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# The Mediating Role of Quality of Work Life (QWL) in the Impact of Lean Leadership (LL) on Organizational Commitment (OC): A Study on Healthcare Workers*

Hicret TOSUN[1], Güller ŞAHİN[2]

## Abstract

This study seeks to answer the question of whether quality of work life plays a mediating role in the effect of lean leadership on organizational commitment among healthcare workers. The study was conducted on 703 healthcare professionals working in private and public hospitals in Türkiye. Using an online survey method, primary data was collected by way of Google Forms. Exploratory factor analysis, confirmatory factor analysis, and reliability and normality tests were conducted for the LL, OC, and QWL scales. Spearman correlation and mediation analyses were then performed to calculate the direction and degree of the relationships between the variables. When the reliability and validity assumptions for the scales were met, the results from the correlation analysis support positive and moderately important relationships between LL and OC, LL and QWL, and OC and QWL. The mediation analysis results reveal that LL affected QWL by approximately 0.60, LL affected OC by approximately 0.20, and QWL affected OC by approximately 0.56. Furthermore, the mediating role of QWL in the impact of LL perception on OC was found as approximately 0.33.

*Keywords*: Lean leadership; quality of work life; organizational commitment; healthcare workers; mediation analysis.

* This article is derived from the master's thesis prepared by Hicret TOSUN under the supervision of Assoc. Prof. Dr. Güller ŞAHİN at the Graduate Education Institute of Kütahya Health Sciences University.

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## Introduction

Traditional leadership theories, which began with the Great Man theory in the 1840s, have evolved over time, evolving into contemporary leadership theories such as transformational leadership and transactional leadership after the 1990s, and servant leadership, ethical leadership, charismatic leadership, paternalistic leadership, and lean leadership after the 2000s. In this context, LL is a methodological framework developed for the continuous improvement and sustainable implementation of a lean production system (Dombrowski and Mielke, 2014). The definition describes the collaboration between leaders and employees in their mutual pursuit of excellence. This includes customer-centricity in all processes and the long-term development of employees and leaders.

Healthcare organizations are turning to lean practices to improve service quality and competitive advantage. Lean practices eliminate process waste, leading to improved healthcare at lower costs (Patri and Suresh, 2018). Organizational change literature highlights the importance of leadership and management involvement for successful change. The leadership style emphasized for implementing lean is one that fosters continuous improvement, respect for people, employee development, and team-based accountability. LL in the healthcare sector is a leadership style designed to provide healthcare leaders with information that can help them advance hospital strategies by increasing productivity and improving patient, employee, and physician satisfaction (Nicholas, 2023). Leaders in healthcare organizations should consider feedback from staff and patients to enhance patient satisfaction, employee success, and job satisfaction. This feedback helps identify shortcomings and implement necessary corrections (Atilla and Günal, 2024).

Organizational commitment is the active relationship employees feel towards their organization. This commitment can be sensitive, enduring, and prescriptive, acting as a bridge between the organization and its employees. This bridge role plays a significant role in determining whether an individual will stay with the organization or continue (Silva et al., 2024). To achieve this, managers within the organization must create an organizational culture that enhances the quality of work life and enhances the organization's external reputation or prestige in the eyes of employees to foster OC (Ojedokun et al., 2015). OC encompasses the ergonomics of a work environment, receiving material and moral compensation for efforts, fostering talent, providing social opportunities, and enjoying social rights (Yalçın, 2014).

Quality of work life, particularly for individuals working in the healthcare field, provides a work environment open to development so they can exhibit constructive attitudes and plays a significant role in achieving the goals of the organization (Kanten, 2014). Neglecting the QWL in organizations is considered a crucial factor, as it leads to additional costs (Demirdelen Alrawadieh, 2021). As individuals' commitment to their organization increases, the organization becomes

stronger. Furthermore, to protect the organization's reputation, efforts are made to improve the QWL by embracing the organization's goals and objectives to prevent employees from leaving the organization and creating an environment where employees feel a sense of togetherness (Taşdemir Afşar, 2015). A high QWL benefits not only the organization but also the individual employees and society. This situation is observed in individuals in the short term and in the organization and society over a longer period of time (Abul, 2015).

Adopting LL in healthcare institutions ensures the creation of complementary roles at each organizational level, controls cost pressures, improves the quality of service provided to patients, increases the number of patients served, reduces waiting times, and increases efficiency and productivity (Çilhoroz and Çakmak, 2020). Prior to and during lean implementation in healthcare systems, training coordination committees should be established, on-the-job training should be provided, and continuous information should be shared, ensuring maximum participation. In this context, employees' opinions and ideas should be considered, ensuring they are informed about unknown issues and positively influencing their responsiveness (Bulut and Yıldız, 2018). LL is particularly critical in healthcare institutions due to the relatively low tolerance for delays and errors by healthcare providers and the irreversible nature of service outcomes. Therefore, the purpose of this research is to analyze the mediating role of QWL in the impact of LL on OC among healthcare professionals in Türkiye.

