



Mental Workload as Predictor of Work-Related Quality of Life in Healthcare Workers ^a

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Abstract

Aim: The aim of this study was to examine the association between mental workload and work-related quality of life among healthcare workers.

Methods: This cross-sectional study included healthcare professionals across Türkiye, and data were collected using an online survey between April and June 2025. The questionnaire included a demographic information section and scales assessing mental workload and work-related quality of life. The study sample consisted of 417 healthcare workers. The relationships between variables were examined using correlation and hierarchical multiple regression analyses.

^a This study is derived from the master's thesis titled "The Relationship Between Mental Workload and Quality of Work Life: A Study on Healthcare Workers" completed at Bandırma Onyedi Eylül University, Graduate School of Education, with the thesis number 980067, in 2025.

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Results: The regression analysis was conducted using three models. In the first model, only demographic variables were included ($R^2=0.030$); in the second model, demographic variables were combined with occupational variables ($R^2=0.040$, $\Delta R^2=0.010$); and in the final model, the mental workload scale was included alongside all other variables to assess the determinants of work-related quality of life. In the third model, the total explained variance increased compared to the previous models ($R^2=0.084$, $\Delta R^2=0.044$).

Conclusion: The results indicate that the demographic and occupational variables of healthcare workers generally do not determine their work-related quality of life. In contrast, mental workload was negatively associated with work-related quality of life and contributed to the explanation of work-related quality of life. Therefore, interventions aimed at reducing healthcare workers' mental workload may contribute to improving their work-related quality of life.

Keywords: Healthcare Workers, Mental Workload, Work-Related Quality of Life

INTRODUCTION

Work life refers to a domain in which individuals spend a substantial portion of their time performing their professional duties and interacting with colleagues. The higher the quality of this domain, the more satisfactory and harmonious both work life and work-family life become (Singh and Chaudhary, 2019). Work-life quality not only reflects the satisfaction that employees derive from their engagement within a given organizational context but also encompasses the quality of the relationships they establish with colleagues and their broader environment (Swamy et al., 2015; Singh and Chaudhary, 2019). In addition, it includes employees' interactions with the organization as well as their positive and negative perceptions of it (Md-Sidin et al., 2010; Nair, 2013). Employees with high work-life quality tend to place greater value on their work, contribute positively to their surroundings, demonstrate higher levels of performance, and help foster a safer working environment (Saraji and Dargahi, 2006; Dehghan Nayeri et al., 2011; Abe et al., 2016; Parveen et al., 2017). Ensuring a high work-related quality of life among employees can enhance organizational effectiveness and efficiency, which in turn can significantly influence job satisfaction, organizational commitment, and overall organizational growth and profitability (Yadav and Khanna, 2014).

There are many things that can affect the quality of life at work. These encompass managerial strategies regarding employees, opportunities for career and skill advancement, safe and appropriate working environments, equitable remuneration, and safeguarding of employee rights, as well as internal organizational communication and social cohesion, and a family-oriented organizational culture (Sirgy et al., 2001). Healthcare services are one of the industries where work

life balance is very important. In this field, the quality of service, patient satisfaction, and care performance are closely linked to the working lives of healthcare workers. These lives are affected by factors specific to the sector, such as limited resources, rising service demand, and bureaucratic procedures (Kılıç and Keklik, 2012; Horrigan et al., 2013).

Psychosocial factors play a significant role in shaping the work-related quality of life among healthcare workers. Increasing workloads have emerged as a critical determinant, affecting employees both physically and mentally. Workload is widely recognized as a multidimensional and complex phenomenon (Hertzum and Holmegaard, 2013; Emeç and Akkaya, 2018). While physical workload is more observable and tangible, mental workload represents a more abstract yet equally substantial dimension. In recent years, the importance of mental workload has garnered increasing attention, leading to an expanding body of research in this area (Young et al., 2015). Mental workload is conceptualized as a subjective evaluation arising from the interaction between an individual's limited cognitive capacity and the mental demands imposed by tasks, and may also be influenced by employees' levels of motivation and competence (Borghini et al., 2014; Van Acker et al., 2018).

The inherently intensive and stressful nature of healthcare services, combined with the provision of care under conditions of risk and uncertainty, may contribute to increased levels of perceived mental workload among healthcare workers. As the complexity of tasks assigned to employees increases, so too does their perceived mental workload (Galy et al., 2012). A substantial proportion of healthcare workers are exposed to psychological risk factors, which may compromise their mental well-being, leading to the provision of suboptimal care and, consequently, a reduction in the quality of services delivered to patients (Kaur and Malhotra, 2018).

