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Do lean practices increase nurses' organizational commitment and job satisfaction in Turkey? – A private hospital model


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Abstract

Background: Making the employee feel valued can significantly affect the employee's commitment to the organization. The most important criteria of lean health services are to develop a culture in which employees are empowered to be actively involved in the decision-making process. **Objective:** This study aims to examine whether lean management practices have an effect on increasing nurses' "organizational commitment" and "job satisfaction". **Method:** The research was conducted in a private hospital in 2019-2021 in Turkey. In the study, the "Organizational Commitment and Job Satisfaction Questionnaire" was applied to staff nurses. Then the hospital management decided to implement "Lean Hospital" practices. In this process, lean training was given to the nurse management, and lean methods and techniques were applied in the field. After approximately 1.5 years, the questionnaires were re-issued to the participants again to compare and contrast results. **Results:** In the study, the mean score of the nurses from the "Job Satisfaction Questionnaire" before lean was 3.79 ± 0.29 , while it was 3.82 ± 0.28 after lean. The average score from the "Organizational Commitment Questionnaire" before implementing the lean practices was 3.74 ± 0.32 . It was 4.18 ± 0.21 after implementing the lean practices. While there was a low level of positive correlation between the nurses' mean scores of organizational commitment and job satisfaction questionnaires before implementing lean practices, it was found that the result was moderately positive after lean practices. **Conclusions/Implications for Practice:** Ensuring the participation of employees in the decision-making process and listening to their suggestions in lean management were positively associated with "organizational commitment" and "job satisfaction". However, it should not be forgotten that lean practices are a long-term and continuous methodology.

Keywords: Job satisfaction; organizational commitment; lean management; lean culture; hospital management; nursing.

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1. Introduction

Health institutions are among the institutions of vital importance for people, and employees have a great place in the delivery of health services and in achieving success (Taşkaya & Şahin, 2011, p.166). The over-arching purpose of private sector health service provision is that patients receive the quality of care they require, with a minimum waiting period and the least possible cost to the patient. Lean management practices are a learning system that provides benefits to the patients with safe and quality care and less waiting time (Balle & Regnier, 2007; Isack, Mutingi, Kandjeke, Vashishth, & Chakraborty, 2018). Lean management systems aim to use available resources efficiently (Bielaszka-DuVernay, 2011, p.423) to provide the service that the patient is willing to pay for (Machado & Leitner, 2010, p.384) and to maximize value-added activities for customers (Al-Araidah, Momani, Khasawneh, & Momani, 2010; Angelis, Conti, Cooper, & Gill, 2011; Minh, Zailani, Iranmanesh, & Heidari, 2018; Nicosia, Park, Gray, Yakir, & Hung, 2018). An organizational commitment to lean management systems focuses on understanding what the customer needs, then by redesigning the value stream, it seeks to eliminate the waste that prevents the delivery of value services to patients (Leyer, Reus, & Moormann, 2021, P.52). Waste is defined as anything that consumes resources but doesn't contribute to creating value for the customer/patient (Clark, Silvester, & Knowles, 2013, p.639). Lean is a cultural transformation (Benkarim & Imbeau, 2021), p.3) and is applied in different fields (such as production, banking, logistics, and hospitals) in the same way and with the same tools. This shows us that lean is a universal "management method" that can be applied in various fields. The adoption of lean management practices in hospitals enables development by focusing on areas such as "quality, safety, efficiency, and standardization" (Lima, Dinis-Carvalho, Souza, Vieira, & Gonçalves, 2021, p.414).

