

Influence of Work-Life Balance on Mental Health Among Nurses: The Mediating Role of Psychological Capital and Job Satisfaction

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Background: Nurses constitute the backbone of the healthcare sector, often confronting elevated levels of work-related stress and emotional demands that can profoundly impact their mental well-being. Mental health is critical to nursing practice as it directly influences job performance, patient care quality, and workforce sustainability. This study examines the effects of work-life balance on the mental health of nurses in Pakistan while examining the intermediary effects of psychological capital and job satisfaction.

Methods: A descriptive cross-sectional survey was conducted from twenty-seven public and private hospitals in Multan, Pakistan, between December 2023 and March 2024. The research employed meticulously validated measurement tools: Work-Life Balance (WLB) Scale, Psychological Capital Questionnaire 12 (PCQ-12), Job Satisfaction Survey (JSS), and General Health Questionnaire 12 (GHQ-12) to collect data on 578 participants. Statistical analysis was performed using SPSS and AMOS to investigate direct and indirect relationships among study constructs.

Results: The results indicated that work-life balance positively influences both psychological capital ($\beta = 0.083$, $p < 0.05$) and job satisfaction ($\beta = 0.113$, $p < 0.01$), which, in turn, significantly contributes to better mental health outcomes among nurses. Sequential mediation analysis confirmed that psychological capital and job satisfaction (Indirect effect=0.022, 95% CI: 0.01–0.037) mediate between work-life balance and mental health, suggesting that a healthy work-life balance enhances psychological resources and job satisfaction, thereby improving mental health.

Conclusion: The findings highlight the importance of fostering a supportive work environment within the nursing community that promotes work-life balance, enhances psychological resources, and improves job satisfaction to maintain nurses' overall mental health.

Keywords: Work-Life Balance, Mental Health, Psychological capital, Job Satisfaction, Nurses

Background

The challenge of achieving a harmonious balance between one's personal life and professional commitments has been exacerbated by the far-reaching effects of globalization. This is compounded by the encroachment of novel technologies into our private lives, the blurring of boundaries between work and family time, the adoption of new organizational paradigms, and shifts like work.¹ Such issues are further magnified among professions characterized by rigorous schedules and extended hours.² In this context, the nursing profession exemplifies a domain where these challenges are particularly acute. A nurse's responsibilities are exacting and immediate, requiring swift and adept interventions to meet the community's health care needs. Moreover, the healthcare sector, of which nursing is integral, operates round-the-clock, year-round, often necessitating that nurses exceed the customary 40-hour full-time work week to provide

continuous services.³ The concept of work-life balance pertains to the array of individual and structural factors that shape how individuals reconcile their occupational duties with personal pursuits, aligning this balance with their unique values, objectives, and ambitions.^{4,5} Research has indicated that employees who achieve a commendable equilibrium between their professional and personal lives typically report diminished stress and augmented job satisfaction, which, in turn, fosters more favorable mental health outcomes. For instance, Haar et al⁶ demonstrated that work-life balance is directly proportional to job satisfaction and inversely proportional to psychological distress. These insights imply that individuals proficient in juggling their vocational obligations with personal endeavors are more predisposed to experience beneficial mental health and overall well-being. Bacharach, Bamberger, and Conley⁷ highlighted that educators who attain a superior work-life balance manifest reduced emotional exhaustion and heightened life contentment. This equilibrium becomes especially crucial in professions necessitating substantial emotional engagement, where occupational demands can inadvertently trespass into one's realm, culminating in stress and professional burnout. The significance of achieving work-life balance is further underscored within healthcare environments characterized by exceptionally stringent demands on professionals. Doctors and allied health professionals who manage to maintain a balance between their work and personal lives are less likely to experience burnout and more likely to report higher job satisfaction and better mental health. Research by Wallace and Lemaire⁸ highlighted that healthcare professionals with better work-life balance are more resilient and capable of managing the pressures of their roles without compromising their mental health. While some studies have addressed the issue of work-life balance among nurses, there is a lack of comprehensive research that examines explicitly how work-life balance influences mental health outcomes in this population.

In recent decades, the advent of positive psychology has spurred researchers to investigate strategies for addressing adverse employee dispositions, such as fatigue, anxiety, and depression, by examining them through the lens of psychological resources.^{9,10} Internal psychological constructs such as self-efficacy, resilience, hope, and optimism have been shown to alleviate symptoms of fatigue.¹¹ Psychological capital, a critical positive psychological resource, encompasses these constructs. Luthans defines psychological capital as “a positive psychological state that an individual exhibits during growth and development.”¹² Psychological capital, which encompasses four quantifiable and developable mental resources—self-efficacy, resilience, hope, and optimism—may offer crucial insights into understanding stress variation and the propensity for negative behaviors.^{13,14} More precisely, psychological capital represents a constructive assessment of one's capacity to confront challenges persistently, encapsulating its four dimensions. Furthermore, psychological capital transcends traditional notions of human and social capital, focusing on “who you are currently” and “who you have the potential to become” in the future, contingent upon developing and caring for your psychological resources within the workplace.^{14–16} Numerous empirical researches have delved into the connections between psychological capital and mental health, underscoring its relevance across various professional domains. Illustrating this point, a meta-analysis revealed that psychological capital is positively linked to enhanced psychological well-being and inversely related to stress and anxiety among employees.¹⁰ These findings suggested that individuals with strong psychological resources are more resilient in facing challenges and can better maintain their mental health. In educational environments, Du et al¹⁷ found that teachers with elevated levels of psychological capital experienced improved mental health outcomes and demonstrated greater efficacy in their teaching roles, showcasing the protective benefits of psychological capital in high-stress occupations. This association is further evident in healthcare contexts, where medical practitioners and affiliated health specialists with increased psychological capital display superior mental health outcomes, characterized by reduced incidences of depression and anxiety.¹⁸