## Literature Review

Historically, lean-related practices were first implemented in the UK healthcare sector in 2001 and in the US healthcare sector in 2002 (Aij et al., 2015). However, evidence regarding the outcomes of LL in healthcare institutions appears to be insufficient. A literature review was addressed within the scope of lean leadership, lean management, lean production, and lean practices due to the limited number of studies on the relationships between LL and QWL in healthcare providers (Ali et al., 2020; Al-hadrawi and Al-abedi, 2020; Ayaad et al., 2019; Yassen et al., 2024). In this regard, Ali et al. (2020) evaluated the impact of lean management strategies on the quality of perioperative nursing roles at Dar Al Fuad Hospital in Cairo, Egypt. The findings show that the perioperative nursing roles of operating room nurses improved after the implementation of lean management strategies, and the design of new supporting roles, such as a lean team, had a positive effect on the elimination of non-value-added activities and volume-based activities. Al-hadrawi and Al-abedi (2020) investigated the impact of LL on employees' creative work behavior through the moderating role of perceived organizational support in the Iraqi healthcare sector using a total sample of 302 medical and nursing personnel. The findings confirm that LL and perceived organizational support have a positive effect on creative work behavior, and that perceived organizational

support positively contributes to the relationship between creative work behavior and LL. Ayaad et al. (2019) examined the effectiveness of the handover process in an oncology ward of nurses working at King Hussain Cancer Center using lean management principles and data from 2017. The findings support the positive impact of lean management principles on reducing handover time and improving nurses' satisfaction scores. Yassen et al. (2024) determined the impact of a lean leadership training program on the performance of head nurses and the quality of nurses' work life at Hamdy El-Tabakh Hospital. The findings reveal a statistically significant difference between the LL training program and the head nurses' performance as well as the nurses' QWL.

There is little research in the literature on the relationship between LL and OC. For example, Akbari et al. (2020) explained the relationship between LL and organizational citizenship behavior in terms of the OC mediator variable at public and Azad universities in the Fars province. The findings show a direct relationship between LL and employee development, insistence on lean thinking, and alignment of vision and goals. Furthermore, it was noted that there was a direct relationship between LL and OC at public universities, while there was no relationship between these variables at Azad universities. Li and Ani (2024) determined the mediating effect of OC on LL and job satisfaction at nineteen lean electronics manufacturing companies using a descriptive research method with 376 participants. The findings reported that lean leadership had a significant impact on employee job satisfaction under the mediating role of OC.

In the context of the phenomena related to lean practices and OC, Fournier et al. (2021) measured the reactions of 176 physicians to lean practices in healthcare organizations in the United States. The quantitative analysis findings reveal important impacts of pre-change and change antecedents on physicians' behavioral support for lean change, mediated by their commitment to organizational change. In this context, process antecedents associated with change management practices were found to be effective in attracting physicians to lean, while efficiency-focused lean practices and traditional management techniques, along with rewards and incentives, had the opposite effect. Koç and Ecevit Alpar (2023) analyzed the effects of lean management practices on nurses' OC and job satisfaction in a private hospital in Türkiye during the 2019-2021 period. The findings show that nurses' OC and job satisfaction had a low positive correlation before lean implementation and a moderate positive correlation after lean implementation. In addition, it has been reported that in lean management, ensuring employee participation in decision-making processes and listening to their suggestions has a positive relationship with OC and job satisfaction. To examine the impact of organizational culture on lean practices, Cadden et al. (2020) examined the role that organizational culture plays in the relationship between lean practices and operational performance in the UK manufacturing sector. The findings indicate that cultural dimensions mediate the impact of lean management practices on operational performance, showing that lean practices are positively associated with organizational cultures that are

procedure-oriented and employee-oriented, structurally open, socially relaxed, rule-oriented (norm-oriented), and market-oriented, while they are negatively associated with results-oriented and pragmatic cultures. Urban (2015) designed a tool to internally assess an organization's lean management maturity. The findings indicate that while organizational culture demonstrates whether lean is truly being implemented in an organization, the tool helps managers better understand the current state of the lean transformation. To explore the connections between LL and employee engagement, Grewan (2019) tested the suitability of the LL model for encouraging employee engagement, the impact of LL behavior on employee engagement, and whether employee perceptions aligned with managers' perceptions of leadership behavior on employees at a Fast Moving Consumer Goods Confectionery Factory in Port Elizabeth, South Africa. This study suggests that LL behavior has a positive impact on employee engagement, that the LL model is not an appropriate framework for employee engagement, and that the lean leadership-employee engagement model can encourage employee engagement by managers spending time with employees and appreciating them on the shop floor.

In the literature, studies on the relationships between QWL and OC in the healthcare sector by Azhar et al. (2022), De Gieter et al. (2011), Elqassaby (2020), Eren and Hisar (2016), Rimatanti and Darmawan (2023) are examples of the relevant literature. In one of these studies, Azhar et al. (2022), analyzed the effects of QWL dimensions on the turnover intention of 142 nurses working in private and public hospitals. The findings show that the work life/home life dimension did not have a significant effect on the turnover intention of nurses; the work world dimension had an effect on the turnover intention of nurses working in private hospitals, and the job design dimension had an effect on the turnover intention of nurses working in public hospitals. De Gieter et al. (2011) used a sample set of 287 nurses working in Belgian hospitals to examine individual differences in the relationships between job satisfaction, OC and turnover intention. The findings show that job satisfaction and OC significantly affected the turnover intention of nurses. In the satisfaction-focused group, job satisfaction was found to be related to the intention to leave, while in the satisfaction-focused group, both job satisfaction and OC were found to be related to the intention to leave. Elqassaby (2020) stated that there was a significant relationship between the variables in his study examining the relationship between QWL and OC on public hospital employees in Saudi Arabia. Eren and Hisar (2016) tested the QWL and OC levels of 163 nurses in Türkiye using data from August to December 2012. The findings confirm that the nurses' QWL and OC were at a moderate level, and that there was a positive and statistically significant relationship between OC and QWL. Rimatanti and Darmawan (2023) analyzed the effects of QWL, OC, and transformational leadership on organizational citizenship behavior among 165 nurses working at RSUD Dr. R. Goeteng Taroenadibrata Purbalingga. The findings support that QWL has a positive and significant effect on organizational citizenship behavior, OC has a positive and insignificant effect on organizational citizenship behavior, and

transformational leadership has a positive and significant effect on organizational citizenship behavior.

