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PERCEIVED STRESS, SLEEP AND COGNITIVE FAILURE IN WORKING MOTHERS: A CROSS-SECTIONAL NEUROPSYCHOLOGICAL STUDY

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Abstract

The current study examined the relationship between perceived stress, sleep quality and cognitive failures among working mothers, specifically testing the mediating role of sleep quality. A correlational research design was used and data was gathered using purposive sampling with 300 working mothers aged 25-50 years. Standardized instruments used included the Perceived Stress Scale (PSS-10), Cognitive Failures Questionnaire (CFQ 2.0), and PROMIS Sleep Disturbance Short Form 8a. A Pearson correlation, regression analysis, ANOVA, and PROCESS Macro mediation analysis were performed in SPSS to analyze the data. The results indicated that all of the variables in the study were significantly positively related to each other. The perceived stress significantly correlated with cognitive failures ($r = .53$, $p < .01$) and sleep disturbances ($r = .51$, $p < .01$); sleep disturbances also significantly correlated with cognitive failures ($r = .61$, $p < .01$). Descriptive statistics indicated moderate levels of perceived stress ($M = 19.97$, $SD = 8.21$), sleep disturbances ($M = 30.60$, $SD = 12.86$), and cognitive failures ($M = 24.29$, $SD = 6.75$). The cognitive failures were significantly predicted by perceived stress and sleep quality, accounting for 30% of the variance each ($R^2 = .30$, $\beta = .43$ and $\beta = .20$, respectively, $P < .001$). Residential background and house help ($p < .05$) also produced significant differences, but education level did not. This study determines that more stress and less sleep quality are significant factors in causing cognitive failures of working mothers. The results underscore the significance of mental health care, a good night's sleep and nurturing work and family environments in enhancing psychiatric status and mental abilities of mothers.

1. INTRODUCTION

Working mothers and their experiences have become a significant subject of psychological and public health studies, especially as the complexities of global work patterns, family arrangements and caregiving demands have heightened the stresses on them (Olivieri et al., 2024). In most societies, working mothers are supposed to perform well at work, yet at the same time meet the emotional, physical, and organizational needs of being a mother (Torres et al., 2024). This dual burden tends to impose a state of psychological tension, which is usually defined as perceived stress. The perceived stress is the subjective assessment of demands of life by an individual as overwhelming, uncontrollable or unpredictable (Sauer et al., 2021). Stress levels are not dependent on the objective number of responsibilities, but rather on how people perceive their capacity to address those responsibilities (Maqsood et al., 2024).

In the last ten years, the level of stress has

increased remarkably all over the world. Gallup Global Emotions Report (2022) found that in almost 41% of the adult population around the world, high stress was reported, which is one of the highest rates ever documented within the last 15 years. Women and especially those having young children always record high levels of stress as compared to men. During the pandemic, this gender gap expanded as mothers were disproportionately impacted by school closures, remote work, and the expanded domestic responsibilities (Kapoor et al., 2021). Working mothers were discovered to have almost three times more unpaid care work than fathers in most countries, which led to the increased emotional exhaustion and mental distress (Seedat & Rondon, 2021). Alongside these domestic pressures, workplace stressors such as bullying can further intensify emotional exhaustion and reduce wellbeing (Javaid et al., 2026), thereby increasing overall psychological strain among working mothers. This heightened stress directly affects essential biological processes, particularly sleep.

Sleep is one of the most delicate and immediate systems that are impacted by high levels of stress. Sleep quality is the objective and subjective features of sleep such as duration of sleeps, continuity, restfulness and lack of disturbances (Kohyama, 2021). Sleep is a very basic biological need as it helps to regulate emotions, thinking, and physical wellbeing (Almarzouki et al., 2022). But in the case of working mothers, sleep is usually lost during the night care giving, emotional stress, and unequal sharing of household duties. It has been found that mothers had worse sleep quality than fathers, despite both partners doing full-time jobs. Mothers tend to be more likely to be awakened during the night to take care of children and have problems falling asleep because of mental preoccupation (Härdelin et al., 2021).

These sleeping disturbances are not single incidences but they belong to a bigger trend of chronic sleep imbalance. International researches have also indicated that extended working hours, inadequate rest period, and accumulative exhaustion are some of the factors that lead to sleep disturbances in working women. A multilevel study involving 30 European nations found that long hours of work were found to significantly increase the likelihood of women experiencing sleep problems and having poor self-rated health in comparison to men (Mensah et al., 2022).

When regular disturbances in sleep occur, the consequences are usually manifested in the form of cognitive failure which are common failures in attention, memory and performance (Kong et al., 2023). Cognitive failure is defined as the small yet significant mistakes people make in daily activities such as forgetting appointments, getting distracted during conversations, misplacing things. These failures are not the signs of clinical impairment but the manifestations of the slight loss in cognitive regulation in a state of stress and fatigue (Hu & Huang, 2023). The concept of cognitive failures is especially crucial to examine among working mothers since it may influence the level of performance at the workplace and parenting roles.

Recent studies that included mothers engaged in childcare parents indicate that motherhood and cognitive failures are linked to fatigue, stress, and severe schedules (Iwasa et al., 2021). These results are consistent with the wider neuropsychological data showing that stress and sleep deprivation affect attention, working memory, and executive functioning (Khan & Al-Jahdali, 2023). In the case of working mothers, who engage in multitasking and quick decision making, any small breakdown of the cognitive process can affect their productivity, emotional wellbeing and their sense of competence to a great extent.

Research has revealed that stress triggers the physiology that disrupts the mechanisms of falling asleep and having a restful sleep (Ma et al., 2025, 2024). An increase in cortisol, increased arousal, and continuous worry may interfere with sleep structure, resulting in inadequate and disturbing sleep. Poor sleep, in its turn, decreases the cognitive efficiency levels, leaving better individuals prone to attentional lapses and lapses in memory. This is a cyclical process in which stress reduces sleep, and inadequate sleep worsens cognitive functioning which forms a feedback loop that is likely to have major implications in the daily operations of working mothers (Fehér et al., 2021).

In Asian countries such as Pakistan, working

mothers are exposed to some extra socio-cultural pressure such as intensive mothering pressure and gendered division of labor (Zulfiqar et al., 2024). These challenges are often compounded by limited organizational support systems (Abdelrady et al., 2026, 2025), despite evidence that structured workplace practices can enhance employee wellbeing and functioning (Khan et al., 2026). These can aggravate the stress levels and diminish the chances of restful sleep, which might predispose one to cognitive failures. Nevertheless, there is little empirical research that examines such relationships among working Pakistani mothers.

1.1 Theoretical Framework

To comprehend the psychological strains, sleep disturbances, and daily cognitive impairments that working mothers experience, one needs a theoretical background to elucidate the emotional, physiological, and cognitive mechanisms and processes that are involved. These relationships can be explained using theoretical frameworks like Lazarus and Folkman's Transactional Model of Stress and Coping (Scott, 2012), sleep-stress psychophysiological models (Kim & Dimsdale, 2007), and cognitive resource theories (Vecchio, 1990). When such views are combined together, they show a dynamic process where stress, sleep, and cognitive functioning are all in a continuous interaction and in some cases can reinforce the effects of each other and in other cases reinstate the effect of each other (Blackwelder et al., 2021; Pearson et al., 2023).

First theoretical model, the Transactional Model of Stress and Coping describe stress as an ongoing psychological mediation process between the demands an individual is exposed to and the resources that individuals think they have. The model identifies two main processes, which include; the primary process, in which one decides whether a situation is threatening or overwhelming and secondary process, in which one decides whether they possess the emotional, physical, and practical resources to cope (Scott, 2012). Working mothers experience these appraisals repeatedly all day long as they have to shift between work, parenting, domestic chores, and emotional nurturing (Olivieri et al., 2024). They perceive their daily roles as unpredictable, uncontrollable, and emotionally charged (Rajgariah et al., 2021).