Job satisfaction is a well-established predictor of mental health across various professions,¹⁹ with a substantial body of research demonstrating that satisfied individuals with their jobs tend to experience better mental health outcomes. The connection between job satisfaction and mental health is particularly relevant in high-stress professions, where job satisfaction can serve as a buffer against the negative effects of work-related stressors, such as burnout, anxiety, and depression. Studies have consistently shown that employees who report higher job satisfaction also report lower levels of psychological distress. For instance, Faragher, Cass, and Cooper¹⁹ conducted a meta-analysis that found a strong inverse relationship between job satisfaction and mental health issues such as depression and anxiety. Their research suggests that job satisfaction contributes significantly to overall well-being, highlighting the importance of a positive work environment in maintaining mental health. Klassen and Chiu²⁰ indicated that teachers with higher job satisfaction

experience lower stress levels and emotional exhaustion in educational settings. This is critical in professions like teaching, where high job demands and emotional labor are prevalent. The positive effects of job satisfaction on mental health in these settings underscore the need for supportive work environments that foster satisfaction and well-being. Healthcare professionals, particularly doctors, have similarly demonstrated the importance of job satisfaction for mental health. Research by Shanafelt et al²¹ found that job satisfaction among physicians is closely tied to their mental health, with higher satisfaction leading to lower rates of burnout and depression. The study underscored the pivotal role of job satisfaction in cultivating resilience and counteracting mental health challenges in high-stress healthcare milieus. While the linkage between job satisfaction and mental health is well-attested across diverse professions, it remains imperative to deepen our understanding of this relationship within nursing, especially in emergent countries like Pakistan. Nurses, positioned at the vanguard of healthcare provision, routinely contend with substantial stress and suboptimal conditions. The onerous nature of their duties, in tandem with emotional involvement and constrained resources, amplifies their vulnerability to mental health concerns.

Theoretical Foundations

This study's theoretical basis lies within the Job Demands-Resources (JD-R) Model²² and Positive Psychology,²³ providing a holistic lens to explore the interrelationships between work-life balance, psychological capital, job satisfaction, and mental health in nursing professionals. The JD-R Model, introduced by Demerouti et al,²² is an authoritative paradigm elucidating the impact of job demands and resources on employee well-being and productivity. As posited by the JD-R Model, unbalanced job demands can precipitate strain and burnout unless counterbalanced by sufficient job resources. However, when job resources are available, they can buffer the negative effects of job demands and promote employee engagement and well-being. In this study, work-life balance is conceptualized as a crucial job resource. A healthy work-life balance provides nurses with the time and energy to recover from the demands of their jobs, thereby reducing the risk of burnout and enhancing overall well-being. This balance is vital in nursing, where the demands are high and the risk of burnout is significant. Xanthopoulou et al²⁴ and Bakker, Hakanen, and Demerouti²⁵ supported this notion, demonstrating that job resources such as work-life balance can significantly reduce the impact of job demands on burnout. Similarly, Bauer et al²⁶ found that job resources are essential for sustaining employee engagement, particularly in high-stress environments like healthcare. The JD-R Model suggests that nurses with a work-life balance dynamic are more likely to experience positive outcomes, such as higher job satisfaction and better mental health, which aligns with the central hypotheses of the present research.

The study also draws on principles from Positive Psychology, particularly the concept of psychological capital. Luthans et al²⁷ introduced psychological capital as a core construct in Positive Psychology, emphasizing its role in enhancing employee performance and well-being. Psychological capital is a critical personal resource that helps individuals navigate challenges and capitalize on opportunities. In the context of the JD-R Model, psychological capital is a personal resource that buffers against job demands and enhances job satisfaction and mental health. The study hypothesizes that work-life balance contributes to developing psychological capital and improving nurses' job satisfaction and mental health. This sequential relationship is supported by the broaden-and-build theory,²⁸ which posits that positive emotions and psychological resources build on each other, creating upward spirals of well-being. Empirical studies have shown that psychological capital is strongly associated with positive workplace outcomes, including job satisfaction and psychological well-being.^{10,29}

Job satisfaction is a well-established predictor of mental health in the workplace.²⁴ According to the JD-R Model,²² job satisfaction is influenced by both job demands and resources. A well-balanced work-life situation can enhance job satisfaction by reducing role conflict and stress, leading to better mental health outcomes. This is particularly relevant in nursing, where job satisfaction is closely tied to perceived support, recognition, and the ability to manage work-related stress. Judge et al³⁰ highlighted the strong connection between job satisfaction and overall well-being, indicating that satisfied employees report better mental health. The sequential mediation model proposed in this study, where work-life balance influences mental health through the mediating roles of psychological capital and job satisfaction, finds support in both the JD-R Model and Positive Psychology. These theoretical frameworks suggest that enhancing work-life balance can initiate a positive chain reaction: improved psychological capital leads to higher job satisfaction, promoting better

mental health. Xanthopoulou et al²⁴ have demonstrated the importance of job resources and psychological capital in fostering job satisfaction and mental health, particularly in demanding work environments. Nurses in Pakistan face unique challenges, including high workloads, emotional demands, and often limited job resources. By applying the JD-R Model and Positive Psychology, this study seeks to provide a deeper understanding of how work-life balance, psychological capital, and job satisfaction interact to influence the mental health of nurses in this region. The theoretical framework supports the study's model, suggesting that interventions to improve work-life balance and build psychological capital could significantly positively affect job satisfaction and mental health (Figure 1).

