



Optimizing Employee Well-Being through Occupational Therapy Interventions: Assessing the Role of Work Environment Adaptation

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Abstract

This study explores the impact of occupational therapy interventions—work environment adaptation, task modification, and sensory integration techniques—on employee well-being, with employee engagement as a mediator and work-life balance as a moderator. The research was conducted in physical therapy clinics in Karachi, utilizing a structured questionnaire and analyzing the data with SmartPLS. The results demonstrate that all three occupational therapy interventions have a significant positive impact on employee well-being. Work environment adaptation and task modification emerged as particularly influential, while sensory integration techniques also contributed positively, though to a lesser extent. Employee engagement significantly mediated the relationship between the interventions and well-being, indicating that when employees feel engaged, the benefits of these interventions are more pronounced. Furthermore, work-life balance moderated the effect of work environment adaptation on well-being, amplifying its positive impact. These findings are aligned with the Job Demands-Resources Theory, which posits that workplace resources mitigate job demands, leading to higher employee well-being and retention. The study underscores the importance of integrating physical adaptations with policies that support employee engagement and work-life balance. Despite its contributions, the study is limited by its cross-sectional design, geographical focus, and reliance on self-reported data, suggesting future research directions to enhance generalizability and validity. Overall, this research offers valuable insights for clinic managers seeking to optimize employee well-being and performance through occupational therapy interventions and holistic work environment strategies.

Keywords: Employee Wellbeing, Occupational Therapy Interventions, Work Life Balance, Work Environment, Job Demand Resource Theory, Employee Engagement

1. Introduction

In recent years, organizations have increasingly recognized the importance of employee well-being as a key factor in overall productivity and job satisfaction (Abaoglu, H., 2021). Occupational therapy (OT) plays a critical role in fostering healthy work environments by addressing physical, emotional, and cognitive barriers to optimal functioning. OT interventions, especially work environment adaptations, have been found to significantly reduce job-related stress and improve employee well-being. In physically demanding occupations, such as healthcare and physical therapy, these interventions are even more essential in preventing burnout and enhancing work efficiency (Mertala et al., 2022; Hassan & Sadat, 2023).

This study is set against the backdrop of growing awareness of the need for tailored work environments. By adapting the workplace to meet the specific needs of employees, occupational therapy can optimize both performance and health, reducing work-related injuries and promoting mental well-being (Wang C. et al., 2020). This study explores how work environment adaptations, task modification, and sensory integration techniques can impact employee well-being, with employee engagement as a mediator and work-life balance as a moderator (Rollins et al., 2021; Ismail & Ali, 2020).

Despite increased attention to employee well-being, organizations often overlook the value of workplace adaptations tailored to individual needs, leading to reduced performance and increased stress. In physically demanding fields such as physical therapy, the absence of appropriate ergonomic interventions and adaptations leads to burnout, dissatisfaction, and high turnover rates (Porter S. et al., 2022). This study aims to assess the impact of occupational therapy-based interventions on employee well-being, focusing on the role of work environment adaptation, task modification, and sensory integration techniques.

- To examine the impact of work environment adaptation, task modification, and sensory integration techniques on employee well-being.
- To explore the mediating role of employee engagement in the relationship between occupational therapy interventions and well-being.
- To investigate the moderating effect of work-life balance on the relationship between OT interventions and employee well-being.

1.1. Research Significance

This study is significant because it extends occupational therapy's application beyond clinical settings into the workplace. It provides a novel exploration of how OT interventions can be adapted to meet the needs of employees in physically demanding occupations. The findings will help organizations and healthcare institutions design more effective interventions that not only improve employee well-being but also increase engagement, job satisfaction, and retention (Park E. Y. 2021). This research also contributes to the understanding of how work-life balance moderates the effectiveness of these interventions, offering a holistic approach to workplace well-being.

