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The Effectiveness of PEO Model-Based Occupational Therapy Intervention on Occupational Performance and Quality of Life in Individuals Working from Home due to Covid-19

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Abstract

Purpose: It is predicted that the quality of life and occupational performance of desk workers will be adversely affected by working from home due to Covid-19. This study aims to investigate the effect of the Participant-Environment-Occupation Model (PEO)-based occupational therapy intervention on occupational performance and quality of life in individuals working from home due to Covid-19.

Methods: Eight desk workers between the ages of 25-45 participated in the study. A participantcentered treatment program was applied to the participants for 4 weeks, once a week for 30-45 minutes. Evaluations were made with the tests, scales, and questionnaires used within the scope of the PEO model. The Canadian Occupational Performance Measure (COPM) and the SF-36 Quality of Life Scale were applied before and after the intervention and the difference was calculated statistically.

Results: Although there was an increase in the SF-36 Quality of Life Scale and COPM performance and satisfaction scores in the analysis performed before and after the intervention, no statistically significant difference was found between the scores. According to the correlation analysis, it was seen that there was a significant relationship between COPM satisfaction and SF-36 general health perception scores.

Conclusion: In this study, although no statistically significant effect of PEO-based occupational therapy intervention on occupational performance and quality of life was found, the increase in scores showed that the intervention could have positive effects. It is thought that it is important to provide holistic approaches by adding ergonomics, joint energy conservation techniques, relaxation techniques, and self-management skills to the intervention process in occupational therapy interventions. It is recommended to investigate the effectiveness of occupational



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therapy intervention in studies with more participants, with longer intervention times, and with a control group.

Keywords: Desk worker, Covid-19, occupational performance, quality of life

Introduction

Today, with the advancement of technology and the increase in the number of desk workers in offices, the problems related to desk work are also increasing. Staying in static and fixed positions at the desk for long periods, which is programmed to move, causes health problems and negatively affects the quality of life (1). These problems cause a decrease in manpower and performance. Decreased motivation and fatigue due to unsuitable working conditions cause a decrease in productivity (2). Studies carried out in the world and in our country, musculoskeletal diseases, fatigue, loss of motivation, etc. in desk workers. problems have been found and effective solutions are tried to be found for these problems (1). In addition to these problems, new problems added to the world agenda also arise. Among these new problems is the effect of working from home on a desk due to Covid-19. While the rate of company employees working from home was 45 percent before Covid-19, this rate reached 95 percent for head office employees after the process. Along with these problems, many new problems arise with desk workers working from home. These new problems are; It includes problems such as the mixing of activity performance areas, lack of coordination in the work team, being constantly under the influence of the home state, the problematic working environment, and the decrease in motivation and burnout in the employees due to the lack of the social environment.

Occupational performance; is defined as the ability to choose, organize and perform tasks that are culturally defined, compatible with one's age, and meaningful to them. Activities in daily life consist of three performance areas: self-care, productivity, and leisure. Occupational performance requires a lifelong dynamic interaction of participant, environment, and activity. Facilitating the individual's participation in daily life activities in these performance areas is one of the main goals of rehabilitation approaches (3). In the occupational therapy literature, it



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is generally believed that occupational performance is the result of the interaction between the participant, the activity, and the environment. A successful occupational performance, with one's ability, requires a balance between the activity and the necessary support for the needs of the environment (4). According to the World Health Organization, quality of life; is defined as the perception of one's situation in life, along with goals, expectations, standards, and interests, taking into account one's cultural and value judgments. Quality of life covers areas such as the individual's physical health, psychological state, social relations, environmental characteristics, and spirituality. Life quality; It is a subjective and multifaceted concept that can change over time, from participant to participant, according to the expectations and pleasures of the participant's life, and can be affected by economic, psychological, social, and cultural factors (5). It has been said that it will help therapists in intervention planning and implementation (6). It is predicted that the quality of life and occupational performance of the desk workers will be adversely affected due to the problems that exist with the work from home due to Covid-19, as well as the emergence of many new problems. The study aims to guide new evidence-based studies.

Materials and Methods

Participants

The sample of the study consisted of 8 individuals who continue to work from home because of Covid-19. Individuals between the ages of 25-45, working from home due to Covid-19, working at a desk (office worker), and working on the computer for 5 hours or more per day were included in the study. Individuals who received extensive ergonomics training and worked in a hybrid setup (both in the office and at home) were excluded from the study.