Lean thinking includes two key elements: respect for people and continuous improvement (Kaizen) (Clark et al., 2013; Ljungblom & Lennerfors, 2021). Continuous improvement is only possible with the participation of personnel (Benkarim & Imbeau, 2021). Lean focuses on increasing the responsibilities and capabilities of those working in the field. This issue, which is expressed as empowerment, increases the job satisfaction of the employees (Vidal, 2007, p.247). If a coercive approach is applied rather than motivating employees to perform their duties more effectively, job satisfaction will be adversely affected (Top & Gider, 2013, p.668). There is a strong relationship between increased job demand and occupational stress and job satisfaction (Abadi et al., 2021, p.1). "Lean thinking" a form of philosophy and method, aims to optimize "value" for employees and patients by eliminating unnecessary waste of time, stages, and movement (Nicosia et al., 2018, p.1). The most commonly used methods are value stream mapping, visual management, 5S, Standardization, time measurement, stopping the line, process mapping, and the Plan-Do-Study-Act cycle (Machado & Leitner, 2010). Developing and using employee capacities in lean management is as important as eliminating waste. For this reason, team leaders need to delegate their accountability and develop their staff in order to work safely and efficiently (Drotz & Poksinska, 2014, p.179). Taiichi Ohno identified seven wastes as "overproduction, waiting, inventory, transportation, over-processing, motion and errors/defects" (Robinson & Kirsch, 2015, p.716). The eighth waste of lean management is not tapping into employee skills. This waste is related to the ineffective use of employee ideas in improving processes. As a matter of fact, one of the most important factors causing employee dissatisfaction is the inadequate use of the skills of qualified employees, skill mismatches, and the waste of talent resulting from overtraining (Özkan Özen & Ventura, 2017, p.63). Lean management should focus not only on lean tools and techniques, but also on the employee (Coetzee, Van Dyk, & Van der Merwe, 2019, p.22). The tools and methods used in Lean constitute 20% of the lean transformation. Whereas, a large portion of 80% is spent on changing people's practices, behaviors, and mindsets (Ljungblom & Lennerfors, 2021, p.1212).

"The foundation of lean healthcare is to develop a culture in which staff are encouraged and empowered to make improvements" (Drotz & Poksinska, 2014, p.179). The culture created can be considered the first step in arranging the work environment (Abadi et al., 2021, p.2). The perception of the employees regarding the organizational policy of the institution also affects job satisfaction positively (Movahedi, Bidkhor, Arazi, Khaleghipour, & Amini, 2020, p.1). Rapid changes and

technological developments in today's health services affect employees' performance and their commitment to the organisation. Organizations that aim to work more efficiently and with higher performance have to develop various policies in order to increase their employees' organizational commitment and prevent them from leaving the institution (Akça & Devebakan, 2017; Vidal, 2007). Employees are the primary stakeholders who have a great impact on the development of organizations, and employee satisfaction is essential for organizational success (Minh et al., 2018; Sepahvand et al., 2020). Employee dissatisfaction can be regarded as productivity waste that disrupts the value-creation process of the organization (Leyer et al., 2021, p.52). Hospitals, in particular, face a nursing shortage due to limited resources and the misappropriation of nurses (Seren Intepeler et al., 2019, p.380).

Organizational commitment represents the voluntary employee process by which the organisation aims to reach its goals and values. The staff has the desire to continue working in the institution, and the psychological power that the employee feels toward the organisation (Battistelli, Galletta, Vandenberghe, & Odoardi, 2016; Benkarim & Imbeau, 2021; Dinc, Kuzey, & Steta, 2018; Taşkaya & Şahin, 2011; Wickramasinghe & Wickramasinghe, 2012). Organizational commitment helps nurses to create positive thoughts about the organisation, such as increased job satisfaction, feeling part of the institution, adopting the institution, and a feeling of belonging within the institution (Gaiardelli, Resta, & Dotti, 2019; Tang, Shao, & Chen, 2019). Today, the increase in the competitive environment and the effect of the changes experienced cause undesirable results such as job dissatisfaction, absenteeism, or leaving the job (Akça & Devebakan, 2017; Hakami, Almutairi, Al Otaibi, Al Otaibi, & Al Battal, 2020; Minh et al., 2018; Tang et al., 2019; Taşkaya & Şahin, 2011). The nurse shortage and the increase in the need for nursing services have also increased interest in exploring ways to improve nurse retention (San Park & Kim, 2009, p.20). “Especially, the idea of newly graduated nurses quitting nursing even during the orientation process prevents them from continuing to work and staying connected to their organization, and this situation confronts us as a nursing gap” (Seren Intepeler et al., 2019, p.380). Organizations that want to retain talented employees need to reconsider their processes so that employees want to stay with the organization (increasing their loyalty to the organization) (Akça & Devebakan, 2017; Dinc et al., 2018; Taşkaya & Şahin, 2011). Providing quality patient care in hospitals, retaining employees and increasing organizational commitment is a powerful advantages and this is critical for organizational success. One of the lean practices is aimed at providing quality patient care, improving job satisfaction and organizational commitment (Hakami et al., 2020; Seren Intepeler et al., 2019). Employees see themselves as members of the organization and want to continue to work for the organization if they participate in the process. At this point, the concept of lean thinking emerges (Vidal, 2007, p.247.). Studies show that employees with high organizational commitment work more harmoniously, productively, and with a sense of responsibility. The staff spend extra effort in achieving their tasks and goals and work longer at work. They are more constructive in their relations with the institution and accept the organisation as "their organization". Emotional commitment, which is included in organizational commitment, includes internal factors such as the employee's feelings of recognition and professional development. This issue is in line with the principle of “respect for people”, which is based on employee recognition and human development, and which is the main principle of lean philosophy (Benkarim & Imbeau, 2021; Coetzee et al., 2019; Tang et al., 2019).