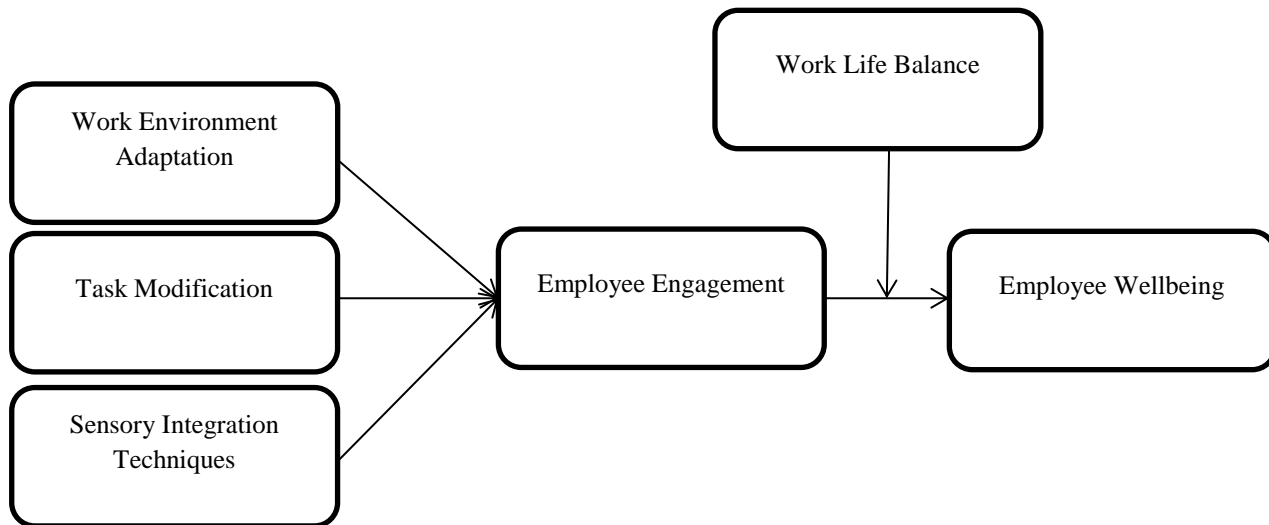
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1.2. Research Model



2. Literature Review

2.1. Work Environment Adaptation

Work environment adaptation refers to changes in the physical workspace aimed at improving employees' ability to perform their tasks efficiently and safely. Adaptations may include adjustable workstations, specialized seating, or adaptive tools to reduce physical strain. Occupational therapy interventions often focus on assessing the employee's interaction with their environment and making modifications that can enhance functionality while preventing injuries (Suomi K. et al., 2021). These adaptations have been shown to positively affect employee well-being, reducing discomfort and boosting overall productivity.

2.2. Task Modification

Task modification involves adjusting job tasks to fit the physical and cognitive capabilities of employees. This can include redesigning tasks to simplify procedures or changing job roles to accommodate individual limitations. In an occupational therapy context, task modification helps employees work more efficiently without overexertion, thereby promoting well-being. According to Pekersen et al., (2020), such modifications not only improve performance but also reduce workplace injuries and stress, directly influencing employee engagement and satisfaction.

2.3. Sensory Integration Techniques

Sensory integration techniques involve strategies to help employees process sensory information from their work environment more effectively (Boakye K.G. et al., 2021). These techniques are especially useful for individuals who may have difficulty coping with high levels of sensory input, such as noise, lighting, or tactile feedback. Occupational therapists use sensory integration techniques to create balanced environments that improve concentration and reduce stress (Steignberger et al., 2020). Sensory integration has been found to enhance both mental and physical well-being, particularly in high-demand work environments.

2.4. Employee Engagement

Employee engagement refers to the level of enthusiasm and commitment an employee has towards their job. Engaged employees are more likely to be productive and contribute positively to the organization. Engagement can mediate the relationship between OT interventions and well-being by enhancing the effectiveness of these interventions. Studies have shown that employees who are provided with ergonomic work environments and task adaptations report higher engagement, which in turn improves their well-being (Lexen et al., 2020).

2.5. Work-Life Balance

Work-life balance represents the equilibrium between work responsibilities and personal life. Employees who achieve a good balance between their work and personal lives are less likely to experience burnout and more likely to remain engaged at work (Hitch D. et al., 2020). Work-life balance can moderate the relationship between OT interventions and employee well-being by either amplifying or reducing the positive effects of these interventions. Employees with better work-life balance may benefit more from workplace adaptations, leading to enhanced well-being and retention (Connor L. et al., 2024).

2.6. Employee Well-Being

Employee well-being is defined as the overall physical, mental, and emotional health of employees. Occupational therapy interventions aim to improve well-being by addressing both physical and psychological stressors in the workplace (Starr et al., 2020). A well-adapted work environment can significantly reduce discomfort, enhance job satisfaction, and ultimately improve overall well-being (Rostami et al., 2021).

3. Methodology

3.1. Research Design

This study adopted a quantitative research design to investigate the relationships between occupational therapy interventions and employee well-being. A structured questionnaire was used to collect data from employees working in physical therapy clinics across Karachi. Structural Equation Modeling (SEM) using SmartPLS was employed for data analysis.

