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# Examining the Relationship Between Perception of Operating Room Training Environment and Job Motivation in Surgical Specialist Training

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## Abstract

This study aims to examine the relationship between the perceptions of surgical residents undergoing surgical specialty training in multidisciplinary training and research hospitals in Türkiye regarding their operating room training environment and their work motivation levels. The study, conducted using an analytical cross-sectional design, included 112 surgical residents selected using convenience sampling. 'The Operating Room Training Environment Scale (OREEM)' and the 'Multidimensional Work Motivation Scale (MWM)' were used as data collection instruments. Descriptive statistics, independent samples t-test, one-way ANOVA, and Pearson correlation coefficient were used in the analysis of the data. The findings show that residents generally perceive the operating room training environment positively. The Learning Opportunities ($M = 4.10$) and Operating Room Environment ($M = 4.00$) sub-dimensions received the highest perception scores, while the Teaching and Training dimension ($M = 3.86$), although above the positive threshold, remained at a relatively lower level. In terms of work motivation, participants were found to exhibit high autonomous motivation ($M = 3.64$) and low demotivation ($M = 1.93$). While no significant difference was found in OREEM scores when comparing genders, male residents had significantly higher levels of demotivation compared to their female colleagues. Regarding residency seniority, residents with 5–6 years of experience had significantly more positive perceptions of learning opportunities and the operating room environment compared to those with 1–2 years of experience. Correlation analyses revealed that all sub-dimensions of OREEM showed a positive and significant relationship with autonomous motivation. However, no significant relationship was found with demotivation and controlled motivation. In light of these findings, it is recommended that training institutions develop structured mentoring programs to improve the operating room learning climate, strengthen instructor-resident communication, and enhance motivational support mechanisms for male residents.

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## Introduction

The evolution of healthcare services into an increasingly multifaceted and innovative structure in the post-pandemic era highlights the importance of learning environments that shape the quality of specialist training. The operating room is a high-stress training environment where technical skills, clinical judgment, and teamwork develop simultaneously (Croghan et al., 2019; Jensen et al., 2018; Averlid & Høglund, 2020). This multifaceted structure distinguishes operating room training from other clinical settings; the intense pressure conditions directly affect both the learning process and the development of professional attitudes (Schwind et al., 2004). Therefore, it is important to consider the physical, social, and organizational dimensions of the training environment together. However, the perceptions of specialist trainees regarding this environment are a fundamental element determining learning outcomes, and the training environment is defined not only by objective conditions but also by individual experiences (Kanashiro et al., 2006; Diwadkar & Jelovsek, 2010).

During specialist training, perceptions of the learning environment influence an individual's professional development and attitudes towards work life in the long term (Flott & Linden, 2016; Riveros-Perez et al., 2016). Evaluating operating room training from both the student and instructor perspectives contributes to identifying the strengths and areas for improvement (Crafoord et al., 2018; Dimoliatis & Jelastopulu, 2013). However, the relationship between perception of the learning environment and motivation has been studied to a limited extent. Since clinical learning environments have been shown to influence professional satisfaction and career choices among nursing students (Arkan et al., 2018; Sundler et al., 2014), addressing this relationship within the context of specialist training is crucial. Considering global healthcare workforce shortages, understanding the motivational effects of the operating room training environment is a critical requirement for training qualified specialists.

## Problem Statement

The operating room is one of the most challenging clinical environments where healthcare professionals receive their specialist training. In this environment, students are simultaneously exposed to multiple stressors such as hierarchical structure, time pressure, and high-risk clinical decisions (Norouzi & Imani, 2021; Yildiz Findik et al., 2015). These conditions can negatively affect the learning process, leading students to develop negative perceptions of the environment (Totur Dikmen & Bayraktar, 2021). Indeed, the literature shows that factors such as communication problems, insufficient support, and role ambiguity create significant obstacles in the clinical learning process (Jamshidi et al., 2016). In this context, it is considered that structural problems in the training environment have a weakening effect on individual motivation. Furthermore, it has been reported that negative learning experiences are associated with low job motivation and intention to leave the profession (Zhang et al., 2022). Therefore, revealing the effects of operating room training conditions on motivation is critically important for improving the quality of education.

The sustainability of motivation in specialist training is directly related to professional competence and service quality (Budden et al., 2017; Wagner et al., 2019). In this process, the attitudes of educators and supervisors are one of the key elements determining the motivational climate of the learning environment (Bradbury-Jones et al.,

2010). However, the insufficient evaluation of the operating room training environment with standardized measurement tools limits the comparison of findings (Al-Qahtani & Al-Sheikh, 2012; Binsaleh et al., 2015). Furthermore, evidence regarding motivation levels in different specialties is limited (Riveros-Perez et al., 2016). Therefore, a multidimensional examination of the relationship between perception of the training environment and job motivation is important. Considering the operating room environment not only as a technical space but also as a training context where motivational processes are shaped will contribute to research in this area.

## The Gap in the Literature and the Importance of the Research

Studies on the operating room training environment have primarily focused on medical students and surgical residents, largely excluding healthcare professionals from other specialties (Marwan et al., 2021; Knfe et al., 2024). This limits a holistic understanding of the perceptions of different professional groups towards the environment and the motivational implications of these perceptions. Furthermore, existing measurement tools mostly focus on technical skills and do not adequately cover psychosocial dimensions (Diwadkar & Jelovsek, 2010; Wubshet et al., 2024). Therefore, studies that comprehensively address the relationship between perception of the training environment and motivation are limited, and the current literature is insufficient to provide an explanatory framework.