A literature review indicated that research addressing lean leadership practices in healthcare providers, the impact of LL on OC, the impact of LL on QWL, and the impact of QWL on OC is quite limited. However, no research was found on the mediating role of quality of work life in the impact of lean leadership on organizational commitment. These reasons are the innovations that this research offers to the literature. The stated context is attributed to the original value of the research and its contribution to the literature.

## Methodology

The study was conducted between 10 July 2024 and 8 October 2024 with healthcare personnel working in public and private sector hospitals affiliated with the Ministry of Health of the Republic of Türkiye. Ethical approval for the research was obtained from the Kütahya Health Sciences University Non-Interventional Clinical Research Ethics Committee at its meeting dated 25 June 2024, and numbered 2024/08. Permission for use of the LL, OC, and QWL scales were obtained from the relevant researchers. Informed consent was also obtained from the survey participants.

### *The universe and sample of the research*

The study population consisted of healthcare workers aged eighteen years and over working in private and public hospitals across Türkiye. The sample size was calculated as 663 people using a known sample size calculation formula, with a 99% confidence interval and a 5% margin of error. 712 healthcare workers from forty-six provinces[3] affiliated with the Ministry of Health of the Republic of Türkiye participated in the study. The inclusion and exclusion criteria of the participants for the study, which used a convenience sampling method, were determined as follows:

*Inclusion criteria*: (1) Had worked as a healthcare professional for at least one year; (2) Had volunteered to participate in the research; (3) Was working in the healthcare services in the public or private sector affiliated with the Ministry of Health of the Republic of Türkiye.

[3] Adana, Adıyaman, Afyonkarahisar, Aksaray, Ankara, Antalya, Aydın, Balıkesir, Bartın, Bilecik, Bitlis, Bolu, Burdur, Bursa, Çorum, Denizli, Eskişehir, Erzincan, Gaziantep, Giresun, Hatay, Isparta, İstanbul, İzmir, Karabük, Kars, Karaman, Kastamonu, Kayseri, Kırklareli, Kilis, Konya, Kütahya, Malatya, Mersin, Muğla, Muş, Nevşehir, Ordu, Osmaniye, Sakarya, Samsun, Sinop, Tokat, Uşak and Yalova.

*Exclusion criteria*: (1) Had not worked as a healthcare worker for at least one year; (2) Had not volunteered to participate in the research; (3) Was not working in the healthcare services in the public or private sector affiliated with the Ministry of Health of the Republic of Türkiye.

Considering the inclusion and exclusion criteria and data restrictions of the study, seven of the 712 healthcare professionals were excluded from the sample due to not meeting the inclusion criteria (having been a healthcare professional for at least one year and working in the healthcare services category in the public and private sectors affiliated with the Ministry of Health of the Republic of Türkiye). Two pharmacists were excluded from the sample due to insufficient data. In this context, the sample size for the study was determined to be 703.

*Data collection tools*

The study used an online survey method, and the primary data was collected by way of Google forms. Voluntary consent was obtained from the participants. The first part of the survey determined the socio-demographic characteristics of the healthcare professionals who participated in the study. In the second part, the 'lean leadership scale', developed by Mulders (2016) and introduced to the literature, was used to determine the level of lean leadership. The scale consists of fifteen items and five sub-dimensions. The 'organizational commitment scale', which was developed by Meyer and Allen (1991) to measure the level of organizational commitment consists of twenty-four questions and three behavioral dimensions, was revised by Meyer et al. (1993). In this context, the final version of the scale, consisting of eighteen statements and three factors, was used. In the fourth part of the survey, the 'quality of work life scale', developed by Van Laar et al. (2007), which has twenty-three items and six factors and is included as the outcome variable by Easton and Van Laar (2012) to measure the validity and reliability of the items, was used.

*Research model and hypotheses*

H1: Lean leadership has a positive impact on the quality of work life.

H2: Lean leadership has a positive effect on organizational commitment.

H3: Quality of work life has a positive effect on organizational commitment.

H4: Quality of work life has a mediating role in the effect of lean leadership on organizational commitment.

