health and workplace conditions, including long working hours/shifts (Gong et al., 2014). Moreover, Gong et al. (2014) argued that the doctor-patient interaction was particularly challenging for younger Chinese doctors who frequently experience A&D symptoms.

Nurses

The comparison between the rates of A&D among nurses and the general population offers a practical framework to evaluate risk factors and prevalence. Cheung and Yip (2015) investigated the prevalence and risk of depression, anxiety, and stress among nurses in Hong Kong. The study included 850 nurses and utilized the DAS-21 to assess their mental health (Cheung & Ying, 2015).A multiple logistic regression elucidated that nurses in Hong Kong reported higher levels of stress, anxiety, and depression than the local community (Cheung & Ying, 2015). This research conclusion was based on the analytic findings showing that more than one-third (estimated 26%) of the respondents reported the conditions compared with epidemiological statistics, indicating that 13.3% of the general public (non-medical staff) in Hong Kong have a common mental condition, with combined anxiety and depressive disorder being the most prevalent (Cheung & Ying, 2015). Thereupon, Cheng and Ying (2015) claim that nurses show more despair, anxiety, and stress than other community members in Hong Kong, with predictor variables including job dissatisfaction, social and personal issues like divorce, and workplace conflicts.

The perspective of mental health issues in healthcare workers can take several practical evidence-based trajectories, including alarm fatigue. According to Bourji et al. (2020), alarm fatigue arises when HCPs are frequently exposed to false alarms, potentially leading to desensitization to alarms and posing a risk to patient safety in critical care settings. Bourji et al. (2020) explored the emotional and psychological aspects of alarm fatigue and its contributing factors among physicians working in critical care units in Lebanon, using a reliable and accurate questionnaire to 337 participants, including doctors and nurses. Bourji et al. (2020) used the Cronbach alpha of (0.69) to demonstrate the validity and reliability of the primary mode of data collection. The findings in this study indicate that HCPs who express stress are 3.14 times more likely to experience AF (Bourji et al., 2020). According to Bourji et al. (2020), there is a non- trivial need for healthcare systems to develop multidisciplinary approaches to reduce alarm fatiguein critical care settings.

A systemic literature review offers a persuasive trajectory to measure the comparability of findings related to mental health impacts on nurses. Pappa et al. (2020) conducted a comprehensive search of literature databases. The critical findings in the systemic review of thirteen studies indicated that the pooled depression incidence was 22.8% across ten studies, and anxiety was 23.2% across 12 studies (Pappa et al., 2020). A subgroup analysis of the data showed that female HCPs and nurses had a higher incidence of emotional symptoms like anxiety than male and medical personnel (Pappa et al., 2020). Consequently, Pappa et al. (2020) enforce the need to investigate further gender-based predictor variables regarding A&D among HCPs.

Studies into A&D among nurses in KSA have several congruent findings with the abovementioned literature. Abbas et al. (2012) reviewed emotional and psychological elements among King Fahad Medical City nursing staff using the HAD scale. A notable finding in this studyis that the primary findings combined with a systemic literature review indicated that nurses from the Middle East had significantly higher prevalence rates of anxiety and depression symptoms thannurses from other nationalities (Abbas et al., 2012). The study also revealed that nurses who do not exercise experienced considerably worse symptoms of A&D (Abbas et al., 2012). Based on these findings, Abbas et al. (2012) recommend conducting an annual HAD scale to identify nursingstaff likely to have clinical cases of A&D, enabling nursing management to provide them with the necessary support services.

A&D among Respiratory Therapists

Anxiety and depression among respiratory therapists are linked with other broader groups of issues, including burnout and compassion fatigue. Burnout is a significant issue in the healthcare industry, as it can lead to various problems, including patients decreased overall health, increased medical errors, and low job satisfaction (Akova et al., 2022; Strickland et al., 2022). Strickland et al. (2022) conducted a qualitative study to comprehend the causes of burnout among RTs during the

pandemic. According to Strickland et al. (2022), the study's respondents reported experiencing anxiety, sadness, and compassion fatigue and expressed concerns that insufficient staffing, heavy workloads, and insufficient leadership support contributed to feelings of burnout.