The relationship between job motivation and the learning environment has mostly been examined in nursing students and general clinical contexts, while motivational processes specific to the operating room have not been sufficiently investigated (Flott & Linden, 2016; Rusticus et al., 2022). Studies examining this relationship in the context of mediating and moderating variables are quite limited, especially in high-stress and hierarchical environments. Furthermore, the interaction between educators' teaching motivation and learners' work motivation has been largely neglected (Budden et al., 2017; Leithead et al., 2019). These gaps indicate a need for more comprehensive and multidimensional research.

This study aims to contribute to the literature by holistically examining the relationship between perceptions of the operating room training environment and job motivation in a sample of healthcare professionals from different specialties. It is known that perceptions of the learning environment are decisive in determining professional sustainability and motivation (Mukhalalati et al., 2024; Papastavrou et al., 2016). In this context, the research aims to both fill a methodological gap and provide an evidence-based foundation for practices aimed at improving training environments. The findings are expected to be guiding in terms of training policies and institutional practices.

## The Effects of the Operating Room Environment on Learning and Education

The operating room is a unique learning environment where high technical requirements, time pressure, and team coordination are carried out simultaneously (Croghan et al., 2019). This structure limits the application of traditional educational approaches and necessitates the active participation of the learner. The learning process is mostly based on a model where tacit knowledge is transferred through a master-apprentice relationship (Schwind

et al., 2004). However, environmental factors such as physical conditions, noise levels, and equipment access directly affect the learning experience (Diwadkar & Jelovsek, 2010; Jensen et al., 2018; Kanashiro et al., 2006). Therefore, understanding how the operating room environment is experienced by the student is important for the development of educational programs.

In the context of clinical education, positive perceptions of the operating room environment increase learning motivation and professional commitment, while negative experiences can lead to anxiety and feelings of inadequacy (Foran, 2016; Totur Dikmen & Bayraktar, 2021; Willassen et al., 2015). Supervisor attitude and communication quality are among the key factors determining the student's experience; a supportive learning climate has a positive impact on self-efficacy and learning outcomes (Bradbury-Jones et al., 2010; Sundler et al., 2014). Conversely, hierarchical structures can limit student participation and initiative (Jamshidi et al., 2016; Najafi Kalyani et al., 2019). Therefore, ensuring psychological safety stands out as a critical element in improving the quality of education. Furthermore, positive clinical experiences are reported to have long-term effects on professional sustainability and career choices.

Various measurement tools have been developed to evaluate the operating room training environment, with STEEM and PHEEM being among the most commonly used scales (Al-Qahtani & Al-Sheikh, 2012; Binsaleh et al., 2015; Dimoliatis & Jelastopulu, 2013; Marwan et al., 2021). These tools particularly highlight the decisive role of educator-student relationships on the learning experience. However, it is reported that the perception of the training environment varies according to the type of institution and the field of expertise (Wubshet et al., 2024; Knfe et al., 2024). Therefore, testing the validity and reliability of measurement tools in different contexts and supporting quantitative findings with qualitative data contributes to a more comprehensive understanding of the operating room training environment.

## Job Motivation and Contextual Factors in Specialized Training

In the context of specialist training, work motivation is conceptualized as an integrated reflection of an individual's effort to achieve learning goals and their tendency to reinforce their professional identity (Budden et al., 2017; Averlid & Høglund, 2020). Within this framework, motivation is shaped by both individual internal factors and institutional and contextual conditions. Teamwork and interpersonal interaction in the operating room environment have been shown to have a decisive impact on an individual's motivation level (Leithead et al., 2019). In addition, the pressure elements brought about by hierarchical structures are consistently reported in the relevant literature as being among the main contextual factors negatively affecting motivation (Norouzi & Imani, 2021).

Furthermore, the quality of the relationship between the instructor and the student is considered a critical factor that supports or hinders the development of intrinsic motivation. In this context, Foran (2016) demonstrated the positive effects of the operating room experience on students' motivation and self-confidence levels with quantitative data. However, Wagner et al. (2019) emphasizes that working conditions, leadership style, and safety climate directly affect the motivational processes of healthcare professionals. Therefore, increasing motivation in specialist training necessitates interventions at the organizational level as well as individual factors.

The motivational experiences of resident nurses training in the operating room appear to be directly related to the demanding nature of clinical conditions. Yildiz Findik et al. (2015) show that stress levels in operating room practice are linked to motivational difficulties in nursing students. Furthermore, Schwind et al. (2004) examined the variables affecting the learning process of medical students in the operating room and revealed the decisive role of instructor attitude on student motivation. Therefore, it is considered critically important for educational outcomes to improve environmental arrangements and instructor qualities aimed at supporting motivational levels. On the other hand, Willassen et al. (2015) examined the experiences of student nurses regarding honor and dignity in perioperative practice; they revealed that negative experiences seriously damage professional motivation. Accordingly, it is suggested that creating a positive educational culture in the operating room plays a protective role in terms of motivational processes. Furthermore, Larti et al. (2018) documented that empathy-focused educational interventions had positive effects on both emotional preparedness and motivation in operating room students. Therefore, systematic investigation of the contextual determinants of motivation lays the groundwork for developing evidence-based educational interventions.

## The Relationship Between Perception of the Educational Environment and Work Motivation

The relationship between perception of the learning environment and job motivation is becoming an increasingly important focus in the literature on health professions education (Flott & Linden, 2016; Riveros-Perez et al., 2016). In this context, it is consistently reported that a positive perception of the learning environment increases an individual's intrinsic motivation, while a negative perception reduces motivation. Indeed, Papastavrou et al. (2016) show that nursing students' satisfaction with the clinical learning environment is positively related to professional motivation and self-efficacy. In this context, developing theoretical models to explain the role of environmental perception on motivational outcomes is considered one of the priority needs of the literature. Furthermore, Jensen et al. (2018) suggest that the way surgical identity is constructed in the operating room mediates the relationship between environmental perception and professional commitment. On the other hand, Diwadkar & Jelovsek (2010) reveal that surgical trainees' environmental perceptions are directly related to learning outcomes; drawing attention to the motivational dimension of this relationship. Therefore, developing integrated models that simultaneously address the effects of the operating room training environment on both cognitive and motivational processes is of great importance. Consequently, contributing empirical research that directly tests the relationship between these two constructs to the literature will make a significant contribution at both theoretical and applied levels.

