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A Model of Human Occupation-based intervention for individuals with Obsessive-Compulsive Disorder: two case reports

Intervenção baseada no Modelo de Ocupação Humana para pessoas com Transtorno Obsessivo-Compulsivo: relato de dois casos

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Abstract

Introduction: Preliminary occupational therapy intervention studies are much needed. Although the importance of Obsessive Compulsive Disorder (OCD) recognized as highly restrictive for individuals, there are only e few studies addressing occupational therapy interventions for them. **Objectives:** This study aimed to examine the effectiveness of a person-centered, holistic occupational therapy assessment and interventions using the conceptual model of practice, the Model of Human Occupation (MOHO), for persons diagnosed with OCD. **Method:** A demographic information form, Occupational Self-Assessment (OSA), Model of Human Occupation Screening Tool (MOHOST), and a semi-structured interview form were employed pre and post-intervention. The Pittsburgh Sleep Quality Index was also used for Case 2. **Results:** After 16 sessions, the findings showed positive results of the person-centered occupational therapy intervention on occupational participation and performance in both cases. **Conclusion:** This study highlights the effectiveness of occupational therapy intervention on occupational participation and performance, based on the MOHO approach for two cases of individuals with OCD.

Keywords: Mental Health, Occupational Therapy, Person-Centered Care, Process Assessment, Health Care.

Resumo

Introdução: Estudos preliminares de intervenção em terapia ocupacional são muito necessários, embora a importância do Transtorno Obsessivo Compulsivo (TOC) seja conhecida como uma das condições psiquiátricas mais restritivas, poucos

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estudos enfatizam a intervenção com esta clientela. **Objetivos:** Este estudo teve como objetivo examinar a eficácia de uma avaliação e intervenções de terapia ocupacional holística e centrada na pessoa dentro da estrutura do Modelo de Ocupação Humana (MOHO) para pessoas com sintomas e problemas únicos observados no diagnóstico de TOC. **Método:** Um formulário de informações demográficas, Escala de Autoavaliação Ocupacional (OSA), Instrumento de Identificação da Participação Ocupacional do Modelo de Ocupação Humana (MOHOST) e um formulário de entrevista semiestruturada foram empregados pré e pós-intervenção. O Índice de Qualidade do Sono de Pittsburgh também foi utilizado para o Caso 2. **Resultados:** Após 16 sessões, os resultados mostraram-se positivos para a intervenção terapêutica ocupacional centrada na pessoa, na participação e desempenho ocupacional para ambos os casos. **Conclusão:** Este estudo destaca a eficácia da intervenção terapêutica ocupacional baseada no MOHO para dois casos de pessoas com TOC.

Palavras-chave: Saúde Mental, Terapia Ocupacional, Assistência Centrada na Pessoa, Avaliação de Processos em Cuidados de Saúde.

Introduction

Obsessive-compulsive disorder (OCD) is a neuropsychiatric disorder in which unwanted thoughts (obsessions) and ritual behaviors (compulsions) cause anxiety and excessive avoidance behavior to reduce distress (Abramowitz & Reuman, 2020). OCD has been listed by the World Health Organization (WHO) as one of the ten most disabling disorders due to loss of income and decreased quality of life (Varinelli et al., 2022). It is the fourth most common psychiatric disease, which causes significant morbidity if left untreated (Abramowitz & Reuman, 2020; Grant, 2014). According to DSM-V diagnostic criteria, obsessions and compulsions in OCD should last more than one hour a day and cause social and occupational difficulties. (Dougherty et al., 2014).

OCD is a severe mental illness that significantly affects individuals' lives, imposing substantial health challenges and daily restrictions. It leads to limitations in various areas, including reduced participation in activities like community involvement, employment opportunities, self-care, and disrupted sleep patterns (Rocamora-Montenegro et al., 2021). The quality of life of individuals with OCD decreases due to cognitive-behavioral symptoms (Bobes et al., 2001; Varinelli et al., 2022). Sleep interruptions and delays may be observed in individuals with OCD due to obsessions and compulsions (Kohler, 2017). There is evidence for subjective sleep quality, sleep onset, and insomnia complaints. Symptom severity is consistently associated with sleep disturbance, and more severe symptoms are associated with more significant disruption (Paterson et al., 2013). Obsessive thoughts affect the individual's everyday life. Embarrassment, isolation, loss of friendships, and decreased activities are seen in their social lives. Their lives are also restricted because they want to include their surroundings in their rituals. The decline in their academic achievements results in higher unemployment rates and lower average incomes. These problems reveal low self-esteem (Kohler, 2017).