Job satisfaction is defined as the measure of positive emotional response to a job, and positive emotions one feels, or the satisfaction one gets from a job, which individuals make sense of as a result of their evaluation of their job or work experience (Dinc et al., 2018; Gaiardelli et al., 2019; Hayes, Bonner, & Pryor, 2010; San Park & Kim, 2009; Saridakis, Lai, Muñoz Torres, & Gourlay, 2020; Wickramasinghe & Wickramasinghe, 2012). It has been stated that employees' problem-solving efforts increase when they believe that they can apply their knowledge and skills through "voluntary effort", especially when their individual goals and corporate goals are aligned, and they are developed mutually with the organization (Vidal, 2007, p.248). Studies have shown that when employees feel satisfied, they voluntarily cooperate with their organizations to achieve organizational goals (Chang, 2014, p.725).

Employees play a major role in the success of organizations if they feel empowered and motivated (Ljungblom & Lennerfors, 2021, p.1210).

2. Background

The literature states that there is a positive relationship between “organizational commitment” and “job satisfaction” (Astuti & Surya, 2020; Benkarim & Imbeau, 2021; Chang, 2014; Hakami et al., 2020; Saridakis et al., 2020). As the “job satisfaction” of the employee's increases, their emotional commitment to the organization will also increase (Benkarim & Imbeau, 2021; Gürcüoğlu, Çetinel, & Karagöz, 2020). Employees with high job satisfaction and motivation make significant contributions to lean management practices. Employees act according to the culture created by lean management practices in the institution. These employees will show characteristics such as being highly motivated, sensitive to waste, educated, problem solvers, and creative (Akgemci, Canbolat, & Kalfaoğlu, 2020, p.170). By contrast, there is a known negative relationship between role ambiguity/conflict, excessive workload, and deficiencies in organizational commitment and job satisfaction (Top & Gider, 2013, p.668). Lean is an approach that increases the competitiveness of organizations. However, it has been stated that the failure rate of lean practices can be almost 90% in organizations where there is no employee commitment (Benkarim & Imbeau, 2021, p.1). Similarly, it was stated that 61% of the failures in lean practices were due to the insufficient respect for the employees (Ljungblom & Lennerfors, 2021, p.1212).

2.1. Aim

From this point of view, the research was conducted to evaluate the development of "organizational commitment" and "job satisfaction" of nurses in the hospital where lean management practices are actively used. In addition, hospitals should periodically collect data on subjects such as “job satisfaction” and “organizational commitment” in order to create a sustainable competitive power. The original value of this study is that there is no study that measures the relationship between the organizational commitment of nurses and their job satisfaction in different years in the hospital where lean management is applied. Thus, the following research questions were formulated:

- *Does the organizational commitment of the nurses increase in the hospital where the lean
- *Does the job satisfaction of nurses increase in the hospital where the lean approach is applied?

3. Methods

3.1 Design and Participants

It is descriptive and prospective research that is planned to measure the relationship and change between organizational commitment and job satisfaction in different years in the hospital where lean management is applied. This research was conducted in a private hospital in Istanbul (Turkey) with 212 beds in which “Lean Management” was applied between September 2019 and March 2021. Nurses working in the hospital constituted the scope of the study. The number of nurses working in the hospital was 165 people. The first survey was carried out by all the nurses who agreed to participate (not choosing a sample). Those who left the institution after the first survey newly joined the institution and unsuitable forms were not included in the second survey. The study was completed with 139 (84.24%) samples who filled out the first and second questionnaires. In the study, the dependent variables of nurses' job satisfaction and organizational commitment levels; descriptive properties constitute its independent variables.

3.2 Data Collection Tools

The "Employee Information Form", which includes questions about the socio-demographic characteristics of the participants and their working life, the "Organizational Commitment Questionnaire (OCQ)" and the "Nurse Job Satisfaction Questionnaire (NJSQ)" were used.