The increasing diversity of patient populations and medical specialties in healthcare contributes to more complex care processes, potential disruptions in care delivery, and heightened requirements for knowledge and responsibility among employees (Congdon et al., 2020). Previous studies have also indicated that increased workload and job demands are associated with reduced psychological well-being and quality of work life among healthcare workers (Huhtala et al., 2021; Koca et al., 2024; Yousef et al., 2024). When combined with intensive and demanding working conditions, these factors may not only increase the mental workload of healthcare workers but also adversely affect them both physically and psychologically, thereby diminishing their work-related

quality of life (Yıldırım and Hacıhasanoğlu, 2011). Based on the existing literature, the present study addresses the following research question: Is mental workload associated with work-related quality of life among healthcare workers?

1. RESEARCH METHODOLOGY

1.1. Type of Research

This research was conducted using a quantitative methodology to examine the relationship between mental workload and work-related quality of life among healthcare workers. It is a cross-sectional and descriptive study.

1.2. Research Population and Sample

The population of the study consisted of healthcare workers in Türkiye. The minimum sample size was calculated based on the analytical methods employed in the study and the number of independent variables. Accordingly, using the G*Power 3.1.9.7 software, an F-test, Linear Multiple Regression: Fixed Model, R^2 Deviation from Zero test, and an a priori power analysis were conducted. The effect size was set at $f^2 = 0.15$ based on Cohen's (2013) classification, the significance level at $\alpha = 0.05$, and the statistical power at $1 - \beta = 0.95$. Considering the total of eight independent variables included in the hierarchical regression, the minimum required sample size was calculated as 160. Within this framework, data were collected from 417 healthcare workers using a convenience sampling approach through a survey prepared on Google Forms.

1.3. Data Collection Tools and Methods

Data for the study were collected through a questionnaire consisting of three sections. The first section consisted of seven questions about participants' personal characteristics. The second section included the Mental Workload Scale, and the third section included the Work-Related Quality of Life Scale.

Personal Information Form: The form includes items designed to identify the demographic and professional characteristics of the participants. In this context, information is collected on employees' gender, age, marital status, educational level, profession, work experience, and shift work status.

Mental Workload Scale (MWS): In this study, the scale developed by Rubio-Valdehita et al. (2017) and adapted into Turkish by Akca et al. (2020) was used to assess mental workload. The scale consists of four subdimensions and includes a total of 25 items, rated on a five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5). The Cronbach's alpha reliability

coefficient of the scale was reported as 0.90 in previous studies, whereas it was found to be 0.91 in the present study. In the present study, the Cronbach's alpha coefficients for the subdimensions were 0.799 for temporary workload, 0.898 for cognitive workload, 0.922 for performance-related workload, and 0.879 for emotional workload.

Work-Related Quality of Life Scale (WRQoLS): The scale developed by Van Laar et al. (2007) and adapted into Turkish by Akar and Üstüner (2017) was utilized to assess work-life quality. The scale consists of six dimensions and 23 items, rated on a five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5). The overall Cronbach's alpha coefficient for the scale was reported as 0.91, with subdimension reliability coefficients ranging from 0.75 to 0.88. In the present study, the Cronbach's alpha value was found to be 0.92. The Cronbach's alpha coefficients for the subdimensions were 0.769 for job and career satisfaction, 0.840 for general well-being, 0.774 for control at work, 0.828 for working conditions, 0.740 for stress at work, and 0.817 for home-work interface.

1.4. Data Collection

The study was conducted among healthcare workers working in the public sector in Türkiye, and the data were collected online between April and June 2025. In the introductory section of the questionnaire, respondents were informed about the purpose and scope of the study. A mandatory consent option indicating voluntary participation was included, and respondents could proceed with the survey questions only after giving consent.

1.5. Data Analysis

Data organization and statistical analyses were carried out using the SPSS 26.0 software package. During the analysis, reverse-coded items in the scales were first recoded, and total scores for the relevant scales were calculated. Normality was assessed using skewness and kurtosis values. Cronbach's alpha coefficients were computed to assess the internal consistency of the scales. Pearson correlation analysis was used to examine the relationships between variables. Hierarchical multiple regression analysis then examined the predictive effects on the dependent variable.

1.6. Ethical Approval

This study was conducted after obtaining approval from the Bandırma Onyedi Eylül University, Non-Interventional Research Ethics Committee of Health Sciences (Approval No: 2024-57, dated 22.04.2024). Permission to use the scales included in the study was obtained from

the respective authors via email. During the data collection process, participants were informed about the purpose of the study, and their informed consent indicating voluntary participation was obtained prior to completing the online questionnaire. The study was carried out in accordance with the Declaration of Helsinki.