Effects of stress on sleep can be well explained by the Hyperarousal Model of Insomnia (Riemann et al., 2010), which contend that psychological stress leads to a chronic condition of physiological and mental alertness that disrupts the capability of falling asleep and sustaining sleep. When we are under stress, the brain is under a high alert state. There is an increase in cortical activity, metabolic rate, an increase in activity of the sympathetic nervous system, and our cognitive rumination is heightened (Cardoner et al., 2024). In working mothers, who frequently bring emotional and mental stress of whole day into the night, this hyperarousal causes them to be unable to disconnect their minds, leading to broken, shallow, or restless sleep.

A deeper study of sleep regulation is possible via the Two-Process Model of Sleep Regulation (Borbély, 2022), which argues that two biological processes, Process S sleeping drive which gets accumulated during the time the person remains awake, and Process C circadian rhythm, regulate sleep. Coupled with other processes in normal condition these processes are involved in creating consolidated as well as restorative sleep. But hyperarousal caused by stress disturbs the two systems. Increased arousal disrupts the accumulation and expression of Process S while emotional strain and disruptive routines disrupt the circadian rhythm underlying Process C (Monzón et al., 2025). This leads to the fact that biological processes which help to facilitate deep, restorative sleep will not be triggered even when mothers are trying to sleep at the right time. The Two-Process Model also suggests when these processes are being impaired, the brain becomes hyperirritable to the impact of sleep deprivation so that any little loss in sleep can have a proportionately large impact on daytime operations (Borbély, 2022).

Another theoretical underpinning is based on the cognitive resource theories (Vecchio, 1990), in particular, Cognitive Load Theory and sleep dependent neurocognitive models. The Cognitive Load Theory assumes that there are limited human cognitive resources particularly the working memory and attentional capacity. Under the pressure of too many demands, the

cognitive system of individuals is overloaded and they find it harder to focus, recall information or do regular tasks effectively (Szulewski et al., 2020).

Sleep Dependent Memory Consolidation Framework (Cipolli et al., 2012) further contributes that sleep plays an important role in enhancing memory, experience integration, and neural efficiency restoration. These processes are disrupted when there is disruption in sleep resulting in impairment in attention, memory retrieval and executive functioning (Mantua et al., 2020). According to the recent studies, mothers who experience poor sleep complain of higher cognitive lapses, especially on the tasks that require sustained attention and working memory (Iwasa et al., 2021). Noteworthy, the cognitive resource theories also take into consideration the fact that the brain is not always vulnerable to the loss of sleep; it varies with emotional load, physiological arousal, and mental exhaustion. The cognitive system is already stressed meaning that there is less reserve to counteract sleep related deficits under high stress. Therefore, the cognitive outcome of sleep deprivation is increased when the stress level is high (Ampofo et al., 2025).

These theoretical perspectives when combined bring out the picture of a dynamic and interdependent system. The Transactional Model describes the stress that working mothers' encounter; sleep-stress interaction models describe the manner in which this stress impacts sleep and cognitive resource theories describe the way such sleep distortions lead to cognitive failures (Borbély, 2022; Scott, 2012). In this system of integration, the emotional acuity of stress has a subtle impact on the extent to which sleep affects the working of the mind. Stress increases physiological arousal and cognitive rumination, rendering the brain more vulnerable to the consequences of sleep deprivation (Noor & Dangwal, 2025).

1.2 Rationale

A complicated interplay of stress, sleep, and cognition influences the functioning of working mothers every day. Although all these areas have been researched widely in the field of psychology and neuroscience, they are scarcely considered as a composite entity. Such a study is crucial as stress, sleep, and cognition do not operate independently; they constitute a dynamic relationship that directly affects the well-being of mothers, their productivity, and family life. As Balsamo et al. (2024) conducted a review of the correlation between sleep and cognitive reserve, proving that poor sleep impairs attentional control and working memory. Similarly, Zhang (2024) established that there is a direct relationship between sleep quality and cognitive efficiency and emotional regulation among adults. Likewise, according to Ampofo et al. (2025), there was evidence of cross cultural differences in sleep in students across universities in Japan and the UK, and found that sleep quality is a predictor of cognitive performance in heterogeneous populations.

Concurrently, stress has been always associated with sleep disturbance. Recent evidence suggests that these relationships may operate through indirect mechanisms rather than simple direct associations. For instance, perceived stress has been shown to influence sleep quality through intermediary factors such as quality of life, highlighting the importance of mediating processes in psychological functioning (Munir et al., 2024). A longitudinal mediation study by Zhang et al. (2024) also revealed that stress affects the quality of sleep by activating rumination and emotional arousal. Li et al. (2025) carried out a meta-analysis that has synthesized 54 studies and affirms that poor sleep quality is a significant contributor to the poor mental health of adults. Similarly, Alhola and Polo Kantola (2007) noted that sleep deprivation impairs attention, working memory, and executive functioning particularly when people are stressed.

Cognition has also been associated to stress directly. Coelli et al. (2024) provided a summary of the progress in neurophysiological measures, indicating that stress can change the brain activity patterns associated with cognitive control. More recently, according to Jurgens et al. (2025), perceived stress is an indicator of cognitive decline in older adults, which is mediated by emotion regulation strategies. Moreover, broader contextual and demographic factors also shape how individuals experience stress and its outcomes. Research on workforce diversity indicates that characteristics such as

age, education, and gender significantly influence employee performance and workplace experiences, highlighting the importance of considering these variables in understanding maternal functioning (Khan & Javaid, 2023).

The evidence is even stronger when mothers are taken into specific consideration. Deater Deckard et al. (2021) discovered that mothers of children with inadequate sleep reported lower cognitive performance, and the influence of stress mediated this outcome. Lo Olivieri et al. (2024) have shown that working Italian mothers with family-related issues reported sleep-wake issues that are closely linked with emotional wellbeing. In Pakistan, Khan et al. (2022) demonstrated that sleep deprivation in working mothers decreased job performance and deviance at the workplace.

Combined, the results indicate that stress, sleep, and cognition have been researched in detail, but not together and not within a common explanatory paradigm and especially not among working mothers in South Asia. This gap is notable considering the socio-cultural pressures on Pakistani women such as intensive mothering roles, lack of institutional facilitation, and gendered division of household labor. This gap is necessary in addressing the impact on maternal functioning by daily pressures. The current research therefore attempts to combine stress, sleep and cognitive breakdowns in a single model as per the realities of working mothers in real life with the view of furthering theoretical understanding and interventions on maternal wellbeing, productivity and resiliency.

1.3 Objectives of the Study

The given research seeks to elaborate further on the patterns of coping with the psychological and neurocognitive challenges of everyday life by working mothers. The proposed study is informed by the following objectives which are based on both theoretical and empirical bases that have been discussed in the previous sections:

1. To evaluate perceived stress, sleep, and cognitive failures among working mothers.
2. To investigate the mediating role of sleep with stress and cognitive failures among working mothers.
3. To determine how demographic variables, e.g., age, education, number of children, expectations of intensive mothering, lack of institutional support, and division of labor affect stress, sleep, and cognitive failures among working mothers.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Psychosocial and Cognitive Functioning of Working Mothers

One of the most important psychological constructs that can explain the lives of working mothers is perceived stress. Stress is a subjective interpretation of demands that are beyond the resources at hand (Jurgens et al., 2025). Working mothers are usually left to occupational duties, childcare and housekeeping. This threefold pressure has a distinct stress profile, which is not similar to the stress profile of non-working mothers or fathers.

A number of studies have pointed out the increased levels of stress in working mothers. A comparative analysis of parenting stress between working and non-working mothers revealed that working mothers experienced considerably higher levels of stress-related to role overload and time pressure (Rajgariah et al., 2021). It was also found that there was a variety in coping strategies with working mothers tending to adopt problem-focused coping mechanisms to handle two roles. Likewise, Kavitha et al. (2022) investigated the stress factors and coping mechanisms of working mothers, and reported that the combination of such factors as economic stress, occupational challenges, and family requirements increased the stress level. Beyond workload-related stress, internal psychological resources also influence how stress is experienced, as mindfulness and quality of life have been found to shape workplace stress among working women (Javaid et al., 2023).