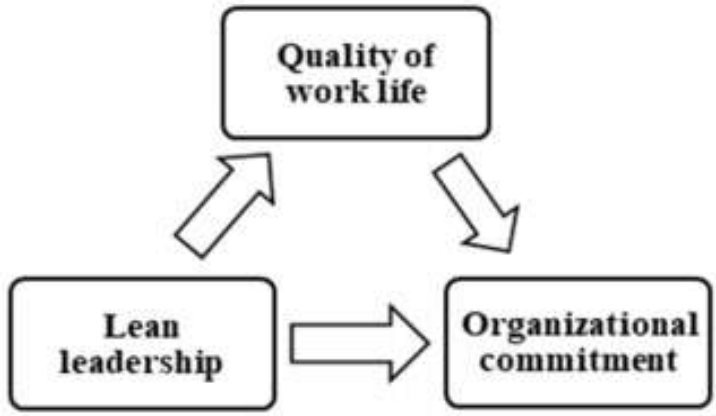


*Figure 1.* Research model

*Research method*

First, an exploratory factor analysis (EFA) was conducted to determine the structural validity of the scales that form the basis of the study. At this stage, Bartlett and Kaiser-Meyer-Olkin (KMO) tests were applied. A confirmatory factor analysis (CFA) was conducted to determine whether the model or structure determined by the sequential EFA was accepted or rejected. Goodness-of-fit test values were examined to examine whether the models were confirmed. Cronbach's alpha and McDonald's w coefficients were evaluated for the reliability of the scales. Subsequently, various tests were conducted to determine whether the normality assumption was met. Parametric tests (a t-test and a one-way ANOVA) were conducted when the normality assumption was met, and non-parametric tests (the Mann-Whitney U test and the Kruskal-Wallis test) were conducted when it was not. A Spearman correlation analysis was conducted to determine the direction and degree of the relationships between the variables. In the final stage, a mediation analysis was conducted to determine the mediating role of the quality of work life between lean leadership perception and organizational commitment with the results being interpreted.

## Results

Socio-demographic characteristics include information on participants' gender, education, age, and years of work. The results regarding the socio-demographic characteristics of the healthcare workers are reported in Table 1.

*Table 1.* The socio-demographic characteristics of the participants

| Socio-demographic characteristics | | n | % |
|---|---|---|---|
| Gender | Female | 429 | 61 |
| | Male | 274 | 39 |
| | Total | 703 | 100 |
| Education | High school | 39 | 5.5 |
| | Associate degree | 167 | 23.8 |
| | Bachelor's degree | 456 | 64.9 |
| | Master's degree | 30 | 4.3 |
| | Doctorate | 11 | 1.6 |
| | Total | 703 | 100 |
| Age | 18-25 age range | 47 | 6.7 |
| | 26-35 age range | 397 | 56.5 |
| | 36-45 age range | 212 | 30.2 |
| | 46 years and older | 47 | 6.7 |
| | Total | 703 | 100 |
| Years of work | 1-5 years | 147 | 20.9 |
| | 6-10 years | 238 | 33.9 |
| | 11-15 years | 160 | 22.8 |
| | 16-20 years | 79 | 11.2 |
| | 21-25 years | 79 | 11.2 |
| | Total | 703 | 100 |

An examination of the Table 1 reveals that 61% of the survey participants were female and 39% male; 5.5% had a high school qualification, 23.8% had an associate degree, 64.9% had a bachelor's degree, 4.3% had a master's degree, and 1.6% had a doctorate. It was also determined that the majority of workers were between 26 and 35 years of age (56.5%) and had 6-10 years of work experience (33.9%).

*Table 2.* The EFA results of the LL scale

| Questions | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Variance | KMO | p |
|---|---|---|---|---|---|---|---|---|
| LL13 | 0.605 | | | | | 14.42% | 0.870 | <0.001 |
| LL14 | 0.681 | | | | | | | |
| LL15 | 0.879 | | | | | | | |
| LL1 | | 0.677 | | | | 12.52% | | |
| LL4 | | 0.869 | | | | | | |
| LL5 | | 0.668 | | | | | | |
| LL7 | | | 0.758 | | | 11.30% | | |
| LL8 | | | 0.656 | | | | | |
| LL12 | | | 0.468 | | | | | |
| LL3 | | | | 0.533 | | 9.58% | | |
| LL9 | | | | 0.827 | | | | |
| LL10 | | | | | 0.315 | 6.31% | | |
| LL2 | | | | | 0.529 | | | |
| Total | | | | | | 54.13% | | |

The results of the EFA applied to the fifteen items in the scale used to test the validity of the LL scale are presented in Table 2. When the table is evaluated, it can be seen that the KMO coefficient is 0.870 and the p-value is <0.001. In this context, it was determined that the LL scale is suitable for the factor analysis structure. The EFA was performed using the Principal Axis method and Promax rotation. It was explained that the thirteenth, fourteenth, and fifteenth items of the scale were collected under factor 1, with the factor loadings ranging from 0.605 to 0.681 and 0.879, respectively, with their proportion within the total variance being 14.42%. It was also observed that the first, fourth, and fifth items of the scale were collected under factor 2, with factor loadings ranging from 0.668 to 0.869, with their proportion within the total variance being 12.52%. It was found that the seventh, eighth, and twelfth items of the scale were collected under factor 3, with factor loadings ranging from 0.468 to 0.758, respectively, and accounted for 11.30% of the total variance. It was found that the third and ninth items were collected under factor 4, with factor loadings of 0.533 and 0.827, respectively, and accounted for 9.58% of the total variance. It was also explained that the second and tenth items were collected under factor 5, with factor loadings of 0.315 and 0.529, and accounted for 6.31% of the total variance. Item eleven of the scale

was removed from the model in order to reduce the RMSEA value to below 0.70. The EFA process was re-run on fourteen items. It was determined that item 6 did not show any distribution under any factor. The EFA showed that the LL scale consisted of five factors, similar to the original scale. It was also observed that the scale explained 54.13% of the total variance.