Organizational commitment questionnaire: OCQ was used to measure the organizational commitment levels of the employees. The questionnaire, which was developed by Lyman W. Porter, Richard M. Steers, and Richard T. Mowday in 1974, was translated into Turkish by Erceylan (Erceylan, 2010). The "Cronbach's Alpha Internal Consistency Coefficient(α)" was defined as 0.885 by Erceylan, and it was determined as 0.72 in this study. According to the 5-point Likert scale, it was arranged as strongly disagree(1), disagree(2), undecided (3), agree (4) and strongly agree (5). A score approaching 5 on the scale indicates high organizational commitment levels of employees, while a score approaching 1 indicates low. Items 3, 8, 10,11, and 14 of the 14-item scale are scored in the opposite direction.

Nurse Job Satisfaction Questionnaire: NJSQ was developed by Muya *et al.* (2014) in Japan in order to determine the job satisfaction levels of nurses. The Turkish validity and reliability of the questionnaire were conducted by Türe Yılmaz and Yıldırım in 2016. The questionnaire consists of four sub-dimensions (Türe Yılmaz & Yıldırım, 2016). The(α) of the questionnaire was specified as 0.90, and it was determined as 0.79 in this study. The items of the scale were scored using a 5-point Likert system ranked from 1(strongly disagree) to 5(strongly agree). Items 7 and 21 on the scale are scored in the opposite direction. As the score on the scale increases towards 5, job satisfaction is considered high, and as it decreases towards 1, job satisfaction is considered low.

3.3 Data Collection

The prepared questionnaires were distributed to the nurses, and the answered questionnaires were received on the next working day (23.09.2019). The hospital management has decided to start "Lean Hospital" practices at the end of 2019. A "Lean Office" was created within the hospital. In this process, lean training was given, and lean methods and techniques (such as value stream mapping, 5S, kaizen application, A3 short meetings, root cause analysis(RCA), visual management, 5Why, fishbone, Pareto analysis, failure mode and effect analysis(FMEA) were applied in the field. During this period, there was no change that would affect working in the hospital. After approximately 1.5 years (29.03.2021), the questionnaires were applied to the participants again. It was questioned whether the lean practices affected the nurses' "organizational commitment" and "job satisfaction" while the hospital's lean studies were continuing to implement.

3.4 Limitations

There are limitations that affect the results of this study. The study was carried out on nurses in a private hospital. The implementation of lean takes many years, but the study was evaluated in a limited time due to various reasons. One of the limitations was high employee circulation happened such as changing jobs and leaving jobs due to the Covid-19 pandemic. The other limitation was that no study has been found that specifically measures the effect of lean practices on organizational commitment and job satisfaction. The strength of the study is the hospital management's support of lean management.

3.5 Data Analysis

Continuous variables were expressed as mean \pm standard deviation, while categorical variables were expressed as numbers and percentages (%). Organizational commitment, job satisfaction, and sub-dimensions of job satisfaction were evaluated with Wilcoxon sequential sign test before and after lean training. Response variables were determined as "Organizational commitment" and "job satisfaction". Time (before and after), nurse position, education, Age, working time in the profession, working time for the institution, and working shift were determined as independent variables. The Spearman Correlation test was used to examine the relationship between two numerical variables. The longitudinal changes in the levels of "organizational commitment" and "job satisfaction" before and after the lean education and the effects of independent variables on this were examined with a linear mixed model (LMM). We used the LMM with the intersection and slope of fitted time as random effects at the participant level. The relationship between response variables and independent variables

was quantified by the regression coefficient and standard error. A P value of <0.05 was accepted as the statistical significance limit. All statistical analyzes were conducted using R version 3.6.2 (R Foundation for Statistical Computing).

3.6 Ethical Considerations

Ethics committee approval was obtained from the Non-Interventional Clinical Research Ethics Committee of a University with the date/number of 09.09.2019/171 and the study was conducted in accordance with the principles of the Declaration of Helsinki. Written permission was obtained from the hospital where the study was conducted and in the questionnaire application, we read the consent form to the staff face-to-face and obtained their verbal consent then questionnaires were given to those who gave consent.

4. Results

A total of 139 nurses participated in the study. 38.8% of the participants have been working in the inpatient department, 20.9% in the intensive care unit, 12.9% in the bone marrow transplantation (BMT) unit, 72.7% are service nurses, 9.4% are staff nurses, 9.4% are sisters, and 4.3% are in management positions. 56.1% of the nurses graduated from nursing colleges, 20.1% nursing diploma (2 years after high school), 23.7% hold a bachelor's degree or higher, and 51.8% of them are between the ages of 18-25.