The Model of Human Occupation (MOHO) is an occupation-focused conceptual model of practice and evidence-based model that takes the person in the center and evaluates holistically (Lee et al., 2008; Taylor et al., 2023). It provides a broad perspective, aiming to understand the strengths and weaknesses of the person involved in their occupations and to explain how the occupation is shaped, motivated, and performed. Understanding the impact of participation on individuals is a priority for occupational therapists to create an effective treatment plan and ensure integration into society (Boop et al., 2020). MOHO is a conceptual model of practice that can be applied to any person with difficulties in participating in occupations (Taylor et al., 2023). MOHO offers numerous benefits, including enhanced person-centred therapeutic reasoning, improved professional confidence, and increased person satisfaction. It also enhances therapists' understanding of person's needs, prioritizing progress, and maintaining motivation and engagement as professionals (Taylor et al., 2022).

Achieving effective treatment for individuals with OCD necessitates a comprehensive approach that integrates multiple levels of care and interventions. In a recent investigation concerning interventions for individuals with OCD, a range of highly promising therapies was identified across five key categories. These interventions include activity scheduling to address doubt, lassitude, and circadian rhythm disturbances; specific forms of Cognitive Behavioral Therapy (CBT) to target perfectionism, insomnia, and worry about the future; lifestyle intervention for circadian rhythm disturbances, mindfulness for anxiety, and habit reversal therapy for compulsions. While these therapies hold potential when combined with evidence-based treatments like standard pharmacotherapy and CBT, additional research is required to fully establish their clinical effectiveness and address existing knowledge gaps (Varinelli et al., 2022).

Overall, non-pharmacological approaches like occupational therapy are crucial in promoting recovery, utilizing meaningful occupations to enhance independence in daily functioning, improving the overall quality of life, and nurturing personal well-being (Rocamora-Montenegro et al., 2021). In particular, occupational therapy interventions aimed at enhancing skill development and facilitating lifestyle changes have been demonstrated to be effective in relieving mental health symptoms. By encouraging active participation in meaningful occupations, these interventions effectively improve the occupational performance of adults struggling with mental health issues (Kirsh et al., 2019). However, despite the significance of occupational interventions, the field lacks a robust body of scientific evidence to support the wide range of interventions aimed at enhancing autonomy and reducing daily limitations for individuals with OCD.

In this respect, our study aims to examine the effectiveness of a person-centered, holistic occupational therapy assessment and interventions within the frame of the Model of Human Occupation (MOHO) for persons with the unique symptoms and problems seen in the diagnosis of Obsessive Compulsive Disorder (OCD) and their subjective experiences.

Materials and Methods

In our study, we considered a case report research method to increase the comprehensiveness and depth of our analysis and to provide valuable insights into the

impact of OCD on individuals' lives. By utilizing MOHO, a well-established conceptual model of practice, we aimed to provide a comprehensive understanding of the interaction between individuals, their occupations and the environment, specifically in the context of the intervention being conducted. We also assume that incorporating MOHO will allow us to analyze various components of human occupation, such as volition and habituation, which are critical in exploring the potential effects of the intervention.

A case report is a research method that includes examining and analyzing a specific phenomenon or case, such as an individual, organization, community, event, or scenario. This method often employs qualitative methodologies, but also quantitative approaches. Case reports often include several data sources, such as interviews, observations, documents, and artifacts (Zainal, 2007; Foss, 2023). This study was designed as two case reports with an exploratory case methodology to comprehensively understand the application of MOHO in individuals with OCD while focusing on all aspects of the model.

Two cases of individuals diagnosed with OCD according to DSM-V criteria, who are referred to Hacettepe University Faculty of Health Sciences Department of Occupational Therapy, were included in this study. A written informed consent form was obtained after the participants were informed about the study. Demographic information form, Occupational Self-Assessment (OSA), Model of Human Occupation Screening Tool (MOHOST), and semi-structured interview form were used for data collection for two cases. In addition, the Pittsburgh Sleep Quality Index was employed since Case 2 was found to have problems by learning her sleep routine and quality. The person-centered and holistic intervention program, designed within the MOHO model, was applied in 16 sessions twice a week for eight weeks. The assessments were repeated after the intervention.

Instruments of data collection

Semi-structured interview within the framework of MOHO

MOHO, developed by Kielhofner (2008), is a dynamic system theory widely used by occupational therapists. It consists of 4 main elements: volition, habituation, performance capacity and environment. Volition pertains to one's orientation and choice of activities, including personal causations, values, and interests. Habituation encompasses roles and routines. Performance capacity emphasizes that when objectively evaluating people's performance and performance challenges, subjective experience and how these experiences shape performance should also be taken into account. The model classifies the environment into physical (natural and built areas for activities), social (social interactions and support systems), and occupational (activities reflecting interests, roles, capacities, and cultural preferences, along with relevant financing and policies) (Fisher et al., 2017; Lin & Fisher, 2020).