*Table 3.* The EFA results of the OC scale

| Questions | Factor 1 | Factor 2 | Factor 3 | Variance | KMO | p |
|---|---|---|---|---|---|---|
| OC2_IM | 0.597 | | | 27.99% | 0.853 | <0.001 |
| OC3_IM | 0.669 | | | | | |
| OC5_IM | 0.677 | | | | | |
| OC6 | 0.677 | | | | | |
| OC13_IM | 0.652 | | | | | |
| OC14 | 0.803 | | | | | |
| OC15 | 0.624 | | | | | |
| OC17 | 0.722 | | | | | |
| OC18 | 0.636 | | | | | |
| OC1 | | 0.672 | | 10.54% | | |
| OC4 | | 0.522 | | | | |
| OC16 | | 0.757 | | | | |
| OC7 | | | 0.337 | 8.87% | | |
| OC10 | | | 0.619 | | | |
| OC12 | | | 0.677 | | | |
| Total | | | | 47.4% | | |

*Note: The symbol IM describes inverse matter*

The results of the EFA conducted to determine the structural validity of the OC scale are reported in Table 3. When Table 3 is examined, it can be seen that the KMO coefficient is 0.853 (KMO>0.60) and the p value is significant (p<0.001). In this context, the OC scale was determined to be suitable for factor analysis. The EFA was conducted using the Principal Axis technique and the Promax rotation method. Because questions nine and eleven on the OC scale had loadings of less than 0.1 on multiple factors simultaneously, the relevant item was considered an overlapping item and was removed from the scale. The scale was rebuilt with sixteen items. In line with the obtained values, item eight was removed to provide the RMSEA value. The scale was repeated with fifteen items, and appropriate values were obtained. It was determined that the second, third,

fifth, sixth, thirteenth, fourteenth, fifteenth, seventeenth and eighteenth items of the OC scale were collected under factor 1, with factor loadings ranging from 0.597 to 0.803, with their proportion within the total variance being 27.99%. It was observed that the first, fourth, and sixteenth items of the scale were collected under factor 2, with factor loadings being 0.672, 0.522 and 0.757, respectively, with their proportion within the total variance being 10.54%. It was found that the seventh, tenth, and twelfth items of the scale were collected under factor 3, with factor loadings being 0.337, 0.619 and 0.677, respectively, and their proportion within the total variance was 8.87%. The total variance explained rate of the scale was 47.4%. In the literature, a total variance between 0.40 and 0.60 is considered sufficient (Karagöz, 2021). It was found that the dimensioning distribution for the scale questions was similar to the original dimensioning distribution of the scale.

The results of the EFA for the QWL scale are presented in Table 4. The information in the table indicates that the KMO coefficient was 0.911 (KMO>0.60) and the p value ($p<0.001$) was significant. In this context, it was determined that the QWL scale was suitable for factor analysis. The EFA was applied according to the Principal Axis technique and the Promax rotation method. To ensure the RMSEA value of the scale, individual items were checked. After the repetition, it was deemed appropriate to remove items three, nine, and twelve. The analysis was repeated with twenty-one items; item thirteen was considered an overlapping item because it contained loadings of less than 0.1 on multiple factors simultaneously and was removed from the scale. The scale was re-constructed with twenty items, and normal values were achieved. It was found that items one, two, eight, eleven, eighteen and twenty-three of the QWL scale were collected under factor 1, with factor loadings ranging from 0.400 to 0.964, and their proportion in the total variance was 17.74%. It was found that questions four, ten, fifteen, sixteen, seventeen, twenty and twenty-one were collected under factor 2, with factor loadings ranging from 0.465 to 0.796, and their proportion in the total variance was 15.48%. It was observed that items five, six, and fourteen of the scale were collected under factor 3, with factor loadings being 0.623, 0.632, and 0.795, respectively, and their proportion in the total variance was 9.22%. It was found that items twenty-two and twenty-four were collected under factor 4, with factor loadings of 0.669 and 0.659, respectively, accounting for 6.81% of the total variance. Items seven and nineteen were collected under factor 5, with factor loadings of 0.679 and 0.647, respectively, accounting for 5.48% of the total variance. At the same time, no item loaded on factor 6, and its accounting for 1.72% of the total variance was calculated. The EFA results show that the QWL scale consisted of five factors. In this context, it was found that the dimensioning distribution of the scale items was not similar to the original dimensioning distribution of the scale. The results show that the total variance explanation rate of the QWL scale was 56.45%.

*Table 4.* The EFA results of the QWL scale

| Questions | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Factor 6 | Variance | KMO | p |
|---|---|---|---|---|---|---|---|---|---|
| QWL1 | 0.400 | | | | | | 17.74% | 0.911 | <0.001 |
| QWL2 | 0.964 | | | | | | | | |
| QWL8 | 0.701 | | | | | | | | |
| QWL11 | 0.682 | | | | | | | | |
| QWL18 | 0.465 | | | | | | | | |
| QWL23 | 0.740 | | | | | | | | |
| QWL4 | | 0.600 | | | | | 15.48% | | |
| QWL10 | | 0.680 | | | | | | | |
| QWL15 | | 0.717 | | | | | | | |
| QWL16 | | 0.465 | | | | | | | |
| QWL17 | | 0.556 | | | | | | | |
| QWL20 | | 0.501 | | | | | | | |
| QWL21 | | 0.796 | | | | | | | |
| QWL5 | | | 0.623 | | | | 9.22% | | |
| QWL6 | | | 0.632 | | | | | | |
| QWL14 | | | 0.795 | | | | | | |
| QWL22 | | | | 0.669 | | | 6.81% | | |
| QWL24 | | | | 0.659 | | | | | |
| QWL7_IM | | | | | 0.679 | | 5.48% | | |
| QWL19_IM | | | | | 0.647 | | | | |
| | | | | | | | 1.72% | | |
| Total | | | | | | | 56.45% | | |