Study Contribution

This investigation was meticulously conceived to address significant lacunae in the scholarly discourse about mental health and the overall well-being of nursing personnel in Pakistan. Although antecedent studies have delved into the effects of work-life balance, psychological capital, and job satisfaction on mental health, a paucity of holistic evidence concerning these associations within Pakistani healthcare milieus has been observed. Predominantly, research endeavors have been anchored in Western contexts, engendering a deficit in discerning the interplay of these factors within South Asian settings, especially among nurses negotiating distinct occupational and personal challenges. The nursing profession in Pakistan faces unique challenges, including severe workforce shortages, long working hours, and cultural expectations that often place additional emotional and social burdens on healthcare workers. These systemic and cultural stressors, coupled with insufficient workplace support, make the mental health of nurses a particularly critical area of study. Understanding these dynamics within Pakistan's healthcare system can offer insights into addressing similar challenges in other developing contexts. Consequently, this study aims to evaluate the direct and mediated relationships between work-life balance, psychological capital, job satisfaction, and mental health among nurses in Multan City, Pakistan. By examining psychological capital and job satisfaction as sequential mediators, the research seeks to understand better how workplace resources and psychological factors interact to influence mental health in high-stress healthcare environments. Beyond work-life balance, psychological capital, and job satisfaction, other factors such as workplace policies, interpersonal dynamics, and organizational culture also significantly influence mental health outcomes among nurses. While this study primarily focuses on work-life balance, psychological capital, and job satisfaction, acknowledging these

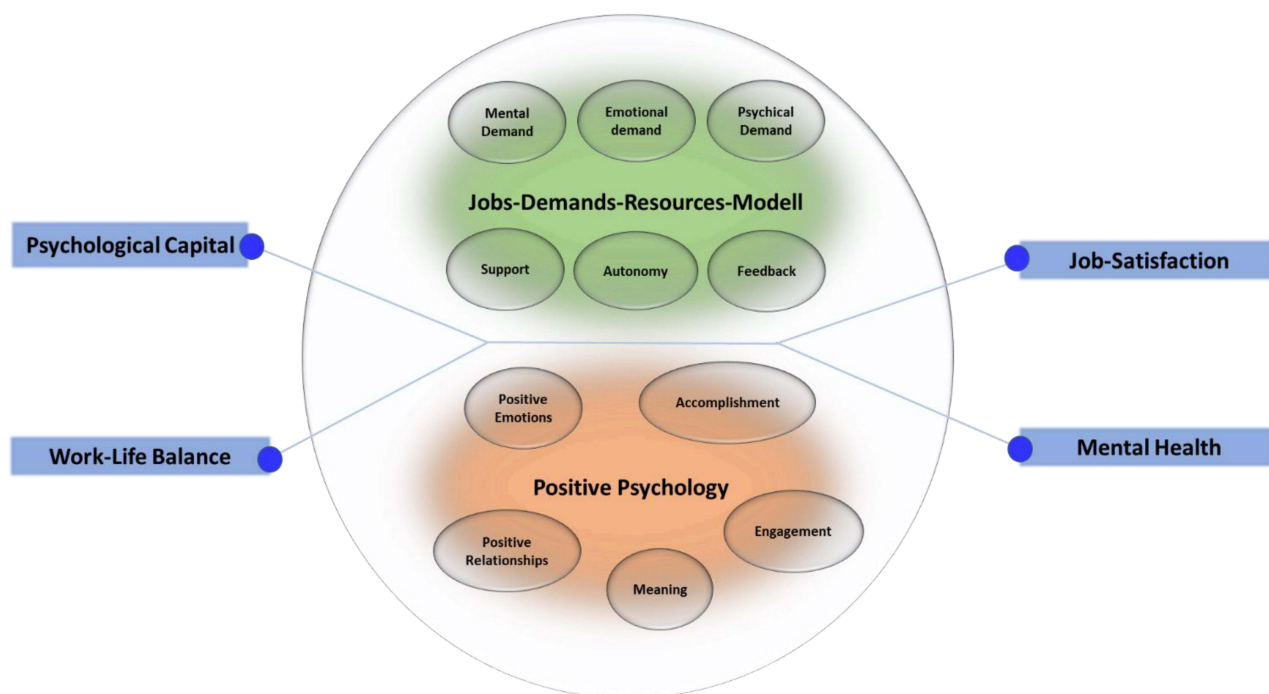


Figure 1 Theoretical conceptual study model.

additional influences provides a broader context for understanding the multifaceted nature of mental health challenges in nursing.

This research is essential for providing insights that can inform healthcare policy and practice in Pakistan. By identifying the key factors that influence nurses' mental health, this study seeks to contribute to developing interventions that can enhance job satisfaction and psychological resilience, ultimately leading to improved mental health outcomes. Multan was selected as the study site due to its diverse mix of public and private hospitals, making it an ideal location for examining these issues. The city's strategic importance in Punjab and its varied healthcare infrastructure provided a representative environment for assessing nurses' challenges. The graphical illustration of the present research is shown in Figure 2. Consequently, the present research objectives are:

Study objective 1: To evaluate the direct impact of work-life balance on the mental health of nurses.