A similar study by Akova et al. (2022) using the same depression anxiety scale to analyze burnout found that pandemic-related burnout significantly impacted HCWs' mental health, including A&D. As a result, both studies provide a persuasive link between burnout and psychological outcomes among respiratory therapists. Evanoff et al. (2020) also conducted a study that found that providing support from supervisors was linked to a lower risk of A&D among HCPs. Hence, providing RTs with support from supervisors and addressing the thematic findings in Strickland et al.'s (2022) study may help mitigate the impact of burnout on RTs' mental health.

Anxiety and depression were ubiquitous for respiratory therapists and other HCPs during the COVID-19 pandemic. Shamsan et al. (2022) conducted a cross-sectional investigation using primary data from information from 326 Saudi Arabian HCPs. This study showed modest anxiety markers and sadness levels among healthcare personnel (Shamsan et al., 2022). According to Shamsan et al. (2022), several predictor variables are associated with increased anxiety among HCPs during the study period, “including being female, under 30 or between 31 and 39 years old, working in a specialist hospital institution, and the quantity of COVID-19 cases the professionals handled”. Shamsan et al. (2022) advocate for further research, arguing that understanding the trajectory of anxiety levels among HCPs over time requires a comprehensive longitudinal study design.

Potential Interventions

Several potential interventions exist regarding A&D among HCPs, specifically respiratory therapists. The primary interventions include psychological interventions, such as cognitive-behavioral therapy (CBT), and organizational interventions, such as improving working conditions, better compliance with international healthcare standards, and providing support fromsupervisors (Muller et al., 2020; AlAteeq et al., 2020). Cognitive-behavioral therapy is a psychological strategy that focuses on identifying and changing negative thought patterns and behaviors to encourage better and more adaptable ways of thinking and behaving. AlAteeq et al. (2020) found that CBT was a considerable intervention in reducing adverse emotional and psychological symptoms among nurses in KSA.

Conversely, Evanoff et al. (2020) affirm that there is a robust research foundation to indicate that providing support from supervisors positively impacts reducing the incidence of A&Damong HCPs. The researchers examined the relationship between social and emotional support from supervisors and the risk of A&D among HCPs (Evanoff et al., 2020). This study indicates that providing social and emotional support to healthcare professionals can positively impact their mental well-being (Evanoff et al., 2020). Thereupon, Evanoff et al. (2020) conclude that HCPs arelikely to report better emotional and psychological well-being by receiving more supervisor support than colleagues who reported less support.

Summary

This literature review offers compelling insights into A&D among healthcare workers. The literature review identified several risk factors: workload, lack of supervisor support, and job stress. Several studies encompass the set of risk factors into the broad concept of "burnout." The literature elucidates that the COVID-19 pandemic influenced most risk factors, leading to an increased prevalence of A&D.

Several predictor variables are identified in the literature review. Several studies indicate that the age, socio-economic status, and gender of HCPs are significant to the research on A&D among HCPs. Again, one study stated divergent emotional and psychological impacts between different HCPs, differentiating between nurses and medical professionals (Pappa et al., 2020). Nonetheless, more research is required for most variables with slight divergences between some healthcare systems.

Finally, there is very little literature about respiratory therapists' (RTs) experience of burnout, and the reasons for burnout among RTs have not been thoroughly investigated. In addition, divergent interventions in different studies regarding potential interventions indicate that interventions for the mental health of healthcare professionals during pandemics need to be better understood. Thus, a significant research gap exists in understanding A&D among RTs and potential interventions.

CHAPTER III

METHODOLOGY

This study was conducted as a cross-sectional study that aimed to evaluate the prevalence of anxiety and depression among respiratory therapy professionals in the western region of Saudi Arabia. The research utilized a self-report approach, employing a validated questionnaire, the Hospital Anxiety and Depression Scale (HADS). Stern developed the Hospital Anxiety and Depression Scale (HADS), which consists of a 14-item scale that includes scales to investigate anxiety and depression both having seven items (Stern, 2014) The study design was adopted for its ability to efficiently respond to the study questions while conserving resources and time. In this chapter, we discussed the methods and instrumentations that were employed to conduct this study.