*Note: The symbol IM describes inverse matter*

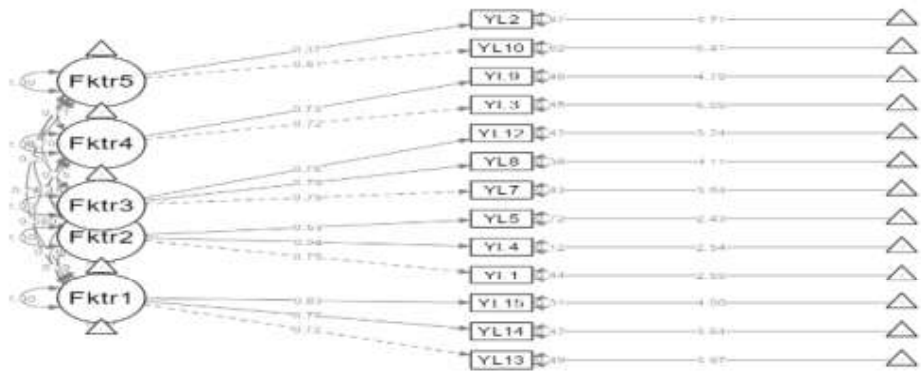


*Figure 2.* The CFA model of the LL scale

*Note: The Fktr symbol describes the factors, and the YL symbol describes lean leadership*

The CFA model for the LL scale is shown in Figure 2. According to the fit indices obtained from the CFA, CMIN/df is 4.21; CFI is 0.949; NFI is 0.935; TLI is 0.928; and RMSEA is 0.068. These values indicate that the LL scale meets the validity assumption.

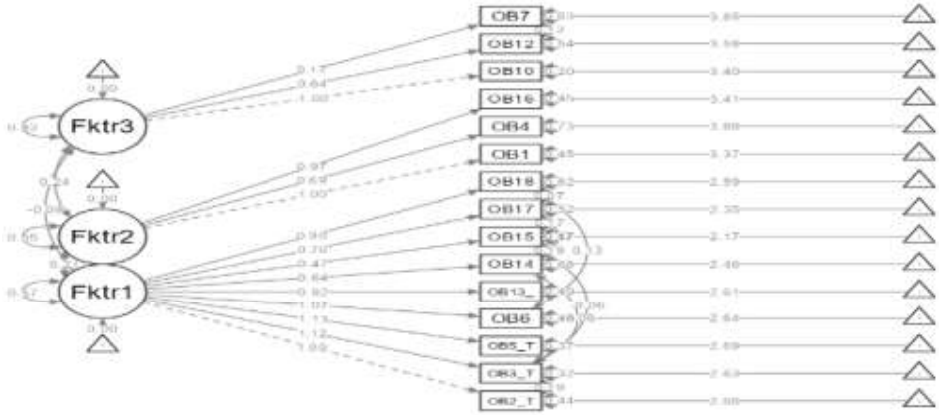


*Figure 3.* The CFA model of the OC scale

*Note: The Fktr symbol describes the factors, the symbol T describes inverse matter, and the OB symbol describes the organizational commitment*

In the analysis conducted for the OC scale, items two and three, fifteen and seventeen, fourteen and fifteen, fourteen and seventeen, six and eighteen, twelve and seven, three and fifteen, and seventeen and eighteen, which were highly correlated and theoretically did not pose an obstacle to determining the relationship

between the items, were linked and modified. Thanks to the modification process, the goodness of fit index values were increased, ensuring an acceptable fit for the model. The CFA model for the OC scale is shown in Figure 3. The goodness of fit index values obtained as a result of the CFA were CMIN/df 4.24; CFI 0.942; NFI 0.926; TLI 0.922; and RMSEA 0.068. The obtained result indicates that the scale meets the validity assumption.

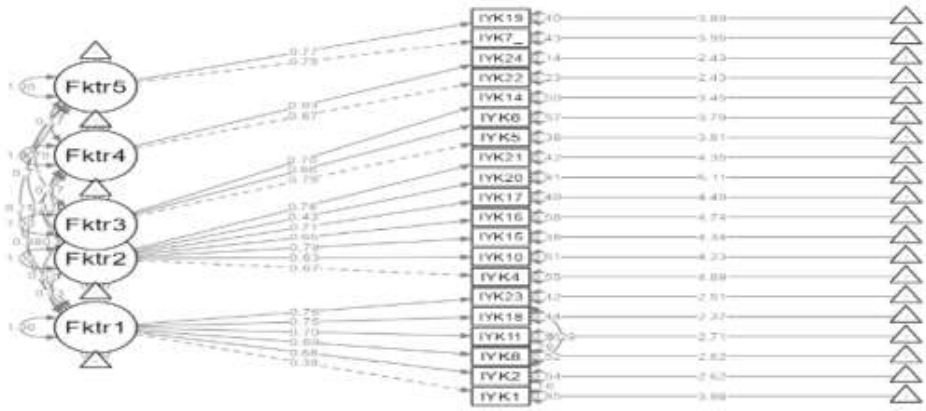


*Figure 4.* The CFA model of the QWL scale

*Note: The Fktr symbol describes the factors, the symbol T describes inverse matter, and the IYK symbol describes the quality of work life*

In the analysis of the QWL scale, items two and twenty-three, eight and eleven, and one and two, which were highly correlated and theoretically did not pose an obstacle to determining the relationship between the items, were linked and various modifications were applied. This increased the model's goodness-of-fit index values, ensuring an acceptable model fit. The CFA model for the quality of work life scale is shown in Figure 4. The goodness-of-fit index values obtained from the CFA were CMIN/df 4.04; CFI 0.929; NFI 0.908; TLI 0.914; and RMSEA 0.066. These index values indicate that the scale is valid.