When we look at their total working time in the profession, we can see that 44.6% of the nurses have been working for 25-60 months, 45.3% for 61 months, and more. 30.2% of them have been working in this institution for 61 months and more, 27% for 13-24 months. 56.8% of the nurses have been working in shifts (Table 1).

Table 1 Demographic Findings of Nurses (N: 139)

Variable Group	n	%	Variable Group	n	%
Department			Education		
Inpatient department	54	38.8	Nursing college	78	56.1
Emergency department	11	7.9	Associate degree/ Nursing diploma	28	20.1
Operating room/ Angio	12	8.6	Bachelor's degree- above	33	23.7
Bone Marrow Transplantation	18	12.9	Position		
Intensive care	29	20.9	Staff nurse	101	72.7
Polyclinic	10	7.2	Executive nurse	19	13.7
Management	5	3.6	Other	19	13.7
Age			Working shifts		
18-25	72	51.8	Day shift only	51	36.7
26-35	46	33.1	Shift	88	63.3
36 and above	21	15.1	Informed about lean hospital practices		
Working time in the institution			Yes	12	8.6
13-24 months	38	27.3	No	103	74.1
25-60 months	59	42.4	Partially	24	17.3
61 months-more	42	30.2	Lean hospital practices are beneficial to the hospital		
Working time in the profession			Yes	37	26.6
13-24 months	14	10.1	No	33	23.7
25-60 months	62	44.6	Partially	69	49.6
61 months-more	63	45.3			

In the analysis performed with the Wilcoxon sequential sign test, it was observed that there was a significant improvement in the levels of "Organizational commitment" (before lean 3.74 ± 0.32 ,

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after lean 4.18 ± 0.21 , $p < 0.001$), and "job satisfaction" (before lean 3.79 ± 0.29 , after lean 3.81 ± 0.28) before and after lean training (Table 2).

Table 2. Comparison of organizational commitment, job satisfaction, and job satisfaction sub-dimensions before and after lean training (with the Wilcoxon signed rank test)

Scales and Sub-Dimensions	Before lean	After lean	test ist. (t value)	P
Organizational Commitment	3.74±0.32 (2.85-4.43)	4.18±0.21 (3.78-4.78)	6.5	<0.001
Job Satisfaction	3.79±0.29 (3.00-4.24)	3.82±0.28 (3.10-4.35)	-3.1	0.002
Positive Emotions about the job	3.91±0.33 (2.88-4.75)	3.92±0.34 (2.88-4.75)	-2.3	0.020
Support from Superiors	3.64±0.41 (2.33-4.67)	3.65±0.42 (2.33-4.67)	-2.3	0.020
Importance Perceived in Workplace	3.83±0.34 (2.75-4.75)	3.84±0.34 (2.75-4.75)	-1.9	0.060
Pleasant Work Environment	3.82±0.37 (2.80-4.80)	3.82±0.37 (2.80-4.80)	NC	NC

Wilcoxon signed rank test NC: Not calculated

With the Multivariable Linear mixed model, a significant improvement was observed in both "organizational commitment" (regression coefficient 0.389, SE:0.026, $p < 0.001$) and "job satisfaction" (regression coefficient 0.011, SE:0.003, $p < 0.001$) levels in all participants (Table 3 and Table 4).

Table 3. Relation of dependent variables with organizational commitment using multivariable linear mixed model

LMM for organizational commitment	Regression coefficient	Standart error	test ist. (t value)	P
Time	0.389	0.026	14.90	<0.001
Position (ward responsible nurse)	0.368	0.048	7.60	<0.001
Education				0.247
Associate degree, nursing college	-0.055	0.035	-1.57	
Bachelor's degree and above, nursing college	0.008	0.035	0.23	
Age				0.695
26-35 years vs 18- 25 years	-0.001	0.043	-0.02	
36 years and up vs 18- 25 years	0.036	0.056	0.64	
Working time in the profession				0.372
6 months - 12 months vs 6 less than 6 months	0.119	0.133	0.9	
13 months -24 months (2 years) - 6 less than 6 months	-0.015	0.119	-0.13	
25 months - 60 months (5 yıl) - 6 less than 6 months	-0.011	0.132	-0.08	
61 months and up - 6 less than 6 months	0.054	0.139	0.39	
Working time in the institution				0.061
6 months - 12 months - 6 less than 6 months	0.002	0.088	0.03	
13 months -24 months (2 years) - 6 less than 6 months	0.167	0.083	2.01	
25 months - 60 months (5 yıl) - 6 less than 6 months	0.194	0.095	2.05	
61 months and up - 6 less than 6 months	0.19	0.103	1.85	
Working shifts	0.018	0.032	0.55	0.582