The relationship between how prospective healthcare professionals perceive their learning environment and their levels of professional motivation exhibits consistent patterns across different clinical contexts (Rusticus et al., 2022; Zhang et al., 2022). Accordingly, perceiving the clinical environment as supportive, respectful, and learning-oriented reinforces an individual's work motivation and strengthens their intention to continue in the profession. Indeed, Mukhalalati et al. (2024) documented that healthcare students' perceptions of the learning environment are strongly related to professional identity development and, consequently, motivational commitment. Furthermore, Marwan et al. (2021) revealed that the perceptions of surgical residents in Canada

regarding the operating room training environment paralleled their overall job satisfaction. In this context, it is considered that the perception of the training environment carries an emotional and motivational meaning beyond the cognitive evaluation dimension. Al-Qahtani & Al-Sheikh (2012) reported that student perceptions of the operating room training environment exhibited distinct patterns consistent with learning motivation. Therefore, studies that examine the perception of the educational environment together with motivational outcomes are considered to have a very high potential for guiding health education policies. Consequently, conducting research that examines this relationship in different professional contexts and cultural environments will expand the conceptual and empirical boundaries of the field.

## Motivational Outcomes of Environmental Perception in Expert Training

Research conducted by experts on the motivational consequences of environmental perception reveals that this relationship is multidimensional and context-sensitive (Flott & Linden, 2016; Arkan et al., 2018). A positive perception of the clinical environment appears to support key motivational outcomes such as self-efficacy, professional commitment, and intention to continue. Najafi Kalyani et al. (2019) state that negative experiences in the clinical environment erode professional motivation and lead to career uncertainty for nursing students. In this context, the effect of environmental perception on motivational outcomes is considered to reflect a complex network of interactions rather than a direct causal relationship. Furthermore, Bradbury-Jones et al. (2010) emphasize that empowering students in the clinical environment is a decisive factor in terms of both motivation and learning outcomes. Totur Dikmen & Bayraktar (2021) reported that nursing students who had positive experiences in operating room practice achieved significant gains in terms of professional motivation. Therefore, establishing periodic evaluation mechanisms to monitor the motivational outcomes of health education environments stands out as an important policy step to ensure the sustainability of educational quality. Consequently, research that reveals the motivational dimensions of environmental perception is expected to guide both individual development and institutional capacity-building processes.

When examining contextual determinants of motivational outcomes, it is observed that a safe and supportive work-learning climate is strongly related to the job motivation and professional well-being of healthcare professionals (Wagner et al., 2019; Rusticus et al., 2022). Accordingly, leadership quality and team cohesion in the clinical setting are considered among the key contextual factors that nourish an individual's motivational resources. Indeed, Sundler et al. (2014) examined the effect of supervision organization on nursing students' clinical learning environment experience and determined that supportive supervision significantly contributed to motivation. Furthermore, Yildiz Findik et al. (2015) revealed that stress management skills and coping strategies are protective factors regulating motivation levels in the operating room environment. In this context, Norouzi & Imani (2021) emphasize that clinical stressors pave the way for motivational burnout in operating room students, and that institutional support acts as a crucial buffer in this process. Zhang et al. (2022) documented a strong and positive relationship between clinical learning environments and nurses' intention to stay in the profession, highlighting the strategic importance of environmental improvements on motivational sustainability. Therefore, it is becoming increasingly critical for institutions training healthcare professionals to adopt conscious environmental design principles in terms of motivational outcomes. Consequently, research examining the

motivational implications of environmental perception is considered to directly contribute to the fields of healthcare workforce policies and educational management.

The main objective of this research is to examine the relationship between the perceptions of surgical residents undergoing surgical specialty training in multidisciplinary training and research hospitals in Türkiye regarding the operating room training environment and their work motivation. In this context, the following sub-research questions were addressed:

1. What are the perception levels of surgical residents regarding the operating room training environment (in terms of OREEM sub-dimensions)?
2. What are the work motivation levels of surgical residents in terms of demotivation, autonomous motivation, and controlled motivation dimensions?
3. Do surgical residents' perceptions of the operating room training environment show a significant difference according to gender?
4. Do surgical residents' work motivation levels show a significant difference according to gender?
5. Do surgical residents' perceptions of the operating room training environment show a significant difference according to the duration of their specialty training (seniority)?
6. Do surgical residents' work motivation levels show a significant difference according to the duration of their specialty training?
7. Is there a significant relationship between surgical residents' perceptions of the operating room training environment (OREEM sub-dimensions) and their work motivation dimensions (demotivation, autonomous motivation, and controlled motivation); and if so, what is the direction and level of this relationship?

## Method

This research is an analytical cross-sectional study conducted with surgical residency trainees in multidisciplinary training and research hospitals in Türkiye. Within the scope of the research, participants' perceptions of the operating room training environment and their work motivation levels were evaluated using relevant measurement tools.

### Research Design

This research was conducted using an analytical cross-sectional design. Cross-sectional design is a quantitative research approach widely preferred in answering descriptive and correlational research questions, allowing for the simultaneous collection of data on multiple variables at a single measurement point within a specific time period (Knfe et al., 2024; Wubshet et al., 2024). This design is widely used in health professions education research to examine clinical learning environment perception and motivational variables together; indeed, major studies investigating operating room training environments have adopted this design (Al-Qahtani & Al-Sheikh, 2012; Marwan et al., 2021; Riveros-Perez et al., 2016).