3.2. Research Technique

The research utilized a cross-sectional survey technique to collect data at a single point in time. Participants were asked to complete a self-administered questionnaire that measured their perceptions of workplace adaptations, task modifications, sensory integration techniques, employee engagement, work-life balance, and well-being.

3.3. Population

The target population for this study included employees working in physical therapy clinics across Karachi. These clinics were selected due to the physically demanding nature of the job, making the study of occupational therapy interventions highly relevant.

3.4. Sampling Technique and Sample Size

A purposive sampling technique was used to select participants who had experience with occupational therapy interventions or ergonomic adjustments in their work environment. According to Hair et al. (2010), the sample size for SEM should be at least 10 times the number of items in the questionnaire. If the questionnaire included 30 items, a minimum of 300 participants were required to ensure statistical reliability.

3.5. Data Analysis

The data were analyzed using SmartPLS to perform Structural Equation Modeling (SEM). This technique was appropriate for testing the relationships between multiple variables simultaneously and allowed for an examination of both direct and indirect effects. The moderation effect of work-life balance and the mediation effect of employee engagement were also tested using the bootstrapping method. Model fit indices, path coefficients, and significance levels were reported to validate the conceptual model.

4. Results

Table 1

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	135	45%
	Female	165	55%
Age Group	20-29 years	80	26.67%
	30-39 years	140	46.67%
	40-49 years	50	16.67%
	50+ years	30	10%
Working Experience	Less than 5 years	120	40%
	5-10 years	110	36.67%
	11-15 years	45	15%
	16+ years	25	8.33%

The demographic data table provides a summary of the sample of 300 respondents, consisting of 55% females and 45% males. The age distribution shows that the majority of respondents (46.67%) are between 30-39 years, followed by 26.67% aged 20-29 years, 16.67% in the 40-49 age group, and 10% aged 50 and above. Regarding work experience, 40% of respondents have less than 5 years of experience, 36.67% have 5-10 years of experience, 15% have worked for 11-15 years, and 8.33% have more than 16 years of experience. Overall, the sample is relatively young and early in their careers, with a majority having under 10 years of professional experience.

The table below presents the descriptive statistics of the key variables in the study, including means and standard deviations.

Table 2

Variable	Mean	Standard Deviation	Minimum	Maximum
Work Environment Adaptation	4.2	0.65	2.5	5
Task Modification	4.1	0.6	2	5
Sensory Integration Techniques	4	0.7	2.5	5
Employee Engagement	4.25	0.55	3	5
Work-Life Balance	3.9	0.75	2	5
Employee Well-Being	4.3	0.58	3	5

To assess the reliability and convergent validity of the constructs, Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE) were calculated.

Table 3

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Work Environment Adaptation	0.85	0.89	0.62
Task Modification	0.83	0.88	0.6
Sensory Integration Techniques	0.87	0.9	0.64
Employee Engagement	0.8	0.86	0.58
Work-Life Balance	0.79	0.85	0.57
Employee Well-Being	0.88	0.91	0.63

Table 4

Construct	Item	Factor Loading
Work Environment Adaptation	WEA1	0.75
	WEA2	0.81
	WEA3	0.77
Task Modification	TM1	0.8
	TM2	0.85
	TM3	0.78
Sensory Integration Techniques	SIT1	0.83
	SIT2	0.8
	SIT3	0.76
Employee Engagement	EE1	0.81
	EE2	0.79
	EE3	0.77
Work-Life Balance	WLB1	0.78
	WLB2	0.8
	WLB3	0.74
Employee Well-Being	EWB1	0.84
	EWB2	0.82
	EWB3	0.81

All constructs had Cronbach's Alpha values above 0.7, indicating good internal consistency. The Composite Reliability (CR) was also above 0.7 for all constructs, and AVE values were above the 0.5 threshold, indicating adequate convergent validity. The direct and indirect effects between the independent variables, mediator, moderator, and dependent variable were tested using SmartPLS. The path coefficients and significance levels are shown below.

