



THE RELATIONSHIP BETWEEN WORK STRESS, AND SOMATIC SYMPTOMS AMONG NURSES: THE MEDIATING ROLE OF JOB SATISFACTION

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ABSTRACT

Nurses in Pakistan face significant workplace stress due to their demanding roles in healthcare, high patient-to-nurse ratios, resource constraints, and systemic healthcare problems. This stress can lead to physical health problems such as immune system weakness hypertension, and cardiovascular diseases. The country's healthcare system, with high illness rates, lack of funding, and insufficient personnel, exacerbates the stress experienced by nurses. High levels of work-related stress are directly correlated with increased somatic symptoms, leading to burnout, depression, weakened immune function, increased susceptibility to illness, and higher rates of cardiovascular disease. Job dissatisfaction is positively correlated with lower patient safety attitudes. The study aims to investigate the relationship between work stress and somatic symptoms among nurses, exploring how job satisfaction mediates this relationship. It seeks to understand if higher job satisfaction can reduce the physical symptoms caused by work stress. The study emphasizes the significance of organizational initiatives aimed at improving job satisfaction and reducing work stress for employee health and well-being. The research highlights the complex relationship between work stress, job satisfaction, and somatic symptoms, emphasizing the mediating role of job satisfaction.

Keywords: Work stress, somatic symptoms, job satisfaction

INTRODUCTION

A nurse's work responsibility includes providing healthcare services, which include illness prevention, health promotion, and lifelong care-giving. An integral part of the healthcare team who afford treatments, collaborate with medical teams, educate patients, and advocate patients' needs are nurses (Moradi et al, 2014). The nursing field require skills, empathy, and a commitment to improve health outcomes, when working in clinics, hospitals, community health centres, and research institutes. Because nursing is such a demanding career, workplace stress is a common issue (Zencirci, 2010). Various stressors include confronting patient deaths, dealing with conflicts with doctors and co-

workers, and being excessively busy (Gokkaya, 2014). These stressors resultantly influence the job satisfaction of nurses which is the subjective assessment of one's employment or work experience, encompassing feelings of fulfilment, contentment, and optimism about one's role and workplace. Factors affecting job satisfaction include the type of work, interactions with co-workers and managers, chances for promotion, pay, and company culture. An overall sense of well-being, motivation, and engagement are often increased when job satisfaction is high. On the other hand, scarcity of job satisfaction leads to unhappiness, low morale, also possible rate of higher turnovers. For nurses, increased work stress can lower job satisfaction. Workloads that are too

great and difficult working environments might make people more stressed, which lowers their degree of job satisfaction in general. On the other hand, a supportive workplace culture and effective stress reduction, favourably affect job satisfaction (Hoboubi et al, 2016). With such compromised job satisfaction comes great distress for nurses. This psychological distress results in the bodily manifestations among nurses i.e. somatic symptoms which include physical complaints without a clear medical reason, such as headaches, weariness, muscle soreness, and gastrointestinal discomfort. Somatic symptoms highlight the complex relationship between mental and physical health, showing how psychological issues can affect the body's responses and exacerbate physical pain or distress.

There seems to be a protective link between higher job satisfaction and somatic symptoms. Contented nurses may exhibit enhanced psychological and physiological well-being, reducing the frequency of physical complaints. Good work-life experiences and job satisfaction lessen the stress' adverse outcome on physical well-being, and promote a better work-life balance (Gandhi et al, 2014). Somatic symptoms among nurses seem to increase in direct proportion to increased work-related stress. Extended periods of stress can deteriorate physical well-being and leads to problems, mainly headaches and tense muscles. Reducing stress at work is thought to be a possible way to improve general well-being and reduce physical symptoms. The delicate link of work stress, job satisfaction, and also somatic symptoms, is highlighted in the complex dynamic among nurses. Stress at work has a negative correlation with somatic symptom prevalence in addition to decreasing job satisfaction (Babapour et al, 2022). Conversely, increased level of satisfaction in job appears to operate as a protective factor against physical symptoms, highlighting the relationship of mental health, satisfaction of job, and physical health. Moreover, significance of favourable work environments and effective stress mitigation becomes apparent, forming a balanced correlation between these factors and influencing the general health of nurses.

1.1 Work Stress

Physiological and psychological well-being is adversely affected by work stress, which has become a

prominent concern in various line of work. It results from high demands and pressures of one's work, responsibilities, and it frequently has a major negative impact on productivity and health. The impact of work stress is especially noticeable in high-stress occupations like nursing because of the demanding and frequently hectic nature of the duties involved. The constant stress of long hours, heavy patient loads, emotional strain from patient care, and the need to make crucial decisions quickly is a burden that nurses bear as vital healthcare providers (Khamisa et al., 2015). Stress has serious consequences, including exhaustion, mental health problems, and physical illnesses. The situation is especially difficult in Pakistan because of high patient-to-nurse ratios, resource constraints, and systemic healthcare problems. Studies conducted in Pakistan show that nurses, a profession that is naturally demanding because of their demanding duties and emotional cost, have a notably high prevalence of work stress (Qureshi et al., 2012).

Stress related to work has a substantial effect on psychological well-being of nurses, leading to a range of symptoms such as emotional exhaustion, helplessness, cynicism, elevated anxiety, depression, and burnout. According to a 2017 study by Iqbal and colleagues in Pakistan, 82% of nurses reported having moderate to severe stress levels, and a significant percentage of them also showed signs of depression and also anxiety (Iqbal et al., 2017). Additionally, psychological impact of stress due to work, on nurses can lower job satisfaction and affects the standard of patient's treatment. High performance standards combined with the emotional strain of managing patient suffering and death make for a demanding workplace that can be mentally draining. The effects of occupational stress on the body are also noteworthy. Chronic stress can cause a host of health problems for nurses, such as immune system weakness, hypertension, and cardiovascular diseases. Studies reveal that extended exposure to high-stress settings can cause physical symptoms like exhaustion, headaches, and gastrointestinal issues (Shah et al., 2018). Furthermore, chronic stress can cause a persistent elevation in the stress hormone cortisol, which can lead to metabolic syndromes and other long-term health issues.

The numerous challenges facing Pakistan's healthcare system add to the stress of working as a nurse. These include a high rate of illness, a lack of funding, and insufficient personnel. Research conducted by Ali et al. (2019) examined nurses in Pakistan, indicating that nurses commonly work under extreme pressure with patient-to-nurse ratios that were significantly higher than recommended, leading to stress and overwork (Ali et al., 2019). The cultural and social context is crucial because, as a result of societal expectations, under appreciated professions like nursing can cause additional stress for their practitioners.

The effects of occupational stress on a nurse's psyche and body are complex and intricately linked. Research carried out in Pakistan presents an unsettling image. More than 75% of participants in a 2015 study by Badil et al. involving nurses in Karachi tertiary care hospitals reported feeling stressed out at work, with a sizeable percentage reporting different levels of stress (Badil et al., 2016). A vicious cycle of declining health and well-being can result from psychological stress since mental health disorders can aggravate physical health problems. For example, a nurse who is under a lot of stress at work might have sleeplessness, which can cause exhaustion and a decline in cognitive abilities, which can further exacerbate stress and affect the way the nurse performs her job (Rafati et al., 2020). Similarly, a 2019 study conducted at Liaquat University Hospital, Jamshoro by Jamil et al. discovered that 90% of nurses reported experiencing stress related to their jobs, with workload being the main cause (Panhwar et al., 2019). The World Health Organisation (WHO) has released a report that emphasises the global nursing shortage, with Pakistan being in a particularly dire situation. Due to the shortage, employees will have to put in more overtime and face greater pressure, which will cause stress and burnout (Muhammad et al., 2023).

Pakistani nurses deal with additional stressors in addition to their workload. According to research by Mahar et al. (2020), work stress among nurses in Karachi is caused by things like poor supervision, insufficient training, and few opportunities for career advancement (Nazir et al., 2022). Stress levels can also be increased by the emotional toll that dealing with seriously ill patients and seeing deaths can have on one's emotional state. Concerning are the

psychological effects of work stress on Pakistani nurses. Research shows that among nurses, symptoms such as anxiety, depression, and emotional tiredness are highly prevalent (Qureshi et al., 2012). These mental health issues can seriously hinder a nurse's capacity to work efficiently, which could lower the standard of patient care. Equally concerning are the physiological effects of work-related stress on nurses. According to research by Lashari et al. (2022), nurses working under stress at work report digestive problems, cardiovascular problems, and sleep disturbances. These physical health problems may also make it more tough for nurses to execute their duties, hence increasing absenteeism (Membrive-Jiménez et al., 2022). Workplace stress is a serious problem that has a significant impact on nurses, especially in high-stress settings like those in Pakistan. The physiological and psychological effects of this stress result in serious health issues and decreased productivity at work, highlighting the necessity for all-encompassing approaches to promote nurses' well-being (Labrague & McEnroe-Petitte, 2017).

1.2 Somatic Symptoms

Somatic symptoms, which refer to physical symptoms that arise from psychological distress rather than from an underlying medical condition, have increasingly become a focal point in the study of occupational health (Henningsen, 2018). Nurses, in particular, are highly susceptible to somatic symptoms due to their demanding work environments, which often involve long hours, emotional strain, and the constant pressure of providing high-quality patient care. The psychological and physiological impacts of these symptoms are profound, manifesting as chronic pain, fatigue, headaches, gastrointestinal issues, and other physical complaints that significantly impair life's quality and job performance (Zimmermann et al., 2016).

Based around the idea of nursing, somatic symptoms are intricately linked to work-related stress. The high-stress nature of nursing can exacerbate these symptoms, leading to a vicious cycle of stress and physical discomfort that further hampers professional performance and personal well-being. For instance, a study conducted in Pakistan found that nurses working in high-stress environments

reported a higher prevalence of somatic symptoms compared to those in less stressful roles (Kamal et al., 2018). This study revealed that over 60% of nurses experienced frequent headaches, while 45% reported gastrointestinal problems, and nearly 30% suffered from chronic back pain, all of which they attributed to their work stress. Research suggests a significant presence of somatic symptoms within the medical field. A 2023 study by Murtaza et al. investigating medical students in Pakistan found a prevalence of Somatic Symptom Disorder (SSD) of nearly 45%, with females experiencing a higher rate than males. Nurses, who often work in high-stress environments with exposure to trauma and illness, might be even more susceptible.

The psychological impact of somatic symptoms deserves particular attention. Chronic pain, a frequently reported symptom, can lead to heightened anxiety and depression (Murtaza et al., 2023). A research conducted in 2019 reported a strong relation between chronic pain and anxiety/depression found in nurses. Beyond psychological effects, somatic symptoms can have a cascading physiological impact. Stress, a major contributor to somatic symptoms, is known to weaken the immune system, making nurses more susceptible to infections (Zhang et al., 2024). Additionally, chronic pain can disrupt sleep patterns, further compromising overall health and well-being. This compromised state can ultimately reduce the treatment's quality nurses provide to patients. The demanding nature of nursing work, characterized by long hours, shift work, and emotional labour, undoubtedly plays a role. Workplace factors such as inadequate staffing, limited resources, and lack of support can further exacerbate stress levels (Hassmiller & Wakefield, 2022).

The psychological impacts of somatic symptoms among nurses are equally significant. These symptoms can lead to increased levels of anxiety and depression, creating a detrimental feedback loop where psychological distress worsens physical symptoms, which in turn heightens psychological stress. For example, a cross-sectional study in Karachi highlighted that 50% of nurses experiencing high somatic symptom burdens also reported moderate to severe levels of depression (Iqbal & Bano, 2016). Work stress among nurses not only contributes to the prevalence of somatic symptoms but also intensifies

their severity. Factors such as heavy workloads, inadequate staffing, and emotional demands of patient care create an environment where stress is a constant companion. This chronic stress triggers physiological responses that manifest as somatic symptoms. A notable study from Lahore emphasized that nurses working in intensive care units and also emergency departments reported higher stress levels and more severe somatic symptoms compared to their counterparts in less acute settings. Specifically, 70% of ICU nurses reported experiencing severe somatic symptoms, including musculoskeletal pain and cardiovascular complaints, directly linked to the high levels of stress in their work (Hussain et al., 2019).