Research Questions

The following research questions were investigated in this study.:

1. How common were anxiety and depression among respiratory therapists in the western region of Saudi Arabia?

2. What are the association between anxiety, depression, and sociodemographic variables?

Instrumentation

In this study, a self-report questionnaire was used to gather data about sociodemographic variables, the prevalence and severity of anxiety and depression among respiratory therapy professionals in the western region hospitals Saudi Arabia. The Hospital anxiety and depression Scale (HADS) is a widely implemented instrument used to assess anxiety and depression in a general

healthcare field profession (Rishi et al., 2017) This instrument contains fourteen items divided equally between anxiety and depression. Each item has a score that extends from 0 to 3. The overall score ranges from 0 to 21 and can be interpreted as follows: a score between (0 - 7) is considered a normal value, (8 – 10) borderline abnormal case, and (11 – 21) abnormal case. The Hospital Anxiety and Depression Scale (HADS) exhibits good validity and reliability, with data demonstrating its ability to precisely measure anxiety and depression symptoms and to consistently generate reliable results over time.

Study Population and Sampling Techniques

This study aimed to target the Respiratory Therapy workforce working in both governmental and private western region hospitals. According to the Saudi Commission for Health Specialties (SCFHS), it was estimated that 334 respiratory therapists work in the western region of Saudi Arabia hospitals (Alotaibi, 2015) Therefore, this study was conducted using a convenient sampling technique to enroll 179 participants, with a 95% confidence interval and a 5% margin of error. However, other healthcare practitioners such as nurses and physicians were excluded, while non-Saudi RTs were included.

Study Design and Setting

The prevalence of anxiety and depression among Saudi Arabian respiratory therapy professionals in the Western region was investigated using a cross-sectional technique. According to the Saudi Commission for Health Specialties, only 88 out of 411 hospitals in Saudi Arabia have respiratory therapists in their institutions. The questionnaire was sent to the population of respiratory therapists in the western region of Saudi Arabia via their work e-mail addresses.

Data Collection

After receiving approval from the Institutional Review Board (IRB) at Georgia State University, the data collection process began. A copy of validated questionnaire was electronically sent via email to the participants. The confidentiality and anonymity of the participants was guaranteed. The study purpose was clearly stated on the cover page, and informed consent was obtained prior to participation. Moreover, the email address of the primary investigator of the study was presented for further consideration**.**

Data Analysis

Statistical Package for the Social Sciences (SPSS) version 28.0.1.1, SPSS Inc., used for data management and analysis. Participants' statistical description and analysis of the data were shown in the form of frequencies, percentages, means, and standard deviations. Independent variables were gender, age, sex, residence, ethnicity, and marital status. An Independent t-test utilized to explore differences in depression and anxiety in terms of demographic variables. Also, a one-way ANOVA test was used to compare HADS scores compared to categorical groups.

CHAPTER IV

RESULTS

Demographic data:

Overall, 307 respiratory therapists responded to the study questionnaire between September 5 and October 14, 2023 with a response rate of 58%. The mean age of study participants was 29.4 (SD±5.4). Most of them were males 206 (67.1%), and Saudi professionals 262 (85.3%). The majority of respondents held a Bachelor's degree (285; 84%) and had between 1 and 4 years of clinical experience (51.1%). Regarding place of employment, 228 of the study respondents were working in public hospitals while over half of the participants (58.6%) had never smoked. With regards to marital status, the majority (53.4%) were single and 42.3% were married, while 4.2% were divorced/widowed.

Table 1

Demographic data of the study participants (n=307).

Variables	**Frequency (%), m (±SD)**
Gender n (%)	
Male	206 (67.1%)
Female	101 (32.9%)
Age (mean, ±SD)	29.4 ± 5.4
Nationality n	
Saudi	262 (85.3%)
Non-Saudi	45 (14.7%)
Academic degree	
Associate degree	14 (4.6%)
Bachelor's degree	258 (84%)
Master's degree	35 (11.4%)

Clinical experience	
Less than 1 year	30 (9.8%)
1-4 years	157 (51.1%)
5-9 years	63 (20.5%)
10-15 years	32 (10.4%)
More than 15 years	25 (8.1%)
Working sector	
Public	206
Private	101
Smoking status	
Never smoked	180
Former smoker	35
Current smoker	92
Marital status	
Single	164 (53.4%)
Married	130 (42.3%)
Divorced / Widowed	13 (4.2%)

Prevalence of Depression Among RT Professionals

The prevalence of depression among RT professionals was 37.5%. The mean HADS scores for depression was 8.8 (±4.2). 41.7% of them were normal, 20.8% were borderline, while 37.5% were experiencing abnormal depressive symptoms.