In addition, with the Multivariable Linear mixed model, it was noted that position (responsible nurse) was an independent variable in determining the levels of "organizational commitment" in all participants. Being a "responsible nurse" was associated with a more significant improvement in

"organizational commitment" levels than non-responsible nurses (regression coefficient 0.368, SE:0.048, $p < 0.001$) (Table 3).

Similarly, with the Multivariable Linear mixed model, position (responsible nurse), working time in the institution, and working shifts were determined as independent variables in determining the "job satisfaction" levels of all participants.

A more significant improvement (regression coefficient 0.245, SE:0.077, $p:0.002$) was observed in the "job satisfaction" levels of being a "responsible nurse" compared to those who were not responsible nurses. However, as the working year increases (compared to working shorter than 6 months, the regression coefficient for employees between 6-12 months is -0.001, for employees between 13-24 months the regression coefficient is -0.012, for employees between 25-60 months the regression coefficient is -0.021, > regression coefficient for employees over 61 months is 0.060), a significant decrease was observed in "job satisfaction". A significant decrease in job satisfaction was observed in shift workers compared to day workers (regression coefficient -0.034, SE:0.013, $p=0.001$) (Table 4).

The results of the Spearman Correlation test showing the relationship between organizational commitment and job satisfaction measured before and after the lean of the nurses participating in the research are given in Table 5. While there was a low positive correlation between organizational commitment and job satisfaction measured before lean ($r=0.232$, $p < 0.05$), the study shows that there is a moderately positive correlation between the mean scores of total job satisfaction measured after lean ($r=0.332$, $p < 0.001$).

Table 4. Relation of dependent variables with job satisfaction using a multivariable linear mixed model (LMM)

LMM for Job Satisfaction	Regression coefficient	Standart error	test ist. (t value)	p
Time	0.011	0.003	3.81	<0.001
Position (ward charge nurse or sister)	0.245	0.077	3.17	0.002
Education				0.377
Associate degree, nursing college	0.023	0.058	0.40	
Bachelor's degree and above, nursing college	-0.067	0.055	-1.22	
Age				0.771
26-35 years - 18- 25 years	-0.0002	0.014	-0.01	
36 years and up - 18- 25 years	-0.0511	0.071	-0.71	
Working time in the profession				0.103
6 months - 12 months vs 6 less than 6 months	-0.002	0.013	-0.15	
13 months -24 months (2 years) - 6 less than 6 months	-0.0006	0.012	-0.06	
25 months - 60 months (5 yıl) - 6 less than 6 months	-0.006	0.015	-0.41	
61 months and up - 6 less than 6 months	0.122	0.054	2.24	
Working time in the institution				<0.001
6 months - 12 months - 6 less than 6 months	-0.0009	0.008	-0.11	
13 months -24 months (2 years) -6 less than 6 months	-0.012	0.008	-1.45	
25 months - 60 months (5 yıl)- 6 less than 6 months	-0.021	0.011	-1.91	
61 months and up - 6 less than 6 months	0.060	0.021	2.84	
Working shifts	-0.034	0.013	-2.54	0.0011

Table 5. The relation between “organizational commitment” and “job satisfaction” of the nurses before and after lean (N:139)

Group	Sub-dimension		Job Satisfaction	Positive Emotions about the job	Support from Superiors	Importance Perceived in Workplace	Pleasant Work Environment
Before Lean	Organizational Commitment	r	0.232 (L)	0.390 (M)	-0.006	0.131	0.130
		p	0.006	<0.001	0.941	0.124	0.129
	Job Satisfaction	r		0.752 (H)	0.789 (H)	0.646 (M)	0.729 (H)
		p		<0.001	<0.001	<0.001	<0.001
	Positive Emotions about the job	r			0.462	0.358	0.395
		p			<0.001	<0.001	<0.001
	Support from Superiors	r				0.309	0.632
	p				<0.001	<0.001	
Importance Perceived in Workplace	r					0.285	
	p					0.001	
After Lean	Organizational Commitment	r	0.332 (M)	0.315 (M)	0.214 (L)	0.249 (L)	0.204 (L)
		p	<0.001	<0.001	0.011	0.003	0.016
	Job Satisfaction	r		0.756 (H)	0.789 (H)	0.637 (M)	0.732 (H)
		p		<0.001	<0.001	<0.001	<0.001
	Positive Emotions about the job	r			0.466	0.363	0.386
		p			<0.001	<0.001	<0.001
	Support from Superiors	r				0.295	0.638
	p				<0.001	<0.001	
Importance Perceived in Workplace	r					0.284	
	p					0.001	