1.3 Job Satisfaction

Job satisfaction, is an important factor in an individual's positive evaluation of their work experience. It transcends mere contentment and encompasses feelings of accomplishment, growth, and value within the workplace (Spector, 1997 as cited in Khan et al., 2020). Research conducted by Shah et al. (2018) reported job satisfaction among Pakistani nurses is significantly low, primarily due to inadequate staffing, lack of professional growth opportunities, and poor working conditions. This dissatisfaction is compounded by the stress inherent in the nursing profession, which can lead to various somatic symptoms such as headaches, gastrointestinal issues, and fatigue. In the context of Pakistan, research indicates that the increased levels of work-related stress in nurses directly increase the somatic symptoms (Shah et al., 2018). Research on nurses by Naqvi et al. (2016) reported that a significant percentage experienced frequent headaches, back pain, and gastrointestinal issues, all of which were linked to job-related stress. The same study highlighted that these physical symptoms were more pronounced among nurses who reported low job satisfaction, emphasizing the mediating role of satisfaction of job (Hoboubi et al., 2017).

Studies in Pakistan highlight a concerning trend: a significant portion of nurses report dissatisfaction with their jobs. Research conducted in Islamabad between 2013-2014 revealed that a staggering 86% of nurses expressed dissatisfaction, with 26% reporting severe discontent (Bahalkani et al., 2014). This low satisfaction level is a cause for serious concern, as it

has significant implications for both the nurses themselves and the treatment quality of patients. Job satisfaction acts as a mediating factor between work stress and the development of somatic symptoms. Work stress, characterized by feelings of overwhelm, anxiety, and exhaustion, is a prevalent issue among nurses in Pakistan. A study published in the Rawalpindi Medical Journal (2017) found that workload was a major source of dissatisfaction for nurses, contributing to stress (Khan et al., 2020). When job satisfaction is low, nurses may lack the emotional resilience to cope with this stress effectively. This lack of resilience can lead to the development of various somatic symptoms, which are physical manifestations of psychological distress. These symptoms can include headaches, muscle tension, fatigue, and gastrointestinal problems (Takala et al., 2017).

The psychological and physiological impacts of job dissatisfaction on nurses are multifaceted. Dissatisfaction can result in burnout, distinguished by exhaustion, cynicism towards patients, and lack of accomplishment (Maslach et al., 2018). This burnout can further exacerbate work stress, creating a vicious cycle that negatively affects mental health. Research suggests a connection between job dissatisfaction and depression among nurses (Aiken et al., 2018). Physiologically, chronic stress and dissatisfaction can manifest in weakened immune function, increased susceptibility to illness, and higher rates of cardiovascular disease (Steptoe et al., 2017). A study conducted in Faisalabad, Pakistan (2018) showed a positive correlation between job dissatisfaction and lower patient safety attitudes among nurses (Aziz et al., 2018). This suggests that a dissatisfied nurse may be less attentive to detail or experience difficulty focusing, potentially compromising patient care.

Studies have reported a link between stress and an increased risk of headaches, musculoskeletal disorders, and gastrointestinal issues (Takala et al., 2017). When nurses are constantly under pressure, their bodies remain in a heightened state of arousal, leading to these physical manifestations. The consequences of job dissatisfaction and work stress extend beyond the individual nurse. High turnover rates and absenteeism are associated with low job satisfaction (Aiken et al., 2018). Ultimately, a healthcare system with a high proportion of dissatisfied nurses suffers from decreased efficiency,

potentially compromising the quality of care delivered to patients.

LITERATURE REVIEW

2.1 International Literature

In the past 20 years, as the nursing sector experienced innovation, nurses have taken on more responsibilities for providing care to patients and communities. Nurses therefore operate in a challenging and competitive setting. In developing nations, stress management strategies are often inadequate and the prevalence of work-related stress is often overestimated (Kortum et al., 2010). Nursing requires being skilled, working together in a range of situations, and managing their emotions. Occupational stress negatively affects nurses' well-being and patient outcomes both directly and indirectly, and nurses are particularly prone to it (Clegg, 2001). A difference of opinion among health care professionals, conflicts with peers, discord with a supervisor, prejudice, work stress, confusion about cure, coping with death and their families are some of these (McVicar, 2003). Nursing is a challenging job involving high levels of stress due to long working hours, heavy workload, emotional demands, and the need to give patients the care they need, with various disorders (Nabizadeh Gharghozar et al., 2020). This high level of stress experienced by nurses can have adverse effects on their physical and psychological well-being.

Work stress is defined as the physical and psychic responses, which have cynical impact that occurs when job demands have a clash with the worker's talents, skills, and needs (1999, National Institute of Occupational Safety and Health). Employers who are stressed report to be ill, without motivation, less productive, and uncomfortable at job. Job strain is a significant source of workplace stress (Palmer et al., 2004). Job strain is one type of stressor that employees can encounter at work. Physical effort and job insecurity can both contribute to stress. According to one study, employed women reported higher levels of work stress than males—28% had high-strain occupations and 17% had low-strain employment, compared to 20% and 24%, respectively, for men (Park, 2007). Furthermore, healthcare workplaces are perceived to be less independent, physically displeasing, and more focused on job needs and administrative control.

More particular environmental factors have been identifying among nurses. These include unpredictable hiring, a lack of character clarification, reduced input in governing, low status, and lack of support (Bennett, 2001).

Workload, leadership concerns, and conflicts within profession have been highlighted as the most common reasons for stress for nurses for a long time (McVicar, 2003). Inter- and intra-professional disagreement remains a major reason of stress among nurses. Conflict within professional boundaries with others appears to be more prevalent, particularly between nurses and physicians. Furthermore, it is not surprising that nurses identify the necessity to tackle ill patients and their respective families as a source of anxiety. Wages and shift of working schedules appear to be emerging as key components of stress among nurses. Lack of incentive is a growing source of irritation, contributing to role detachment, which is a component of exhaustion. Furthermore, shift work, particularly night shifts, has generally resulted in wage increases but can substantially impact the personal and the social life. Long hour of working, particularly working at night, poses a health concern because it creates consequences similar to mild or of moderate level of distress (McVicar, 2003). Demands of work, control over job, and social support are thought to be important for workers' health and well-being. A link of high level of work demands and less freedom to make decisions in job is associated with a poor well-being (Nomura et al., 2007).

Early research by Cannon, Selye, Seligman, and Lazarus, as well as more recent research by others, suggest that heightened or persistent stress causes physiologic changes that can contribute to morbidity or mortality over time (Shamsikhani & Ahmadi, 2023). A research study observed that nurses with higher levels of work stress experience more somatic symptoms such as headaches, gastrointestinal problems, and fatigue (Nabizadeh & Gharghozar et al., 2020). Similarly, a research by Jones et al. found that nurses who experienced increased levels of work stress report somatic symptoms such as muscle tension, back pain, and sleep disturbances. These findings suggest that work stress has a significant affect on nurses' physical well-being and can manifest as somatic symptoms. Workplace stress among nurses is linked to a number of unfavourable patterns, as well as physical, behavioural, and mental health

impacts and outcomes. Job satisfaction has been identified as one of the behavioural and attitude effects (Long et. Al., 2014).

One of the most evident detrimental effects of workplace stress on nurses in every work setting is job dissatisfaction (Kawano, 2008). Work satisfaction is an important factor that has been found as a mediating factor between the relationship of work stress and somatic symptoms among nurses. Job satisfaction is defined as the level of contentment and also fulfilment that experienced by individuals in their work. Therefore, a nurse's job dissatisfaction may result in absenteeism, inadequate output, and even jeopardize the standard of patient care. Furthermore, there was a strong correlation found between the elements contributing to stress brought on by a heavy workload and low work motivation, which has an evident impact on individual performance. Additionally, when quality programs that are based on instruments, reward criteria, or standards to improve the quality of treatment in the healthcare industry are adopted, the pressure on nurses' increases. According to this study, nurses who experience higher workload stressors, such as not having enough time to finish tasks or an overwhelming burden, perform worse.

As a result, the pressures associated with the hospital workload may have an affect on the calibre of work and the performance of nurses. There is compelling evidence from earlier studies that high nursing workloads on units have a detrimental effect on patient outcomes. increased levels of job demands, are significantly linked to increased levels of discontent and weariness, according to certain studies on nurses. As a result, increased levels of job discontent and exhaustion among nurses are being caused by increased workloads and high number of patient to nurse ratios (Long et al., 2014). Apart from the psychological distress, this burnout in nurses adversely impacts the physical health of nurses in Intensive Care Units of hospitals. With greater responsibility comes greater workload and job dissatisfaction.

This workload stress has been associated to have somatic complaints among nurses which mainly include, hypertension, cardiovascular disease, immunological diseases, obesity, depression, musculoskeletal ailments, and all-cause mortality, in addition to psychological repercussions. Chronic

work stress has been associated to a variety of health related-consequences among nurses, including depression, substance addiction, obesity, hypertension, musculoskeletal injury, infection, carcinogenic, and premature aging. One health study that employed a nursing cohort specifically to highlight the health repercussions of this occupation (50,000 nurses from 1984 to 1990) reported that nurses had a higher mortality risk for various diseases than all workers (McNeely, 2005). Workers frequently report various somatic symptoms including musculoskeletal pain, sleeplessness, and stomach, cardiac and respiratory complaints. Those experiencing psychological distress are more likely to experience various somatic symptoms, and the quantity of somatic symptoms is an accurate indicator of impairment in psychological, physical, and social functioning, according to previous research (Nomura et al., 2007).

Several studies have found that work stress in nurses causes somatic symptoms such as headaches, backaches, weariness, discomfort in the joints, and sleep difficulties. Another study, reported that 56 randomly selected nurses had somatic symptoms such as headache, ulcers, hypertension, bronchitis, eczema and back pain (Gandhi et al., 2014). Several studies have highlighted the link between work stress and somatic symptoms (Nabizadeh & Gharghozar et al., 2020). Studies from various countries consistently indicate a high rate of somatic symptoms among nurses. A study in China by Wu et al. (2018) found that 67.3% of nurses reported experiencing at least one somatic symptom, such as fatigue, headaches, or gastrointestinal issues. Similarly, research in Sweden by Glise, Hadzibajramovic, Jonsdottir, and Ahlborg (2019) reported that 45% of nurses experienced frequent somatic symptoms, with musculoskeletal pain being the most common complaint. Somatic symptoms can lead to severe health consequences for nurses.

Research by Gärtner et al. (2019) in Germany showed that nurses with chronic somatic symptoms suffer more from anxiety, depression, and burnout. This correlation suggests a detrimental cycle where somatic symptoms exacerbate mental health issues, which in turn, can intensify physical complaints. Moreover, a longitudinal study by Pihl-Thingvad, Andersen, and Andersen (2020) in Denmark highlighted that persistent somatic symptoms could

predict a decline in overall health status and increased absenteeism due to illness. The presence of somatic symptoms also significantly affects nurses' personal lives. A study conducted by Saijo, Yoshioka, Hanley, and Kitaoka (2017) in Japan found that nurses with higher levels of somatic symptoms reported poorer quality of life, including disrupted sleep, reduced leisure activities, and strained family relationships. These findings are supported by research from the United States, which showed that somatic symptoms in nurses were associated with lower life satisfaction and increased rates of stress-related conditions (Melnik et al., 2016).

Nurses experiencing these symptoms often face reduced work efficiency, increased errors, and higher rates of absenteeism. A study by Jun, Ojemeni, Kalisch, and Zhang (2020) in the United States found that nurses with frequent somatic complaints were more likely to report impaired work performance and higher incidences of occupational injuries. Additionally, a research in Egypt indicated that somatic symptoms negatively affected nurses' ability to maintain patient care standards, contributing to a decline in overall healthcare quality (Badr et al., 2021). Work stress in nurses significantly impacts their physical and mental health through various mechanisms and bodily responses. Chronic exposure to stress in the demanding environment of healthcare triggers a cascade of physiological reactions, starting with the triggering of the hypothalamic-pituitary-adrenal (HPA) axis. This activation releases cortisol, a stress hormone that, when elevated over prolonged periods, can lead to a host of adverse health effects (McEwen, 2019). For instance, persistent high cortisol levels can impair immune function, making nurses more susceptible to infections and illnesses (Marin et al., 2016).

Additionally, stress induces the release of pro-inflammatory cytokines, which contribute to chronic inflammation and are associated with cardiovascular disease and musculoskeletal pain (Black & Garbutt, 2020). Research by Letvak et al. (2018) demonstrated that nurses experiencing increase levels of work-related stress reported significantly increased incidences of back pain, migraines, and gastrointestinal problems compared to their less stressed counterparts. These somatic symptoms can further perpetuate a cycle of stress and illness, as the physical discomfort exacerbates mental strain and

vice versa. Mental health is equally affected, with stress leading to higher chances of anxiety, depression, and burnout (Dall'Ora et al., 2020). The psychological burden of managing heavy workloads, emotional demands of patient care, and organizational pressures contributes to cognitive overload and emotional exhaustion. This mental fatigue can impair decision-making and increase the likelihood of errors, thereby compromising patient's quality treatment and safety (Adriaenssens, De Gucht, & Maes, 2015).