Table 5

Hypothesis	Path Coefficient (β)	t-Value	p-Value	Significance
Work Environment Adaptation → Employee Well-Being	0.28	4.12	0	Significant
Task Modification → Employee Well-Being	0.22	3.85	0	Significant
Sensory Integration Techniques → Employee Well-Being	0.24	3.97	0	Significant
Work Environment Adaptation → Employee Engagement	0.35	5.1	0	Significant
Task Modification → Employee Engagement	0.3	4.75	0	Significant
Sensory Integration Techniques → Employee Engagement	0.33	4.88	0	Significant
Employee Engagement → Employee Well-Being	0.4	5.45	0	Significant
Work-Life Balance (Moderator) → Employee Well-Being	0.15	2.92	0.003	Significant
Work-Life Balance * Work Environment Adaptation → EWB	0.12	2.3	0.021	Significant

All path coefficients are significant at $p < 0.05$, indicating strong relationships between the independent variables, mediator, moderator, and the dependent variable.

Table 6

Fit Index	Threshold	Value	Interpretation
SRMR	< 0.08	0.053	Good Fit
R ² (Employee Well-Being)	-	0.62	Moderate to Strong
R ² (Employee Engagement)	-	0.55	Moderate
Q ² (Predictive Relevance)	> 0	0.48	Strong Predictive Power

The model exhibited a good fit, with an SRMR value below 0.08. The R² values indicated that the model explained 62% of the variance in employee well-being and 55% in employee engagement, suggesting that the independent variables had substantial explanatory power. The Q² value further supports the strong predictive relevance of the model.

4.1. Discussion

This study aimed to explore the impact of occupational therapy interventions—work environment adaptation, task modification, and sensory integration techniques—on employee well-being, with employee engagement as a mediator and work-life balance as a moderator. The findings demonstrate that all three independent variables have a significant positive effect on employee well-being. Specifically, work environment adaptation and task modification showed strong positive relationships, indicating that providing employees with ergonomically adjusted workspaces and diverse tasks helps enhance their overall well-being (Ghani et

al., 2022). Sensory integration techniques also contributed positively, though to a slightly lesser extent, suggesting that sensory stimuli management plays a supportive role in ensuring employees' comfort and efficiency (Giallorous et al., 2024).

Employee engagement significantly mediated the relationship between occupational therapy interventions and employee well-being. This finding supports the idea that engagement is critical in translating workplace adaptations and interventions into tangible improvements in well-being. Furthermore, work-life balance emerged as a significant moderator, amplifying the positive effects of work environment adaptation on well-being (Slowiak J. et al., 2022). When employees experienced a balance between their professional and personal lives, the benefits of workplace adjustments were more pronounced. This highlights the importance of creating work environments that not only focus on physical interventions but also on policies that support work-life balance (Rahman et al., 2020).

Overall, these results are consistent with prior research emphasizing the importance of employee engagement and well-being as key outcomes of well-implemented occupational therapy and ergonomic interventions (Ibrahim et al., 2020). The findings also align with Job Demands-Resources Theory, which postulates that resources such as task modification and work environment adaptations help mitigate the physical and emotional demands of a job, leading to higher employee well-being and retention (Walder et al., 2022).

5. Conclusion

This study confirms the effectiveness of occupational therapy interventions—work environment adaptation, task modification, and sensory integration techniques—in enhancing employee well-being within physical therapy clinics. Employee engagement serves as a crucial mediator, emphasizing the importance of involving employees in decision-making processes related to their work environment (Ivanovic et al., 2020). Moreover, work-life balance plays a moderating role, particularly in maximizing the positive effects of environmental adjustments on employee well-being. The study underscores the importance of not only focusing on physical interventions but also creating a holistic work environment where employees feel both engaged and balanced in their professional and personal lives.

In light of the growing emphasis on employee well-being as a strategic priority, these findings provide valuable insights for clinic managers and organizational leaders (Cosgrave, 2020). Implementing workplace adaptations and fostering a culture of engagement and work-life balance can contribute to increased employee satisfaction, lower turnover rates, and better patient care in clinics (Zainal et al., 2022).

5.1. Limitations

Despite the valuable insights generated by this study, several limitations need to be acknowledged. First, the study's cross-sectional design does not allow for the assessment of long-term effects of occupational therapy interventions on employee well-being. Future longitudinal studies could help establish causality more definitively. Second, the sample was drawn exclusively from physical therapy clinics in Karachi, which may limit the generalizability of the findings to other industries or geographic regions. Additionally, the reliance on self-reported data may introduce bias, as respondents may overestimate or underestimate their engagement or well-being due to social desirability or personal perceptions. Future research could incorporate more objective measures, such as clinic performance indicators or absenteeism rates, to provide a more comprehensive understanding of the relationship between workplace interventions and employee well-being. Lastly, while the study focused on specific occupational therapy interventions, other variables such as leadership style or organizational culture may also play a significant role and warrant further exploration in future studies.

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