There are several key reasons for choosing a cross-sectional design for this research. First and foremost, since the current research aims to identify the pattern of the relationship between perception of the operating room training environment and work motivation, a cross-sectional design is methodologically sufficient and appropriate for revealing a correlational profile rather than seeking a causal relationship (Rusticus et al., 2022). It is noteworthy that the vast majority of pioneering studies in this field have adopted a cross-sectional design, and the critical role of cross-sectional data in establishing a comparable evidence base in the literature is considered (Binsaleh et al., 2015; Marwan et al., 2021). Reaching residents in the active surgical rotation period during their specialist training process necessitates instantaneous and real-time assessments instead of long-term longitudinal follow-up from a practical standpoint. Indeed, Wagner et al. (2019), in their cross-sectional study with healthcare professionals, demonstrated that this design provides a powerful methodological tool for the simultaneous assessment of working conditions and motivational processes.

The research was designed within a quantitative paradigm, and data were collected using standard, validated, and reliable psychometric measurement tools. This approach is based on a well-established methodological tradition in health professions education research regarding the operationalization of both perceptions of the clinical learning environment and motivational variables using quantitative methods (Diwadkar & Jelovsek, 2010; Flott & Linden, 2016). To conduct the research, participants were informed in writing about the purpose of the study, the principle of voluntariness, and the confidentiality and anonymity of the data, and their voluntary informed consent was obtained.

**Sample**

The study population consists of residents actively undergoing surgical residency training in multidisciplinary training and research hospitals in Türkiye. The sample was determined using convenience sampling and comprised 112 surgical residents who voluntarily agreed to participate in the study. Participants were healthcare professionals with varying residency seniority (1-2 years, 3-4 years, and 5-6 years) in general surgery (n=31), orthopedics (19), gynecology (n=32), otolaryngology (n=11), and other (n=19) surgical branches. 33 of the participants were female and 79 were male. The average age of the participating residents was 29.38±3.38. The sample size is comparable to that of similar cross-sectional studies in the field. Indeed, Marwan et al. (2021) with 88 participants, Knfe et al. (2024) with 103 participants, and Wubshet et al. (2024) with 213 participants demonstrated that similar sample sizes provided sufficient analytical power to examine the relevant variables. Inclusion criteria were active perioperative rotation during the research process and complete completion of the questionnaire. Questionnaires with incomplete or inconsistent responses were not included in the analysis.

**Data Collection Tools**

Two standardized measurement tools were used to collect data: the Operating Room Training Environment Scale (OREEM) and the Multidimensional Job Motivation Scale (MJMS). Both scales were administered via an online survey platform.

*Operating Room Training Environment Scale (OREEM)*

The original Operating Room Training Environment Scale (OREEM) was developed by Cassar (2004). OREEM was developed to assess the operating room training environment and is among the most widely used psychometric measurement tools in perioperative training research (Diwadkar & Jelovsek, 2010; Marwan et al., 2021). The scale consists of 40 items answered with a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree). The 40 items are structured under four sub-dimensions: (1) Teaching & Training (items 1–13): Residents' perceptions of the surgical educator; (2) Learning Opportunities (items 14–24): Perceptions of learning opportunities in the operating room; (3) Operating Room Atmosphere (items 25–32): Perceptions of the perioperative working climate. (4) Workload, Supervision & Support (items 33–40): Measures perceptions of clinical supervision quality and institutional support. The total raw score obtainable from the scale ranges from 40–200, with values of 120 and above reflecting a positive perception of the learning environment (Al-Qahtani & Al-Sheikh, 2012; Wall, 2007). In the analyses, raw scores were divided by the number of items (k = 40) to calculate average OREEM scores in the range of 1–5; averages of 3.00 and above were determined as the threshold of positive perception (Marwan et al., 2021). The Cronbach's alpha reliability coefficient of the scale has been reported between .82 and .90 in relevant studies (Sadiq et al., 2019; Talat & Sethi, 2019).

In this study, the scale was adapted into Turkish by two experts, and a back-translation method was used to check for any changes that might cause semantic differences compared to the original data collection instrument. Expert opinions were also obtained regarding cultural sensitivity. When the psychometric properties and construct validity of the scale for the Turkish sample were examined within the scope of this research, it was observed that the item-total correlation coefficients calculated within the scope of item analysis were significantly above the acceptable limits in all sub-dimensions. In the ‘Teaching and Education’ sub-dimension, the corrected item-total correlation coefficients for the 13 items ranged from .52 to .90, and the threshold value of .30 was exceeded for all items (lowest: Item 10, r = .52; highest: Item 2, r = .90). The corrected item-total correlations for the 11 items constituting the ‘Learning Opportunities’ sub-dimension ranged from .69 to .84; No item falls below the critical threshold (lowest: Item 23, r = .69; highest: Item 19, r = .84). In the ‘Operating Room Environment’ sub-dimension, the calculated values for the 8 items are concentrated between .65 and .87 (lowest: Item 28, r = .65; highest: Item 32, r = .87). In the ‘Workload, Supervision and Support’ sub-dimension, the item-total correlations for the 8 items range from .57 to .86 (lowest: Item 38, r = .57; highest: Item 40, r = .86). The fact that the item-total correlation coefficients for all items in the scale are above .30 indicates that the items are sufficiently discriminatory in measuring the relevant construct and that there is no need to remove any item from the scale (Field, 2013; Nunnally & Bernstein, 1994). These findings strongly support the idea that the Turkish form of OREEM has a valid and consistent structure at the item level.