The COVID-19 also increased the levels of stress among working mothers. Kapoor et al. (2021) explored the issues of perceived stress and psychological well-being among Asian working mothers and revealed that teleworking negatively affected stress levels because of the ambiguity between work and family life. The research also revealed that resilience and organizational support mitigated the negative

impact, but the amount of stress was rather high. On the same note, Gupta and Srivastava (2020) found that the working mothers significantly experienced burnout than the non-working mothers during the pandemic, indicating the progressive effect of the employment and caregiving responsibilities during the times of crisis.

Socio-cultural expectations in South Asian situations enhance apparent stress. Nisa et al. (2024) have investigated the issues of working Pakistani mothers and observed that emotional stress, time-management problems, and financial strains were typical. In spite of these difficulties, mothers still helped their children in their studies which was indicative of the culture of intensive mothering. Such sustained socio-cultural stress continuously occupies mental resources and reduces cognitive control in daily functioning.

When cognitive resources are persistently taxed by stress, everyday mental efficiency becomes vulnerable to disruption (Ahmad et al., 2022; Amjad et al., 2021). Cognitive failures are basically daily impairments in attention, memory, and executive functioning, including forgetfulness, errors in routine and inability to concentrate (Javaid & Ramzan, 2026; Khan & Al-Jahdali, 2023). Although individually, these failures are minor, they may add up to influence work performance, parental self-efficacy, and general mental health (Nawaz et al., 2022; 2021). Among working mothers, cognitive failures are especially apposite, as they are manifested in the conjunction of the occupational stress, sleep deprivation, and the role of a caregiver. The literature brings out the fact that working mothers are susceptible to such lapses because of the frequent need to multitask and role conflict (Chen & Ramzan, 2024; Iwasa et al., 2021).

There are a number of studies which have investigated the general cognitive effects of maternal work. Omotayo and Queen (2023) compared the impact of working mothers on the cognitive development of their children in Nigeria, highlighting that maternal stress and workload have an indirect effect on cognitive outcomes also in the family. In the same manner, Iriani et al. (2023) examined the impact of working mothers on the cognitive success of children in Indonesia and found that the type of employment and the maternal workload have a significant impact on the academic accomplishments of children.

Cognitive lapses in working mothers are usually associated with guilt and psychological distress at an individual level. In their study of the problem of employment-linked guilt among working mothers, Maclean et al. (2021) have pointed out that the guilt over the role of work in family roles has been the cause of psychological discomfort and the inability to concentrate on family matters. This is in line with the idea of cognitive labor in which mothers are constantly on housework in their minds even when performing employment.

As Petts and Carlson (2023) verified, mothers were disproportionately forced to perform cognitive labor during the pandemic, which has a detrimental impact on their psychological state. Such results emphasize that cognitive failures cannot be viewed merely as neurological breakdowns but they are entrenched in the socio-emotional setting of maternal functions. According to past research highlighting the significant impact of stress on maternal cognition, we hypothesize that:

Hypothesis (H1): Perceived stress is positively associated with cognitive failure among working mothers.

This state of heightened psychological arousal has direct implications for sleep quality, which is one of the basic processes of recovery that restores physical energy and maintains emotional balance as well as cognitive activity (Borbély, 2022). Nevertheless, when working mothers have to work, they are likely to lack sleep because of the two-fold responsibility of working and taking care of children. Studies have always indicated that mothers have lesser and more disrupted sleep than the fathers even when the couple is working full-time (Härdelin et al., 2021). This disparity is accredited to the night care, emotional involvement with children and unequal household assignment.

The sleep problems of working mothers have been identified in a number of studies. Olivieri et al. (2024) studied how Italian mothers who were working and had family-related issues handled these difficulties, stating that sleep-wake issues were highly correlated with emotional well-being. The paper has highlighted how

mothers are likely to lose sleep in a bid to address the needs of the family, which causes long-term exhaustion and diminished psychological strength.

The issue of disrupted sleep is more common in South Asian contexts with socio-cultural demands of intensive mothering. Khan and Al-Jahdali (2023) also established that sleep deprivation in Pakistani working mothers decreased employment performance and caused more deviance at work, which highlights the occupational outcomes of sleep deprivation. Combined, the literature has proven that working mothers have their quality of sleep impaired by a set of factors that include the occupational factors, care giving factors, socio-cultural factors and demographic factors. Inadequate sleep does not only deteriorate the health of the mother, but also leads to cognitive incompetence, poor performance at the workplace, as well as dysfunctional family relationships.

Equally, Deng et al. (2022) found that sleep deprivation among working mothers led to low job performance and high workplace deviance, arguing that cognitive failures can have occupational outcomes. According to past research highlighting the significant impact of stress, sleep, and socio-cultural demands on maternal cognition, we hypothesize that:

Hypothesis (H2): Perceived stress is negatively associated with sleep quality among working mothers.

Hypothesis (H3): Sleep quality is negatively associated with cognitive failure among working mothers.

2.2 Sleep Quality as a Mediator

Sleep functions as a critical bridge between stress and cognitive performance. Stress alone can impair attention and decision-making, but its impact is often transmitted through disrupted sleep. When mothers experience heightened stress, rumination and emotional arousal reduce sleep quality, which in turn undermines memory, concentration, and executive functioning. Zhang et al. (2024) showed that stress impairs sleep through rumination, while Li et al. (2025) confirmed poor sleep worsens mental health outcomes. Deater-Deckard et al. (2021) found that mothers with poor sleep displayed reduced cognitive performance, moderated by stress, highlighting sleep's mediating role. This evidence suggests that sleep is not merely a parallel variable but a mechanism that explains how stress translates into everyday cognitive failures in working mothers. According to past research highlighting sleep as a pathway linking stress and cognition, we hypothesize that:

Hypothesis (H4): Sleep quality mediates the relationship between perceived stress and cognitive failures among working mothers.

2.3 Influence of Demographic Variables

Demographic factors are decisive when it comes to determining the experience of working mothers. Demographic variables of age, marital status, education, career, family formation, and children count have a direct impact on the levels of stress and the quality of sleep and intellectual ability. These aspects dictate the resources that mothers have, the expectation of them, and the coping mechanisms that they use in reconciling work and childcare.

Age and marital status have been demonstrated to moderate maternal stress and sleep. The mothers who are younger are more likely to report greater stress because of the lack of coping resources and childcare needs and the divorced or widowed mothers are exposed to the extra burden of single parenting. Supadmi et al. (2024) discovered that marital status was a significant factor in child health outcomes in working mothers in Indonesia that is indirectly related to the stress and cognitive burden of a mother. Likewise, Laksono et al. (2022) reported that maternal education safeguarded the mothers against adverse childhood outcomes, implying that maternal education shields the mothers against stress and promotes coping.

Mother functioning is also influenced by education and profession. Professional demands can create role conflict and higher education may provide mothers with more resources and better coping strategies. Asri et al. (2021) found that parental stress had a detrimental impact on the quality of parent-child relationships in Malaysian working mothers, and the relational impact of demographic pressures. Gupta and Srivastava (2020) underlined that organizational support minimized burnout, indicating that workplace context, in interaction with demographic variables, affect the stress and

sleep. Similarly, inclusive leadership and perceived organizational support have been shown to enhance employee engagement and psychological safety, thereby reducing the negative impact of stress (Javaid et al., 2025).

The South Asian contexts are very sensitive to family setup and support. Nuclear families may expose mothers to more stress and sleep disturbance because of the lack of caregiving support, whereas joint ones may support but also place cultural demands. Access to house help also moderates maternal workload, which has a direct effect on the quality of sleep and cognitive ability. Nisa et al. (2024) corroborated that Pakistani working mothers are under emotional and time-management stress, but they still help children with their studies, which is the dual influence of the family set-up and cultural demands.

The number of children and care giving burden increases maternal strain. The bigger the family the higher the chances of the sleep fragmentation and cognitive lapses because of night-time caregiving and the multitasking requirements. Research by Petts and Carlson (2023) concerning cognitive labor points to the fact that mothers are always moving household tasks around their heads, a factor that builds up to attentional slip and mental torture.

Combined, the literature indicated that the demographic factors play a great role in maternal functioning. The interaction of age, marital status, education, profession, family set-up, and children number with cultural expectations defines the way that the stress, sleep, and mental breakdown appears among working mothers. According to past research highlighting the role of demographic factors in maternal functioning, we hypothesize that:

Hypothesis (H5a): There is a significant difference in perceived stress among working mothers based on their age.