*Table 5.* The reliability and normality test results

| Scales | Mean | Stnd. Dev. | Skewness | Kurtosis | CMIN/df | RMSEA | CFI | NFI | TLI | Cronbach's alpha | McDonald's w |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LL | 3.42 | 0.543 | -0.587 | 1.82 | 4.21 | 0.068 | 0.949 | 0.935 | 0.928 | 0.843 | 0.858 |
| OC | 2.94 | 0.514 | 0.415 | 1.13 | 4.24 | 0.068 | 0.942 | 0.926 | 0.922 | 0.816 | 0.832 |
| QWL | 3.26 | 0.538 | -0.216 | 2.03 | 4.04 | 0.066 | 0.929 | 0.908 | 0.914 | 0.897 | 0.899 |

The reliability and normality test results of the LL, OC, and QWL scales are presented in Table 5. When the table is examined, the results of the reliability analysis of the lean leadership scale (Cronbach's alpha: 0.843; McDonald's w: 0.858) indicate that the scale is highly reliable. At the same time, the reliability analysis results of the organizational commitment scale (Cronbach's alpha: 0.816; McDonald's w: 0.832) indicate that the scale is highly reliable. Similarly, the reliability values of the quality of work life scale (Cronbach's alpha: 0.897; McDonald's w: 0.899) indicate that the scale is highly reliable. It is known that when the skewness and kurtosis coefficients of the data are between -1.5 and +1.5, the normal distribution assumption is met (Tabachnick and Fidell, 2013). When the values in Table 5 are considered, it can be seen that the organizational commitment (skewness: 0.415; kurtosis: 1.13) scale meets the normality assumption, but the lean leadership (skewness: -0.587; kurtosis: 1.82) and quality of work life (skewness: -0.216; kurtosis: 2.03) scales do not meet the normality assumption.

*Table 6.* The correlation analysis results

| Variables | Mean | Stnd. Dev. | LL | OC | QWL |
|---|---|---|---|---|---|
| LL | 3.42 | 0.543 | 1 | - | - |
| OC | 2.94 | 0.514 | 0.505* | 1 | |
| QWL | 3.26 | 0.538 | 0.576* | 0.643* | 1 |

*Note: * notation indicates probability value (p<0.01).*

A Spearman correlation analysis was performed to examine the relationships between the variables. According to the results in Table 6, a positive and moderately significant correlation is observed between LL and OC (r: 0.505; p<0.01). Similarly, a positive and moderately significant correlation is found between LL and QWL (r: 0.576; p<0.01). Likewise, a positive and moderately significant correlation is found between OC and QWL (r: 0.643; p<0.01).

*Table 7.* The mediation analysis results

| Hypotheses | Effect (b) | Standard error | Confidence interval | | β | z | p |
|---|---|---|---|---|---|---|---|
| | | | Lower limit | Upper limit | | | |
| Direct effect of LL on QWL | 0.593 | 0.0299 | 0.507 | 0.677 | 0.599 | 19.81 | <0.001 |
| Direct effect of LL on OC | 0.190 | 0.0320 | 0.102 | 0.286 | 0.200 | 5.92 | <0.001 |
| Direct effect of QWL on OC | 0.532 | 0.0323 | 0.447 | 0.614 | 0.557 | 16.45 | <0.001 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mediating effect of QWL on LL's OC | 0.315 | 0.0249 | 0.262 | 0.377 | 0.333 | 12.66 | <0.001 |

The results from the mediation analysis in Table 7 show that the participants' perceptions of lean leadership have a positive and significant effect on the quality of work life (β: 0.599; 95% CI [0.507, 0.677]; p<0.05). In this context, LL increases QWL by approximately 0.60. Therefore, hypothesis H1: '*Lean leadership has a positive impact on the quality of work life*' was accepted as valid. In addition, it was found that the participants' perceptions of lean leadership have a positive and significant effect on organizational commitment (β: 0.200; 95% CI [0.102, 0.286]; p<0.05). In this context, LL affects OC by 0.20. Therefore, hypothesis H2: '*Lean leadership has a positive effect on organizational commitment*' was found to be valid. In addition, the results revealed that the participants' quality of work life has a positive and significant effect on organizational commitment (β: 0.557, 95% CI [0.447, 0.614], p<0.05). According to this result, QWL affects OC by approximately 0.56. Therefore, hypothesis H3: '*Quality of work life has a positive effect on organizational commitment*' was confirmed. At the same time, the results show that QWL has a positive mediating role in the effect of LL perception on OC (β: 0.333; 95% CI [0.262, 0.377]; p<0.05). In this context, the mediating role of QWL in the relationship was reported to be approximately 0.33. Therefore, hypothesis H4: '*Quality of work life has a mediating role in the effect of lean leadership on organizational commitment*' was supported.