Table 2. Prevalence of depression among RT professionals. (n=307)

Depression status	**Frequency (%)**
Normal	128 (41.7%)
Borderline abnormal	64 (20.8%)
Abnormal	115 (37.5%)

Prevalence of Anxiety Among RT Professionals

The prevalence of anxiety among RT professionals was 38.8%. The mean HADS score for anxiety was 8.9 (4.1±). In total, (39.1%) of them were normal, 22.1% was borderline, while 38.8% were experiencing abnormal anxiety symptoms.

Table 3. Prevalence of anxiety among RT professionals (n=307).

Anxiety status	Frequency (%)
Normal	120 (39.1%)
Borderline abnormal	68 (22.1%)
Abnormal	119 (38.8%)

Association Between Depression and Sociodemographic Variables Among RT Professionals

One-way ANOVA results showed that females (M=10.0) were more likely to suffer from depression than males (M=8.2) (p=0.001). Moreover, current smokers (M=10.0) tend to be highly exposed to depression compared to former smokers (M=8.2) and non-smokers (M=8.3) (p=0.006). Divorced/Widowed RTs (M=13.0) were more likely to have depression than single (M=8.8) and married (M=8.3) RTs(p=0.001). Whereas no significant association was found between depression and nationality (p=0.382), academic degree (p=0.364), clinical experience (p=0.471), or working sector (p=0.294).

Table 4. Result of ANOVA test between depression and demographic data of study participants (n=307).

Variable	N	Depression means	SD	P value
Gender				0.001
Male	206	8.2	4.2	
Female	101	10.0	4.1	
Nationality				0.382
Saudi	262	8.9	4.2	
Non-Saudi	45	8.3	4.4	
Academic degree				0.364
Associate degree	14	10.3	4.6	
Bachelor's degree	258	8.7	4.2	
Master's degree	35	9.0	4.3	
Clinical experience				
Less than 1 year				0.471
1-4 years	30	8.2	4.5	
5-9 years	157	9.0	4.1	
10 – 15 years	63	8.3	4.3	
More than 15	32	9.6	4.2	
years	25	8.4	4.6	
Working sector				
Public	228	8.6	4.3	0.294
Private	79	9.2	3.9	
Smoking status				
Never smoked	180	8.3	4.2	0.006
Former smoker	35	8.2	3.8	
Current smoker	92	10.0	4.2	
Marital Status				
Single	164	8.8	4.3	0.001
Married	130	8.3	4.0	
Divorced/Widowed	13	13.0	3.2	

Association Between Anxiety and Sociodemographic Variables Among RT Professionals

One-way ANOVA results indicated that females (M=10.4) were more likely than men (M=8.2) to experience anxiety (p=0.001). Furthermore, clinical experience showed a p-value of 0.047 demonstrating that RTs with clinical experience between 1-4 (M=9.4) were at greater risk than RTs with less than 1 year (M=8.4), 5-9 years (M=8.8), 10-15 years (M=9.3), or more than 15 years (M=6.8). In addition, compared to former smokers (M=9.1) and non-smokers (M=8.4), current smokers (M=9.8) appear to be more susceptible to anxiety (p=0.027). Divorced/widowed RTs (M=11.2) are significantly more likely to develop anxiety compared to single (M=9.4) and married (M=8.1) RTs (p=0.003). There was no correlation between anxiety and nationality (p=0.710), academic degree (p=0.779), or working sector (p=0.119).

Table 5. Result of ANOVA test between anxiety and demographic data of study participants (n=307).

Variable	N	Anxiety means	SD	P value
Gender				
Male	206	8.2	4.1	0.001
Female	101	10.4	3.7	
Nationality				
Saudi	262	8.9	4.1	0.710
Non-Saudi	45	9.1	4.2	
Academic degree				
Associate degree	14	8.7	4.2	
Bachelor's degree	258	9.0	4.2	0.779
Master's degree	35	8.5	3.5	

Clinical experience				
Less than 1 year	30	8.4	4.5	
1-4 years	157	9.4	4.2	0.047
5-9 years	63	8.8	3.9	
10 – 15 years	32	9.3	3.9	
More than 15 years	25	6.8	3.7	
Working sector				
Public	228	8.7	4.0	0.119
Private	79	9.5	4.5	
Smoking status				
Never smoked	180	8.4	4.2	0.0027
Former smoker	35	9.1	3.5	
Current smoker	92	9.8	4.1	
Marital Status				
Single	164	9.4	4.3	0.003
Married	130	8.1	3.7	
Divorced/Widowed	13	11.2	4.7	