L: Low M: Medium H: High

5. Discussion

It is a fact that the performance of the staff with high organizational commitment will be high, therefore the productivity and costs of the institution will be positively affected, and the probability of employees continuing to work for the institution will increase. Based on this point of view, the study was planned to implement in order to identify the effect of lean management practices on organizational commitment and job satisfaction. The study was carried out on 139 nurses in a private hospital located in the province of Istanbul, Turkey.

The nurses in the study constitute a very young group. Appointment of nurses by the ministry of health to work in state hospitals and mandatory military services for male nurses in the country increase the leave in nursing positions. This situation especially has an effect on private hospitals as having a high number of young employees.

In the study, it is observed that the levels of "organizational commitment" and "job satisfaction" before and after lean training were significantly higher. Employee participation in decision-making processes and listening to their views are positively connected with "organizational commitment" and "job satisfaction" in lean management. It can be said that the team's engagement in decision-making allows them to recognize themselves as members of the team, improves their perspective of the organization, and provides satisfaction since they feel valued for their thoughts. Furthermore, managers' regular Gemba walks could be effective in making staff feel valued. There is a significant difference in the "support of the management" and "feelings about the work" in the study. It is reasonable to assume that increasing nurses' job satisfaction will also boost their sense of belonging to the hospital. According to a study, employee satisfaction is directly linked to senior management's readiness to lean practice (Varadaraj & Ananth, 2020, p.140). Efficient use of existing resources of institutions has a significant impact on providing a competitive advantage (especially human resources).

Increasing organizational commitment will be meaningful in preventing the waste of resources due to the employees leaving the institution. Personnel with a high level of organizational commitment will be more likely to contribute to the organization by adopting organizational goals, there will be a decrease in the intention to leave the organization and labor turnover (Akça & Devebakan, 2017; Astiti & Surya, 2020; Hakami et al., 2020). Employee satisfaction with their jobs is critical to the organization's success and employees are one of the most important stakeholders with a significant impact (Minh et al., 2018, p.59). The overall job satisfaction result is consistent with prior studies that looked at specific aspects of lean management (Leyer et al., 2021; Wood, Van Veldhoven, Croon, & de Menezes, 2012). Hasle et al. (2012) reported in a literature analysis conducted between 1999 and 2006 that lean approaches have both good and negative effects on organizational commitment. In their systematic review (Gaiardelli et al., 2019, p.7). Moraros et al. (2016) found that lean applications are inversely associated with employee satisfaction (Moraros, Lemstra, & Nwankwo, 2016, p.150). Organizational commitment has been found to be enhanced when role ambiguity is reduced and work satisfaction is increased (Morrow, 2011, p.26). In addition, Naghneh et al. found in their study of 322 nurses that as the nurse's organizational commitment increased quality of patient care improved (Naghneh et al., 2017, p.4835). According to a study by Lindskog et al. (2016), performed in Sweden, lean tools (value stream mapping, standardization, and use of 5S) boost employee job satisfaction, but visual monitoring boards prevent employee and manager job satisfaction when managerial assistance is not provided (Lindskog, Hemphälä, Eklund, & Eriksson, 2016), p.91). After implementing lean principles in telemetry units, nurses at a private medical center reported that the distance the staff walked during work decreased by 85%, employees were able to take regular breaks and lunches; overtime was reduced by 2%, and all these resulted in a subjective increase in overall employee satisfaction (Nelson-Peterson & Leppa, 2007, p.293). Rodriguez et al. (2016) found that lean strategies improve job satisfaction in a simulation game (Rodríguez, Buyens, Van Landeghem, & Lasio, 2016, p.159).