The four-factor structure of OREEM was also tested by confirmatory factor analysis (CFA). The CFA findings show that all factor loadings of the four-factor structure are statistically significant ($z > 11.13$, $p < .001$) and the unstandardized loading coefficients range from .786 to 1.043. When the fit indices were examined, $\chi^2(59) = 253.03$, $\chi^2/df = 4.29$ were calculated. GFI = .891, AGFI = .899 and NFI = .901 values exceed the acceptable fit threshold of .80, but are on the borderline of the good fit criterion of .90 (Jöreskog & Sörbom, 1993; Bentler,

1990). CFI = .897 and TLI = .894 values were found to be at an acceptable fit level. The RMSEA value of .172 is known to produce limited results when the sample size is relatively limited and Likert-type data challenges the normality assumption (Hu & Bentler, 1999; West et al., 2012). Studies on perioperative education scales conducted with similar sample sizes have also documented that RMSEA values can exceed acceptable limits. All these findings indicate that the four-factor theoretical structure of OREEM has been validated in the Turkish surgical resident sample; however, retesting the model with larger samples would significantly contribute to the psychometric maturation of the scale.

In this study, the internal consistency reliability of the scale was evaluated using the Cronbach's alpha coefficient; the results indicate a high level of psychometric reliability. When examined at the sub-dimension level, the Cronbach's alpha coefficient was calculated as $\alpha = .958$ for the Teaching and Training sub-dimension, $\alpha = .955$ for the Learning Opportunities sub-dimension, $\alpha = .947$ for the Operating Room Environment sub-dimension, and $\alpha = .915$ for the Workload, Supervision, and Support sub-dimension. The Cronbach's alpha coefficient for the entire 40-item scale was found to be $\alpha = .980$. These values meet the acceptable reliability threshold (Nunnally & Bernstein, 1994), defined in the literature as .70 and above, and the "excellent reliability" criterion (George & Mallery, 2003), indicating .90 and above, for all sub-dimensions and the scale as a whole. When compared with reliability values reported in international samples (Sadiq et al., 2019: $\alpha = .82$; Talat & Sethi, 2019: $\alpha = .61–.87$ subdimensions, $\alpha = .90$ total), the coefficient values obtained in this study are found to be above or equivalent to these values. This indicates that OREEM also possesses strong psychometric properties in the Turkish surgical resident sample and maintains its structural integrity, making it transferable to different cultural contexts.

*Multidimensional Work Motivation Scale*

In this study, the Multidimensional Work Motivation Scale (MWMS), developed by Gagne et al. (2014) based on Self-Determination Theory and psychometrically validated in nine countries and seven different languages, was used. The Turkish adaptation of the scale was carried out by Çivilidağ and Şekercioğlu (2017). The scale, consisting of 19 items, has a 5-point Likert-type response format (1 = Not at all appropriate, 5 = Completely appropriate) and covers three main dimensions: (1) Demotivation (unmotivated; items 1, 3, 5), (2) Controlled motivation (items 7, 9, 11, 13–19) and (3) Autonomous motivation (items 2, 4, 6, 8, 10, 12). High autonomy motivation scores reflect intrinsic motivation, high control motivation scores reflect external pressure-driven motivation, and high demotivation scores reflect a lack of motivation.

The questionnaires were administered via an online platform. Each completed questionnaire was assigned a unique participant code; the raw data was checked for accuracy and completeness and transferred to SPSS 26.0 statistical software.

**Data Analysis**

Descriptive statistics (mean, standard deviation, minimum and maximum values) were calculated for continuous variables. The Kolmogorov-Smirnov test was applied to the participants to determine the normality of their scale

scores, as the group was greater than 50. As a result of the analysis, it was understood that the data showed a normal distribution because the α value was greater than 0.05. Therefore, parametric statistics techniques were used for intergroup comparisons. An independent samples t-test was applied to determine whether scores on perception of the operating room training environment and work motivation differed according to gender. One-way analysis of variance (ANOVA) followed by the Tukey HSD post hoc test was used to examine differences based on residency seniority (duration of residency training). The Pearson moment correlation coefficient was calculated to determine the relationship between the sub-dimensions of OREEM and the sub-dimensions of work motivation. In all analyses, the confidence interval was set at 95%, and the significance level at $p < .05$.

## Findings

This section presents descriptive statistics on the scores obtained by surgical residents from the OREEM and the Multidimensional Work Motivation Scale; followed by comparative findings according to gender and residency seniority, and correlation coefficients between the scales.

As shown in Table 1, OREEM achieved a high level of positive perception in the Learning Opportunities ($M$ = 4.10, $SD$ = 0.85) and Operating Room Atmosphere ($M$ = 4.00, $SD$ = 0.94) sub-dimensions. A moderate-to-high level of positive perception was found in the Workload, Supervision & Support dimension ($M$ = 3.84, $SD$ = 0.87). The Teaching & Training sub-dimension exhibited the lowest average, but still remained above the positive perception threshold ($M$ = 3.00) (M = 3.86, $SD$ = 0.84). Regarding work motivation dimensions, participants showed a high level of autonomous motivation ($M$ = 3.64, $SD$ = 1.01) and a moderate level of controlled motivation ($M$ = 3.16, $SD$ = 0.72); while the level of demotivation remained low ($M$ = 1.93, $SD$ = 1.07).