The MOHO-based semi-structured interview form was developed by the researchers to gather information on the volition as personal causation, interests, values, and the habits of their past, present, and future roles and routines. The questions covered the environment and the performance capacity that affect the person's physical, cognitive, and psychological

experience of occupations. Also, it was used to learn about individuals' occupations, occupational balance, problem areas, and expectations from occupational therapy intervention.

Demographic information such as gender, age, and marital status of the participants was recorded. The interview questions are presented below:

A. Volition

1. Do you feel like you can control your occupational behavior and make your own decisions? Please explain.
2. Do you feel confident when performing your daily tasks? Please explain.
3. What aspects do you feel strong or weak about?
4. Can you give me an example of something you do well?
5. What is valuable to you, and what do you feel valuable about?
6. Are there any activities you enjoy doing? If so, what are they? Can you achieve these?

B. Habituation

7. What are your thoughts about the roles in your life? Are you happy with your roles?
8. Do you have any past or future roles you would like to take on?
9. What obstacles do you face in fulfilling these roles?
10. Do people around you support you in performing these roles?
11. Can you tell us about your day? Are there any activities you do regularly? If so, what are they?

C. Performance capacity

12. What are the physical, psychological, emotional, motivational, and other factors that support you to do the activities?
13. What are the physical, psychological, and emotional factors that prevent you from doing activities?

D. Environment

14. What are the situations in your physical environment that facilitate or hinder you from performing activities?
15. What are the attitudes and behaviors of your social circle regarding your participation in activities? Which of these behaviors do you think support or hinder you?

Occupational Self-Assessment (OSA)

OSA is a 21-item outcome measure based on the MOHO model, assessing occupational competence and values (Baron & Kielhofner, 2006; Kielhofner et al., 2009; Stuber & Nelson, 2010). It rates their perceptions of, for example, how well the individual is capable of occupations (1 = many problems, 4 = very good) and how important these occupations are to them (1 = not very important, 4 = most important). A higher score in occupational competence means the patient is more capable of doing

the occupation, whereas a higher score in occupational values indicates more importance of the given occupation. Individuals then choose a priority occupation for intervention (Kielhofner et al., 2010a). The Turkish version was created, and the construct validity (via exploratory and confirmatory factor analyses) was tested to be acceptable by Pekçetin et al. (2018).

Model of Human Occupation Screening Tool (MOHOST)

MOHOST version 2 is an assessment tool based on the MOHO (Parkinson et al., 2006), consisting of 6 sections and containing 24 items, including motivation for occupation , the pattern of occupation, communication and interaction skills, process skills, motor skills, and the environment. Each item is evaluated in the range of 1-4 points (F = Facilitates, A = Allows, I= Inhibits, R= Restricts occupational participation) (Kielhofner et al., 2010b). The reliability coefficient of the Turkish version of the scale (Cronbach's Alpha) was found to be 0.89 by Zakarneh (2015). The ratings on the MOHOST were done based on the semi-structured interview and OSA evaluation.

Pittsburgh Sleep Quality Index (PSQI)

PSQI evaluates sleep quality in the last month and consists of five sub-titles and 24 questions. While subjective evaluation is made in the first 19 questions, the sleep partner or family evaluation is in the last five questions. The total score is between 0-24. A total number of more than 5 means poor sleep quality. It was developed by Buysse et al. (1989), and Turkish validity and reliability were performed by Agargun et al. (1996).

After the intervention, evaluations were re-administered via the semi structured interview by applying the measures again as well as using the interview questions.

Case presentations

In this article, we present two case reports that highlight the experiences of individuals with OCD. To protect their privacy, we will refer to them using pseudonyms. The first case is a man, whom we will refer to as Alex, and the second case is a woman, whom we will refer to as Ava**.**

Case 1- Alex

Alex is a 24-year-old male patient with a diagnosis of OCD and depression. He was admitted to the Hacettepe University psychiatry clinic and occupational therapy unit. He has been prescribed specific medication for his condition. He is a third-grade university student living in his parents' house.

Since age two, he has had obsessions with cleaning, such as wiping toys. His cleaning obsessions, such as regularly changing his towel and brushing his whole body, and compulsions, such as checking electrical appliances in the house, continue. The main complaints started at 13 with OCD symptoms related to cleanliness, counting, and order. Afterwards, the thought of being followed and the thinking that supernatural beings were watching him were added. He attempted suicide twice. He had negative

judgments about himself at the time of the interview, thinking he was unsuccessful in everything.