Hypothesis (H5b): Marital status significantly influences the level of perceived stress experienced by working mothers.

Hypothesis (H5c): The educational background of working mothers significantly impacts their perceived stress.

Hypothesis (H5d): There is a significant variation in perceived stress among working mothers across different professions.

3. METHODS

3.1 Research Design

This study employed a correlational research design. The purpose of this design was to examine the relationships among perceived stress, sleep quality, and cognitive failures in working mothers, while also testing the mediating role of sleep and the influence of demographic factors (Devi et al., 2022).

3.2 Sampling Technique

This research utilized a purposive sampling approach, which is a non-probability sampling method. In purposive sampling, participants are selected purposely as they share certain traits that directly relate to the study aims. In contrast to the probability sampling, where all members of the population are given an equal opportunity to be selected, purposive sampling is based on the judgment of the researcher to pick up those who can offer rich information (Tajik et al., 2025).

3.3 Participants

The study involved 300 working mothers. This sample size was sufficient to provide statistical power to correlational and mediation tests. Past research on maternal stress and functioning employed similar sample sizes of between 200 and 350 participants that were adequate enough to identify significant correlations as well as generalize the results (Rajgaraiya et al., 2021; Kavitha et al., 2022; Nisa et al., 2024).

3.3.1 Inclusion Criteria

The participants were selected under the following conditions:

1. Working mothers aged 25-50 years.
2. Worked at least six months in either a formal environment or in a formal setting.
3. One or more living child.
4. Could read and comprehend the language of study.

3.3.2 Exclusion Criteria

Participants were excluded if they meet any of the following conditions:

1. History of diagnosed psychiatric or neurological disorders.
2. Current use of psychotropic medication.

3. Diagnosed sleep disorders.
4. Chronic medical illnesses affecting cognition or sleep.
5. Current pregnancy or postpartum period of less than one year.
6. Substance abuse.
7. Employment duration of less than six months.

3.4 Measures

3.4.1 Demographic Information Form

The study began with a demographic information form designed to capture key contextual variables relevant to working mothers. This form included items on age, marital status, education, profession and grade, duration of job, job timing, and family setup. It also gathered details about husband's education and profession, number and ages of children, children's educational level, and whether tuition or academy support is provided.

3.4.2 Perceived Stress Scale (PSS-10)

Perceived stress was assessed with the help of the Perceived Stress Scale (PSS 10) developed by Cohen et al. (1983). The 10-item instrument measured the extent to which the respondents evaluate scenarios in their lives as stressful, and the answers will be marked based on a 5-point Likert scale of never to very often. The PSS-10 demonstrates a two-factor structure, comprising perceived helplessness and perceived self-efficacy. The PSS-10 has established strong internal consistency, with Cronbach's alpha reported as 0.89 in validation studies. Construct validity has also been established across diverse populations, confirming its suitability for use in this study (Cohen et al., 1983).

3.4.3 Cognitive Failures Questionnaire 2.0 (CFQ-2.0)

Everyday cognitive lapses were assessed using the Cognitive Failures Questionnaire 2.0 (CFQ-2.0) developed by Goodhew and Edwards (2024). This instrument consisted of 15 items that measure attentional slips, memory failures, and routine errors in daily life. Items are rated on a Likert scale, with higher scores indicating greater frequency of cognitive failures. The CFQ-2.0 has shown good reliability, with Cronbach's alpha reported as 0.86 (Goodhew & Edwards, 2023).

3.4.4 PROMIS Sleep Disturbance – Short Form 8a

Sleep quality was measured using the Patient-Reported Outcomes Measurement Information System (PROMIS) Sleep Disturbance (SD) and Sleep-Related Impairment (SRI) item-Short Form 8a. This scale consisted of 8 items that assessed perceptions of sleep quality, difficulties in falling asleep, and sleep adequacy. The Sleep Disturbance short forms have demonstrated excellent psychometric properties, with Cronbach's alpha reported as 0.90 in large validation samples. Factorial validity and test–retest reliability have also been confirmed, making this instrument appropriate for assessing sleep disturbance in working mothers (Yu et al., 2012).

3.5 Procedure

The research was conducted in a carefully structured sequence to ensure rigor and ethical compliance. Ethical approval was first obtained from the university, and formal permission to use standardized instruments was secured. This step guaranteed that the study adheres to international research standards. Purposive sampling was used to recruit the participants from schools, hospitals, offices and other formal working places in Faisalabad. The institutional heads were approached to provide access and working mothers who can fulfill the inclusion criteria were invited to take part.

A clear description of the study goals, confidentiality and their right to withdrawing at any point was given to each participant. Informed consent was asked to be provided via written form to have a voluntary participation. Data collection involved the administration of a structured questionnaire comprising the Perceived Stress Scale (PSS-10), the Cognitive Failures Questionnaire 2.0, the PROMIS Sleep Disturbance – Short Form 8a, and a demographic information form. Mothers will be asked to complete the forms in a quiet environment.

After that, questionnaires were gathered, coded, and keyed into SPSS to be analyzed statistically. All data was stored safely without any identification data so as to guarantee confidentiality. The process of data collection was carried out in 6-8 weeks to provide the

consistency of the data collected in the various working environments and groups of participants.

3.6 Data Analysis

All the data was processed with the help of SPSS (version 23) and the PROCESS Macro (Hayes, Model 4). Assumption testing was done before doing the main analyses so as to ascertain the validity of statistical procedures. Normality was analyzed by values of skewness and kurtosis, linearity and homoscedasticity will be analyzed by scatterplots, Multicollinearity will be analyzed by Variance Inflation Factor and Independence of errors will be analyzed by Durbin Waters statistic.

To explore the relationships among the study variables, Pearson correlation analysis was conducted. This examined the bivariate associations between perceived stress, sleep quality, and cognitive failures. Correlation coefficients, p values, and confidence intervals will be reported in a correlation matrix. Following this, hierarchical multiple regression analysis was performed to determine whether perceived stress and sleep quality predict cognitive failures after controlling for demographic variables.

Finally, mediation analysis was conducted to test the hypothesized model in which sleep quality mediates the relationship between perceived stress and cognitive failures. The PROCESS Macro (Model 4) was used with 5,000 bootstrap samples and 95% confidence intervals. Path coefficients were reported for the effect of perceived stress on sleep quality, the effect of sleep quality on cognitive failures, the total effect of perceived stress on cognitive failures, and the direct effect after accounting for mediation. An analysis of variance (ANOVA) was also conducted to examine group differences.

3.7 Ethical Considerations

The participants were completely informed of the study purpose, procedures involved, and their rights prior to participating in the study. Informed consent was obtained in written form, and the participation was voluntary. The confidentiality was preserved with the utmost respect to the removal of identifying information and keeping data secure.

The participants were guaranteed that they could leave the study at any point without consequences, as well as avoid any question that makes them feel uncomfortable. The psychological discomfort was avoided as much as possible. The research was carried out in accordance with ethical codes of autonomy, beneficence, non-maleficence, and justice to ensure that the dignity and wellbeing of all the participants are respected.

4. RESULTS

In this chapter, the statistical results of the research studying the connections between perceived stress and cognitive failures and the quality of sleep in working mothers are provided. The outcomes comprise descriptive statistics, reliability analysis, correlation analysis, group comparisons, ANOVA and regression analysis. The demographical analysis of the participants presents a valuable background to the study results. The sample only included married working mothers, so it is guaranteed that all respondents are individuals who have to bear the burden of both work and family life. Regarding education, most of the participants were well-educated, with most of them having Master (38.7) and MPhil (36.0) as their highest level of education, with a significant part also having PhD (25.3) as their highest level of education. In terms of family structure, a bit more than half the respondents (55.7) were in nuclear families, with 44.3 living in joint family structures.

The access to house help was almost equal, 48.7% indicated that they had house help and 51.3% responded that they did not. This implies that there is variation in household workload, which can impact stress and everyday functioning. Participants were nearly balanced in size in terms of family, with one (33.7%), two (34.3%), or three children (32.0%). This balance suggests that the burden of caregiving was quite similar among participants. Lastly, most of the participants lived in cities (69%), and 31% lived in the countryside. This is a representation of the increased involvement of working women in the urban setting which could be attributed to increased employment.