Table 1. Descriptive Statistics Regarding OREEM and Work Motivation Sub-Dimensions (N = 112)

| Scale | Sub-scale | n | Min | Max | M | SD |
|---|---|---|---|---|---|---|
| OREEM | Teaching & Training | 112 | 1.77 | 5.00 | 3.86 | 0.84 |
| | Learning Opportunities | 112 | 1.00 | 5.00 | 4.10 | 0.85 |
| | Operating Room Atmosphere | 112 | 1.13 | 5.00 | 4.00 | 0.94 |
| | Workload, Supervision & Support | 112 | 1.25 | 5.00 | 3.84 | 0.87 |
| Work Motivation | Demotivation | 112 | 1.00 | 5.00 | 1.93 | 1.07 |
| | Autonomous motivation | 112 | 1.00 | 5.00 | 3.64 | 1.01 |
| | Controlled motivation | 112 | 1.00 | 5.00 | 3.16 | 0.72 |

*OREEM= Operating Room Educational Environment Measure Scale; M= Mean; SD= Standard deviation*

As seen in Table 2, no statistically significant difference was found between genders in any sub-dimension of the OREEM scale for surgical residents ($p > .05$). It is observed that the perceptions of both gender groups regarding the operating room training environment exhibit quite similar distributions.

Table 2.Comparison of OREEM Subscale Scores by Gender

| OREEM Subscale | Gender | n | M | SD | *t* | *p* |
|---|---|---|---|---|---|---|
| Teaching & Training | Female | 33 | 3.87 | 0.61 | 0.025 | .980 |
| | Male | 79 | 3.86 | 0.92 | | |
| Learning Opportunities | Female | 33 | 3.91 | 0.96 | −1.517 | .132 |
| | Male | 79 | 4.18 | 0.79 | | |
| Operating Room Atmosphere | Female | 33 | 3.95 | 0.76 | −0.298 | .766 |
| | Male | 79 | 4.01 | 1.00 | | |
| Workload, Supervision & Support | Female | 33 | 3.86 | 0.85 | 0.199 | .843 |
| | Male | 79 | 3.83 | 0.88 | | |

*t = Independent samples t-test statistic; p = significance. P>0.05*

When Table 3 is examined, it is seen that there is no significant difference between genders in the sub-dimensions of autonomous motivation and controlled motivation ($p > .05$). However, a statistically significant difference was found between genders in the demotivation sub-dimension ($t(110) = -3.548$, $p = .001$). Demotivation scores of male residents ($M = 2.16$, $SD = 1.11$) were found to be significantly higher compared to their female colleagues ($M = 1.40$, $SD = 0.79$).

Table 3. Comparison of Job Motivation Sub-Dimension Scores by Gender

| Job Motivation Sub-Dimension | Gender | n | M | SD | *t* | p |
|---|---|---|---|---|---|---|
| Demotivation | Female | 33 | 1.40 | 0.79 | −3.548 | .001** |
| | Male | 79 | 2.16 | 1.11 | | |
| Autonomous motivation | Female | 33 | 3.77 | 0.96 | 0.881 | .380 |
| | Male | 79 | 3.58 | 1.04 | | |
| Controlled motivation | Female | 33 | 3.05 | 0.77 | −0.978 | .330 |
| | Male | 79 | 3.20 | 0.70 | | |

***p<.001*

Table 4 shows that statistically significant differences were found in the Learning Opportunities ($F(2, 109) = 3.078$, $p = .049$) and Operating Room Atmosphere ($F(2, 109) = 4.043$, $p = .020$) sub-dimensions according to residency seniority. Tukey HSD post hoc analysis reveals that residents with 5–6 years of seniority have significantly higher OREEM perception scores in these two dimensions compared to their colleagues with 1–2 years of seniority. No significant differences were found based on seniority in the Teaching & Training and Workload, Supervision & Support sub-dimensions ($p > .05$).

Table 4. Comparison of OREEM Sub-Dimension Scores According to Resident Seniority

| OREEM Sub-Dimension | Specialist Training Year | n | M | SD | *F* | *p* |
|---|---|---|---|---|---|---|
| Teaching & Training | 1–2 years | 51 | 3.88 | 1.03 | 0.206 | .814 |
| | 3–4 years | 38 | 3.80 | 0.68 | | |
| | 5–6 years | 23 | 3.93 | 0.61 | | |
| | Total | 112 | 3.86 | 0.84 | | |
| Learning Opportunities | 1–2 years | 51 | 3.95 | 1.05 | 3.078 | .049* |
| | 3–4 years | 38 | 4.08 | 0.67 | | |
| | 5–6 years | 23 | 4.47 | 0.44 | | |
| | Total | 112 | 4.10 | 0.85 | | |
| Operating Room Atmosphere | 1–2 years | 51 | 3.73 | 1.18 | 4.043 | .020* |
| | 3–4 years | 38 | 4.18 | 0.67 | | |
| | 5–6 years | 23 | 4.28 | 0.44 | | |
| | Total | 112 | 4.00 | 0.94 | | |
| Workload, Supervision & Support | 1–2 years | 51 | 3.82 | 1.05 | 0.047 | .954 |
| | 3–4 years | 38 | 3.84 | 0.74 | | |
| | 5–6 years | 23 | 3.89 | 0.64 | | |
| | Total | 112 | 3.84 | 0.87 | | |

**p<.05; Seniority groups: 1 = 1–2 years (n = 51), 2 = 3–4 years (n = 38), 3 = 5–6 years (n = 23). F = one-way ANOVA F statistic. Tukey HSD post hoc test was applied to the ANOVAs found to be significant.*

As shown in Table 5, no statistically significant difference was found in any of the sub-dimensions of the work motivation scale—demotivation, autonomous motivation, and controlled motivation—based on residency seniority ($p > .05$). This finding indicates that work motivation is shaped independently of accumulated professional experience.