CHAPTER V

DISCUSSION

Only limited studies have investigated the prevalence of psychological disorders among healthcare workers in Saudi Arabia, Therefore, this study aimed to explore the prevalence and severity of depression and anxiety among respiratory therapists in the western region of Saudi Arabia. The results of the study showed that anxiety and depression were prominent sociological disorders among respiratory therapists in the western region of Saudi Arabia. Furthermore, it was found that RTs who were female, smokers, and divorced/widowed were at higher susceptibility to depression and anxiety. However, RTs with 1-4 years of work experience showed increased vulnerability to anxiety, demonstrating an unambiguous connection between the early stages of employment and elevated anxiety risk.

Prevalence of Anxiety and Depression

Our study results demonstrated that the prevalence of anxiety and depression were 38.8%, 37.5%, respectively. The findings were consistent with a recent cross-sectional study among surgical physicians in Saudi Arabia, indicating that the prevalence of anxiety and depression was 30.7% and 27.5%, respectively (Hariri et al., 2023). Similarly, a systematic review of 100 studies from 35 countries showed that the prevalence of anxiety ranged between 22% to 33% among doctors and nurses, while the depression prevalence rate was estimated to be 18% and 36% (Fernandez et al., 2021). Moreover, a relevant study carried out among 1015 healthcare providers showed that 32% of them experienced anxiety and 35% had depressive symptoms (Akova et al., 2022). These findings could be as a result of heavy workload, working for long hours in stressful environments, and burnout. Previous literatures have found that healthcare providers were more exposed to stress, anxiety, depression, and burnout due to overabounded clinical obligations in the intensive care units (Prasad et al., 2021; Søvold et al., 2021).

The Role of Gender on Anxiety and Depression

In addition, females were more likely to have depression and anxiety. Similarly, a systematic review of 12 studies showed that female healthcare workers endure a greater rate of depressive and anxious symptoms (Pappa et al., 2020). Moreover, a study conducted in Turkey demonstrated that females were more susceptible to anxiety and depression than males (Kurt et al.,2020). In a cross-sectional study conducted among healthcare professionals in India, findings revealed that females were at nearly double the risk, with approximately two times higher odds, of developing anxiety and depression (Wilson et al.,2020). An additional cross-sectional study carried out in Brazil found that females experience anxiety and depression at higher rates than males (Souza et al., 2021). Other studies revealed similar findings were females more exposed to anxiety and depression (Takmaz et al., 2021; Sun et al., 2021). This could be explained by the dominance of males in the respiratory therapy specialty in Saudi Arabia, placing females under psychological pressure due to concerns about limited opportunities for professional advancement. (Siraj et al., 2023).

The Impact of Clinical Experience on Anxiety and Depression

Our study found that RTs who had clinical experience of 1 to 4 were more likely to experience anxiety compared to senior staff whereas no significant correlation between clinical experience and depression. Similarly, a study conducted during Covid pandemic illustrated that nurses in the early years of their careers, specifically those who are younger and have limited professional experience, tend to experience heightened levels of anxiety in comparison to their more seasoned counterparts in the nursing profession (Roberts et al., 2021). Subsequent studies have consistently demonstrated that junior physicians are more vulnerable to exhibit symptoms of anxiety, which highlights the challenges and demands that early-career medical professionals

encounter (Pandey et al, 2021; Doulias et al, 2023; Riely et al., 2021).

The Effect of Smoking on Anxiety and Depression

Furthermore, it was observed that smoker RT staff were at higher risk of anxiety and depression. A study conducted in Greece among medical staff has demonstrated that individuals who smoke are increasingly prone to develop anxiety and depression compared to nonsmokers and former smokers (Tselebis et al., 2003). In an analogous vein, a study conducted in Egypt among the general population and healthcare workers has revealed that smokers are more vulnerable than nonsmokers and former smokers to experiencing anxiety and depression (Ahmed et al., 2021). Furthermore, corresponding findings from an assortment of associated studies confirmed that smokers had a substantially higher probability of exhibiting anxiety and depression than nonsmokers and former smokers. These results demonstrate a pattern that is consistent across various study projects and emphasize the strong correlation between smoking behaviors and mental health issues, including elevated anxiety and depressed symptoms (Z. Alizadeh et al, 2023; L. Alizadeh, 2014; Slomp et al., 2019). This could potentially be a consequence of nicotine addiction, which is a potent psychoactive substance found in tobacco products that can often exacerbate the severity of mental health problems by stimulating the central nervous system and interfering with the brain's neurotransmitter pathways (Picciotto et al., 2002; Goodwin, 2015).