Table 1
Descriptive Statistics Pearson Correlation Matrix Among Study Variables

Variable	M	SD	1	2	3
1. Perceived Stress	19.97	8.21	–		
2. Sleep Quality	30.60	12.86	.51**	–	
3. Cognitive Failures	24.29	6.75	.53**	.61**	–

Note. $p < .01$

The correlation analysis showed that there were significant positive relationships between all the variables. The perceived stress was positively correlated with cognitive failures (r =.53, p <.01) meaning that the higher the stress level the more the cognitive lapses. On the same note, poor sleep quality was strongly associated with perceived stress (r = .51, p < .01), which alludes to the fact that stress adversely impacts sleep patterns. Cognitive failures were also greatly associated with sleep quality (r =.61, p < .01), which showed that sleep problems are related to cognitive inefficiencies. These results indicate that stress and sleep are highly related and they both affect cognitive functioning. The descriptive findings reveal that the participants reported moderate perceived stress, cognitive failures and sleep disturbances. The standard deviations indicate that there is good variation in participants, which implies that there are different experiences.

Table 2
Regression Analysis Predicting Cognitive Failures

Predictor		B	SE	β	t	p	UL	LL
Constant		8.26	2.36	–	3.49	.001	-4.48	2.59
Perceived Stress		0.67	0.09	.43	7.53	.000	.19	.53
Sleep Quality		0.37	0.11	.20	3.47	.001	.70	1.04
R^2	.55							
R^2	.30							

The regression model was significant F(2, 297) = 64.85, p <.001; and explained 30% of the variance in cognitive failures. The quality of sleep was second, followed by perceived stress, as the best predictor. This means that, the psychological and physiological factors are the major contributors to cognitive functioning with stress being the dominant factor.

Table 3
Differences Based on Family System

Variable	Nuclear (n=167) M ± SD	Joint (n=133) M ± SD	t	p	Cohen's d
PSS	18.75 ± 7.42	15.91 ± 6.93	3.31	.00	0.46
CFQ	26.71 ± 12.65	19.20 ± 10.03	5.48	.00	0.42
Sleep	22.43 ± 7.72	18.11 ± 6.80	5.55	.00	0.61

The results show that differences between family system (p < .05) are statistically significant. This means that, the experience of perceived stress, cognitive failures and sleep disorders are consistent throughout the family system. The findings indicate that such structural factors as living arrangements or domestic support might be incredibly beneficial in mediating psychological and cognitive issues among working mothers.

Table 4

Differences Based on House Help Availability

Variable	Available M ± SD	Not Available M ± SD	t	p	Cohen's d
PSS	18.14 ± 7.26	16.81 ± 6.19	3.37	.00	0.30
CFQ	26.07 ± 13.50	20.69 ± 11.23	2.37	.01	0.49
Sleep	21.45 ± 7.50	19.14 ± 6.99	2.51	.01	0.31

The results indicate statistically significant differences in availability of house help ($p < .05$). This means that the perception of stress, thought disruptions and insomnia are always uniformly felt across different demographic profiles. The findings indicate that structural problems such as living conditions or domestic support can significantly buffer the psychological and cognitive problems of working mothers.

Table 5
Differences Based on Residence

Variable	Urban M ± SD	Rural M ± SD	t	p	Cohen's d
PSS	18.40 ± 7.14	15.77 ± 5.36	3.36	.00	0.47
CFQ	24.97 ± 12.79	19.82 ± 10.36	3.35	.00	0.45
Sleep	21.41 ± 7.60	18.58 ± 6.09	3.14	.00	0.22

The results imply the statistically significant residence differences ($p < .005$). It means that perceived stress, cognitive impairments, and sleeping issues are systematically expressed when grouped in terms of different demographic features. The findings are that the structure (living arrangements or domestic support) of working mothers can significantly buffer psychological and cognitive problems.

Table 6
One-Way Analysis of Variance for CFQ, PSS, and Sleep by Education Level

Variable	Source	*SS*	*df*	MS	*F*	*p*	η^2
CFQ Total	Between Groups	221.61	2	110.81	0.72	.487	.005
	Within Groups	45581.47	297	153.47			
	Total	45803.08	299				
PSS Total	Between Groups	46.68	2	23.34	0.44	.643	.003
	Within Groups	15683.12	297	52.81			
	Total	15729.80	299				
Sleep Total	Between Groups	55.81	2	27.91	0.53	.588	.004
	Within Groups	15562.62	297	52.40			
	Total	15618.44	299				

The analysis of the differences in CFQ, PSS and sleep scores at different levels of education (Master, MPhil, PhD) was conducted with the help of one-way ANOVA. The results showed that there were no statistically significant differences among the groups for CFQ, $F(2, 297) = 0.72$, $p = .487$, $\eta^2 = .005$; PSS, $F(2, 297) = 0.44$, $p = .643$, $\eta^2 = .003$; and sleep, $F(2, 297) = 0.53$, $p = .588$, $\eta^2 = .004$. The sizes of the effect were extremely insignificant suggesting that there were no practical differences that were significant. Levenes test was also not significant in all the variables ($p > .05$) hence confirming the assumption of homogeneity of variances.

5. Discussion

The present study examined the correlations between perceived stress, cognitive failures and

the quality of sleep-in working mothers and the effect of demographic and contextual factors like family system, domestic help availability, residence and education level in influencing the experiences. The entire purpose was to learn about psychological and physiological functioning among a sample of working mothers who balance the roles between the working field and the family.

In line with available literature, the results demonstrate that there is a high interdependence between perceived stress, sleep quality and cognitive functioning. The positive links between these constructs are consistent with theoretical viewpoints that stress exhausts the cognitive resources and interferes with cognitive control mechanisms (Shields et al., 2016). It has been demonstrated that chronic stress affects attention, working memory, and executive functioning and promotes the occurrence of cognitive failures and daily errors. These cognitive disturbances may be particularly acute in working mothers who have to always split their attention among several duties (Lupien et al., 2007).

The correlation between the stress level and sleep disturbances observed in the current research is also justified by the recent studies indicating that an increased physiological arousal disrupts both sleep onset, maintenance, and the quality of sleep (Alfano et al., 2015). Instead, poor sleep is counterproductive to restorative processes that play a vital role in the cognitive performance, emotional regulation, and psychological resilience (Harrison and Horne, 2000). The meta-analytic evidence of the reciprocal relationships between sleep disturbance and cognitive performance supports this two-way relationship within adult groups (Lo et al., 2016).

The results of the present research in regression analysis indicate that perceived stress was found to be a stronger predictor of cognitive failures as compared to sleep quality. This trend is echoed in recent theoretical ideas of stress as a leading factor in cognitive instability as people have to allot attention in the context of prolonged psychological demands (Arnsten, 2021). The hypothalamic-pituitary-adrenal (HPA) axis is activated under the influence of stress, which negatively affects the work of the prefrontal cortex, the center of planning, decision-making, and control of attention (Herman, 2016). It also means that under stressed working moms are more likely to lapse cognition, irrespective of other physiological conditions.

Sleep quality also had its own independent effect on cognitive outcomes, but then it was found that its impact was smaller than stress. However, the quality of sleep is an urgent aspect that justifies emotional control and metabolic renewal, particularly in adults with high role demands (Kong et al., 2023). In societies where extended family and professional achievement are placed at the same rank, poor or discontinuous sleep can further complicate cognitive difficulties in working mothers.

The demographic comparisons showed that contextual and structural factors are influential factors that determine stress and cognitive experiences. The differences between family systems are the same in the studies of collectivistic societies where extended family support systems tend to offer emotional and instrumental resources that can protect against stress (Hofstede, 1991; Shafiq and Iqbal, 2023). The JFSs often involve more than one or two adult individuals in the duties of caregiving and domestic chores, which may eliminate role overload and provide working mothers with more chances to rest and rejuvenate. The observation aligns with the ecological theories that highlight a contribution of the proximal social networks to the well-being of individuals (Bronfenbrenner, 2020).