Furthermore, the sympathetic nervous system's activation under stress conditions leads to symptoms such as increased heart rate, hypertension, and sleep disturbances (Garcia & Calvo, 2017). These symptoms not only diminish nurses' overall well-being but also affect their professional performance by reducing their ability to remain alert and responsive during shifts. Work stress can lead to significant functional impairment in nurses, manifesting in both physical and psychological domains. Functional impairment refers to the reduction in the ability to perform daily activities and job responsibilities effectively due to health issues. Chronic stress in the nursing profession can damage cognitive functions mainly memory, decision-making, and attention (Barker et al., 2020). This cognitive decline is often a result of prolonged exposure to stress hormones like cortisol, which can negatively affect brain areas such as the prefrontal cortex and the hippocampus (McEwen, 2019).

Physically, stress-related conditions such as chronic pain, fatigue, and gastrointestinal disorders can impede a nurse's ability to perform tasks that require physical endurance and precision. For example, a study by Letvak et al. (2018) found that nurses experiencing high levels of stress reported more frequent musculoskeletal pain, which in turn affected their mobility and dexterity, leading to difficulties in performing clinical procedures and increasing the risk of errors. These physical ailments can exacerbate stress levels, creating a vicious cycle of declining health and functional capability. Psychologically, work stress is closely linked to mental health issues such as depression, anxiety, and burnout. These conditions can significantly reduce a nurse's motivation, energy levels, and emotional resilience, further impairing their job performance (Dall'Ora et al., 2020). The emotional exhaustion

associated with burnout, for instance, can lead to a disengagement from work, negatively impacting patient care and increasing the likelihood of mistakes and oversight (Adriaenssens, De Gucht, & Maes, 2015).

Functional impairment due to work stress is thus intertwined with various physical and psychological issues, forming a complex web of health challenges that reinforce each other. The interplay between physical ailments and mental health problems can lead to a decline in overall well-being, making it increasingly difficult for nurses to fulfill their professional duties effectively (Garcia & Calvo, 2017). Work stress is an important factor contributing to the prevalence of somatic symptoms among nurses, which in turn negatively impacts their satisfaction of job. Research studies have demonstrated a clear link among chronic work stress and the manifestation of somatic symptoms such as headaches, gastrointestinal disturbances, and musculoskeletal pain (Letvak et al., 2018). These symptoms are often a direct result of the physiological stress response, which includes the release of stress hormones like cortisol and adrenaline. Over time, the chronic activation of these stress pathways can lead to persistent physical complaints, reducing nurses' overall health and functional capacity (McEwen, 2019).

The presence of somatic symptoms can substantially diminish job satisfaction among nurses. When physical discomfort and pain become a regular part of their daily experience, nurses may find it challenging to maintain the level of performance and care expected in their roles. This scenario is often exacerbated by the high demands and low control typical of nursing environments, further contributing to feelings of frustration and dissatisfaction (Dall'Ora et al., 2020). Research by Roelen et al. (2015) indicates that nurses who frequently experience somatic symptoms report lower job satisfaction, which can lead to higher turnover rates and reduced engagement in their work. Job dissatisfaction among nurses is not merely a consequence of somatic symptoms but also a contributing factor to overall poor well-being. Nurses who are not satisfied with their jobs experience emotional exhaustion, a core component of burnout (Adriaenssens, De Gucht, & Maes, 2015). This emotional state can further exacerbate somatic

symptoms, creating a vicious cycle where physical and psychological health continuously deteriorate. Conversely, work satisfaction has been reported to have a protective role in the well-being of nurses. Nurses who report increased levels of job satisfaction are less likely to experience severe somatic symptoms and are better equipped to handle the stresses of job (Van der Heijden et al., 2017).

Moreover, job satisfaction constitutes to a positive work environment and enhances the quality of patient treatment. Nurses who have job satisfaction tend to exhibit higher levels of professional commitment, leading to improved patient outcomes and increased personal fulfilment (Lu et al., 2019). This positive feedback loop can mitigate the negative effects of work related stress and reduce the incidence of somatic symptoms. Therefore, fostering job satisfaction through supportive management practices, adequate staffing, and opportunities for professional development is crucial in promoting nurses' health and well-being (Garcia & Calvo, 2017). Job dissatisfaction is strongly associated with increased levels of stress, depression and anxiety. A research study by Stansfeld et al. (2017) observed that employees who are not satisfied with their jobs are more likely to experience mental health issues, which can lead to chronic emotional exhaustion and burnout. These mental health challenges can diminish an individual's quality of life, affecting their emotional resilience and capacity to cope with everyday stressors.

Physically, the repercussions of job dissatisfaction are significant. Chronic job dissatisfaction can lead to somatic symptoms such as headaches, gastrointestinal problems, and musculoskeletal pain (Letvak et al., 2018). These physical ailments are often the result of prolonged stress and inadequate coping mechanisms, which can weaken the immune system and make individuals more susceptible to illness. Moreover, the ongoing physical strain can further exacerbate psychological distress, creating a cycle of declining health. Job dissatisfaction can undermine a person's sense of purpose and fulfilment. According to research by Büssing et al. (2016), employees who find their work unfulfilling often report a diminished sense of spiritual well-being. This loss of meaning and purpose can lead to feelings of emptiness and disconnection, impacting their overall life satisfaction and personal growth.

The spiritual distress caused by job dissatisfaction can also interfere with one's ability to find joy and contentment in other areas of life, leading to a pervasive sense of discontent. It can lead to lower productivity and higher absenteeism, which in turn may result in reduced earnings and limited career advancement opportunities (van der Heijden et al., 2017). The financial instability that often accompanies job dissatisfaction can cause additional stress, affecting not only the individual but also their family members. Moreover, the lack of job satisfaction can prompt frequent job changes, which may hinder the development of a stable career path and exacerbate economic insecurity.

The demanding nature of nursing makes it a profession susceptible to increased levels of work stress. This stress can have a negative impact on nurses' physical and psychological well-being, often manifesting as somatic symptoms. However, research suggests that job satisfaction acts as a crucial mediating factor in this relationship. When nurses experience high job satisfaction, they are better equipped to manage the inevitable stressors inherent in the profession. A study by Bakker et al. (2014) found that satisfaction of job fosters a sense of control and personal growth within the work environment. This sense of control allows nurses to perceive stressful situations as challenges rather than insurmountable obstacles. Additionally, job satisfaction cultivates feelings of accomplishment and value within the role, which can buffer the negative emotional impact of stress (Halbesleben & Bowler, 2006).

Job satisfaction also influences nurses' coping mechanisms. Research by Xanthopoulou et al. (2007) highlights that satisfied nurses take part in healthy coping strategies like social support and problem-solving when faced with stress. Conversely, low job satisfaction can lead to the use of unhealthy coping mechanisms such as substance abuse and social withdrawal, which can exacerbate the adverse effects of stress on physical health. Job satisfaction, defined as the level of contentment individuals feel towards their job, plays an important role in moderating the outcome of work stress on somatic symptoms. Job satisfaction can be influenced by many factors, including work environment, support from colleagues, remuneration, and opportunities for professional development (Lu et al., 2019). When

satisfaction of job is high, it can buffer the negative impacts of stress, thereby reducing the incidence of stress-related somatic symptoms. Conversely, low job satisfaction can exacerbate the effects of stress, leading to an increased prevalence of physical health problems.

Furthermore, job satisfaction can influence the physiological response to stress. When nurses experience high job satisfaction, their bodies are more likely to react adaptively to stressful situations. Studies by Kinnunen (2017) suggest that job satisfaction may promote a healthier stress response by maintaining the hypothalamic-pituitary-adrenal (HPA) axis, which controls the release of stress hormones like cortisol. Conversely, low job satisfaction can result in a chronic activation of the HPA axis, leading to a heightened stress response and increased vulnerability to somatic symptoms like headaches, muscle tension, and gastrointestinal issues (Takala et al., 2017). Job satisfaction can alleviate the effects of work stress by enhancing nurses' emotional and psychological resilience. When nurses have job satisfaction, they experience positive emotions, which can counteract the physiological and psychological impacts of stress (Van der Heijden et al., 2017). Positive job satisfaction can reduce the levels of cortisol and adrenaline, which are typically elevated during periods of high work stress (McEwen, 2019). Lower levels of these hormones can decrease the occurrence of stress-related somatic symptoms such as headaches, muscle pain, and gastrointestinal disturbances (Garcia & Calvo, 2017).

Moreover, job satisfaction influences nurses' perceptions and responses to stressful situations. Nurses who are satisfied with their job perceive stressors as less threatening and more manageable, which can mitigate the response of stress (Barker et al., 2020). This altered perception can prevent the chronic activation of the hypothalamic-pituitary-adrenal (HPA) axis. Chronic activation of the HPA axis is associated with numerous somatic symptoms, including fatigue, insomnia, and cardiovascular issues (Marin et al., 2016). By reducing the perceived severity of stressors, job satisfaction can help maintain a balanced HPA axis response, thus minimizing the physical toll of stress on the body. Job satisfaction also promotes better coping strategies, which are essential for managing work stress and

preventing somatic symptoms. Satisfied nurses engage in effective coping mechanisms such as looking for social support, maintaining a healthy work-life balance, and problem solving (Dall'Ora et al., 2020).

These strategies can reduce the physical and emotional strain associated with stressful work environments. For instance, social support from colleagues and supervisors can provide emotional relief and practical assistance, helping nurses manage their workload more effectively and reducing the likelihood of stress-related physical complaints (Letvak et al., 2018). Additionally, job satisfaction can enhance nurses' overall health behaviors, further mitigating the effect of work stress on somatic symptoms. Nurses who are satisfied with their jobs engage in health-promoting behaviors such as exercising regularly, adequate sleep, and eating healthy (Lu et al., 2019). These behaviors can strengthen resilience of body to stress and reduce the incidence of stress-related health issues. For example, regular physical exercise has been reported to decrease stress levels hormones and improve mood, while sufficient sleep is crucial for recovery and stress management (Melnyk et al., 2016). The organizational plays a significant role in mediating the link between work stress, job satisfaction, and somatic symptoms. Supportive management practices, adequate staffing levels, and opportunities for professional development can increase the job satisfaction and ultimately reduce work stress (Roelen et al., 2015).

When nurses feel valued and supported by their organization, their job satisfaction increases. For instance, a research by Van der Heijden et al. (2017) examined that nurses with high job satisfaction reported fewer somatic symptoms even in high-stress environments, highlighting the protective role of job satisfaction. Furthermore, job satisfaction can reduce the risk of burnout, a critical factor linking work stress to somatic symptoms. Burnout, identified by emotional exhaustion, depersonalization, and reduced personal accomplishment, is a result of chronic work stress and is strongly associated with various physiological and psychological health issues (Adriaenssens, De Gucht, & Maes, 2015). High satisfaction of job can act as a cushion against burnout by enhancing a sense of purpose, engagement, and fulfilment in professional domain.

This can reduce the physiological and psychological impacts of stress, thereby decreasing the prevalence of somatic symptoms. In the context of patient's care, satisfaction of job among nurses can lead to improved patient outcomes, which can indirectly reduce work stress and associated somatic symptoms. Satisfied nurses provide high-quality care, leading to better patient satisfaction and treatment (Lu et al., 2019). Positive patient outcomes can enhance nurses' professional satisfaction and reduce the stress associated with poor patient care and outcomes. This positive feedback loop can help mitigate the physical and emotional effects of work stress.

Moreover, job satisfaction is associated with lower levels of absenteeism and presenteeism among nurses. Absenteeism refers to frequent absence from work due to health issues or lack of motivation, while presenteeism refers to attending work despite being ill or under-performing due to health problems (Letvak et al., 2018). High rate of absenteeism and presenteeism are often associated to job dissatisfaction and increased work stress. In a nursing context, high job satisfaction is seen as a valuable resource that assist nurses handle job stress and prevents the depletion of physical and psychological resources. Studies have shown that nurses with increased level of job satisfaction are more resilient to stress and report fewer physical health problems (Li et al., 2014). Moreover, the transactional model of stress and coping also elucidates the mediating role of job satisfaction. This model suggests that individuals appraise stressors and their ability to handle them, which in turn affects their mental and physical health (Lazarus & Folkman, 1984).