Study objective 2: To investigate the mediating roles of psychological capital and job satisfaction on the relationship between work-life balance and mental health among nurses.

Methods

Study Design and Setting

This cross-sectional study was conducted between December 2023 and March 2024 in the Multan Division, a significant healthcare hub in the Punjab province of Pakistan. Multan was chosen for its diverse population and a mix of public and private healthcare facilities, making it an ideal setting to examine nurses' mental health and well-being across different healthcare environments.

Population and Sampling

The target population comprised all registered nurses in the 31 public and private hospitals within the Multan Division.³¹ After obtaining permission, 27 hospitals agreed to participate in the study. The sample size was determined using a power analysis based on an expected moderate effect size, a confidence level of 95%, and a statistical power of 80%. This calculation indicated that a minimum of 385 responses would be needed to detect significant effects. Initially, 654 responses were received. After data cleaning, which involved removing incomplete and incorrect responses, we were left with 578 valid responses, ensuring robust statistical analysis.

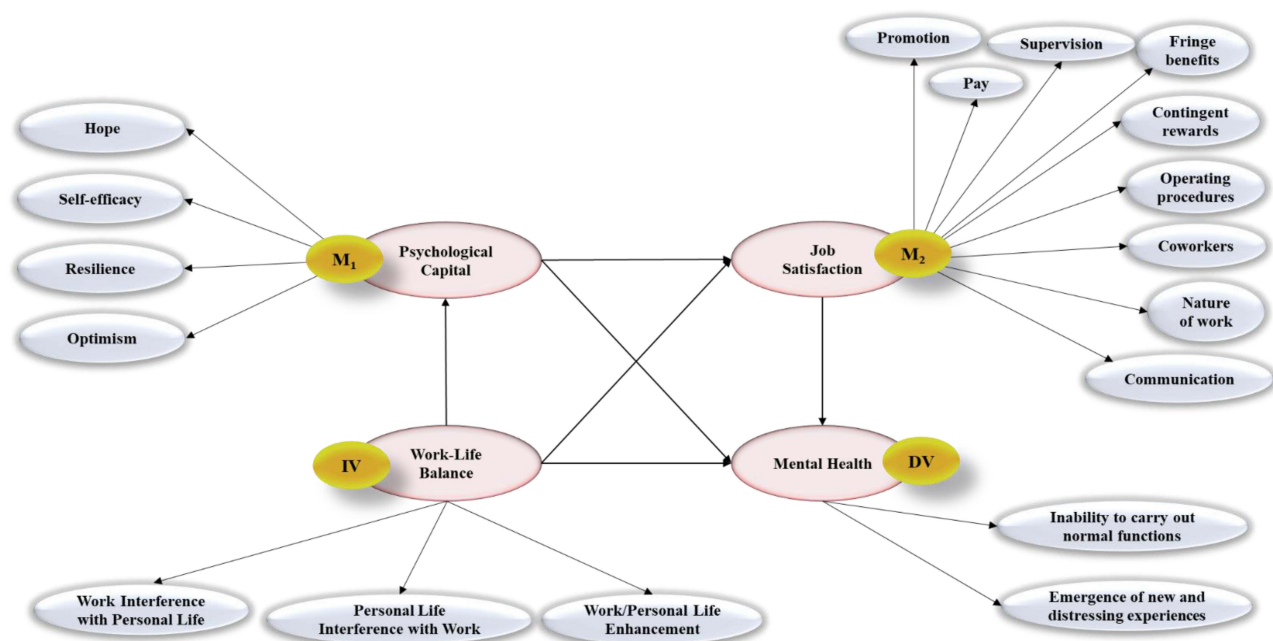


Figure 2 The graphical presentation of the study concept (M1: Mediator 1, M2: Mediator 2, IV: independent variable, DV: dependent variable).

Eligibility Criteria

The inclusion criteria for the study were all registered nurses currently employed in the participating hospitals, regardless of their role or department. Nurses on long-term leave during the data collection period or with less than six months of experience at their current hospital were excluded to ensure that participants had sufficient exposure to their work environment to provide meaningful responses.

Data Collection and Participant Engagement

Data were amassed utilizing a self-administered online questionnaire disseminated via electronic mail. The electronic mailing addresses of the nursing personnel were acquired from the administrative divisions of the hospitals. To foster participation, the data collection initiative was launched with informational sessions and promotional materials dispatched to hospital administrations and directly to nurses. These communications underscored the study's relevance in enhancing work-life balance and mental health among nursing professionals and assured participants of their confidential and anonymous responses. Moreover, periodic reminders were issued to bolster survey completion rates.

Data Cleaning

Data cleaning was performed on the 654 responses initially received to ensure the dataset's quality and reliability. Incomplete responses, defined as those missing significant portions of data (more than 10% of the questionnaire), and incorrect responses, where inconsistencies or errors were detected, were removed. As a result, 76 responses were excluded, leaving 578 valid responses for analysis. This approach aligns with best practices, which suggest that datasets with less than 5% missing data are generally acceptable for analysis.³²

Measures

Demographic Characteristics

Socio-demographic characteristics of the study participants, including age, gender, educational level, marital status, number of children, year of experience, employment status, shift work, and income level were collected ([Supplementary File 1](#)).