Residential background differences also emphasize the importance of environment. Although urban living is commonly linked to more economic opportunities and services, it is also accompanied by increased time pressure, traffic jams, and competitive workplaces that become a source of pressure and sleep disruption (Montanari et al., 2024). Conversely, rural living might offer a better community support and the low life rhythm, but it might have the same resource limitation that characterizes stress experiences. The results presented above resonate with the bigger sociological research that emphasizes environmental conditions as exclusive determinants of mental health and everyday functioning (Black et al., 2022).

In contrast to what some people had assumed, the level of education did not show that there were any significant differences in perceived stress, cognitive failures, and sleep quality. This result indicates that increased educational level is not always associated with greater psychological resilience or less every-day stress on working mothers. Although education tends to predetermine more favorable health results in the general high-risk population (Cutler and Lleras-Muney, 2012), structural and cultural norms imposed on females could override any potential psychological advantages of high-level education in the situations when the role demands are neither low nor too high.

Together, the results enhance a more varied perspective of the interplay between stress, sleep, and cognition in the context of the socio-cultural conditions of working mothers. The findings confirm the role strain theory, which suggests that various role demands may result in cumulative stress and worsened health conditions in case of a lack of resources (Goode, 1960). These theoretical insights are especially applicable to the collectivistic context, in which socialization tends to dictate women to carry wide familial and caregiving duties, although they participate in the labor force.

The motherhood and homemaking expectations culturally inculcated could also be a part of the complexity of the strained and stressed feelings of working mothers. The pressure to perform in every role may lead to the enhancement of the pressure because the values of the society are focused on the motherly devotion, family dignity and the need to take care and this puts the pressure on the role and exerts pressure on the individual. Structural factors that contribute to these cultural pressures include inability to be flexible in the work place, the unavailability of official childcare and misplaced mental health treatment that combined to create the cultures of working moms.

5.1 Limitations

The study has a good methodology although it is limited in a number of ways which should be taken into consideration. Firstly, the cross-sectional research design portrays a snapshot of a particular time and, therefore, one cannot be able to determine the absolute causality. It is also the most probable to be a two-way relationship: the causes of cognitive failures are stress and the consequences of cognitive failures are (e.g. make a mistake at work) the causes of stress. Second, self-report measures means that social desirability bias or subjective miscalibration is possible; mothers will report less on cognitive lapses because they will be afraid of professional stigma. Lastly, the group of working mothers was also viewed as a relatively homogenous group of professionals in the study, they did not differentiate between the kind of professions (i.e. the one of a healthcare worker and the one of an academic researcher) that could have different intrinsic stress profiles.

5.2 Future Research Directions

Follow-up studies should also aim to expound on these results using longitudinal designs to track the changes in the stress, sleep and cognitive performance of various ages in the professional and maternal life cycle (e.g. childhood and adolescence). The self-reported information would be triangulated and verified and the objective biometric data would be included, including actigraphy to measure the sleep architecture and salivary cortisol to measure chronic stress. It is also greatly suggested that the multifaceted and lived experiences of the problem of management stress which comes along with house help and peculiarities of the joint family unit must be taken into account with the assistance of qualitative methods like thematic analysis of in-depth interviews.

5.3 Conclusion

Conclusively, this paper gives concrete evidence to the fact that perceived stress and sleep deprivation interact at a high level to become a risk factor to the cognitive health of working mothers. The paper expounds the fact that cognitive failures do not happen accidentally, but they are the systemic consequence of psychological overload, and physiological fatigue. The social protection forms such as the joint family system have very high values and the stresses of the urban life of professionalism have a heavy burden on the minds. In order to achieve effective integration of women in the workforce, the society and organizations should

not merely do the superficial changes, but the structural changes that would be proactive and safeguard the psychological and cognitive resources of working mothers.

REFERENCE

Abdelrady, A. H., Akram, H., Mohamed, A. T. A., Abaalkhail, G. F., Osman, E. H. E., Mohamed, G. T. A. H., & Suliman, W. M. M. (2026). *World Journal of English Language, 16*(4), 311-321.

Abdelrady, A. H., Ibrahim, D. O. O., & Akram, H. (2025). Unveiling the Role of Copilot in Enhancing EFL Learners' Writing Skills: A Content Analysis. *World Journal of English Language, 15*(8), 174-185.

Ahmad, N., Akram, H., & Ranra, B. (2022). In quest of Language and National Identity: A Case of Urdu language in Pakistan. *International Journal of Business and Management Sciences*, *3*(2), 48-66.

Alfano, C. A., Patriquin, M. A., & De Los Reyes, A. (2015). Subjective – objective sleep comparisons and discrepancies among Clinically-Anxious and Healthy children. *Journal of Abnormal Child Psychology*, *43*(7), 1343–1353. https://doi.org/10.1007/s10802-015-0018-7

Alhola, P., & Polo-Kantola, P. (2007). Sleep deprivation: Impact on cognitive performance. *Neuropsychiatric Disease and Treatment*, *3*(5), 553–567. https://doi.org/10.2147/ndt.s12160203

Almarzouki, A. F., Mandili, R. L., Salloom, J., Kamal, L. K., Alharthi, O., Alharthi, S., Khayyat, N., & Baglagel, A. M. (2022). The impact of sleep and mental health on working memory and academic performance: a longitudinal study. *Brain Sciences*, *12*(11), 1525. https://doi.org/10.3390/brainsci12111525

Amjad, M., Hussain, R., & Akram, H. (2021). Structural and functional taxonomies of lexical bundles: an overview. *Harf-o-Sukhan*, *5*(4), 358-367.

Ampofo, J., Sun, B., Bentum-Micah, G., Qinggong, L., Changfeng, W., Guoan, L., & Xusheng, Q. (2025). Investigating the impact of sleep quality on cognitive functions among students in Tokyo, Japan, and London, UK. *Frontiers in Sleep*, *4*, 1537997. https://doi.org/10.3389/frsle.2025.1537997

Arnsten, A. F. (2021). Stress weakens prefrontal networks: Molecular insults to higher cognition. Nature Neuroscience, 24(10), 1299–1310.

Asri, N. S. M., Juhari, R., & Zafri, A. V. (2023). Correlates of Parent- child Relationship Quality among Working Mothers during Covid-19 Pandemic in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, *13*(16). https://doi.org/10.6007/ijarbss/v13-i16/18713

Balsamo, F., Berretta, E., Meneo, D., Baglioni, C., & Gelfo, F. (2024). The Complex Relationship between Sleep and Cognitive Reserve: A Narrative Review Based on Human Studies. *Brain Sciences*, *14*(7), 654. https://doi.org/10.3390/brainsci14070654

Black, D. S., Le, M. T., & Tucker, R. P. (2022). Community factors and mental health: A social ecological perspective. Annual Review of Public Health, 43, 211–228.

Blackwelder, A., Hoskins, M., & Huber, L. (2021). Effect of inadequate sleep on frequent mental distress. *Preventing Chronic Disease*, *18*, E61. https://doi.org/10.5888/pcd18.200573

Borbély, A. (2022). The two-process model of sleep regulation: Beginnings and outlook†. Journal of Sleep Research, 31(4), e13598. https://doi.org/10.1111/jsr.13598

Bronfenbrenner, U. (2020). The ecology of human development: Experiments by nature and design. Harvard University Press.

Cardoner, N., Andero, R., Cano, M., Marin-Blasco, I., Porta-Casteràs, D., Serra-Blasco, M., Via, E., Vicent-Gil, M., & Portella, M. J. (2024). Impact of Stress on Brain Morphology: Insights into

Structural Biomarkers of Stress-related Disorders. Current Neuropharmacology, 22(5), 935–962. https://doi.org/10.2174/1570159X21666230703091435

Chen, Z., & Ramzan, M. (2024). Analyzing the role of Facebook-based e-portfolio on motivation and performance in English as a second language learning. *International Journal of English Language and Literature Studies*, *13*(2), 123-138.

Chong, Z. (2024). The influence of sleep on cognitive function and mental health. *Neurosci Psychiatry Open Access*, *7*(4), 245-6.