In this framework, job satisfaction can influence how nurses perceive and respond to stress. For instance, a supportive work environment that promotes job satisfaction can enhance coping mechanisms, thereby reducing the likelihood of stress translating into somatic symptoms. Research by Lim et al. (2010) supports this view, indicating that job satisfaction moderated the connection between job stress and health outcomes among nurses. The link between job satisfaction, work stress, and somatic symptoms is complex and multifaceted. Job satisfaction not only directly affects nurses' well-being but also interacts with various organizational and personal factors to influence how work stress impacts physical health. For example, individual differences in stress

resilience and coping skills can moderate the outcome of job satisfaction on stress-related somatic symptoms (Garcia & Calvo, 2017).

The mediating role of job satisfaction in the relationship between work stress and somatic symptoms has been supported by empirical research. For example, Farquharson et al. (2013) found that job satisfaction significantly mediated the link between job stress and health outcomes among nurses. Nurses who reported increased levels of job satisfaction had fewer somatic symptoms despite high levels of job stress. This suggests that enhancing job satisfaction could be a viable strategy to mitigate the negative health effects of occupational stress in nursing. The interplay between work stress, somatic symptoms, and job satisfaction can be further understood through the job demands-resources (JD-R) model (Bakker & Demerouti, 2017). According to this model, job demands, such as workload and emotional strain, can lead to stress when they exceed an individual's capacity to cope. However, job resources, including social support, opportunities for professional growth, and job autonomy, can promote job satisfaction and mitigate the effect of job demands on stress and health outcomes.

Study by Van der Heijden et al. (2019) supports this framework, demonstrating that job assets were significantly linked with higher satisfaction of job and lower levels of somatic symptoms among nurses. The mediating factor of job satisfaction is further supported by a research study examining the relationship between work stress, job dissatisfaction, and burnout. Schaufeli and Bakker (2004) propose the Job Demands-Resources model, which implies that a work environment characterized by more job demands (stress) and low job assets (opportunities for growth and development) leads to burnout. However, the model also highlights that high job control (a facet of job satisfaction) can act as a cushion against burnout, even in high-demand environments. Studies by Laschinger et al. (2009) demonstrate this buffering effect, showing that job satisfaction moderates the relation between work stress and burnout among nurses. Since burnout is a strong predictor of somatic symptoms (Aiken et al., 2018), this suggests that job satisfaction can indirectly reduce the likelihood of physical manifestations of stress.

International research across diverse healthcare settings strengthens the argument for job satisfaction's mediating role. A research study by Sun et al. (2019) in China reported that job satisfaction significantly buffered the adverse effects of work stress on sleep quality and physiological health complaints among nurses. Similarly, a study by in Ireland demonstrated that job satisfaction moderated the relationship between work stress and musculoskeletal disorders among nurses. These findings highlight that the mediating effect of job satisfaction, which is not limited to specific cultural contexts (McArdle et al., 2017).

2.2 Indigenous Literature

Work stress in the nursing profession is a critical issue that has garnered substantial attention due to its far-reaching consequences on both individual and organizational levels. Nurses in Pakistan face a myriad of stressors in their work environment, including high patient loads, insufficient staffing, long working hours, and inadequate resources (Shah et al., 2019). These stressors are compounded by the emotional demands of patient care, which require nurses to constantly manage their emotions while providing compassionate care to patients and their families (Kamal et al., 2020). The organizational culture in many Pakistani healthcare settings often lacks the necessary support systems to alleviate these stressors, leading to chronic stress among nurses (Saeed et al., 2018). The result of work stress on nurses' health and well-being is profound. Work stress triggers a cascade of physiological responses that can lead to the development of somatic symptoms.

Repeated exposure to stress activates the hypothalamic-pituitary-adrenal (HPA) axis, causing the release of cortisol and other stress hormones (Yousaf et al., 2020). Over time, elevated levels of these hormones can disrupt bodily functions and lead to various physical health issues such as headaches, musculoskeletal pain, and gastrointestinal disturbances (Rehman et al., 2018). A study by Ahmed et al. (2017) in Pakistani hospitals found that nurses experiencing increased levels of work stress reported significantly more instances of back pain, migraines, and fatigue compared to their less stressed counterparts. Moreover, work stress can weaken the immune system, making nurses more

susceptible to infections and illnesses (Khan et al., 2016). The chronic inflammation resulting from prolonged stress exposure is also associated with cardiovascular problems and metabolic disorders (Ali & Siddiqui, 2019). These somatic symptoms not only affect nurses' physical health but also contribute to psychological issues such as anxiety and depression, further exacerbating their overall stress levels (Naz & Gul, 2021). Job satisfaction among nurses in Pakistan is significantly impacted by work stress and the resultant somatic symptoms. Job satisfaction is defined as the extent to which the workers feel content and fulfilled with their job roles and work environment (Farid et al., 2019).

When nurses experience increased levels of work stress and somatic symptoms, their job satisfaction tends to decline. Stress-induced physical discomfort and pain can hinder nurses' ability to execute their duties effectively, resulting in frustration and dissatisfaction with their job (Ahmed et al., 2017). Additionally, the emotional exhaustion caused by chronic stress reduces nurses' motivation and engagement, further diminishing the satisfaction of job (Malik et al., 2018). The relation between work stress, somatic symptoms, and job satisfaction is complex and interdependent. Job satisfaction plays a critical mediating role in this dynamic. Satisfied nurses are better able to handle work stress, which in turn reduces the likelihood of developing severe somatic symptoms. Conversely, low job satisfaction can exacerbate the effects of work stress, leading to more pronounced physical and mental health issues (Khan et al., 2016). For instance, a study by Rehman et al. (2018) found that Pakistani nurses with higher job satisfaction reported fewer stress-related somatic symptoms and better overall health compared to those with lower job satisfaction.

Job satisfaction can mitigate the impact of work stress through various mechanisms. Firstly, it enhances nurses' emotional and psychological resilience, enabling them to manage stress more effectively (Farid et al., 2019). Satisfied nurses are more likely to perceive stressors as challenges rather than threats, which can buffer the physiological stress response and prevent the chronic activation of the HPA axis (Naz & Gul, 2021). This positive perception can reduce the levels of stress hormones and inflammatory markers, thereby decreasing the incidence of somatic symptoms (Ali & Siddiqui,

2019). Secondly, job satisfaction promotes better coping strategies among nurses. Satisfied nurses engage in proactive coping mechanisms such as seeking social support, practising mindfulness techniques, and maintaining a healthy balance of professional and personal life (Kamal et al., 2020). These coping strategies can alleviate the physical and emotional burden of work stress, reducing the risk of somatic symptoms, improving well-being (Shah et al., 2019). For example, nurses who have strong social support networks are less likely to experience severe stress and its related health issues, as they can share their concerns and receive emotional and practical assistance (Saeed et al., 2018).

Furthermore, job satisfaction can enhance nurses' overall health behaviors, further mitigating the effects of work stress. Nurses who are satisfied with their jobs engage in health-promoting behaviors such as exercising regularly, balanced nutrition, and adequate sleep (Farid et al., 2019). These behaviors can strengthen the body's resilience to stress and reduce the occurrence of stress-related health problems. For instance, regular physical activity can lower cortisol levels and improve mood, while sufficient sleep is essential for recovery and stress management (Naz & Gul, 2021). The organizational environment significantly influences job satisfaction and its mediating role between work stress and somatic symptoms. Supportive management practices, adequate staffing levels, and opportunities for professional development are crucial factors that enhance job satisfaction and reduce work stress (Kamal et al., 2020). When nurses feel valued and supported by their organization, their job satisfaction increases, which can cushion the effects of work stress. A study by Ali & Siddiqui (2019) showed that Pakistani nurses who perceived their work environment as supportive and had opportunities for career growth reported higher job satisfaction and decreased levels of stress-related somatic symptoms. In addition, effective communication and conflict resolution mechanisms within the organization can enhance satisfaction of job and reduce the impact of work stress.

Nurses who have open channels of communication with their supervisors and colleagues are better able to express their concerns and seek solutions to work-related problems (Saeed et al., 2018). This can reduce the feelings of isolation and helplessness often

associated with work stress, thereby improving job satisfaction and reducing the likelihood of somatic symptoms (Rehman et al., 2018). Job satisfaction also reduces the risk of burnout, a critical factor linking work stress to somatic symptoms. Positive patient outcomes can enhance nurses' professional satisfaction and reduce the stress associated with poor patient care and outcomes. This positive feedback loop can help mitigate the physical and emotional effects of work stress. Moreover, job satisfaction is associated with lower levels of absenteeism and presenteeism among nurses. Absenteeism refers to frequent absence from work due to health issues or lack of motivation, while presenteeism refers to attending work despite being ill or under-performing due to health problems (Rehman et al., 2018). High rates of absenteeism and presenteeism are often related to job dissatisfaction and increased work stress. By promoting job satisfaction, healthcare organizations can reduce absenteeism and presenteeism, ensuring that nurses are healthier and more capable of performing their duties effectively. This reduction in absenteeism and presenteeism can decrease the overall stress burden on the nursing staff, further reducing the incidence of somatic symptoms (Naz & Gul, 2021).

The relation between job satisfaction, work stress, and somatic symptoms is complicated and multifaceted. Job satisfaction not only directly affects nurses' well-being but also interacts with various organizational and personal factors to influence how work stress impacts physical health. For example, individual differences in stress resilience and coping skills can moderate the effects of job satisfaction on stress-related somatic symptoms (Ahmed et al., 2017). Understanding these interactions is crucial for developing targeted interventions to promote job satisfaction and reduce work stress among nurses. This includes providing adequate resources, ensuring fair workload distribution, offering opportunities for professional growth, and fostering a positive organizational culture (Shah et al., 2019). Additionally, interventions such as stress coping programs, resilience strategies, and mental health support can enhance nurses' ability to handle work stress and reduce the prevalence of somatic symptoms (Naz & Gul, 2021).

Healthcare policy-makers in Pakistan should also consider the broader implications of work stress and

job satisfaction on the healthcare system. By investing in the well-being of nurses, they can ensure a more static and effective workforce, ultimately leading to an improved patient care and health outcomes (Kamal et al., 2020). This includes implementing policies that address systemic issues such as staffing shortages, inadequate resources, and workplace violence, which are significant sources of work stress for nurses. Furthermore, ongoing research is essential to understand the factors causing work stress and lower job satisfaction among Pakistani nurses. Longitudinal research studies can provide insights into the long-term effects of work stress on somatic symptoms and job satisfaction, helping to identify effective interventions and support mechanisms (Ali & Siddiqui, 2019).

2.3 Rationale

Nurses experience diverse range of work-related stressors. Studies have shown that occupational stress not only impacts nurses' somatic well-being, but it is also a significant risk factor for patient safety and the quality of nursing (Lees & Lal, 2016). Previous studies indicated that nurses with increased work stress had a increased risk of unhealthy somatic well-being (e.g., anxiety, lower back pain, depression, sleep problems, distress, headache, and appetite loss), and cardiovascular diseases compared to those with less occupational stress (Backé et al., 2011). These stress-related somatic problems are associated with higher risk of compromised health and disease. Thus, work stress in the nursing profession is related with a variety of problems, mainly behavioural, physical and psychological health effects and consequences (Long et al., 2014). Job dissatisfaction is one of the adverse outcomes of work stress among nurses (Kawano, 2008).

Research studies show that the higher levels of nurse job satisfaction are positively connected to improved quality and quantity of patient treatment, enhance work environment, higher productivity, improved performance, better self-esteem among staff, patient and life satisfaction, mood and indelicacy (Melo, et al., 2011). Hence, it is necessary to examine the level of both work stress and job satisfaction, and figure out the effect of job stress on job satisfaction among the nursing staff. Therefore, the necessity to attend to the health and professional satisfaction of this vital healthcare workforce is the justification for the

investigation of the effects of work related stress on somatic symptoms and job satisfaction among Pakistani nurses. The male nurses are under-represented in previous researches that their problems did not addressed. Several international studies have investigated the outcome of somatic symptoms, satisfaction of job, and work stress separately on healthcare professionals, there is a significant research gap when examining these variables combined among nurses in Pakistan. Nurses are in the forefront of providing crucial services, and Pakistan's healthcare system faces particular problems.

Although the significance of nurses' mental and physical health is widely recognized, there is a notable lack of study in the regional literature that thoroughly investigates the combined effects of work stress, physical symptoms, and satisfaction of job in nurses. It is imperative to comprehend the dynamics present in the healthcare system of Pakistan because of the cultural, organizational, and structural elements that may impact nurses' experiences. Our goal in filling this research void is to make a significant contribution that will help shape evidence-based interventions that are specially designed to meet the requirements of Pakistani nurses. Also, the importance of this study is further highlighted by the paucity of research on the combined influence of these variables in the local environment. Given that work-related stress can exacerbate physical symptoms and impact job satisfaction, a comprehensive assessment is necessary to design focused interventions that will improve nurses' general health.