2. ANALYSIS

The demographic and occupational characteristics of the participants are presented in Table 1. Among the 417 healthcare workers included in the study, the majority were aged 25-34 years (45.6%), followed by those aged 45 and above (22.3%), 35-44 years (19.7%), and under 24 years (12.5%). Among the participants, 67.6% were female and 64.7% were married. In terms of educational level, most participants held a bachelor's degree (59%), while associate degree (27.3%), high school (7.2%), and postgraduate degree holders (6.5%) constituted smaller proportions. Regarding professional distribution, nurses/midwives were the largest group (47.7%), followed by health technicians/technologists (28.1%), administrative staff (12.5%), physicians (7.9%), and other occupational groups (3.8%). It was also determined that 71.5% of the participants worked in shifts, and their work experience was predominantly concentrated at five years or less (31.7%).

Table 1: Socio-Demographic and Occupational Characteristics of the Participants

Age	≤24	52	12,5	Gender	Female	282	67,6
	25-34	190	45,6		Male	135	32,4
	35- 44	82	19,7	Profession	Physician	33	7,9
	45≤	93	22,3		Nurse/Midwife	199	47,7
Marital Status	Married	270	64,7		Health Technicians/Technologists	117	28,1
	Single	147	35,3		Administrative Staff	52	12,5
Education	High School	30	7,2		Other	16	3,8
	Associate Degree	114	27,3	Work Experience	≤5	132	31,7
	Bachelor's Degree	246	59,0		6-10	99	23,7
	Postgraduate Degree	27	6,5		11-15	50	12,0
Shift Work Status	Yes	298	71,5		16-20	36	8,6
	No	119	28,5		21≤	100	24,0

The normality of the scales was assessed using skewness and kurtosis values. Values within the range of ± 1.5 to ± 2 are considered acceptable for meeting the assumption of normality (Tabachnick and Fidell, 2013; George and Mallery, 2024). Assessment of normality indicated that the Mental Workload Scale had skewness and kurtosis values of -0.704 and 0.061, respectively, whereas the Work-Related Quality of Life Scale yielded values of 0.066 and -0.380 (Table 2). These results indicate that the data were normally distributed.

Table 2: Descriptive Statistics of the Scales

Scale	Mean $\pm$ SD	Minimum	Maximum	Skewness	Kurtosis
Mental Workload	93.44 $\pm$ 16.37	44	119	-0.704	0.061
Work-Related Quality of Life	67.86 $\pm$ 14.65	33	106	0.066	-0.380

N=Sample size, SD=Standard Deviation

The score distributions of the scales used in the study showed that the Mental Workload Scale scores ranged from 44 to 119 among participants, with a mean of 93.44 $\pm$ 16.37. The Work-Life Quality Scale scores ranged from 33 to 106, with a mean of 67.86 $\pm$ 14.65. In the absence of established cut-off points, the minimum and maximum possible scores of the scales were considered, and total scores were categorized into three equal intervals (low, moderate, and high) based on this range. According to this classification, mental workload was found to be at a moderate-to-high level, whereas work-related quality of life was at a moderate level.

Table 3: Correlation Analysis Results Among Variables

Variable	Statistic	Work-Related Quality of Life
Mental Workload	r	-0.221**
	p	0.000

r=Pearson correlation coefficient, p=Significance level (p<0,001)

When the relationship between mental workload and work-related quality of life was analyzed, a weak and negative correlation was found between the two variables (r=-0.221, p<0.001).

Table 4: Hierarchical Regression Model Results Among Variables

Model	R	R ²	Adjusted R ²	SE	Δ R ²
1	0.172	0.030	0.020	14.50	—
2	0.200	0.040	0.023	14.47	0.010
3	0.291	0.084	0.067	14.15	0.044

Model 1: Demographic variables (age, gender, marital status, education level); **Model 2:** Demographic + Occupational variables (shift work, profession, years in profession); **Model 3:** Model 2 + Main variable (mental workload); R²=Explained Variance, SE=Standard Error, Δ R²=Increase in explained variance from the previous model

The results of the three-step hierarchical regression analysis are presented in Table 4. In the first step, only demographic variables (age, gender, marital status, and education level) were included in the model, explaining 3% of the total variance in work-related quality of life (R²=0.030; Adjusted R²=0.020). In the second step, occupational variables (shift work status, professional group, and years of experience) were added, increasing the explained variance to 4%. The additional contribution of these variables to the explained variance was 1% (Δ R²=0.010). In the third step, the inclusion of the mental workload variable increased the explained variance to 8.4%,

representing an additional 4.4% increase in the model's explanatory power ($\Delta R^2=0.044$). These findings indicate that mental workload contributes to explaining work-related quality of life.