Data Collection Tools

Evaluations were made through the Zoom program and the Google form. Semi-structured interview questions, Canadian Occupation Performance Measurement (COPM) (7), and Cornell Musculoskeletal Discomfort Questionnaire (CMDQ) (8) were applied to the individuals in the first interview made over the Zoom program. Then, a sociodemographic information form was



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sent to the people via Google Forms, Fatigue Severity Scale (FSS) (9), Adult Attention Test (AAT), Perceived Stress Scale (PSS) (10), Time Management Inventory (TMI) (11), Multidimensional Scale of Perceived Social Support (MFSI) (12), Work Role Functioning Questionnaire (WRFQ) (13), Perceived Organizational Support Scale (POSS) (14), SF-36 Quality of Life Scale (15) forms were sent. RULA Posture Evaluation Analysis was performed on the photographs requested from the individuals to evaluate the working environment and ergonomics through the Ergofellow Application Program. for temperature and noise measurement, people have installed the necessary applications on their phones. Average values were determined by using the notes taken by the people between 9:00 and 17:00, using Thermometer Room Temperature for temperature measurement, and DecibelMeter application for noise measurement. Illumination evaluation was made through photographs (lighting angle, color, brightness, position, number) taken from people. After the intervention lasted 30 minutes a week for four weeks, the COPM and SF-36 Quality of Life Questionnaire forms were applied again for the final evaluation.

Intervention

The intervention program lasted for 4 weeks and was administered as 30-minute telerehabilitation sessions once a week. As a result of the problems identified within the scope of the PEO Model used for the participant-centered intervention plan, Zoom interviews were conducted through presentations prepared under the main topics of ergonomics, joint-energy conservation techniques, relaxation techniques, and self-management skills. In the ergonomics presentation, information was given about correct posture training, ergonomic risk factors (biomechanical, environmental, and psychosocial risk factors), and equipment that will provide the right working environment. Desk exercises that can be done during breaks and breaks were applied. Along with the suggestions of joint-energy conservation techniques, applications in daily living activities are explained through the video. In the presentation of relaxation techniques, the progressive muscle relaxation technique was explained and applied via video. In the presentation of self-management skills, the main topics of time management and stress



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management were created. In the time management section, information is given about time wasters and some time management techniques (quick planning method, activity priority matrix, Pomodoro technique, etc.). In the stress management part, information was given about the effects of stress and methods of coping with stress (relaxation exercises, breathing techniques, body awareness, and lifestyle changes). The action plan, on the other hand, was implemented in the form of questions and answers about the source of stress, how to cope and what activity to do. The presentations used in the interviews were handled in a way that sheds light on the problems of the participant, taking into account the information obtained in the evaluations made on the subject and asking questions to the participants to provide an interactive interview. Additions were made to the presentations regarding the additional problems of the participants (nutrition, attention training, job satisfaction, occupational balance, sleep and rest, sports, guidance for psychosocial support, etc.).

Data Analysis

The SPSS 26 package program was used in the analysis of the data. Descriptive statistical values were given as mean ± standard deviation, and minimum and maximum values were calculated. Wilcoxon Signed Ranks Test was used to compare the pre-intervention and post-intervention COPM and SF-36 data. Calculation of the correlation of mean values with each other was provided by Spearman Correlation Analysis.

Results

According to the sociodemographic information form; 7 of the participants were male and 1 female and their age distribution was 25-30 (50%), 31-35 (12.5%), and 36-40 (37.5%). While the education level of all of the participants was university, 50% were managers and 50% were employees. Looking at their marital status, 75% were single and 25% were married. 42.9% of them were living with their families, 28.6% were living alone, 14.3% were living with their spouses and children. One of the participants had a chronic illness. The results obtained from our participants' FSS averages were effective in the



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concepts of motivation and insight, and the average results of TMI were effective in adding the subjects of roles and routines to the content of self-management skills training. data, I. The performance score of the activities determined according to the COPM in the evaluation was determined as a minimum 3, maximum 9, satisfaction score of minimum 2, and maximum 10. II. According to the COPM in the evaluation, the performance score of the determined activities was determined as a minimum 4, a maximum 9, a satisfaction score minimum of 3, maximum of 10. When the problems of participants in the field of personnel care were examined, it was determined that they had the most difficulty in feeding and bathing activities. When the problems of self-management in society were examined, it was determined that shopping activity was a problem. When the productivity activity problems of individuals were examined, it was determined that approximately 2/3 of them were problems in the field of housework management. It has been observed that individuals have stated that running their business from home, which they did before Covid-19, is a business problem. When the housework management problems of the individuals were examined, it was determined that about 1/2 of the problems consisted of cleaning the house and the other 1/2 was the cooking activity. When the leisure area of the individuals was examined, it was determined that almost half of the problems were caused by the activities they experienced in the quiet recreation area. When the silent recreation problems of the individuals were examined, it was determined that 1/2 of the activity consisted of reading, while when the active recreation problems were examined, it was seen that the activity of traveling constituted 2/3 of it. When the socialization area problems of the individuals were examined, ¹/₂ of the problems were determined as going to a picnic, and ¹/₂ of them were talking on the phone with acquaintances. When Table 1 examined, the 3 activity performance areas for COPM, the participants chose the activities in the areas of self-care and productivity the most according to their importance value. It is seen that the most chosen readings are feeding, bathing, cleaning the house, cooking, and reading books, respectively.