2.4 Theoretical Framework

The relationship of work stress, job satisfaction and somatic symptoms among nurses is best understood by the following theories.

2.4.1 Allostatic Load Model Theory

The allostatic load model theory provides a comprehensive framework for understanding how chronic stress affects health by examining the physiological costs associated with repeated adaptation to stressors. Coined by McEwen and Stellar (1993), the concept of allostatic load refers to the cumulative wear and tear on the body's systems due to chronic exposure to stress. Unlike the concept

of homeostasis, which implies a constant internal environment, allostasis involves the dynamic process by which the body responds to stressors to regain stability through change (McEwen, 1998). Allostatic load is the result of the body's attempt to adapt to stress through various physiological processes, including the release of stress hormones such as cortisol, adrenaline, and noradrenaline. These hormones prepare the body to respond to immediate challenges but can lead to adverse effects when their activation is prolonged or when the body fails to return to a baseline state (McEwen & Wingfield, 2003). Over time, the repeated activation of these stress response systems can cause damage to multiple body systems, including the cardiovascular, metabolic, and immune systems (Juster, McEwen, & Lupien, 2010).

Work stress in nursing includes high workloads, emotional demands, and shift work. These stressors activate the body's stress response systems, such as the hypothalamic-pituitary-adrenal (HPA) axis, leading to increased production of stress hormones like cortisol (Schulz et al., 2016). Chronic activation of these systems can contribute to a higher allostatic load, manifesting as somatic symptoms like fatigue, headaches, and gastrointestinal issues (Sterling, 2017). Somatic symptoms are physical manifestations of the accumulated allostatic load. In nurses, common symptoms include musculoskeletal pain, fatigue, and gastrointestinal disturbances, which are often linked to prolonged stress exposure and inadequate job satisfaction (Gurung et al., 2019). These symptoms reflect the body's struggle to maintain homeostasis under chronic stress conditions. Job satisfaction serves as a mediator in the relationship between work stress and somatic symptoms. High job satisfaction can buffer the negative effects of stress by enhancing coping mechanisms and reducing the psychological impact of stressors. This can lead to a decrease in allostatic load, thereby mitigating somatic symptoms (Sharma et al., 2018). Conversely, low job satisfaction intensifies stress responses, exacerbating the allostatic load and increasing the prevalence of somatic complaints.

2.4.2 General Adaptation Syndrome (GAS)

General Adaptation Syndrome (GAS) is a theory developed by Hans Selye, describing the body's

response to stress through a series of stages. Selye introduced this model to explain how organisms adapt to stressors, ultimately affecting health outcomes (Cooper, 2019). The GAS model consists of three stages: alarm, resistance, and exhaustion. In the alarm stage, the body recognizes a stressor and initiates a "fight or flight" response, activating the sympathetic nervous system and releasing stress hormones like adrenaline and cortisol. This immediate reaction prepares the body to confront or escape the threat (Schneiderman et al., 2021).

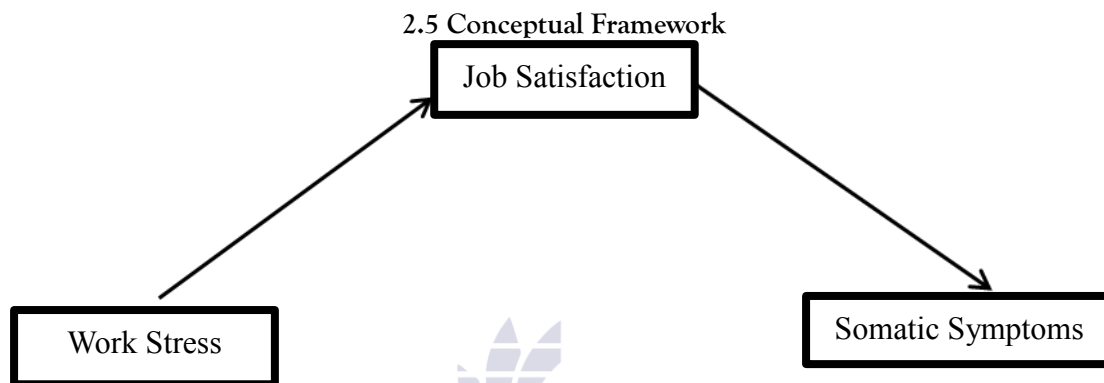
Next is the resistance stage, where the body attempts to adapt to the ongoing stress. During this phase, physiological responses stabilize as the body tries to return to homeostasis while remaining alert. If the stressor persists, resources can become depleted, affecting immune function and leading to increased vulnerability to illness (McEwen, 2017). Finally, the exhaustion stage occurs if the stress continues without resolution. The body's resources are depleted, leading to burnout, weakened immunity, and heightened risk of health issues. Chronic exposure to stress at this stage can result in serious health consequences, including cardiovascular disease and mental health disorders (Chrousos, 2018). Work stress, job satisfaction, and somatic symptoms are intricately linked with the General Adaptation Syndrome (GAS), a model describing the body's physiological response to stress. This framework helps explain how chronic stress impacts nurses' health, mediated by job satisfaction.

The alarm stage is the body's immediate reaction to a stressor, activating the "fight-or-flight" response. For nurses, high-pressure environments can trigger this response, leading to increased adrenaline and cortisol levels (Selye, 1956). This stage prepares the body for immediate action but is unsustainable long-term. In the resistance stage, the body attempts to adapt to the stressor. Nurses might manage this through coping mechanisms and support systems. However, without adequate recovery, prolonged exposure leads to the exhaustion stage, where the body's resources are depleted, resulting in physical and mental health issues (Selye, 1956). Job satisfaction serves as a critical mediator between work stress and somatic symptoms. High job satisfaction can buffer the negative effects of stress by promoting positive attitudes and coping strategies (Lazarus & Folkman, 1984). For instance, supportive

management and professional development opportunities enhance job satisfaction, reducing the perceived stress and its physiological impact (Judge et al., 2001).

Conversely, low job satisfaction exacerbates stress, accelerating progression to the exhaustion stage of GAS. Dissatisfied nurses may experience heightened cortisol levels and increased risk of burnout, manifesting in somatic symptoms such as headaches and fatigue (Shah et al., 2018). Somatic symptoms, including muscle tension, gastrointestinal disturbances, and sleep disorders, are physical

manifestations of chronic stress (Naqvi et al., 2016). These symptoms occur as the body struggles to cope with prolonged stress during the exhaustion stage of GAS. Research in Pakistan highlights that nurses with low job satisfaction report higher levels of somatic symptoms, underscoring the role of job satisfaction in modulating stress responses (Rathore et al., 2020). Addressing job satisfaction can therefore reduce somatic symptoms by interrupting the stress cycle at the resistance stage, preventing progression to exhaustion.



2.6 Objectives of the Study

The objectives of the study are as follows:

1. To examine the relationship of work stress and somatic symptoms among nurses.
2. To examine the relationship of work stress and job satisfaction among nurses.
3. To examine the mediating role of job satisfaction in the relationship of work stress and somatic symptoms among nurses.
4. To examine the variations of demographics variables (gender and institute) on the relationship of work stress, and somatic symptoms mediated by job satisfaction among nurses.

2.7 Hypotheses of the Study

Following are the hypotheses of the study:

1. The work stress would positively relate with somatic symptoms among nurses.
2. The work stress and somatic symptoms would negatively relate with job satisfaction among nurses.
3. Job satisfaction acts as a mediator in the relationship of work stress and somatic symptoms among nurses.

4. The differences of demographic variable (gender and institute) between work stress, somatic symptoms and job satisfaction using independent t-test.

METHOD

The current study assessed the correlation between work stress and somatic symptoms among nurses: mediating role of job satisfaction.

3.1 Research design

A correlational research methodology was adopted in the current study. This study intended to explore the association of work stress, somatic complaints and satisfaction of job among nurses from various hospitals.

3.2 Sample

The sample of 278 hospital nurses of Medical and Surgical Intensive Care Unit (ICU) wards has been taken from previous researches through purposive sampling technique. Participants were taken from different hospitals of Rawalpindi and Islamabad including Shifa International Hospital, PAF Hospital, Holy Family Hospital, Benazir Bhutto

Hospital (BBH), PIMS Hospital, and Al-Khidmat Raazi Hospital. Demographic information of the participants indicated that there was a total of 158 (57%) females and 120 (43%) males, the ages of the participants ranged from 25 to 50 years ($\bar{x}=32$ & $SD=7$), and working hours is 3 to 48 per week ($\bar{x}=11$ & $SD=7$).

3.3 Inclusion - Exclusion Criterion

Participants were taken from hospitals of Rawalpindi and Islamabad, and were not taken from hospitals outside of Rawalpindi and Islamabad. Sample consist of 278 nurses only. Nurses of age range (25-50) were taken. All participants were nurses with education Matric, Fsc, BS Nursing, M.Sc., M.Phil. not from any lower or higher degree level. Nurses with other illnesses also excluded in this study.

Table 1: Descriptive Statistics of Demographic Variables of the Data Set

Variables	F	%
Gender		
Male	120	43
Female	158	57
Education		
Matric	4	1
Fsc	28	10
BS (Nursing)	138	50
M.Sc.	92	33
MPhil	18	6
Institute		
Government	154	55
Private	124	45
Experience		
1 to 10 years	202	72
11 to 20 years	60	22
21 to 30 years	14	5
31 to 40 years	2	1
Socioeconomic Status		
Low	36	13
Middle	222	80
High	20	7

Note. No of participant (N) =278, f=Frequency; %=Percentage

Table 1 shows the descriptive statistics of demographic variables of the data set (N= 278). Majority of the nurses were of age range 25-50. Majority of the respondents were female but number of male of respond. Most of the respondents were nurses with BS (nursing) and MSc level of education. Majority of them belongs to middle class. Most of nurses were working in government hospitals.

3.4 Operational Definitions

3.4.1 Work Stress

Work stress is defined as the adverse physical and emotional reactions that arise when job demands do not correspond to the worker's abilities, resources, and needs (1999, National Institute of Occupational Safety and Health). Work stress was operationalized through Work Stress Scale (Marlin Company and AIS, 2001). The higher scores on the scale showed higher work stress while lower scores showed lower work stress.

3.4.2 Job Satisfaction

Job satisfaction refers to the degree of contentment an individual feels with their job. This encompasses satisfaction with colleagues and managers, contentment with organizational policies, the influence of the job on personal life, and daily work activities (Mallick, 2021). The higher scores on the scale showed higher job satisfaction while lower scores showed lower job satisfaction. Job Satisfaction was operationalized through Job Satisfaction Index (Brayfield et al., 1951).

3.4.3 Somatic Symptoms

Physical signs of psychological distress or disruptive emotions are referred to as somatic symptoms. These symptoms, which can include pain, exhaustion, changes in eating or sleep patterns, and other physical sensations, are frequently felt throughout the body (Association, 2013). The higher scores on the scale showed increased somatic symptoms while lower scores showed decreased somatic symptoms. Somatic symptoms were operationalized through somatic symptom scale (Gierk et al., 2014).

3.5 Assessment Measures

3.5.1 Somatic Symptoms Scale-8 (SSS-8)

Somatic Symptoms Scale, developed by Gierk et al., (2014), is a brief, somatic symptom burden outcome measure reported by the patient. This scale is clinically rated and the English version of the scale was used for this study. This 8-item scale evaluates perceived severity of typical physical complaints associated with various illnesses and mental health conditions. Respondents rate how much these symptoms have bothered them over the past seven days using a five-point Likert scale. The scale assesses symptoms including intestinal or stomach issues, backache, pain in your joints, arms, or legs, headaches, breathing difficulties or chest discomfort, weakness, fatigue or low energy, as well as difficulty sleeping (Gierk et al., 2015). The SSS-8 clarifies symptom severity categories range from zero to minimal (0-3 points), moderate (4-7), medium (8-11), high (12-15 points), and extremely high (16-32 points) somatic symptom burden. A higher score on SSS-8 reports higher somatic burden. The SSS-8 is highly reliable with Cronbach α (0.81), and outstanding characteristics of items, making it a

dependable and precise self-report tool for measuring somatic symptom load (Gierk et al., 2014).