Table 5: Hierarchical Regression Analysis Results Among Variables

Independent Variables	B	SE	β	t	p	95% CI [LL, UL]	Tolerance	VIF
Sabit	75.497	8.584	-	8.795	<0.001	[58.623, 92.371]	-	-
Gender	-1.199	1.573	-0.038	-0.762	0.446	[-4.291, 1.893]	0.886	1.128
Age	0.146	1.577	0.010	0.093	0.926	[-2.953, 3.246]	0.204	4.894
Marital status	5.262	1.688	0.172	3.118	0.002	[1.945, 8.580]	0.739	1.354
Education level	1.761	1.146	0.085	1.537	0.125	[-0.491, 4.014]	0.729	1.371
Profession	-0.961	0.907	-0.062	-1.060	0.290	[-2.744, 0.822]	0.661	1.514
Shift work status	1.274	1.683	0.039	0.757	0.449	[-2.033, 4.582]	0.832	1.202
Years in profession	0.956	0.985	0.102	0.970	0.332	[-0.981, 2.893]	0.201	4.966
Mental workload	-0.209	0.047	-0.234	-4.458	<0.001	[-0.301, -0.117]	0.817	1.224

Dependent variable: Work-Related Quality of Life; B=Unstandardized regression coefficient, β =Standardized regression coefficient, SE=Standard error, CI=Confidence interval, LL=Lower limit, UL=Upper limit

Age was coded as 1= ≤ 24 (ref.), 2=25–34, 3=35–44, and 4= ≥ 50 . Gender was coded as 0=female (ref.) and 1=male. Marital status was coded as 0=single (ref.) and 1=married. Education level was coded as 1=high school (ref.), 2=associate degree, 3=bachelor's degree, and 4=postgraduate degree. Profession was coded as 1=physician (ref.), 2=nurse/midwife, 3=health technicians/technologists, 4=administrative staff and 5=other. Shift work status was coded as 0=yes and 1=no. Years of professional experience was coded as 1= ≤ 5 (ref.), 2=6–10, 3=11–15, 4=16–20, and 5= ≥ 21 .

The regression coefficients of the final model are presented in Table 5. to assess multicollinearity, tolerance and VIF values were examined, and no multicollinearity issue was detected ($VIF < 10$, $Tolerance > 0.20$). As shown in the table, marital status ($\beta = 0.172$, $p = 0.002$) and mental workload ($\beta = -0.234$, $p < 0.001$) were found to be significantly associated with work-related quality of life. Accordingly, married individuals had higher work-related quality of life scores (reference group: married), whereas higher mental workload was associated with a decrease in work-related quality of life scores. In contrast, gender, age, education level, profession, shift work status, and years of experience were not significantly associated with work-related quality of life ($p > 0.05$).

3. CONCLUSIONS/DISCUSSION AND RECOMMENDATIONS

3.1. Discussion

The aim of this study was to investigate the relationship between mental workload and work-related quality of life among healthcare workers. Hierarchical regression analysis was conducted to identify the predictors of work-related quality of life, and the model's explanatory power increased progressively. In the first model, demographic variables accounted for 3% of the variance. In the second model, the inclusion of occupational variables raised the explained variance to 4%. In the third model, the inclusion of mental workload increased the explanatory power of

the model. These results indicate that work-life quality is influenced not only by individual or structural job characteristics but also by cognitive demands and mental processes.

In the final model, marital status was a significant predictor among demographic factors. Married individuals reported higher work-life quality, possibly due to stronger emotional and social support. Previous studies highlight the role of social support in enhancing employees' job satisfaction and overall quality of life (Bradley and Cartwright, 2002; Fradelos, 2014; Shojaei et al., 2019; Öksüz et al., 2019; Ruiz-Fernández et al., 2020; Altay et al., 2022). Other demographic factors, including gender, age, and education, as well as occupational factors such as shift work and professional experience, were not found to have a significant effect. These findings suggest that, in the healthcare sector, work-life quality is shaped more by the combined and interactive effects of multiple stressors than by individual factors alone.