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Table 1. Rating importance of occupations

OCCUPATIONAL	SCORES		
PERFORMANCE AREAS			
SELF-CARE	Eating (10) / 3 participant		
	Bathing (9) / 4 participant		
	Ironing (10)		
	Brushing teeth (10)		
	Shopping at the market (10)		
	Personal Hygiene (9)		
	Shaving Heard, beard (9)		
	Dress up (6)		
	Shopping(6)		
PRODUCTIVITY	Home cleaning (9) / 5 participant		
	Cooking(8) / 5 participant		
	To meet calls and emails from customers $(10) / 2$ participant		
	Coordinating, and organizing employees (finance, accounting, report,		
	etc.) (10)		
	Zoom meetings with customers and colleagues (10)		
	Hotel etc. for incoming customers plans (9)		
LEISURE	Reading book (9) / 3 participant		
	Go the trip $(10)/2$ participant		
	Go to the gym (10)		
	Join online courses (10)		
	Having a nicnic (8)		
	Watch series and movies $(7)/2$ participant		
	Make a phone call (5)		
	make a phone can (5)		

While both performance and satisfaction minimum scores increased for COPM, only satisfaction maximum scores increased. However, it was determined that the score increases for both domains were not significant (p > 0.05).



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Participants	I. Performance Scores	II. Performance Scores	I.Satisfaction Scores	II.Satisfaction Scores
1-E.K.	6,60	7,40	7,60	7,40
2- T.Y.	6,00	6,40	7,20	7,60
3-M.U	8,80	8,80	8,80	8,80
4-S.Y.	7,80	8,40	7,00	8,40
5-İ.P.	7,80	7,40	7,80	7,60
6-S.A.	8,40	8,80	8,60	9,40
7-E.Ö.	8,20	8,40	7,80	8,20
8-M.Y.	5,75	7,25	6,25	9,50
Average scores of all participants	7,41	7,85	7,63	8,36
Ζ	-1,873 ^b		-1,866 ^b	
р	,061		,062	

Table 2. COPM scores before and after the intervention.

Significance: p<0,05

When the data of the first evaluation and the second evaluation were compared in the quality of life sub-parameters, no significant relationship was found (p > 0.05).

SF-36 areas	Before	After	Z	р
	Individuals	Individuals		
	$(X \pm SS)$	$(X \pm SS)$		
Physical Function	$91,87 \pm 7,98$	$91,\!25 \pm 8,\!76$	-,577 ^b	,564
Physical Role Difficulties	$62,50 \pm 27,77$	$65,\!62 \pm 26,\!51$	-1,000 ^b	,317
Emotional Role	$70,82 \pm 45,20$	$74,97 \pm 29,56$	-,138 ^b	,890
Difficulties				
Pain	$72,18 \pm 14,10$	75,62 ± 18,31	-,105°	,916

 Table 3. SF-36 scores before and after the intervention



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Vitalite	$59,\!37 \pm 23,\!21$	$66,25 \pm 15,52$	-,954°	,340
Mental Health	$65,\!00 \pm 22,\!09$	$67,\!00 \pm 16,\!24$	-,493°	,622
Social Functioning	$75,\!00 \pm 17,\!67$	$68,\!75\pm25,\!00$	-1,127 ^b	,260
General Health Perception	$65{,}62\pm19{,}53$	$68,75\pm13,82$	-,341°	,733

Significance: p<0,05

Considering the correlation analysis between COPM and quality of life sub-parameters, no significant correlation was found between the first evaluation data. In the second evaluation, it was found that there was a significant relationship only between the COPM satisfaction scores and the general health perception sub-parameter of quality of life.

Discussion

In this study, it was aimed that PEO-based occupational therapy intervention to increase occupational performance and quality of life in people working from home due to Covid-19. The increase in both SF-36 Quality of Life and COPM performance and satisfaction scores before and after the intervention was not found to be significant. According to the correlation analysis performed in our study, a significant relationship was found between satisfaction scores and general health perception. According to COPM, when the problems of individuals in the field of personal care were examined, it was determined that they had the most difficulty in feeding and bathing activities due to the time management between work and daily life. For this reason, self-management skills training was applied in the intervention plan to increase occupational performance.