3.5.2 The Workplace Stress Scale

The workplace stress scale, developed by Marlin Company and the AIS in 2001, consist of eight items that assess how frequently respondents experience certain feelings about their job. Items 6, 7, and 8 are reverse-scored. This scale is clinically rated and the English version of the scale was used for this study. The WSS uses a five-point Likert scale, with responses ranging from never (scored 1) to very often (scored 5), where higher scores indicate great levels of job stress. The overall scores are interpreted as follows: 15 and below indicates a reasonably calm state, 16-20 indicate relatively low stress, 21-25 indicate moderate stress, 26-30 indicate severe work stress, and 31-40 indicate potentially dangerous levels of work stress. The scale assesses various factors including workplace conditions, attitudes towards the workplace, work deadlines, job pressure, job control, work performance, and job-related skills. The WSS has demonstrated good reliability, with a Cronbach's alpha of 0.82 at baseline and 0.83 after 15 months (Kava et al., 2020).

3.5.3 Job Satisfaction Index

Job satisfaction scale developed by Brayfield et al., (1951). Rather than measuring specific components of job satisfaction, the 18-item scale provides an overall measure of job satisfaction. This scale is clinically rated and the English version of the scale was used for this study. This 18-item scale presents statements related to job that participants score on a five-point scale, such as "My job is like hobby to me," "I consider my job rather unpleasant," and "I definitely dislike my work" (Looti, 2023). The rating on a Likert scale range from 1 (strongly agree) to 5 (strongly disagree). Items 1, 2, 5, 7, 9, 12, 13, 15, and 17 have their scores reversed. The range of scores is from 18 to 90. The lower the score, the less satisfied with one's employment. Cronbach's alpha, a measure of internal consistency, is used to assess reliability. A high alpha coefficient (often more than 0.70) indicates good internal consistency (Yanchovska, 2022).

3.6 Procedure

The study received approval by Research Committee of Faculty of Psychology, Shifa Tameer-e-Millat

University (STMU). The information was gathered using the printed form of survey questionnaire. The permission was taken from different hospitals for data collection. The data was gathered from different private and government hospitals having surgical and medical ICU nurses. Each participant at every location received an explanation of the objectives of research. Participants were made aware of their right to withdraw from the study at any time. Participants were guaranteed that their data would be kept confidential and anonymous. Participants were asked to agree to the permission form that was attached to the surveys before answering the questions. Participants were given time of 25 to 30 minutes for questionnaire. Following the collection of data, the survey will be scored according to the scoring rules.

3.7 Statistical Analysis

In investigating the relationship hypothesis, this study employed the Pearson Product Moment Correlation to analyze the associations among work stress, somatic symptoms, and job satisfaction. Linear regression analysis was utilized to predict somatic symptoms and job satisfaction. Furthermore, to evaluate the demographic variables and reliability of the data, Reliability Analysis was performed. Mediation Analysis using the Hayes Process Macro was performed to analyze the mediating effects of job satisfaction, work stress, and somatic symptoms. To assess the demographic properties of data independent sample t-test was performed.

3.8 Ethical Considerations

Ethical considerations were taken into account in conducting this research.

- Approval was obtained from the institute.

- Participants received the consent form and were briefed on the study's nature before completing the questionnaire.
- Participants were guaranteed confidentiality and reassured that the information they provided would be used solely for research purposes.
- Their information should be kept confidential.
- The items are clearly defined to the participant.

RESULT

The study aimed to shed light on the interconnectedness of Work Stress and Somatic Symptoms, while also considering the mediating influence of Job Satisfaction. The focus of the research was on nurses residing in Islamabad and Rawalpindi, exploring the directions of these variables. The data analysis approach involved following steps:

- (I) Descriptive statistical analysis, including Descriptive Statistics and Reliability Coefficients for Work Stress, Job Satisfaction, and Somatic Symptom Variables.
- (II) Pearson Product Moment Correlation Analysis was performed to investigate the relationships between work stress, somatic symptoms and job satisfaction.
- (III) Linear Regression Analysis was utilized to identify the relationship of work stress and job satisfaction with somatic symptoms.
- (IV) Mediation analysis was executed to determine the impact of job satisfaction on work stress and somatic symptoms.
- (V) Independent Sample T-Test analysis was employed to investigate potential demographic variations in the work stress, job satisfaction, and somatic symptom variables.

Table 2: Descriptive Statistics and Reliability Coefficients for Work Stress, Somatic Symptoms, and Job Satisfaction Variables

Scales	k	a	M(SD)	Range		Skewness	Kurtosis
				Potential	Actual		
WSS	8	.67	21.6(5.04)	8-40	8-37	-.247	0.53
JSI	14	.86	45.6(9.47)	14-70	17-68	.005	-.225
SSS	8	.78	8.65(5.56)	0-32	0-28	.475	-.046

Note: α = reliability coefficient; k= no. of items in scale; M=Mean; S. D=standard deviation; WSS= Work Stress Scale;SSS=Somatic Symptom Scale;JSI=Job Satisfaction Index

Table 3 shows the descriptive statistics and reliability coefficients of three study variables:

The Work Stress Scale (WSS), the Somatic Symptom Scale (SSS), and the Job Satisfaction Index (JSI). The WSS, consisting of 8 items, has a reliability coefficient of 0.673, indicating acceptable internal consistency. The average score is 21.6 with a standard deviation of 5.04, and the scores range from 8 to 37, close to the potential range of 8-40. The distribution shows a slight left skew (skewness = -0.247) and a moderately peaked shape (kurtosis = 0.53). The SSS, also comprising 8 items, shows strong internal consistency with a reliability coefficient of 0.783. The mean score is 8.65 with a standard deviation of 5.56,

and the actual range is 0-28, within the potential range of 0-32. The distribution is slightly right-skewed (skewness = 0.475) and close to normal (kurtosis = -0.046). The JSI, which includes 14 items, shows high internal consistency with a reliability coefficient of 0.864. The mean score is 45.6 with a standard deviation of 9.47, and the scores range from 17 to 68, nearly covering the potential range of 14-70. The distribution is very symmetric (skewness = 0.005) and slightly flatter than normal (kurtosis = -0.225). Overall, the scales exhibit varying degrees of reliability and their score distributions are approximately normal, covering most of their potential ranges.

Table 3: Descriptive Statistics and Correlation for Work Stress, Somatic Symptoms and Job Satisfaction

Variables	1	2	3
WSS	—	.278**	-.264**
SSS	—	—	-.240**
JSI	—	—	—

Note: N=no of responses= 278; **correlation is significant at the 0.01 level. (2-tailed);*correlation is significant at the 0.05 level. (1-tailed); WSS= Work Stress Scale;SSS=Somatic Symptom Scale;JSI=Job Satisfaction Index

Table 4 demonstrates the descriptive statistics and correlation coefficients for the relationships between work stress (WSS), somatic symptoms (SSS), and job satisfaction (JSI). The sample size (N) is 278. The findings reveal that work stress (WSS) is positively correlated with somatic symptoms (SSS) ($r = .278$, $p < .01$), indicating that higher levels of work stress are linked with higher levels of somatic symptoms. Additionally, work stress shows a negative correlation with job satisfaction (JSI) ($r = -.264$, $p < .01$),

suggesting that higher levels of work stress are connected with lower levels of job satisfaction. Similarly, somatic symptoms have negative correlation with job satisfaction ($r = -.240$, $p < .01$), showing that higher levels of somatic symptoms are linked with lower job satisfaction. All correlations are statistically significant at the 0.01 level (2-tailed), demonstrating statistically significant relationships between these variables.

Table 4: Linear Regression Analysis examining the predictor Somatic Symptoms of Work Stress and Job Satisfaction

Predictor	B	S.E	β	95% CI		t	p
				LL	UL		
Constant	7.93	2.40	—	3.21	12.7	3.3	.001
WSS	.25	.07	.23***	.13	.38	3.9	.000
JSI	-.11	.04	-.18**	-.17	-.04	-3.0	.003
R ²	.11***	—	—	—	—	—	—
F	16.50	—	—	—	—	—	—

Note; β = Standardized Coefficient; CI= Confidence Interval, S. E=Std. Error; B =Unstandardized Coefficient; R²= coefficient of determination; WSS= Work Stress Scale; Constant=Somatic Symptom Scale; JSI=Job Satisfaction Index

A linear regression analysis was through SPSS Version 23.00 to examine the predictor Somatic Symptoms of Work Stress. In the regression model, work stress and job satisfaction was used as the predictor variable and somatic symptoms as the outcome variable. The analysis produced a constant ($B = 7.93$, $SE = 2.40$, $t = 3.3$, $p = .001$), indicating that the baseline level of somatic symptoms, when work stress is zero, is statistically significant. The results demonstrated that work stress significantly predicted the somatic symptoms ($B = 0.25$, $SE = 0.07$, $\beta = 0.23$, $t = 3.9$, $p < .001$). The confidence interval for the unstandardized coefficient B ranged from 0.13 to 0.38, suggesting that for each unit increase in work stress, somatic symptoms increased by 0.25 units, with a high level of confidence that this effect is not due to chance.

The findings reveal that job satisfaction significantly predicted the somatic symptoms ($B = -0.11$, $SE = 0.04$, $\beta = -0.18$, $t = -3.0$, $p < .001$). The confidence interval for the unstandardized coefficient B ranged from -

0.17 to -0.04, suggesting that for each unit increase in job satisfaction, somatic symptoms decreased by -0.11 units. The F-test was significant, ($F_{2, 275} = 16.50$, $p < .001$), indicating that the regression model significantly predicts the outcome variable. The model explained 11% of the variance in somatic symptoms, as indicated by the R^2 value of 0.11. These results suggest that work stress and job satisfaction has a meaningful impact on somatic symptoms. In summary, the linear regression analysis confirms the hypotheses that there is a positive relationship between work stress and somatic symptoms with higher levels of work stress leading to an increase in somatic symptoms. These findings also support the hypotheses that there is a negative relationship between job satisfaction and somatic symptoms with higher levels of job satisfaction leading to decrease in somatic symptoms. The results highlight the importance of addressing work stress and job satisfaction to potentially reduce somatic symptoms.

Table 5: Mediation Analysis between Work Stress and Somatic Symptoms through Job Satisfaction

Step	predictor	R	R ²	Std. Error	F	B	B	p
1	WSS→ SSS	.33	.11	.07	16.5	.23	.25	.000
2	JSI→ SSS	.33	.11	.03	16.5	-.18	-.10	.003
3	WSS→ JSI	.26	.07	.11	20.7	-.26	-.49	.000
Total effect		.31**						
Direct effect		.25**						
Indirect effect		.05**						

Note. β = Standardized Coefficient; S. E=Std. Error; B=Unstandardized Coefficient; R= Pearson correlation; R^2 = coefficient of determination; WSS= Work Stress Scale; Constant= Somatic Symptom Scale; JSI=Job Satisfaction Index. * $p < .05$. ** $p < .01$. *** $p < .001$.

A mediation analysis was carried out to investigate the relationship between work stress and somatic symptoms, with job satisfaction as a mediator. The results are detailed in Table 6. The mediation analysis reveals that total effect of work stress on somatic symptoms is 0.31 ($p < .01$). This indicates a significant positive relationship where increased work stress levels are associated with higher somatic symptoms

when not accounting for job satisfaction. When job satisfaction is included as a mediator, the direct effect of sleep quality on cognitive decline is 0.25 ($p < .01$). Although this effect is smaller, it remains statistically significant. This suggests that work stress continues to independently influence somatic symptoms even when considering the role of job satisfaction.

The indirect effect of work stress on somatic symptoms through job satisfaction is 0.05 ($p < .01$). This significant indirect effect highlights that job satisfaction partially mediates the relationship between work stress and somatic symptoms. Specifically, a portion of the association between higher work stress and increased somatic symptoms is explained by its impact on job satisfaction. Lastly,

the analysis reveals that job satisfaction partially mediates the relationship between work stress and somatic symptoms. This finding implies that while work stress directly influences somatic symptoms, a significant portion of its impact is mediated through job satisfaction, highlighting the importance of job satisfaction in mitigating the negative health impacts of work stress.