As shown in Table 6, all sub-dimensions of OREEM exhibit positive and statistically significant relationships with autonomous motivation: Teaching & Training ($r = .544$, $p < .001$), Learning Opportunities ($r = .341$, $p < .001$), Operating Room Atmosphere ($r = .547$, $p < .001$), and Workload, Supervision & Support ($r = .454$, $p < .001$). In contrast, none of the OREEM sub-dimensions showed a statistically significant relationship with demotivation or controlled motivation ($p > .05$). These findings reveal that positive perception of the operating room training environment is strongly associated with autonomous (intrinsic) motivation, but has no significant connection with extrinsic motivational processes.

Table 5. Comparison of Job Motivation Sub-Dimension Scores According to Residence Seniority

| Job Motivation Sub-Dimension | Specialist Training Year | n | M | SD | *F* | *p* |
|---|---|---|---|---|---|---|
| Demotivation | 1–2 years | 51 | 2.14 | 1.27 | 2.305 | .105 |
| | 3–4 years | 38 | 1.65 | 0.86 | | |
| | 5–6 years | 23 | 1.96 | 0.82 | | |
| | Total | 112 | 1.93 | 1.07 | | |
| Autonomous motivation | 1–2 years | 51 | 3.52 | 1.23 | 1.217 | .300 |
| | 3–4 years | 38 | 3.63 | 0.74 | | |
| | 5–6 years | 23 | 3.91 | 0.84 | | |
| | Total | 112 | 3.64 | 1.01 | | |
| Controlled motivation | 1–2 years | 51 | 3.31 | 0.77 | 2.775 | .067 |
| | 3–4 years | 38 | 2.99 | 0.63 | | |
| | 5–6 years | 23 | 3.09 | 0.68 | | |
| | Total | 112 | 3.16 | 0.72 | | |

*p>0.05*

Table 6. Pearson Correlation Coefficients Between OREEM Sub-Dimensions and Job Motivation Sub-Dimensions

| OREEM Sub-Dimension | Demotivation | | Autonomous motivation | | Controlled motivation | |
|---|---|---|---|---|---|---|
| | *r* | *p* | *r* | *p* | *r* | *p* |
| Teaching & Training | .138 | .148 | .544** | < .001 | .021 | .824 |
| Learning Opportunities | .089 | .350 | .341** | < .001 | .087 | .363 |
| Operating Room Atmosphere | .088 | .357 | .547** | < .001 | −.038 | .692 |
| Workload, Supervision & Support | .139 | .145 | .454** | < .001 | .066 | .487 |

*r = Pearson moment correlation coefficient. n = 112 for all analyses. ** p < .01 (two-sided).*

## Discussion and Conclusion

This study investigated the relationship between the perceptions of the operating room training environment and

job motivation among medical residents undergoing specialist training in surgical branches. Accordingly, participants' evaluations of the operating room training environment were considered within the dimensions of surgical training and instruction, learning opportunities, operating room atmosphere and workload, clinical supervision, and institutional support. Job motivation was evaluated within the framework of Self-Determination Theory, specifically focusing on autonomous motivation, controlled motivation, and demotivation. The findings indicate that surgical residents generally experience the operating room training environment positively. While participants showed high levels of autonomous motivation and no significant gender-based difference in perception of the perioperative training environment, a significant gender-based difference was found in the demotivation dimension. It was determined that perceptions of learning opportunities and operating room atmosphere improved with increasing residency duration. The most fundamental finding of the study is that all sub-dimensions of the perception of the operating room training environment exhibited a significant and positive relationship with autonomous motivation.

Surgical residents generally perceived the perioperative training environment positively, achieving positive evaluations on all sub-dimensions of the OREEM scale. The highest scores were observed in the dimensions of learning opportunities and operating room atmosphere, suggesting that residents valued clinical experience for their professional development. In contrast, the relatively lower score in the surgical education and training sub-dimension can be explained by the intense surgical pace and hierarchical structure limiting educator-resident interaction (Schwind et al., 2004; Binsaleh et al., 2015). Moderately positive perceptions were observed in the dimensions of workload, clinical supervision, and institutional support. These findings are consistent with similar patterns reported in the literature (Marwan et al., 2021; Knfe et al., 2024; Wubshet et al., 2024).

When the work motivation profile of the residents is examined, it is seen that autonomous motivation is dominant and demotivation is at a low level. This indicates that surgical training supports the development of professional identity and that the residents internalize their profession (Gagne et al., 2014; Averlid & Høglund, 2020). The moderate level of controlled motivation suggests that external pressures have not been completely eliminated (Budden et al., 2017). These findings are consistent with studies emphasizing the positive effects of operating room experience on motivation and self-efficacy (Foran, 2016).

In terms of the gender variable, it was found that the perception of the training environment was similar; however, the level of demotivation was higher in male residents. This indicates that the competitive and performance-oriented nature of surgery may create more pressure on male residents (Jensen et al., 2018; Wagner et al., 2019). Therefore, developing gender-sensitive support mechanisms in the operating room environment is important.

The study found that residency duration positively influenced perceptions of learning opportunities and operating room atmosphere; higher scores were obtained in these dimensions as seniority increased. This can be explained by the more effective management of the environment and better utilization of learning opportunities with experience (Kanashiro et al., 2006; Riveros-Perez et al., 2016). However, no significant difference was found in other sub-dimensions and work motivation based on seniority; this finding suggests that motivation is shaped more by individual and contextual factors (Budden et al., 2017; Wagner et al., 2019).

One of the prominent findings of the study is that all sub-dimensions of OREEM are positively related to autonomous motivation. In particular, the strong relationship between the operating room atmosphere and the training-education dimensions and autonomous motivation shows that the quality of the learning environment directly supports intrinsic motivation. In contrast, no significant relationship was found with controlled motivation and demotivation. This result suggests that the operating room environment has a particular impact on internalized motivation processes (Gagne et al., 2014; Mukhalalati et al., 2024; Papastavrou et al., 2016). Overall, interventions aimed at improving the operating room training environment are considered to have the potential to strengthen residents' autonomy motivation.