The Relationship Between Marital Status, Anxiety, and Depression

Additionally, the result of this study showed that divorced and widowed were more prone to anxiety and depression. In line with this, a study in the UK has revealed a direct correlation between divorce and elevated levels of anxiety and depression (Richards et al., 1997). Likewise, even more, intriguing findings originated from a cross-sectional study conducted among nurses in Hong Kong

revealed compelling insights; specifically, it determined that those who were divorced or widowed exhibited a notably higher prevalence of reporting symptoms related to anxiety and depression in comparison to their married and single counterparts (Cheung & Yip, 2015). On top of that, a previous research study carried out in Malaysia recognized a significant correlation between married status and lower psychological morbidity, which includes a lower prevalence of anxiety and depression among those who are married (Kaur et al., 2013). Loneliness appears to be a particularly poignant factor that contributes to the onset and intensification of anxiety and depression in divorced and widowed individuals. This is because the lack of a supportive partner often results in profound feelings of emotional distress and isolation, which exacerbates mental health challenges (Owczarek et al., 2022; Lim et al., 2016).

Limitations

This study is valuable since it provides great insights into the psychological research scope because it is the first study of its kind to address the prevalence of depression and anxiety among RTs professionals in the western region of Saudi Arabia. Additionally, this study involves a target population from several cities to generalize the research results across governmental and private hospitals in western of Saudi Arabia. However, this study is somewhat limited due to certain factors. This study was conducted through a cross-sectional design and self-reported survey, which may have introduced systematic bias and led to different outcomes. Furthermore, this study is limited because it cannot identify the causality of anxiety and depression among RTs professionals, which can arise from several causative factors other than clinical practice. Additional studies are recommended to investigate the prevalence of anxiety and depression among wide-border range of RT professionals in Saudi Arabia.

Conclusion

Depression and anxiety were common psychological disorders among respiratory therapists in the western region of Saudi Arabia. Higher odds of depression and anxiety was significantly found among females, staff with clinical experience between 1 and 4 years, smokers, and divorced/widowed staff. Further studies are warranted to explore the prevalence of anxiety and depression among RT professionals in all regions of Saudi Arabia.

APPENDIX A: Hospital Anxiety and Depression Scale (HADS)

Demographic Data

1. Your gender:
    - Male
    - Female
2. Your age:
3. Your nationality:
    - Saudi
    - Non-Saudi
4. Your academic degree:
    - Bachelor's degree
    - Master's degree
    - PhD degree
5. Your clinical experience in years:
    - 1-5 years
    - 5- 10 years
    - 10 -15 years
    - More than 15 years
6. Working sector:
    - Public
    - Private
7. Your smoking status:
    - Never smoke
    - Former smoker
    - Current smoker
8. Your marital status:
    - Single
    - Married
    - Divorced

Hospital Anxiety and Depression Scale (HADS)

Tick the box beside the reply that is closest to how you have been feeling in the past week.
Don't take too long over you replies: your immediate is best.