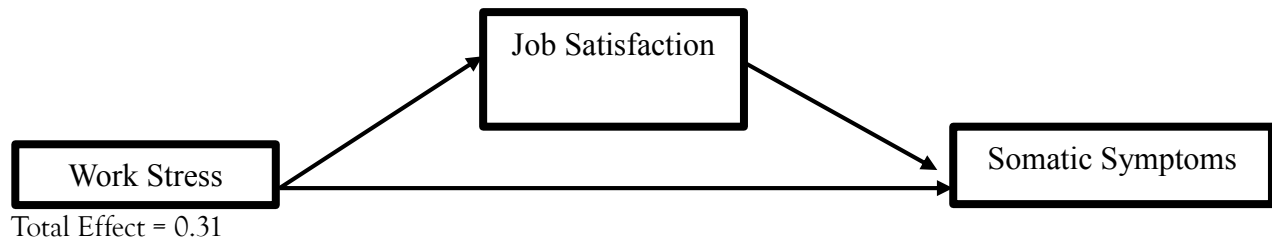


Table 6.1: Independent samples T-Test of Private and Government University

Variables	Government		Private		t	p	95% CI		Cohen's d
	M	SD	M	SD			LL	UL	
SSS	8.38	5.1	8.98	6.06	-.89	.02	-1.92	.71	0.107
WSS	21.0	5.05	22.2	4.97	-.19	.06	-2.35	.03	–
JSI	45.5	9.55	45.7	9.41	-.20	.48	-2.48	2.02	–

Note. * $p < .05$, ** $p < .01$, *** $p < .001$, n is the number of Government (178) and Private (167); M=mean; SD=standard deviation; LL=lower limit; UL=upper limit; WSS= Work Stress Scale;SSS=Somatic Symptom Scale;JSI=Job Satisfaction Index

An independent samples t-test was performed to compare the Somatic Symptom Scale (SSS), Work Stress Scale (WSS), and Job Satisfaction Index (JSI) between nurses at government and private hospitals. The study encompassed 178 participants from government universities and 167 from private universities. The findings show statistically significant variations in SSS scores, with private hospital nurses reporting slightly higher somatic symptoms ($M = 8.98$, $SD = 6.06$) compared to

government hospital nurses ($M = 8.38$, $SD = 5.10$), $t(343) = -0.896$, $p = .023$. The effect size, as determined by Cohen's d, was 0.107, indicating a small effect. However, no significant differences were found in WSS ($p = .057$) or JSI ($p = .483$) scores between the two groups. The findings suggest that while there may be slight variations in somatic symptoms between government and private hospital nurses, levels of work stress and job satisfaction appear comparable across both sectors.

Table 6.2: Independent samples T-Test of Male and Female

Variables	Male		Female		t	p	95% CI		Cohen's D
	M	SD	M	SD			LL	UL	
SSS	8.57	5.62	8.71	5.51	-.21	.83	-1.46	1.18	–
WSS	20.8	5.12	22.2	4.91	-2.31	.02	-2.59	-2.08	0.28
JSI	46.0	10.4	45.3	8.71	.63	.53	-1.58	3.04	–

Note. * $p < .05$, ** $p < .01$, *** $p < .001$, n is the number of Male (121) and Female (157); M=mean; SD=standard deviation; LL=lower limit; UL=upper limit; WSS= Work Stress Scale;SSS=Somatic Symptom Scale;JSI=Job Satisfaction Index

An independent samples t-test comparing male and female participants across Somatic Symptom Scale (SSS), Work Stress Scale (WSS), and Job Satisfaction Index (JSI), descriptive statistics revealed minimal differences between the genders. For SSS, males had a mean score of 8.570 (SD = 5.62) while females had a mean score of 8.713 (SD = 5.51), with a non-significant difference, $t(334) = -0.213$, $p = .832$, and a Cohen's d of 0.026. Similarly, for WSS, males had a mean score of 20.80 (SD = 5.122) and females had a mean score of 22.21 (SD = 4.914), with a statistically significant variation, $t(334) = -2.312$, $p = .021$, and a Cohen's d of 0.281. Conversely, for JSI, males had a score of mean 46.04 (SD = 10.40) and females had a score of mean 45.31 (SD = 8.711), with a non-significant difference, $t(334) = 0.637$, $p = .532$, and a Cohen's d of -0.076. These findings suggest that while there were slight variations in work stress between males and females, somatic symptoms and job satisfaction levels were comparable between genders.

CONCLUSION

The research discusses the intricate correlation between stress from work, satisfaction of job, and somatic symptoms among nurses, with a particular focus on the healthcare context in Pakistan (Moradi et al, 2014). It emphasizes the challenges faced by nurses due to the demanding nature of their occupation, including long hours, heavy patient loads, emotional strain, and the need to make critical decisions quickly (Zencirci, 2010). The introduction sets the stage by highlighting the essential role of nurses in healthcare and the demanding nature of their work, which often leads to workplace stress. It discusses the concept of job satisfaction and its importance in nurses' overall wellness and achievement (Hoboubi et al, 2016).

This study delves into the widespread problem of workplace stress among nurses, especially in high-stress occupations like nursing. It discusses the various stressors faced by nurses, including long hours, heavy patient loads, emotional strain, and systemic healthcare issues in Pakistan. The text highlights the serious consequences of work stress on nurses' mental and physical health, including burnout, mental illness, and physical disorders (Membrive-Jiménez et al., 2022). It explores somatic symptoms, which are physical manifestations of

psychological distress experienced by nurses. It discusses how the demanding nature of nursing work exacerbates these symptoms, leading to chronic pain, fatigue, headaches, gastrointestinal issues, and other physical complaints. The psychological and physiological impacts of somatic symptoms on nurses are examined, including heightened anxiety, depression, weakened immune function, and increased susceptibility to illness (Zimmermann et al., 2016).

This research explores the concept of satisfaction of job among nurses and its mediating role among work stress and somatic symptoms. It discusses the factors resulting to low satisfaction from job among nurses in Pakistan, including inadequate staffing, lack of professional growth opportunities, and poor working conditions. The research emphasizes the significance of work satisfaction in nurses' ability to deal with stress from work effectively and its implications for quality of patient care (Aiken et al., 2018). The findings emphasizing the complex interplay between stress from work, satisfaction of job, and somatic symptoms among nurses. It underscores the need for comprehensive approaches to promote nurses' well-being and enhance patient care quality in healthcare settings, particularly in high-stress environments like those in Pakistan (Hoboubi et al., 2017).

In the last two decades, the nursing profession has undergone significant innovation and expansion, resulting in nurses taking on greater responsibilities in patient care. However, this has led to a challenging and competitive environment for nurses worldwide, particularly in developing nations where stress management strategies are often inadequate (Kortum et al., 2010). Occupational stress is prevalent among nurses, stemming from various sources such as conflicts with physicians, heavy workloads, emotional demands, and job insecurity (Nabizadeh-Gharghozar et al., 2020). The consequences of this strain are profound, impacting both the physical and mental well-being of nurses (Palmer et al. 2004). Researches have shown that nurses experiencing higher level of stress from work are more likely to report somatic symptoms like headaches, back pain, and fatigue. This chronic exposure to stress can lead to various health issues which includes hypertension, circulatory system disease, obesity, melancholy, and musculoskeletal ailments (Letvak et al., 2018).

Furthermore, work stress among nurses has been associated to decreased work satisfaction, impaired job performance, and increased rates of absenteeism. This not only affects the of patient care quality but also contributes to a decline in overall healthcare standards (Adriaenssens, De Gucht, & Maes, 2015). Physiologically, chronic stress triggers the release of cortisol and pro-inflammatory cytokines, leading to immune dysfunction and chronic inflammation, which are associated with various health conditions (McEwen, 2019).

Mentally, nurses experiencing high levels of strain are more subjected to anxiety, depression, and burnout, which can impair the ability to make decisions and increase the possibility of mistakes, compromising safety of patient (Dall'Ora et al., 2020). Overall, the demanding nature of the nursing profession, coupled with inadequate stress management strategies, poses significant challenges to nurses' physical and mental well-being, as well as patient care standards. Addressing these issues requires comprehensive interventions aimed at reducing workplace stress, improving support systems, and promoting overall health and well-being among nurses (Halbesleben & Bowler, 2006). Work stress among nurses has a significant impact on their physiological and psychological well-being, leading to functional impairment in various domains. Physiologically, persistent stress can impair cognitive abilities such as memory and decision-making capabilities, while also contributing to physical conditions like chronic pain and gastrointestinal disorders. Psychologically, work stress is closely linked to mental illnesses such as apprehension, melancholy, and exhaustion, which can reduce motivation and emotional resilience (Halbesleben & Bowler, 2006).

Somatic symptoms, including headaches, gastrointestinal disturbances, and musculoskeletal pain, are common manifestations of work stress among nurses (Takala et al., 2017). These symptoms not only diminish job satisfaction but also impair nurses' ability to perform effectively, leading to reduced work efficiency and increased rates of absenteeism. Job dissatisfaction further exacerbates the adverse effects of stress from work, contributing to emotional exhaustion and poor physical and mental health (Garcia & Calvo, 2017). However, satisfaction of job plays a crucial role in mediating the correlation between work stress and somatic

symptoms among nurses. High job satisfaction enhances nurses' ability to cope with stressors, promotes positive emotional responses, and fosters a sense of motive and accomplishment in their work. This, in turn, reduces the physiological and psychological impacts of stress, leading to fewer somatic symptoms and better overall health outcomes (Bakker & Demerouti, 2017).

Supportive organizational practices, adequate staffing levels, and opportunities for professional development are essential in promoting work satisfaction among nurses and mitigating the adverse effects of work stress. By encouraging a positive workplace environment and addressing the underlying causes of job dissatisfaction, healthcare organizations can improve nurses' well-being, enhance patient care quality, and reduce the prevalence of stress-related somatic symptoms (Garcia & Calvo, 2017). In conclusion, while work stress poses significant challenges to nurses' health and job performance, job satisfaction serves as a protective factor that mitigates the negative consequences of strain and promotes overall well-being. By prioritizing job satisfaction and implementing supportive policies and practices, organizations for healthcare can create a healthier and more productive workplace environment for nurses, ultimately assisting both the healthcare workforce and patient outcomes (Farquharson et al., 2013).

The complex interplay between stress from work, somatic symptoms, and satisfaction of job in the nursing profession is crucial to understand. The Job Demands-Resources (JD-R) model provides a framework for comprehending how job demands and resources influence job satisfaction and health outcomes among nurses. Job demands, such as workload and emotional strain, can lead to stress when they exceed an individual's coping capacity, while job resources, including social support and opportunities for growth, can reduce the affect of job demands on stress and health outcomes. Research across various healthcare settings supports the JD-R model, demonstrating the significant association between job resources, job satisfaction, and somatic symptoms among nurses (Bakker & Demerouti, 2017).

In Pakistan, nurses face numerous stressors in their work environment, including high patient loads, insufficient staffing, and inadequate resources. These

stressors, compounded by emotional demands, contribute to chronic stress among nurses. Work stress triggers physiological responses that can lead to somatic symptoms such as headaches, musculoskeletal spasm, and gastrointestinal disturbances (Rehman et al., 2018). Additionally, work stress weakens the immune system, making nurses more susceptible to infections and illnesses. Job satisfaction among Pakistani nurses is significantly impacted by work stress and somatic symptoms, leading to reduced motivation and engagement (Ahmed et al., 2017). Work satisfaction plays a critical role in mitigating the impact of work stress on somatic symptoms among nurses. Satisfied nurses are better able to cope with stress, perceive stressors as challenges rather than threats, and engage in proactive coping mechanisms such as seeking social support and maintaining a healthy work-life balance (Farid et al., 2019). Moreover, job satisfaction promotes better health behaviors and reduces the risk of burnout, ultimately leading to improved patient outcomes (Kamal et al., 2020).

Healthcare organizations in Pakistan must prioritize creating an encouraging workplace environment that fosters work satisfaction. This includes providing adequate resources, ensuring fair workload distribution, and offering opportunities for professional growth. Additionally, interventions such as stress management programs and mental health support can enhance nurses' ability to cope with stress from work and reduce somatic symptoms (Naz & Gul, 2021). Investing in the well-being of nurses is critical for ensuring a stable and efficient healthcare workforce in Pakistan. Healthcare policy-makers should address systemic issues such as staffing shortages and inadequate resources while conducting ongoing research to understand the specified factors contributing to stress from work and satisfaction of job among nurses (Kamal et al., 2020). By implementing targeted interventions and support mechanisms, healthcare organizations can improve the overall health of nurses and enhance quality of patient care (Ali & Siddiqui, 2019).

Nurses face significant work-related stressors, impacting their somatic well-being and patient care quality (Lees & Lal, 2016). Higher levels of occupational stress increase the risk of somatic issues like anxiety, depression, and cardiovascular diseases among nurses (Backé et al., 2011). Job dissatisfaction,

a common outcome of work stress, negatively affects care quality and organizational outcomes. It's crucial to assess job stress and satisfaction, especially in private hospitals, where these factors profoundly impact nurses, patients, and institutions (Kawano, 2008). Investigating these dynamics among Pakistani nurses fills a crucial research gap, considering cultural and organizational nuances. Understanding these complexities can inform tailored interventions and policies to support nurses' well-being and career satisfaction, ultimately improving patient care and healthcare system effectiveness (Melo, et al., 2011).