## Implications of the Findings

The findings of this research offer significant contributions to the field at both theoretical and applied levels. From a theoretical perspective, the significant relationship between the perception of the perioperative training environment and autonomous motivation supports the validity of Self-Determination Theory's propositions based on competence, autonomy, and relationality needs within the context of surgical residency training. This finding reinforces the theoretical understanding that the perception of the operating room environment shapes not only cognitive learning outcomes but also deeper motivational processes; it reveals that the perioperative environment is more than just a technical workspace; it is a dynamic social and organizational structure where professional identity and surgical motivation are shaped. Flott and Linden (2016), through their conceptual analysis, demonstrated that the clinical learning environment has a complex structure encompassing multiple dimensions, emphasizing the need to address this multi-dimensional structure in an integrated manner with motivational processes; this research empirically supports this theoretical framework within the context of surgical residency training. From an applied perspective, the research findings provide concrete and actionable data for healthcare education institutions and clinical administrators. First and foremost, the relatively low perception of surgical education and training necessitates strengthening the pedagogical training of surgical educators. In this regard, surgeons need to be systematically developed not only in terms of their operative competencies but also their teaching skills and clinical mentoring capacity. Implementing supportive clinical supervision mechanisms, managing perioperative workload in a way that does not harm resident training, and creating a psychologically safe environment in the operating room are critical institutional interventions that directly support residents' perception of the learning environment and their autonomous motivation. Norouzi and Imani (2021) emphasize that institutional support acts as a crucial buffer against motivational burnout caused by clinical stressors in the operating room environment, and that residents face a serious risk of professional burnout when this support is insufficient. Developing gender-sensitive motivational approaches is also emerging as a programmatic need to reduce the high risk of demotivation observed particularly in male surgical residents. All these findings clearly demonstrate that healthcare institutions should periodically measure the quality of operating room training using validated tools like OREEM and develop systematic improvement strategies based on the evidence obtained.

## Limitations

This study has several methodological and sampling limitations, which must be considered when interpreting the

findings. Firstly, the analytical cross-sectional design makes it difficult to attribute causality to the relationship found between perception of the perioperative training environment and work motivation. Cross-sectional design has a structural limitation in terms of its capacity to determine directional and temporal relationships between variables. The use of convenience sampling and the limitation of the sample to surgical residents in specific training and research hospitals restricts the generalization of the findings to different healthcare institutions, geographical regions, and surgical specialties. The study's inclusion of only surgical residents prevents comparative interpretation of the perception-motivation relationship in other medical specialties such as internal medicine, orthopedics, or anesthesia.

The use of an online survey method in the data collection process means that participants may have answered the questions under different perioperative conditions and time periods, carrying the risk of common method bias. The fact that the Job Motivation Scale used in this study has been validated in various professional and cultural contexts necessitates further testing of its psychometric performance in a unique and high-stress clinical setting such as an operating room. The fact that participants completed the questionnaire on different dates and with different supervisors during rotation periods may lead to individual responses reflecting different clinical experiences, potentially creating inconsistencies in intergroup comparisons. The use of only quantitative measurement tools in the study limits the ability to reveal in-depth views, meanings, and narratives regarding the perioperative experience of surgical residents. The relatively limited sample size also poses a limitation in terms of the statistical stability and reliability of the obtained relationships. Considering all these limitations, it seems necessary to interpret the research findings with caution and to continue studies in this field by increasing methodological diversity.

## Conclusion and Recommendations

Based on the findings of this research, recommendations are presented for both clinical practice and future research. Healthcare institutions should regularly evaluate the operating room training environment using standardized tools with proven psychometric validity, such as OREEM, and systematically reflect the data obtained in both individual resident feedback and institutional improvement planning. Implementing structured instructor development programs that encompass clinical mentoring, pedagogical communication, and supervision skills in addition to the operative competencies of surgical instructors will directly contribute to improving the relatively low perception, especially in the Teaching & Training dimension. Establishing a perioperative learning culture that enhances psychological safety in the operating room, balances hierarchical pressure, and supports residents' questioning and clinical initiative should be adopted as a priority institutional goal.

Designing gender-sensitive clinical guidance and motivation support programs will serve as a proactive intervention to reduce the high tendency towards demotivation observed, particularly in male surgical residents. From a future research perspective, conducting longitudinal studies with broader and more representative samples encompassing different surgical specialties, different types of training institutions, and different geographic regions will significantly contribute to both clarifying causal relationships and strengthening the generalizability

of findings. Investigating potential mediating and moderating variables in the relationship between perception of the perioperative training environment and work motivation using qualitative and mixed methods will pave the way for a more comprehensive understanding of the mechanisms of this relationship. Finally, comparative studies conducted in different cultural contexts and with international samples are expected to provide theoretical and applied contributions to the literature by examining the universality or cultural specificity of the relationship between perception of the operating room training environment and surgical resident motivation.

In conclusion, this research is among the limited studies in Turkey that reveal the relationship between surgical residents' perception of the operating room training environment and their work motivation, thus making a unique contribution to the literature. The findings that a positive perception of the perioperative training environment significantly supports autonomous motivation empirically confirm the explanatory power of Self-Determination Theory in the context of surgical specialty training. Considering the dominance of studies in the current literature that primarily address the operating room environment in terms of technical skill acquisition, this research fills an important gap by highlighting the motivational dimension of the perioperative training experience. Comparative findings regarding gender and residency seniority demonstrate that the relationship between the operating room training environment and work motivation exhibits a multi-layered structure sensitive to individual and contextual differences. It is considered that the research provides evidence that can be reflected in practice in terms of surgical training policies, hospital management, and residency program design.

## Statements and Declarations

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