According to the FSS at the first evaluation, it was seen that the participants felt that they were in good physical condition (75%). Since the SF-36 Quality of Life and Physical Function subparameter values were also quite high before the intervention, no significant difference could be observed (at a rate of 62.5%, 95 points). In physical and emotional role difficulties, while most of the participants did not experience any problems before the intervention, the reason for the decrease in this value after the intervention may be due to the lifestyle changes of some of



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our participants. There is an increase in the scores of two of our participants who have difficulties with emotional role difficulty (2 participants who went to live with their families while living alone). Since the living conditions of these two participants changed, it may also have positively affected their occupational performance and satisfaction scores. In our study, it was observed that the participants were irregular in terms of breaks and posture changes. In their study, Akal and İlhan (2017) found that 90% of musculoskeletal complaints in call center employees are due to irregular working hours, sitting mostly, and unfavorable ergonomic conditions (16). In our study, applications related to ergonomic risk factors (biomechanical, environmental, and psychosocial risk factors), recommendations for equipment that will provide the right working environment, correct posture training, breaks, and desk exercises that can be done in breaks were made.

Neuendorf et al. (2015), in their systematic review to evaluate the effect of mindfulness interventions on sleep quality, emphasized that relaxation techniques may be beneficial for better sleep quality in people with sleep problems (17). In our study, two participants with sleep problems were informed about the sleep hygiene and sleeping positions recommended to improve sleep quality as well as the progressive muscle relaxation technique. In our study, the fact that it had a shorter and less frequent intervention plan and that the factors of visualization and mental focus were not provided may be the reason why most of the participants did not have enough positive effects.

According to a study conducted in Hong Kong, the disadvantages of working from home include the blurred line between work and family, distractions, social isolation, and incurring the costs associated with working from home (18). Grant et al. (2019) revealed that home workers have difficulty in managing the boundaries between working and non-working time, which causes a tendency to overwork (19). In our study, most of our participants stated that they had difficulty maintaining the balance between working from home and occupational performance areas due to both the increased workload and flexible working hours. In a study involving 1063 participants using an online survey method, individual factors (personal



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feelings, behaviors, and health) are important determinants of an individual's perceived worklife balance, and work-life balance is positively related to subjective well-being, quality, and quantity of personal life span (20). In our study, there may not have been a significant difference in the quality of life since our participants could not maintain work-life balance due to the problems they experienced mostly in the areas of self-care and productivity. In a study conducted to examine the relationship between quality of life and role-activity balance in female nurses working in shifts, a relationship was found between all parameters of healthrelated quality of life and role-activity balance (21).

The fact that the individuals participating in our study were healthy and have a busy work life resulted in the implementation of the intervention program with less frequency and time. It may also be that the actual results of the study could not be reached because the second evaluation was made immediately after the intervention. It is predicted that more positive results can be obtained as a result of the participant's ability to transform the intervention into practices and routines in their lives.

Since they were in a period of complete closure during the second evaluation period, both the emotional states of the individuals may have negatively affected the results of the survey and their quality of life may have been negatively affected. Intervention with the telerehabilitation method in our study may have caused the positive effects to not be at a significant level (Planning, process, interaction-communication, etc.)

In this study, it was observed that although PEO-based occupational therapy intervention did not have a significant effect on occupational performance and quality of life in those working from home due to Covid-19, it could have positive effects.

Recommendations

The quarantine and curfew restriction/ban in many countries due to COVID-19, which started in Wuhan, China, and caused the death of thousands of people all over the world, undoubtedly brought important changes in the lifestyle of individuals of all ages. Considering that this



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pandemic process will continue for a while; It is an important requirement to raise awareness for individuals about posture and posture disorders, which are expected to occur with the increase in the duration of staying at home. These muscle pains and posture disorders affect individuals of all ages negatively and long-lasting painful conditions bring psychological problems. In occupational therapy interventions, holistic approaches can be applied by adding ergonomics, joint-energy conservation techniques, relaxation techniques (respiratory technique, progressive muscle relaxation technique), and self-management skills to the intervention process. Roles attributed to women in Turkish society; In addition to being an individual, it includes very difficult responsibilities and duties such as being a wife and mother in the house. It was found that the SF-36 Quality of Life Scale scores of the female participant participating in our study was lower than the other participants. Because of this situation, community-based occupational therapy approaches for women can be used in future studies. In our study, the institutions where the participants work were not contacted. More positive results can be achieved by applying organizational coping methods in future studies. Despite the positive findings of our study, there is a need for further studies with a control group, long-term follow-up of the applied intervention, and involving more participants.

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