## Discussion

Hypothesis H1 was confirmed based on the results obtained from the mediation analysis. In this context, it was evaluated that the perceptions of lean leadership among healthcare professionals working in the public and private sectors in forty-six provinces of Türkiye, which constitute the sample of the study, positively affected the quality of work life. The results are similar to the results of studies conducted by Ali et al. (2020) on Egypt, by Al-hadrawi and Al-abedi (2020) on Iraq, by Ayaad et al. (2019) on Jordan, and by Yassen et al. (2024) on the Egyptian healthcare sector.

The research results reveal that the perception of lean leadership in the Turkish healthcare system has a positive effect on organizational commitment, and therefore, hypothesis H2 is supported. This result is also confirmed by the results of studies in the literature. For example, Akbari et al. (2020) interpreted a direct relationship between LL and OC at public universities in the Fars province of Iran. Li and Ani (2024) pointed out that lean leadership in lean electronics manufacturing enterprises had a positive effect on employee job satisfaction under the mediating

role of organizational commitment. Similarly, Koç and Ecevit Alpar (2023) stated that nurses' organizational commitment was low before lean implementation and had a moderate positive relationship after lean implementation.

The results of the study indicated that quality of work life positively affects organizational commitment among healthcare professionals in Türkiye, indicating the validity of hypothesis H3. This result is consistent with the literature evidence regarding the relationship between QWL and OC within the healthcare sector. In this context, the studies conducted by Elqassaby (2020) and Eren and Hisar (2016) are cited in the relevant literature. Elqassaby (2020) pointed out a significant relationship between QWL and OC among public hospital employees in Saudi Arabia. Similarly, Eren and Hisar (2016) found that nurses' QWL and OC were at a moderate level, and confirmed the existence of a positive and statistically significant relationship between OC and QWL.

The research results support the mediating role of QWL on healthcare workers' LL perceptions and their OC. In this context, hypothesis H4 was accepted. No studies were found in the literature on the mediating role of QWL in the possible relationships between the variables. However, it was observed that there are literature studies on the relationships between transformational leadership, one of the contemporary leadership styles, OC, and QWL. In this context, Dewi et al. (2022) examined the effects of transformational leadership and QWL on the mediation of organizational citizenship behavior and OC. The results indicate that transformational leadership and OC have significant effects on QWL. Similarly, Hermanto et al. (2024) investigated the indirect and direct relationships between transformational leadership, QWL and OC for teachers working in different high schools in Madiun City. The results reveal that quality of work life partially mediates the relationship between OC and transformational leadership.

## Conclusion

This study examines the mediating role of quality of work life in the impact of healthcare workers' perceptions of lean leadership on organizational commitment. The study sample consisted of 703 healthcare workers aged eighteen years and over working in the public and private sectors across forty-six provinces in Türkiye. An exploratory factor analysis, a confirmatory factor analysis, and reliability and normality tests were carried out for the LL, OC, and QWL scales used as the data collection tools. Spearman correlation and mediation analyses were also conducted to determine the direction and degree of potential relationships between the consecutive variables.

The results of the correlation analysis show a positive and moderately significant relationship between LL and OC, LL and QWL, OC and QWL. In terms of the degree of the relationship between the variables, a higher correlation was observed between OC and QWL. The variables with the lowest correlation levels were LL

and OC. The mediation analysis results reveal that LL had positive and significant effects on QWL, LL on OC, and QWL on OC. In terms of the degree to which the variables interacted, the participants' perceptions of LL were evaluated as having a greater impact on QWL. The lowest effect rate was observed in the relationship between LL perception and OC. Furthermore, the mediating role of QWL in the effect of LL on OC was observed.

Healthcare institutions are facing increasing pressures and challenges to improve the services they provide in terms of cost, time, and quality. The rapid aging of the world's population, increasing technology spending, patient safety challenges, and stagnant public finances are necessitating long-term cost savings and improved service quality and efficiency in global healthcare systems. In this context, lean leadership, a contemporary leadership style derived from the Toyota Production System, which describes a management philosophy and process methodology derived from the concept of lean, is expanding its application in organizations. Based on the results of this research, it is recommended that a lean leadership approach and practices be developed within the Turkish healthcare system.

Today's rapid changes and transformations are causing healthcare institutions to face pressure to produce healthcare services at lower costs, with higher quality and in less time. Increasing efficiency and productivity in healthcare, improving patient and employee satisfaction, strengthening employee commitment to the organization, and enhancing the quality of their work life are considered important solutions to alleviate these pressures. At this point, the historical trajectory of leadership theories reveals that lean leadership is a current but insufficient field of study, particularly for healthcare providers. However, evaluating the outcomes of lean leadership practices in the healthcare sector is considered crucial, particularly in terms of healthcare outcomes. Furthermore, examining the effect of lean leadership on quality of work life and organizational commitment in different countries constitutes another recommendation.

The research results have shown that lean leadership improves healthcare professionals' quality of work life and organizational commitment. Healthcare managers are advised to implement lean leadership behavior to improve healthcare professionals' quality of work life and organizational commitment.

The explanations above regarding the results apply to the 703 healthcare workers who constituted the sample size of this study. In this context, the lack of generalizability of the results indicates a restriction of the study. The results are also valid for the Turkish healthcare system.

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