Cipolli, C., Mazzetti, M., & Plazzi, G. (2012). Sleep-dependent memory consolidation in patients with sleep disorders. *Sleep Medicine Reviews*, *17*(2), 91–103. https://doi.org/10.1016/j.smrv.2012.01.004

Coelli, S., Maggioni, E., & Mendez, M. O. (2024). Editorial: Stress and the brain: advances in neurophysiological measures for mental stress detection and reduction. *Frontiers in Neuroergonomics*, *5*, 1466783. https://doi.org/10.3389/fnrgo.2024.1466783

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*(4), 385. https://doi.org/10.2307/2136404

Cutler, D., & Lleras-Muney, A. (2012). Education and Health: Insights from International Comparisons. *National Bureau of Economic Research*. https://doi.org/10.3386/w17738

Da Silva-Sauer, L., Garcia, R. B., Da Silva, T. M. P., De Melo, C. B., & Fernández-Calvo, B. (2021). Relationship between psychological resilience, perceived stress, depression, and physical health in community-dwelling older adults. *Psychology & Neuroscience*, *14*(2), 132–144. https://doi.org/10.1037/pne0000254

Deater-Deckard, K., Chary, M., McQuillan, M. E., Staples, A. D., & Bates, J. E. (2021). Mothers' sleep deficits and cognitive performance: Moderation by stress and age. *PLoS ONE*, *16*(1), e0241188. https://doi.org/10.1371/journal.pone.0241188

Devi, B., Lepcha, N., & Basnet, S. (2022). Application of correlational research design in nursing and medical research. Journal of Xi'an Shiyou University, Natural Sciences Edition, 65(11), 60–69.

Fehér, K. D., Wunderlin, M., Maier, J. G., Hertenstein, E., Schneider, C. L., Mikutta, C., Züst, M. A., Klöppel, S., & Nissen, C. (2021). Shaping the slow waves of sleep: A systematic and integrative review of sleep slow wave modulation in humans using non-invasive brain stimulation. *Sleep Medicine Reviews*, *58*, 101438. https://doi.org/10.1016/j.smrv.2021.101438

Global Wellness Institute. (2022, July 12). *Gallup research reveals peak stress and sadness worldwide*. https://globalwellnessinstitute.org/global-wellness-institute-blog/2022/07/12/gallup-research-reveals-peak-stress-and-sadness-worldwide/

Goode, W. J. (1960). A theory of role strain. *American Sociological Review*, *25*(4), 483. https://doi.org/10.2307/2092933

Goodhew, S. C., & Edwards, M. (2023). The Cognitive Failures Questionnaire 2.0. *Personality and Individual Differences*, *218*, 112472. https://doi.org/10.1016/j.paid.2023.112472

Gupta, P., & Srivastava, S. (2020). Work–life conflict and burnout among working women: a mediated moderated model of support and resilience. *International Journal of Organizational Analysis*, *29*(3), 629–655. https://doi.org/10.1108/ijoa-12-2019-1993

Härdelin, G., Holding, B. C., Reess, T., Geranmayeh, A., Axelsson, J., & Sundelin, T. (2021). Do Mothers Have Worse Sleep Than Fathers? Sleep

Imbalance, Parental Stress, and Relationship Satisfaction in Working Parents. *Nature and Science of Sleep, Volume 13*, 1955–1966. https://doi.org/10.2147/NSS.S323991

Harrison, Y., & Horne, J. A. (2000). The impact of sleep deprivation on decision making: A review. *Journal of Experimental Psychology Applied*, *6*(3), 236–249. https://doi.org/10.1037/1076-898x.6.3.236

Herman, J. P. (2016). Limbic pathways to stress control. In *Oxford University Press eBooks*. https://doi.org/10.1093/med/9780190215422.003.0008

Hofstede, G. (1991). Cultures and organizations: Software of the mind. *McGraw Hills*.

Hu, Y., & Huang, H. (2023). The theoretical explanations of cognitive failures in daily life. *Applied & Educational Psychology*, *4*(5). https://doi.org/10.23977/appep.2023.040506

Iwasa, H., Yoshida, Y., Ishii, K., & Yasumura, S. (2021). Factors associated with cognitive failure among mothers involved in child care. *Cogent Psychology*, 8(1), 1896119. https://doi.org/10.1080/23311908.2021.1896119

Javaid, Z. K., & Ramzan, M. (2026). Emotions deteriorate gastrointestinal health: Diagnosing problems through artificial intelligence and psychometric and psycholinguistic techniques. *World Journal of Psychiatry, 16*(3), 112543.

Javaid, Z. K., Ateeq, A., Khan, K., Milhem, M., Astal, A. Y. A., Ali, S. A., & Shahzad, M. H. (2025). Inclusive leadership and employee work engagement in the IT sector: the mediating roles of perceived organizational support, psychological safety, and organizational self-esteem. In *Studies in systems, decision and control* (pp. 1011–1023). https://doi.org/10.1007/978-3-031-84636-6_88

Javaid, Z. K., Khan, K., & Anjum, A. R. (2026). Workplace bullying and job wellbeing in banking sector: Emotional exhaustion as a mediator and perceived organisational support as a moderator. *Journal of Organizational Behavior Management*. https://doi.org/10.1080/1463922X.2026.2614601

Javaid, Z. K., Mahmood, K., & Ali, A. A. (2023). Mediating role of mindfulness between quality of life and workplace stress among working women. *Journal of Workplace Behavior, 4(1), 68–80.*

Jurgens, S., Howard, E., Einstein, D., Prieto, S., & Hayes, J. P. (2025). Perceived stress and cognitive decline: the moderating role of emotion regulation. *Innovation in Aging*, *9*(10), igaf099. https://doi.org/10.1093/geroni/igaf099

Kapoor, V., Yadav, J., Bajpai, L., & Srivastava, S. (2021). RETRACTED: Perceived stress and psychological well-being of working mothers during COVID-19: a mediated moderated roles of teleworking and resilience. *Employee Relations*, *43*(6), 1290–1309. https://doi.org/10.1108/er-05-2020-0244

Kavitha, N., Krishnan, M. M., Bhuvaneswari, M., Varghese, L., Puviarasi, R., & Nawale, R. (2022). A Study on Parenting Stress and Coping Strategies Adopted Among Working Mothers. *NeuroQuantology*, 20(8), 2201.

Khan, K., & Javaid, Z. K. (2023). Analyzing employee performance through workforce diversity management: Role of workforce diversity characteristics. *Foundation University Journal of Business & Economics,* 8(2), 85–101.

Khan, K., Javaid, Z. K., Butt, R. S., & Anjum, A. R. (2026). Digital human resources at work: How electronic human resource management influences modern organizational performance. *Journal of Human Resource and Leadership Management & Consultancy*. https://doi.org/10.35588/y77vyc30

Khan, M. A., & Al-Jahdali, H. (2023). The consequences of sleep deprivation on cognitive performance. *Neurosciences*, *28*(2), 91–99.

https://doi.org/10.17712/nsj.2023.2.20220108

Kim, E.-J., & Dimsdale, J. E. (2007). The Effect of Psychosocial Stress on Sleep: A Review of Polysomnographic Evidence. *Behavioral Sleep Medicine*, 5(4), 256–278. https://doi.org/10.1080/15402000701557383

Kohyama, J. (2021). Which is more important for health: sleep quantity or sleep quality? *Children*, *8*(7), 542. https://doi.org/10.3390/children8070542

Kong, J., Zhou, L., Li, X., & Ren, Q. (2023). Sleep disorders affect cognitive function in adults: An overview of systematic reviews and meta-analyses. *Sleep and Biological Rhythms*, 21(2), 133–142. https://doi.org/10.1007/s41105-022-00439-9

Li, Z., Zhong, T., & Meng, X. (2025). A meta-analysis study evaluating the effects of sleep quality on mental health among the adult population. *BMC Public Health*, 25(1), 2992. https://doi.org/10.1186/s12889-025-23709-w

Lo, J. C., Ong, J. L., Leong, R. L., Gooley, J. J., & Chee, M. W. (2016). Cognitive performance, sleepiness, and mood in partially sleep deprived adolescents: The Need for Sleep Study. *SLEEP*, *39*(3), 687–698. https://doi.org/10.5665/sleep.5552

Lupien, S., Maheu, F., Tu, M., Fiocco, A., & Schramek, T. (2007). The effects of stress and stress hormones on human cognition: Implications for the field of brain and cognition. *Brain and Cognition*, *65*(3), 209–237. https://doi.org/10.1016/j.bandc.2007.02.007

Ma, D., Akram, H., & Chen, I. H. (2024). Artificial Intelligence in Higher Education: A Cross-Cultural Examination of Students' Behavioral Intentions and Attitudes. *The International Review of Research in Open and Distributed Learning*, *25*(3), 134-157.