Work-Life Balance

The work-life balance scale by Hayman³³ is a tool designed to measure how individuals feel they are managing their work and personal life responsibilities effectively. The scale consists of 3 dimensions: Work Interference with Personal Life, Personal Life Interference with Work, and Work/Personal Life Enhancement. The work-life balance scale consists of 15 items, with five items on each scale recorded on a 7-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree", with a higher score indicating a strong balance between work and life. The scale is widely used in organizational and psychological research to assess how well individuals balance their work and personal lives. It is instrumental in studies exploring the impact of work-life balance on employee well-being, job satisfaction, productivity, and overall life satisfaction.^{34–36}

Psychological Capital

Psychological Capital Questionnaire 12 (PCQ-12) is a short version of the original PCQ-24 based on psychological capital, which focuses on four distinct dimensions of Hope, Self-efficacy, Resilience, and Optimism.^{27,37} The responses are recorded on a 6-point Likert scale from "Strongly Disagree" to "Strongly Agree", with a high score indicating a strong presence of psychological capital. The scale has been widely adopted across different settings, making it a valuable tool for organizations, educational institutions, clinical practices, and personal development.^{38–40}

Job Satisfaction

Job satisfaction survey (JSS) is a 36-item tool designed to measure employee satisfaction across various aspects of their job.⁴¹ The scales cover different aspects such as pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, coworkers, nature of work, and communication. Participants are requested to respond to their

level of agreement with each statement on a 6-point Likert scale from “Strongly Disagree” to “Strongly Agree.” A higher score indicates a higher level of satisfaction level. The JSS scale has been adopted and validated across various settings and populations, showing good to excellent internal consistency and validity.^{24,42–45}

Mental Health

The mental health of the participants is measured using General Health Questionnaire 12 (GHQ-12).^{46,47} The GHQ-12 is widely used in clinical and research settings to assess mental health in the general population and specific subgroups such as employees, students, and patients. It is particularly valued for its brevity, reliability, and ease of use. Respondents indicate how they have felt over the past few weeks, with response options typically ranging from “Not at all” to “Much more than usual.” The GHQ-12 has demonstrated high internal consistency, with Cronbach’s alpha values typically reported between 0.82 and 0.90 in various populations.^{48–50}

Ethical Considerations

The research was conducted in accordance with the ethical guidelines of the Declaration of Helsinki. Prior to data collection, approval was obtained from the Institutional Review Board (IRB) of the Nishtar Medical College & Hospital Multan (Approval# IRB-23-NMC/5031), and permissions were secured from each participating hospital. All participants provided informed consent electronically prior to the completion of the questionnaire. Participation was voluntary, and confidentiality was maintained throughout the study.

Statistical Analysis

Descriptive statistics were calculated to summarize the central tendencies and dispersions of each construct, while reliability and validity were assessed through Cronbach’s alpha, composite reliability (CR), and average variance extracted (AVE). Multicollinearity was checked using variance inflation factors (VIFs) to ensure the accuracy of the regression models. Confirmatory factor analysis (CFA) was conducted to evaluate the model fit for each construct, using fit indices such as RMSEA, SRMR, CFI, TLI, and χ^2/df . Bivariate correlations were performed to explore the relationships among the study variables. Subsequently, multiple regression analysis was applied to assess the direct effects of work-life balance on psychological capital, job satisfaction, and mental health and the effects of psychological capital on job satisfaction and mental health and job satisfaction on mental health. Finally, sequential mediation analysis was conducted using bootstrapping techniques to evaluate the indirect effects of work-life balance on mental health through psychological capital and job satisfaction, accounting for potential mediation pathways. All analyses were performed using SPSS and AMOS software.

Results

In Table 1, the descriptive statistics, reliability, and validity metrics for the study constructs provide an overview of the key variables involved in the analysis. The measurement framework employed in this study is characterized as a reflective measurement model. In the context of this model, confirmatory factor analysis employing maximum likelihood estimation is conventionally utilized to evaluate its reliability, convergent validity, and discriminant

Table 1 Descriptive Statistics, Reliability, and Validity Metrics for Study Constructs

	Descriptive	Collinearity	Construct reliability		Convergent validity
	M (SD)	VIF	α	CR	AVE
Work-life balance	36.10 (10.19)	1.29	0.87	0.88	0.617
Psychological capital	25.18 (8.51)	1.45	0.89	0.91	0.672
Job satisfaction	112.01 (30.34)	1.35	0.88	0.90	0.591
Mental health	18.75 (6.17)	1.04	0.91	0.93	0.633

Abbreviations: M, mean; SD, standard deviation; VIF, variance inflation factor; α , Cronbach’s alpha; CR, composite reliability; AVE, average variance extracted.

validity.⁵¹ The mean (M) and standard deviation (SD) for each construct indicated moderate to high variables across the sample. The variance inflation factor (VIF) values were all well below the threshold of 10, suggesting that multicollinearity is not a concern in this dataset. The Cronbach's alpha (α) values range from 0.87 to 0.91, indicating excellent internal consistency for all constructs. The construct reliability (CR) values are all above 0.88, reinforcing the reliability of the measures. Additionally, the average variance extracted (AVE) values exceed the 0.50 benchmark, confirming convergent validity for each construct.