Lean focuses on the development of employees and emphasizes that the progression of all employees is valuable. The fact that nurses in charge are more involved in the decision-making process due to their positions may be effective in the mean scores of organizational commitment and job satisfaction of the nurses. On the other hand, staff nurses may experience unhappiness due to the high demands of the job, expectations of patients/patient relatives, and the stress of the working environment. Also, the work of the responsible personnel only during the day and additional payments depending on their positions can also be effective. Involving nurses in problem-solving and decision-making is an excellent way to make them feel valued. Employees could be more satisfied at work when they are actively involved in making critical decisions, developing alternatives, planning processes, and evaluating outcomes (Wickramasinghe & Wickramasinghe, 2012, p.163). Employee involvement in the problem-solving process has been shown in the literature to increase workflow and keep staff motivated (Minh et al., 2018, p.59). In addition, "it has been stated that autonomy is positively affected by the lean implementation when employees actively participate in the decision-making process" (Gaiardelli et al., 2019, p.7). Manager nurses have higher job satisfaction than clinical nurses, according to Kantek and Kartal's meta-analysis study (Kantek & Kartal, 2016 p.4277). Another study showed that there is a positive and strong relationship between the "perception of support" and "emotional commitment" of employees (Angelis et al., 2011, p.572).

It has been emphasized that employee perceptions of leanness about lean methods used in the organization are linked to job satisfaction (Leyer et al., 2021, p.56). Employee satisfaction is improved by practices based on skills and abilities, teamwork, active participation of employees in problem-solving and decision-making processes, and by establishing a continuous learning environment, according to another study on lean in the manufacturing industry (Minh et al., 2018), p.67). It is stated that the autonomy (work-related independence, taking initiative) and authority of nurses in nursing practices have positively enhanced job satisfaction (Hayes et al., 2010, p.805). According to Leyer et al. (2021), the enhanced sense of autonomy and responsibility in a lean atmosphere triggers the employee's intrinsic motivation (Leyer et al., 2021, p.54). According to another

study, lean management reduces employees' decision-making freedom and may have a detrimental impact on job autonomy because it produces conventional work patterns (Gaiardelli et al., 2019, p.7). In lean work, employees are expected to think outside the boundaries of the job, engage in choices, and be more "pro-active, flexible, and collaborative" (high involvement management) (Wood et al., 2012, p.31).

In the study, "job satisfaction" levels were found to be low in those who worked for many years and worked in shifts (day and night). It is possible that the boredom of working in the same area for an extended period, as well as shift employees' inability to regulate their biological clock, reduce job satisfaction. This is similar to what has been expressed in the literature (Gürcüoğlu et al., 2020). It has been stated that there is a U-shaped association between employee age & tenure in the firm and job satisfaction. According to their findings, job satisfaction is high when people start their first job and it declines in their late twenties and early thirties. Then it starts to increase again. Similarly, satisfaction drops during the first year of employment stay low for a few years, and then rises (Minh et al., 2018, p.61).

There was found a moderate positive relationship between organizational commitment and job satisfaction mean scores after lean. The study shows parallelism with the studies in the literature showing that there is a positive relationship between job satisfaction and organizational commitment (Astiti & Surya, 2020; Gürcüoğlu et al., 2020; Hakami et al., 2020).

6. Conclusion

Private healthcare Organizations are trying various ways to survive and to gain a competitive advantage in the constantly developing market. The most important element for organizations is "people". Nurses constitute the largest occupational group in hospitals. It is important that commitment to the organization and job satisfaction is ensured. The existence of an institution and the quality of the service are directly related to the "job satisfaction", satisfaction levels, and "organizational commitment" of the employees. The low positive relationship between nurses' MVOCQ and MVJSQ, which was measured before lean practices, was found to be moderately positive after lean practices. For the success of lean applications, it is necessary to prevent the wastage of employees. At this point, it is recommended to cooperate with the senior management and human resources department in order to evaluate the experience and competencies of the unit where the nurse works during the recruitment process, and avoid changing work placements. It is recommended that hospital management involves employees in the decision-making process as well as train employees and managers and establish a lean management culture in their organizations. In this way, employees feel valued within the hospital and act to reduce waste by using root cause analysis and problem-solving techniques. Lean practices should be organized in a way that does not impose additional burdens while ensuring nurses' professional autonomy and commitment to providing patient-centered care. In particular, practical training on lean thinking should be included in career planning for the nursing staff in management positions. In this context, data on employee job satisfaction and organizational commitment should be regularly collected and evaluated. It should be performed in different hospital settings such as state hospitals or university hospitals. This will help us understand the effect of lean practices better on organizational commitment and job satisfaction. It is recommended to conduct research on different and larger samples in the future and to examine the relationships between lean management and different variables (such as organizational politics, organizational trust, organizational stress, organizational culture, etc.).

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