One of the most notable findings of the study is that mental workload is a negative predictor of work-related quality of life. This means that as the mental workload of healthcare workers increases, their work-related quality of life decreases. The nature of the healthcare sector, characterized by low tolerance for error and high demands for attention, along with various stress factors, may contribute to increased mental workload. Therefore, mental workload appears to contribute to work-related quality of life. This finding is supported by previous research. For example, Esfahani et al. (2025) reported that mental workload negatively predicted work-related quality of life among nurses. Similar results have been observed in studies conducted outside the healthcare sector. Koozekonan et al. (2021) showed that both mental and physical workload negatively and significantly predicted work-related quality of life among industrial workers. Likewise, a study on call center employees found that physical workload negatively predicted work-related quality of life (Kaçmaz and Çiçek, 2024).

A weak and negative correlation was found between mental workload and work-related quality of life. This result aligns with previous research. For example, Nikeghbal et al. (2021) reported a negative relationship between mental workload and work-related quality of life among nurses. Similarly, Karaca and Oğuzhan (2023) found a positive relationship between mental workload and emotional exhaustion among healthcare workers. Another study reported that emotional workload negatively affected career satisfaction (Sunman, 2025). Comparable patterns have also been observed in other sectors. Özkılıçcı and Aytaç (2022) identified a negative correlation between job satisfaction and mental workload among white-collar workers, while

Tanrıverdi and Özgüç (2026) found a negative association between psychological resilience and burnout among firefighters.

The majority of participants were female, aged between 25 and 44 years, and married, which is consistent with previous studies on healthcare workers (Karadağ and Cankur, 2015; Güçlü and Kurşun, 2018; Tosun and Yılmaz, 2023). Given the continuous nature of healthcare services, shift work is an inherent feature of the sector, contributing to a demanding and high-pressure work environment. In the present study, a substantial proportion of participants reported working shifts. Although shift work is a core component of healthcare delivery, it is widely recognized for its association with sleep disturbances, increased stress, challenges in maintaining work–family balance, and adverse physical and mental health outcomes (Saedpanah et al., 2022).

The perceived mental workload of healthcare workers in this study was at a moderate to high level, which may be attributed to the inherently demanding and stressful nature of healthcare services (Fikri et al., 2024). Although mental workload can vary across specialties, it is generally reported at moderate to high levels in literature. These findings are consistent with previous studies conducted among healthcare workers, including physicians and nurses (Emeç and Akkaya, 2018; Rostami et al., 2021; Sevinik and Lök, 2022; Tosun and Yılmaz, 2023; Yuan et al., 2023).

This finding indicates that participants perceived their work-related quality of life as moderate. The inherently demanding nature of the healthcare sector, characterized by high risk, low tolerance for error, and the need for constant attention, can be considered a key structural factor that may limit work-related quality of life. Although the findings are generally consistent with the literature, several studies have reported that healthcare workers' work-related quality of life levels may range from moderate to low (Kesti et al., 2023; Younis et al., 2025). Similarly, relatively lower levels of work-related quality of life among healthcare professionals have also been documented (Asante et al., 2019). In particular, during periods such as the COVID-19 pandemic, increased workload, high stress, and elevated risk have been shown to significantly reduce work-related quality of life (Maqsood et al., 2021). These findings suggest that both structural and contextual pressures in healthcare settings play a decisive role in shaping work-related quality of life.

3.2. Limitations

This study has several limitations. The sample includes only healthcare workers working in public hospitals in Türkiye who voluntarily participated in the survey, which may limit the

generalizability of the results. In addition, the use of convenience sampling may lead to selection bias; therefore, the findings should be interpreted with caution and may not be fully generalizable to all healthcare workers in Türkiye. The cross-sectional design, with data collected within a specific period, may also reflect time-specific conditions. Furthermore, the study is based on self-reported data, assuming that participants provided accurate and honest responses, and that the measurement tools sufficiently represent the variables examined.

3.3. Conclusion

This study examined the relationship between mental workload and work-related quality of life among healthcare workers in Türkiye. The findings showed that the work-related quality of life of healthcare workers was moderate, while their mental workload was relatively high. The negative relationship between mental workload and work-related quality of life highlights important effects on healthcare service delivery. Healthcare institutions often focus on physical workload and operational efficiency, which can lead to the psychosocial aspects of work being overlooked. Therefore, future research should examine mental workload using different models and in profession-specific groups through longitudinal and comparative designs. Moreover, strengthening social support mechanisms aimed at improving work-related quality of life can not only enhance healthcare workers' performance but also improve the quality of services provided and prevent the occurrence of negative behaviors.

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