The model adequacy analysis presents the fit indices for the measurement models of the four study constructs. The root means square error of approximation (RMSEA) values are below 0.05, indicating a close fit of the models to the data. The standardized root mean square residual (SRMR) values are under 0.08, which is acceptable and suggests a good fit. The comparative fit index (CFI) and Tucker-Lewis index (TLI) values are all above 0.95, demonstrating excellent model fit across all constructs. The chi-square divided by degrees of freedom (χ^2/df) ratios are all below 2, further supporting the adequacy of the models in representing the data structure (Table 2).

Table 3 demonstrates the bivariate correlational analysis that highlighted the relationships between the key study constructs. Work-life balance showed weak but statistically significant positive correlations with psychological capital ($r = 0.11$, $p < 0.05$), job satisfaction ($r = 0.14$, $p < 0.05$), and mental health ($r = 0.18$, $p < 0.05$). Psychological capital was strongly correlated with job satisfaction ($r = 0.68$, $p < 0.001$) and moderately correlated with mental health ($r = 0.43$, $p < 0.001$). Job satisfaction also exhibited a strong positive correlation with mental health ($r = 0.55$, $p < 0.001$). These correlations suggested that while work-life balance positively correlates with the other constructs, more robust relationships were observed between psychological capital, job satisfaction, and mental health.

The regression analysis examined the direct effects of work-life balance on psychological capital, job satisfaction, and mental health, as well as the effects of psychological capital on job satisfaction and mental health and the effect of job satisfaction on mental health (Table 4). The standardized coefficients indicated that work-life balance has a modest positive effect on psychological capital ($\beta = 0.083$, $p < 0.05$) and a slightly more substantial effect on job satisfaction ($\beta = 0.113$, $p < 0.01$). However, its direct effect on mental health is weaker ($\beta = 0.102$, $p < 0.05$). Psychological capital significantly predicts job satisfaction ($\beta = 0.574$, $p < 0.001$) and mental health ($\beta = 0.385$, $p < 0.001$), while job satisfaction has a strong positive effect on mental health ($\beta = 0.451$, $p < 0.001$). These results indicated that psychological capital and job satisfaction mediated the relationship between the participants' work-life balance and mental health.

Table 2 Model Adequacy Analysis

Study Constructs	RMSEA	SRMR	CFI	TLI	χ^2/df
Work-life balance	0.045	0.035	0.961	0.952	1.79*
Psychological capital	0.041	0.032	0.973	0.967	1.53*
Job satisfaction	0.048	0.039	0.954	0.944	1.81*
Mental health	0.043	0.034	0.961	0.951	1.68*
Overall	0.042	0.035	0.966	0.953	1.73*

Notes: * $p < 0.05$. χ^2/df , chi-square/degrees of freedom.

Abbreviations: RMSEA, root mean square error of approximation; SRMR, Standardized root mean square residual; CFI, Comparative fit index; TLI, Tucker-Lewis index.

Table 3 Bivariate Correlational Analysis

	1	2	3	4
1. Work-life balance	1			
2. Psychological capital	0.11**	1		
3. Job satisfaction	0.14**	0.68***	1	
4. Mental health	0.18**	0.43***	0.55***	1

Note: *** $p < 0.001$. ** $p < 0.01$.

Table 4 Regression Analysis

	$(R^2 = 0.09)$		$(R^2 = 0.37)$		$(R^2 = 0.21)$	
	Psychological capital		Job satisfaction		Mental health	
	β	t	β	t	β	t
Work-life balance	0.083	0.81*	0.113	2.75**	0.102	1.09*
Psychological capital			0.574	13.67***	0.385	8.75***
Job satisfaction					0.451	11.56***

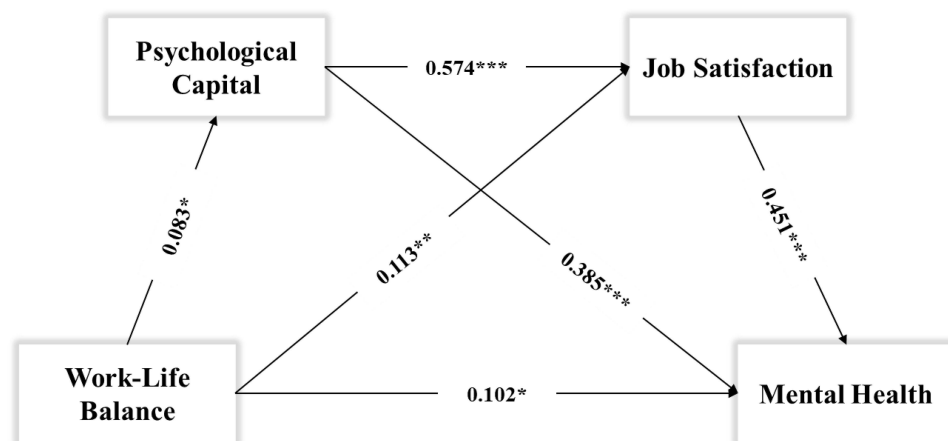
Notes: *** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. β : standardized coefficient. R^2 : coefficient of determination.

Table 5 Sequential Mediation Analysis

	Effect size	Boot LCI	Boot ULCI	Result
Work-life balance $\rightarrow$ Mental health	0.102	0.08	0.187	Supported
Work-life balance $\rightarrow$ Psychological capital $\rightarrow$ Mental health	0.032	0.01	0.054	Supported
Work-life balance $\rightarrow$ Job satisfaction $\rightarrow$ Mental health	0.051	0.03	0.083	Supported
Work-life balance $\rightarrow$ Psychological capital $\rightarrow$ Job satisfaction $\rightarrow$ Mental health	0.022	0.01	0.037	Supported
Total effect	0.207	0.178	0.452	

Abbreviations: Boot SE, Bootstrap standard error; Boot LCI, Bootstrap lower confidence interval; Boot UCI, Bootstrap upper confidence interval.