Ma, D., Akram, H., & Li, S. (2025). Assessing the role of physical activity in shaping students' academic motivation: the mediating role of mental health. *BMC Public Health*.

Maclean, E. I., Andrew, B., & Eivers, A. (2021). The Motherload: Predicting Experiences of Work-Interfering-with-Family Guilt in Working Mothers. *Journal of Child and Family Studies*, 30(1), 169–181. https://doi.org/10.1007/s10826-020-01852-9

Mantua, J., Brager, A. J., Alger, S. E., Adewale, F., Skeiky, L., Balkin, T. J., Capaldi, V. F., & Simonelli, G. (2020). Self-Reported Sleep need, subjective resilience, and cognitive performance following sleep loss and recovery sleep. *Psychological Reports*, *124*(1), 210–226. https://doi.org/10.1177/0033294119899896

Maqsood, A., Gul, S., Noureen, N., & Yaswi, A. (2024). Dynamics of perceived stress, stress appraisal, and coping strategies in an evolving educational landscape. *Behavioral Sciences*, *14*(7), 532. https://doi.org/10.3390/bs14070532

Mensah, A., Toivanen, S., & Diewald, M. (2022). Working Hours, Sleep Disturbance and Self-Assessed Health in Men and Women: A Multilevel analysis of 30 countries in Europe. *Frontiers in Public Health*, *10*, 818359. https://doi.org/10.3389/fpubh.2022.818359

Montanari, A., Wang, L., Birenboim, A., & Chaix, B. (2024). Urban environment influences on stress, autonomic reactivity and circadian rhythm: protocol for an ambulatory study of mental health and sleep. *Frontiers in Public Health*, *12*, 1175109. https://doi.org/10.3389/fpubh.2024.1175109

Munir, M., Javaid, Z. K., Mahmood, K., Fareed, M., & Mubeen, A. (2024). Mediating Role of Quality of Life between Perceived Stress and Sleep Quality among Patients with Rheumatoid Arthritis. *Journal of Health and Rehabilitation Research*, *4*(2), 1570–1575. https://doi.org/10.61919/jhrr.v4i2.11

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Nawaz, S., Qureshi, H. H., Aqeel, M., & Ramzan, M. (2021). MODALITY ANALYSIS OF THE STORY "THE BEAR" BY ANTON CHEKOV. *Jahan-e-Tahqeeq*, *4*(3), 116-123.

Nawaz, S., Sharif, S., Ramzan, M., & Nawaz, H. (2022). The portrayal of women in billboard advertisements installed in Bahawalpur, Punjab, Pakistan. *Harf-o-Sukhan*, *6*(1), 200-207.

Nisa, A. U., Zaman, A. S., & Ibrahim, M. (2024). Challenges of Working Mothers and its Effect on the Academic Performance of their Children. *Pakistan Journal of Gender Studies*, 24(2), 125–143.

Noor, A., & Dangwal, P. (2025). The Impact of Sleep Deprivation on Cognitive Functioning and Emotional Well-Being. *International Journal of Indian Psychology*, 13(2). https://www.ijip.co.in/index.php/ijip/article/view/9824

Olivieri, R., Lo Presti, A., Costa, S., Ariemma, L., & Fabbri, M. (2024). Mothers balancing work and family: The associations with emotional well-being, sleep–wake problems and the role of basic needs. *BMC Psychology*, 12(1), 750. https://doi.org/10.1186/s40359-024-02241-3

Pearson, O., Uglik-Marucha, N., Miskowiak, K. W., Cairney, S. A., Rosenzweig, I., Young, A. H., & Stokes, P. R. (2023). The relationship between sleep disturbance and cognitive impairment in mood disorders: A systematic review. *Journal of Affective Disorders*, *327*, 207–216. https://doi.org/10.1016/j.jad.2023.01.114

Rábago-Monzón, Á. R., Osuna-Ramos, J. F., Armienta-Rojas, D. A., Camberos-Barraza, J., Camacho-Zamora, A., Magaña-Gómez, J. A., & De La Herrán-Arita, A. K. (2025). Stress-Induced Sleep Dysregulation: The roles of astrocytes and microglia in neurodegenerative and psychiatric disorders. *Biomedicines*, *13*(5), 1121. https://doi.org/10.3390/biomedicines13051121

Rajgariah, R., Chandrashekarappa, S. M., Babu, K. V., Gopi, A., Ramaiha, N. M. M., & Kumar, J. (2020). Parenting stress and coping strategies adopted among working and non-working mothers and its association with socio-demographic variables: A cross-sectional study. *Clinical Epidemiology and Global Health*, *9*, 191–195. https://doi.org/10.1016/j.cegh.2020.08.013

Riemann, D., Spiegelhalder, K., Feige, B., Voderholzer, U., Berger, M., Perlis, M., & Nissen, C. (2009). The hyperarousal model of insomnia: A review of the concept and its evidence. *Sleep Medicine Reviews*, *14*(1), 19–31. https://doi.org/10.1016/j.smrv.2009.04.002

Scott, A. (2012). Lazarus and folkman's transactional model of stress and coping.

Seedat, S., & Rondon, M. (2021). Women's wellbeing and the burden of unpaid work. *BMJ*, *374*, n1972. https://doi.org/10.1136/bmj.n1972

Shafiq, M., & Iqbal, S. (2023). Extended family support and psychological adjustment among women in collectivistic societies. *Journal of Family Psychology*, 37(3), 421–432.

Shields, G. S., Sazma, M. A., & Yonelinas, A. P. (2016). The effects of acute stress on core executive functions: A meta-analysis and comparison with cortisol. *Neuroscience & Biobehavioral Reviews*, *68*, 651–668. https://doi.org/10.1016/j.neubiorev.2016.06.038

Szulewski, A., Howes, D., Van Merriënboer, J. J., & Sweller, J. (2020). From Theory to Practice: The application of cognitive load theory to the practice of medicine. *Academic Medicine*, *96*(1), 24–30. https://doi.org/10.1097/acm.0000000000003524

Tajik, O., Golzar, J., & Noor, S. (2025). Purposive sampling. *International Journal of Education & Language Studies*, 1-9.

Torres, A. J. C., Barbosa-Silva, L., Oliveira-Silva,

L. C., Miziara, O. P. P., Guahy, U. C. R., Fisher, A. N., & Ryan, M. K. (2024). The Impact of Motherhood on Women's Career Progression: A Scoping Review of Evidence-Based Interventions. *Behavioral Sciences*, *14*(4), 275. https://doi.org/10.3390/bs14040275

Vecchio, R. P. (1990). Theoretical and empirical examination of cognitive resource theory. *Journal of Applied Psychology*, 75(2), 141.

Yu, L., Buysse, D. J., Germain, A., Moul, D. E., Stover, A., Dodds, N. E., Johnston, K. L., & Pilkonis, P. A. (2012). Development of Short Forms From the PROMISTM Sleep *Disturbance and Sleep-Related Impairment Item Banks. Behavioral Sleep Medicine*, 10(1), 6–24. https://doi.org/10.1080/15402002.2012.636266

Zhang, J., Xiang, S., Li, X., Tang, Y., & Hu, Q. (2024). The impact of stress on sleep quality: a mediation analysis based on longitudinal data. *Frontiers in Psychology*, *15*, 1431234. https://doi.org/10.3389/fpsyg.2024.1431234

Zulfiqar, A., Kuskoff, E., Povey, J., & Baxter, J. (2024). Homemaker or breadwinner: Labour force participation of Pakistani women. *Community, Work & Family*, 1–20. https://doi.org/10.1080/13668803.2024.2336031