D	A		D	A	
		I feel tense or 'wound up':			**I feel as if I am slowed down:**
	3	Most of the time	3		Nearly all the time
	2	A lot of the time	2		Very often
	1	From time to time, occasionally	1		Sometimes
	0	Not at all	0		Not at all
		I still enjoy the things I used to enjoy:			**I get a sort of frightened feeling like 'butterflies' in the stomach:**
0		Definitely as much		0	Not at all
1		Not quite so much		1	Occasionally
2		Only a little		2	Quite Often
3		Hardly at all		3	Very Often
		I get a sort of frightened feeling as if something awful is about to happen:			**I have lost interest in my appearance:**
	3	Very definitely and quite badly	3		Definitely
	2	Yes, but not too badly	2		I don't take as much care as I should
	1	A little, but it doesn't worry me	1		I may not take quite as much care
	0	Not at all	0		I take just as much care as ever
		I can laugh and see the funny side of things:			**I feel restless as I have to be on the move:**
0		As much as I always could		3	Very much indeed
1		Not quite so much now		2	Quite a lot
2		Definitely not so much now		1	Not very much
3		Not at all		0	Not at all
		Worrying thoughts go through my mind:			**I look forward with enjoyment to things:**
	3	A great deal of the time	0		As much as I ever did
	2	A lot of the time	1		Rather less than I used to
	1	From time to time, but not too often	2		Definitely less than I used to
	0	Only occasionally	3		Hardly at all
		I feel cheerful:			**I get sudden feelings of panic:**
3		Not at all		3	Very often indeed
2		Not often		2	Quite often
1		Sometimes		1	Not very often
0		Most of the time		0	Not at all
		I can sit at ease and feel relaxed:			**I can enjoy a good book or radio or TV program:**
	0	Definitely	0		Often
	1	Usually	1		Sometimes
	2	Not Often	2		Not often
	3	Not at all	3		Very seldom

Please check you have answered all the questions

APPENDIX B: Informed Consent and Cover Letter

Prevalence of Anxiety and Depression Among Respiratory Therapy Professionals in the Western Region of Saudi Arabia

You are invited to participate in a research study entitled “Prevalence of Anxiety and Depression Among Respiratory Therapists in Western Region of Saudi Arabia.”

Depression is defined as an incapacitating disorder characterized by enduring feelings of melancholy, emptiness, and lack of joy. Anxiety is a generalized worry about what will or might occur in the future. The aim of this study is to assess the prevalence of anxiety and depression and its impact on their social and practical life among respiratory therapy staff in the western region of Saudi Arabia

The questionnaire will take 3 minutes to complete, and it is completely voluntary to take part and participate in the study. The data will be used confidentially and for research purposes only.

By answering the first question, you voluntarily agree to participate in this

study and give your consent to use your anonymous data for research

purposes.

"You do not have to be in this study. You may skip questions or stop

participating at any time”.

For any additional inquiries regarding the study:

Principal investigator

Dr. Zimmerman, Ralph

Georgia State University

Email: chip@gsu.edu

APPENDIX C: IRB Approval

INSTITUTIONAL REVIEW BOARD

Mail: P.O. Box 3999 In Person: 3rd Floor
Atlanta, Georgia 30302-3999 58 Edgewood
Phone: 404/413-3500 FWA: 00000129

August 31, 2023

Principal Investigator: Ralph Zimmerman

Key Personnel: S AlQahtani, Ali S; Zimmerman, Ralph

Study Department: Respiratory Therapy

Study Title: Prevalence of Anxiety and Depression Among Respiratory Therapists in Western Region of Saudi Arabia

Submission Type: Exempt Protocol Category 2

IRB Number: H24103

Reference Number: 376255

Determination Date: 08/31/2023

Status Check Due By: 08/30/2026

The above-referenced study has been determined by the Institutional Review Board (IRB) to be exempt from federal regulations as defined in 45 CFR 46 and has evaluated for the following:

1. Determination that it falls within one or more of the eight exempt categories allowed by the institution; and
2. Determination that the research meets the organization's ethical standards

If there is a change to your study, you should notify the IRB through an Amendment Application before the change is implemented. The IRB will determine whether your research continues to qualify for exemption or if a new submission of an expedited or full board application is required.

A Status Check must be submitted three years from the determination date indicated above. When the study is complete, a Study Closure Form must be submitted to the IRB.

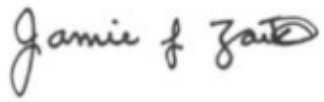
This determination applies only to research activities engaged in by the personnel listed on this document.

It is the Principal Investigator's responsibility to ensure that the IRB's requirements as detailed in the Institutional Review Board Policies and Procedures For Faculty, Staff, and Student Researchers (available

at gsu.edu/irb) are observed, and to ensure that relevant laws and regulations of any jurisdiction where the research takes place are observed in its conduct.

Any unanticipated problems resulting from this study must be reported immediately to the University Institutional Review Board. For more information, please visit our website at www.gsu.edu/irb.

Sincerely,



Jamie Zaikov, IRB Member

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