Table 5 exhibited the outcomes of sequential mediation analysis, which revealed the indirect effects of work-life balance on mental health through psychological capital and job satisfaction. The direct effect of work-life balance on mental health was significant (effect size = 0.102, 95% CI: 0.08–0.187). The indirect pathway through psychological capital (work-life balance $\rightarrow$ psychological capital $\rightarrow$ mental health) showed a more minor but significant effect (effect size = 0.032, 95% CI: 0.01–0.054). The pathway through job satisfaction (work-life balance $\rightarrow$ job satisfaction $\rightarrow$ mental health) also demonstrated a significant effect (effect size = 0.051, 95% CI: 0.03–0.083). Additionally, the sequential pathway through psychological capital and job satisfaction (work-life balance $\rightarrow$ psychological capital $\rightarrow$ job satisfaction $\rightarrow$ mental health) indicated a modest but significant indirect effect (effect size = 0.022, 95% CI: 0.01–0.037). The total effect of work-life balance on mental health, combining all direct and indirect effects, was also significant (effect size = 0.207, 95% CI: 0.178–0.452). These results confirmed that psychological capital and job satisfaction were significant mediators in the relationship between work-life balance and mental health, with a sequential mediation effect also contributing to the overall relationship (Figure 3).

**Figure 3** The Sequential Path Mediation Analysis (*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$).

Discussion

This study aimed to explore the relationships between work-life balance, psychological capital, job satisfaction, and general mental health among nurses in Pakistan, offering a more comprehensive analysis than previous research by incorporating these variables as mediators. The findings indicated that work-life balance positively influences psychological capital and job satisfaction, significantly enhancing mental health. The sequential mediation analysis further revealed that the effects of work-life balance on mental health are partly mediated by these factors, emphasizing their importance in the overall well-being of nurses. These results suggest that workplace interventions should focus on enhancing psychological capital and job satisfaction to improve mental health outcomes in this population effectively.

Our preliminary findings exhibited a direct effect of work-life balance on the mental health of nurses that was found to be positive but not particularly strong, aligning with the first study hypothesis that posited a direct relationship between these variables. This finding is consistent with previous research conducted in similar healthcare settings, where work-life balance has been shown to influence mental health outcomes, though often with varying degrees of impact.^{6,52–54} One possible explanation for the modest strength of this association could be the highly demanding and stressful nature of nursing in Pakistan, where external factors such as workload, staffing shortages, and the emotional toll of patient care may dilute the positive effects of work-life balance.^{55–57} Moreover, cultural expectations and societal norms regarding gender roles and family responsibilities might also contribute to this weaker association, as nurses may face additional pressures that complicate their ability to maintain a healthy balance between work and personal life. Thus, while work-life balance remains an essential factor, its direct influence on mental health may be moderated by other contextual and individual factors within this specific population.

In addition, the study revealed that work-life balance had a positive and more pronounced effect on job satisfaction than psychological capital, as hypothesized in the second and third hypotheses. This indicated that nurses who experience a better balance between work and personal lives tend to report higher levels of job satisfaction. This finding is consistent with prior evidence, demonstrating that work-life balance is a significant predictor of job satisfaction,^{58,59} particularly in healthcare settings where work demands can be intense.^{57,60} The more potent effect on job satisfaction suggests that nurses who balance their work responsibilities and personal life are more likely to feel satisfied with their job roles because they experience less conflict between work and personal commitments.⁶ In contrast, while positive, the effect of work-life balance on psychological capital was less pronounced. This aligns with the notion that psychological capital is influenced by a broader range of factors, including personal traits and workplace support systems.²⁷ Although work-life balance enhances psychological capital, its impact may be moderated by individual differences in how nurses perceive and manage stress and the availability of organizational resources to support employee well-being. These findings suggested that while improving work-life balance is crucial for fostering job satisfaction, additional interventions might be necessary to bolster psychological capital among nurses more significantly. The direct effects of the mediators on mental health revealed that psychological capital had a more substantial positive impact on mental health than job satisfaction, which is consistent with the existing literature. Avey et al¹⁰ and Luthans et al²⁷ have shown that psychological capital is critical in promoting mental health, particularly in high-stress professions like nursing. The strong association between psychological capital and mental health suggests that nurses with higher levels of these psychological resources are better equipped to cope with the stresses of their job, thereby maintaining better mental health. This relationship is likely because psychological capital directly enhances an individual's ability to manage stress and recover from adversity, which is crucial for sustaining mental well-being.^{27,61}

On the other hand, the impact of job satisfaction on mental health, while significant, was less pronounced. This finding aligns with research by Faragher, Cass, and Cooper,¹⁹ who reported that while job satisfaction contributes to overall well-being, its effect on mental health is often indirect and mediated by factors such as work environment and personal life stressors. The relatively weaker effect of job satisfaction could also be attributed to the multifaceted nature of the construct, which encompasses not only mental well-being but also factors such as professional growth, recognition, and work conditions, which may not directly influence mental health to the same extent as psychological capital.³⁰ These findings underscore the importance of fostering psychological capital to enhance mental health outcomes while recognizing that job satisfaction, although necessary, may play a more supportive role in this context.