The study aims to examine the complex interplay between stress from work, somatic symptoms, satisfaction of job, and demographic variables among nurses. Firstly, it seeks to understand the direct correlation between stress from work and somatic symptoms experienced by nurses. Secondly, it aims to explore how work satisfaction mediates the correlation between stress from work and somatic symptoms, potentially buffering the adverse affect of stress on nurses' health. Additionally, the study intends to examine how demographic factors such as gender, education, experience, working hours, and socio-economic status influence the correlation between stress from work, somatic symptoms, and satisfaction of job. The hypotheses propose that stress from work is positively correlated with somatic symptoms, satisfaction of job acts as a mediator between stress from work and somatic symptoms, and the mediation effect is influenced by demographic variables among nurses. Through these objectives and hypotheses, the study seeks to provide insights into the mechanisms underlying the consequences of work stress on nurses' somatic symptoms and job satisfaction, with implications for interventions focusing at improving nurses' overall health.

The study adopts a correlational research approach to examine the correlation between stress from work, somatic symptoms, and satisfaction of job among nurses in Medical and Surgical Intensive Care Units (ICUs) in Rawalpindi and Islamabad hospitals. A sample of 278 nurses, predominantly female, with ages ranging from 25 to 50, participated in the study. The research objectives include examining the direct correlation between stress from work and somatic symptoms, assessing the conciliating role of satisfaction of job, and exploring the influence of demographic variables on these relationships.

Hypotheses propose correlations between stress from work and somatic symptoms, with satisfaction of job mediating this relationship, and demographic factors moderating the mediation effect. Operational definitions are provided for work stress, job satisfaction, and somatic symptoms, assessed through validated scales. Ethical considerations include obtaining institutional permission, informed consent from participants, ensuring confidentiality, and clarifying the research nature. Data analysis involves Pearson correlation, linear regression, reliability analysis, and independent sample t-tests to explore relationships and demographic characteristics. The study aims to contribute to understanding the factors influencing nurses' well-being and job satisfaction, with implications for interventions aimed at promoting their overall health and professional fulfillment.

5.1 Discussion

The research text provides a comprehensive exploration of the intricate relationship between stress from work, satisfaction of job, and somatic symptoms among nurses, particularly in the healthcare context of Pakistan. By highlighting the demanding nature of nursing work and the challenges faced by nurses, including long hours, heavy patient loads, and emotional strain, the study underscores the pervasive issue of workplace stress in this profession (Khamisa et al., 2015). One of the key contributions of the research is its emphasis on the serious consequences of work stress on nurses' mental and physical health, including burnout, mental health problems, and physical illnesses. Through an in-depth analysis of somatic symptoms experienced by nurses, such as chronic pain, fatigue, and gastrointestinal issues, the text illuminates the physiological and psychological impacts of strain in the nursing profession (Zimmermann et al., 2016). Moreover, the study delves into the concept of satisfaction of job among nurses and its mediating role among work stress and somatic symptoms. By identifying factors contributing to low job satisfaction, such as inadequate staffing and poor working conditions, the research highlights the significance of addressing these issues to promote nurses' physical and mental health and enhance patient care quality (Shah et al., 2018). The outcomes of the study emphasize the complex interplay

between stress from work, satisfaction of job, and somatic symptoms among nurses, underscoring the need for comprehensive approaches to address workplace stress and promote nurses' health in healthcare settings, particularly in highly stressful environments like Pakistan (Khan et al., 2016). Moving forward, the research thesis aims to investigate this complex interplay through a correlational research approach among nurses in Medical and Surgical Intensive Care Units (ICUs) in Rawalpindi and Islamabad hospitals. By examining the correlation between stress from work and somatic symptoms, assessing the conciliating role of satisfaction of job, and exploring the influence of demographic variables, the study seeks to provide insights into the mechanisms underlying the effects of stress from work on nurses' somatic symptoms and satisfaction of job.

Overall, the discussion focuses the critical significance of addressing stress from work and promoting job satisfaction among nurses to improve both their physical and mental health and quality of patient care. By understanding the complex dynamics at play and implementing targeted interventions, organizations of healthcare can create a healthier and more productive workplace environment for nurses, eventually assisting both the healthcare workforce and patient outcomes (Bakker & Demerouti, 2017). The mediation analysis explores the correlation between the independent variable (IV), job satisfaction (JSI), and the dependent variable (DV), somatic symptoms (SSS), mediated by work stress (WSS). The results indicate that both job satisfaction (JSI) and work stress (WSS) significantly predict somatic symptoms (SSS). Specifically, satisfaction of job increase is linked with a decrease in somatic symptoms, while work stress increase is linked with an increase in somatic symptoms. These findings align with the research thesis, which aims to understand the interconnectedness of stress from work, somatic symptoms, and satisfaction of job among nurses in Islamabad.

Additionally, the moderation analysis suggests that satisfaction of job (JSI) moderates the correlation between stress from work (WSS) and somatic symptoms (SSS). This implies that the influence of stress from work on somatic symptoms may differ depending on the extent of job satisfaction. In other

words, higher satisfaction of job may buffer the adverse effects of stress from work on somatic symptoms, while lower job satisfaction may exacerbate these effects. These findings contribute to a deeper understanding of the dynamics among work-related stressors, physical symptoms, and job satisfaction among nurses. They underscore the importance of not only addressing work stress directly but also promoting job satisfaction as a potential protecting factor against the adverse consequences of stress on physical health.

This study contributes to our understanding of the intricate dynamics between work stress, job satisfaction, and somatic symptoms, shedding light on the mechanisms through which workplace stressors impact employee health. The significant consequence of stress from work on somatic symptoms underscores the pervasive impact of stressors within the work environment on physical well-being. This aligns with existing literature highlighting the detrimental effects of chronic stress on various somatic complaints, ranging from headaches to gastrointestinal issues. Furthermore, the direct consequence of stress from work on somatic symptoms emphasizes the immediate impact that stressors can have on physical health, independent of any mediating factors. This underscores the urgency for organizations to address the root causes of workplace stress through comprehensive stress management interventions and supportive organizational policies aimed at promoting employee well-being.

The identification of satisfaction of job as a partial mediator in the correlation between stress from work and somatic symptoms adds depth to our understanding of the role of affective experiences at work in buffering the adverse health effects of stress. The statistically significant indirect effect suggests that higher levels of satisfaction of job can attenuate the impact of work stress on somatic symptoms. This finding underscores the importance of encouraging a positive workplace environment and cultivating employee satisfaction as a means of mitigating the deleterious consequences of workplace stress.

5.2 Limitations and Suggestions

While the research provides valuable insights into the relationship between work stress, job satisfaction, and somatic symptoms among nurses in Pakistan,

several limitations should be considered. Firstly, the study's correlational design limits causal inference, necessitating future longitudinal or experimental research to establish temporal relationships and causality between these variables. Additionally, the reliance on self-reported data introduces potential biases, such as social desirability or recall bias, which could influence the accuracy of reported stress levels, job satisfaction, and somatic symptoms. Our study encountered a limitation related to the reliability of the Work-Stress Scale (WSS), which was found to be low. This issue may have affected the precision and consistency of our measurements of work-related stress levels. Future studies could mitigate this by incorporating objective measures and triangulating data from multiple sources. Furthermore, the study's focus on ICUs in Rawalpindi and Islamabad hospitals may not fully capture the experiences of nurses in other healthcare settings or regions of Pakistan, suggesting the need for broader sampling to enhance the generalizability of findings. Finally, while the mediation and moderation analyses offer valuable insights, exploring additional variables beyond job satisfaction that may influence the stress-somatic symptoms relationship could provide a more comprehensive understanding of factors impacting nurse well-being.

In future research, adopting a mixed-methods approach could enrich understanding by integrating qualitative data to explore nuanced experiences and perceptions of stress and job satisfaction among nurses. Longitudinal studies could track changes in stress levels, job satisfaction, and somatic symptoms over time, offering deeper insights into causal pathways and informing targeted interventions. Moreover, expanding the study's scope to include diverse healthcare specialties and geographic locations within Pakistan would enhance the applicability of findings across different nursing contexts. Addressing these suggestions would not only strengthen the evidence base but also contribute to the development of effective strategies to support nurses' health and well-being in challenging work environments.

5.3 Implications

This research study on the interplay between work stress, job satisfaction, and somatic symptoms among nurses in Pakistan holds several implications for

healthcare practice, policy-making, and future research. Firstly, the findings underscore the critical need for healthcare organizations in Pakistan to prioritize the mental and physical well-being of nurses by implementing comprehensive stress management interventions. Given the significant impact of work stress on somatic symptoms highlighted in the study, such interventions should focus on reducing job demands, enhancing job resources, and promoting a supportive work environment. Strategies could include workload optimization, fostering positive team dynamics, and providing access to mental health support services, tailored to the specific needs of nurses in high-stress environments like ICUs.

Secondly, the identification of job satisfaction as a mediator between work stress and somatic symptoms suggests that enhancing job satisfaction can mitigate the adverse health effects of stress among nurses. Organizations should invest in strategies to improve job satisfaction through fair compensation, opportunities for professional growth, and recognition of nurses' contributions. Moreover, fostering a culture of open communication and participatory decision-making can empower nurses and enhance their sense of job control, which is crucial for managing stress effectively. Thirdly, the study highlights the role of demographic variables such as gender, education, experience, and working hours in moderating the relationship between work stress, job satisfaction, and somatic symptoms. Future research should delve deeper into these demographic factors to better understand their specific influences and implications for designing targeted interventions. For instance, exploring how different demographic groups perceive and respond to stressors in the workplace can inform tailored support strategies that cater to diverse needs.

Lastly, this research contributes to the broader literature on occupational health by elucidating the mechanisms through which workplace stressors impact physical health outcomes among nurses. By identifying satisfaction of job as a protective factor against somatic symptoms, the study underscores the importance of holistic approaches to employee well-being that encompass both psychological and physiological dimensions. This holistic perspective is essential for developing sustainable healthcare workforce policies that promote nurses' health, job

satisfaction, and ultimately, enhance patient care quality. In conclusion, addressing work stress and promoting job satisfaction among nurses in Pakistan is pivotal not only for improving nurses' health and well-being but also for sustaining a high standard of patient care. The insights gleaned from this study can guide evidence-based interventions and policy reforms aimed at creating supportive work environments that nurture the resilience and professional satisfaction of nurses, thereby benefiting both healthcare providers and the populations they serve.

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APPENDIX A

Informed Consent

Supervisor

Examiner

Shifa Tameer-e-Millat University, Islamabad

We are final-year clinical psychology bachelor's students at Shifa-Tameer-e-Millat University (STMU), Islamabad. For academic purposes, we are carrying out a study named "The relationship between work stress, job satisfaction, and somatic symptoms among nurses." If you have any question about this study or if participating has any negative consequences for you, you may contact on this email, rimshazahid56@gmail.com at any time. Participation in this study is voluntary, and you are free to decide whether or not to take part. If you choose to participate, you will need to sign a consent form. You are still free to withdraw at any time and for any reason, even after signing the consent form. Withdrawing from the study will not affect your relationship with the researcher, if any. If you decide to withdraw before data collection is complete, your data will either be deleted or returned to you.

I understand my participation is necessary and my information will be kept confidential.

Appendix B

Demographic Sheet

I have signed the consent form agreeing to participate in the study of this course, Unravelling the Nexus: "The relationship between work stress, job satisfaction, and somatic symptoms among female nurses", that has been approved by the University panel. I understand that my responses to the questionnaires are voluntary and that I can choose not to answer certain questions. Furthermore, I understand that I will not be identified by name in any research or publication resulting from this study.

Gender _____ Age _____
Ethnicity _____ Country of Birth _____

Signature _____ Date _____

Occupational Information

Education _____ Working hours _____
Department _____ Socioeconomic status _____
Experience _____



Appendix C

Somatic Symptoms Scale – 8

During the past 7 days, how much have you been bothered by any of the following problems?					
	Not at all 0	A little bit 1	Somewhat 2	Quite a bit 3	Very much 4
Stomach or bowel problems					
Back pain					
Pain in your arms, legs, or joints					
Headaches					
Chest pain or shortness of breath					
Dizziness					
Feeling tired or having low energy					
Trouble sleeping					

Appendix D

The Work Stress Scale