The sequential mediation analysis revealed that psychological capital and job satisfaction significantly mediated the relationship between work-life balance and mental health, with a notable pathway through psychological capital leading to job satisfaction and ultimately impacting mental health. This finding aligns with several prior investigations,^{16,62,63} emphasizing the cascading effects of psychological resources and job-related attitudes on mental health. Specifically, when nurses experience a balanced work-life, they are likely to develop higher psychological capital, which directly improves their mental health and enhances their job satisfaction, a critical factor that further contributes to better mental well-being.⁶⁴ Sequential mediation suggested that psychological capital is a foundational resource that enables individuals to derive greater job satisfaction and positively impact their mental health. This cascading effect is supported by the broaden-and-build theory proposed by Fredrickson,²⁸ which posits that positive emotions and psychological resources can broaden an individual's thought-action repertoire, building enduring personal resources such as job satisfaction. Karatepe and Karadas⁶⁵ also supported this pathway, indicating that employees with high psychological capital are more likely to experience job satisfaction, a buffer against the negative impacts of work-related stress on mental health.

Study Implications

The insights derived from this study hold significant relevance for the welfare and professional engagement of nurses in Pakistan. Recognizing the crucial role that work-life balance plays in enhancing both psychological capital and job satisfaction, thereby positively impacting mental health, it becomes imperative for healthcare entities in Pakistan to champion initiatives that cultivate a wholesome work-life balance among nursing professionals. By implementing policies that facilitate flexible work schedules, ensure adequate staffing, and establish support mechanisms for mitigating job-related stress, healthcare institutions can foster an atmosphere that augments job satisfaction and fortifies psychological resilience among nurses.

Furthermore, the pronounced connection between psychological capital and mental health indicates that interventions aimed at bolstering psychological resources, such as training in resilience, programs for stress management, and seminars on self-efficacy, hold significant promise in enhancing the mental wellness of nurses. These initiatives should be seamlessly integrated into the ongoing professional advancement of nurses, equipping them with the necessary tools to navigate the rigorous demands inherent to their profession.

Additionally, the sequential mediation effect discerned in this study underscores the cruciality of concurrently addressing psychological capital and job satisfaction. Healthcare administrators ought to contemplate multifaceted strategies that concurrently enrich psychological capital and job satisfaction, fostering a more nurturing and mentally conducive work environment. Such strategies might encompass recognition schemes, prospects for career progression, and the cultivation of a positive workplace ethos that values and supports the contributions of nursing staff. These revelations underscore the imperative for an integrated approach to uplifting the well-being of nurses in Pakistan, where endeavors to refine work-life balance, fortify psychological capital, and enhance job satisfaction are vital for sustaining a mentally hale nursing workforce. The materialization of these recommendations could transpire in improved occupational efficacy, diminished professional exhaustion, and more comprehensive patient care, ultimately benefitting the expansive healthcare ecosystem in Pakistan.

Limitations

The present study is not without its limitations, which warrant careful consideration. Firstly, a cross-sectional research design inherently constrains our capacity to infer causality within the observed relationships between work-life balance, psychological capital, job satisfaction, and mental health. Longitudinal investigations are necessary to ascertain these associations' directionality and causal nature. Secondly, this study was geographically limited to the Multan Division, which may restrict the generalizability of the findings to other regions or broader populations. Additionally, while the study collected a wide range of socio-demographic data, certain variables such as department type and hospital size were not included, which may limit the depth of subgroup analyses. Future research should consider incorporating these variables and expanding the sampling framework to include multiple regions and facility types, thereby enhancing the generalizability and applicability of the findings. Thirdly, the study's dependence on self-reported measures engenders the potential for response bias, whereby participants might be inclined towards providing socially desirable responses

rather than precise representations of their experiences. Lastly, while the study has focused on pivotal variables, other pertinent factors, such as organizational support, leadership styles, and individual personality traits, have not been considered despite their potentially significant impact on the mental well-being of nursing professionals. In order to address these limitations, future research endeavors should contemplate employing longitudinal designs, recruiting more expansive and diverse samples, and integrating additional pertinent variables into the analytical framework.

Conclusion

Upon a comprehensive analysis, it is evident that psychological capital and job satisfaction serve as crucial sequential mediators in the relationship between work-life balance and mental health among nurses in Pakistan. Enhanced work-life balance indirectly improves mental health by fostering psychological capital and amplifying job satisfaction, highlighting the importance of psychological resources and job satisfaction for optimal mental health. While this study focuses on nurses in Pakistan, the findings may apply to other healthcare settings and professions with similar stressors. Future research should explore the long-term impact of fostering Psychological capital and job satisfaction on mental health across diverse professional and cultural contexts to develop sustainable mental health strategies.

Data Sharing Statement

The raw data supporting this study's findings are available upon reasonable request from the corresponding author (Shazia Rehman: rehmanshazia.malik@gmail.com).

Institutional Review Board Statement

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board (IRB) of the Nishtar Medical College & Hospital Multan (Approval# IRB-23-NMC/5031).

Informed Consent

Informed consent was obtained from all subjects involved in the study.

Consent to Publish Declaration

Not applicable.

Funding

The authors extend their appreciation to Prince Sattam bin Abdulaziz University for funding this research work through the project number (PSAU/2024/01/99520).

Disclosure

No potential conflict of interest was reported by the authors.

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