Prior to the intervention, he was unable to focus on the TV series he watched, his homework, and his lessons owing to his doubt obsession. He was also not willing to participate in group activities, as he was worried about whether he would hurt or disturb the friends he likes to spend time with. This situation caused him to spend his leisure time sleeping or doing passive recreation such as watching movies. As a result, he was sleeping 11-12 hours a day. With the disruption of his sleep routine, his school absenteeism has increased. He often misses school one day a week and cannot devote enough time to his school duties. He had personal care routines that he performed on a daily basis. He was paying attention to keeping personal care items clean and maintaining them regularly.

Alex's MOHO-based semi-structured initial interview assessment

Volition (Personal causation, values and interests): He believes he has better control over his obsessions than before, showing improved self-efficacy. His ability to manage his anger is also better than a few years ago, indicating better emotional regulation. He shows determination in refusing cigarettes and is confident in his decisions, which further enhances his sense of personal effectiveness. He is aware that he does not have effective stress management and is eager for change. He struggles with motivation, particularly with returning to drumming, an activity he used to enjoy and recognizes as beneficial for him. He stopped preparing for the conservatory because he found the workload too intense, indicating difficulty in managing demanding tasks. This may suggest a perceived lack of competence in dealing with high-stress situations.

His commitment to a good academic life reflects the value he places on education. He also values health, as shown by his refusal to smoke and his interest in cooking, which might be associated with maintaining a healthy diet. His desire to have a pet shows his value for caring and nurturing relationships. His family's reluctance to allow a pet could conflict with his values, potentially causing stress and dissatisfaction.

His interests are wide-ranging and include social activities (spending time with friends, trying new games), cultural activities (concerts, movies, theatre), physical activities (swimming), and creative activities (cooking, drumming). His lack of interest in activities he once enjoyed, such as drumming, suggests a decrease in engagement and satisfaction, which could be related to his depression.

Habituation (Habits and roles): As a student, he is curious and attends classes regularly. In his role as a friend, he likes to spend time with his friends. In his role as a student, he faces challenges in managing time and focusing on his lessons, which hinders his ability to fully participate. As a son, he feels inadequate due to family pressure and constant comparisons with peers, creating a barrier to his participation in this role.

His efforts towards maintaining a good academic life help him complete his school duties regularly. He struggles with managing time and spends excessive time on certain activities, affecting his ability to engage in various roles and activities. His sleep routine is disrupted by his psychological state, resulting in excessive sleep, which hinders his ability to participate in daily activities and roles. Additionally, his obsessive-compulsive behaviors and other time-consuming obsessions interfere with his daily routines and punctuality for classes.

Skills: He recognizes the need for support in problem-solving skills, indicating a willingness to improve in this area. He demonstrates appropriate posture and movement during activities, which can support his engagement and performance. His good coordination, as evidenced by playing the drums, can be a strength that supports his participation in activities requiring physical coordination. However, he faces several barriers to participation. He struggles with effectively using gestures and facial expressions, expressing himself, and understanding others. Emotional awareness is another challenge, as he relies on imitation to recognize emotions, impacting his ability to connect with others on an emotional level. Inconsistent volume control leads to difficulties in effective communication and conveying thoughts or emotions. Fear of humiliation and misunderstanding makes him avoid expressing his thoughts, which limits his social interactions. Anxiety and lack of concentration hinder his ability to engage effectively in academic or professional settings. Additionally, laughing for no reason damages his relationships with peers in class. Procrastination is another issue; he tends to postpone activities that are his responsibility, leading to decreased productivity and difficulties in meeting obligations. He constantly feels tired, experiences headaches, and has a strong desire to sleep. Furthermore, addressing the negative self-perceptions, suicide attempts, and beliefs about supernatural beings related to his Obsessive-Compulsive Disorder (OCD) and depression is essential to improving his mental well-being and overall participation.

Environment: He benefits from supportive friends who play a significant role in encouraging him and introducing him to new activities when he lacks motivation. Their support can positively impact his engagement in various activities. His aunts and uncles also act as supporters, contributing to his overall well-being and participation in activities. Attending a university clinic provides him with support and resources to address his needs, potentially enhancing his participation in activities. Living in a city center with sufficient physical resources and space allows him to access and perform activities more easily, enhancing his participation. However, there are barriers to his participation as well. Parental reluctance to let him have a pet can cause conflict and limit his ability to engage in activities involving having a pet. The lack of trust and constant warnings from his parents create a negative environment, affecting his motivation and self-confidence, potentially hindering his participation in activities. Arguments with friends can also limit his engagement and social interactions, as he may not wish to participate in activities during such times. Additionally, there is a lack of occupational opportunities due to the recent pandemic outbreak, which hinders his ability to engage in work-related activities. No limitations due to the physical environment were identified.

Intervention overview for Alex

In cooperation with Alex, targets were determined, and an intervention was planned. All interventions were supported by homework to ensure continuity. Table 1 shows the intervention sessions overview for Alex, based on these goals.

Alex's goals

1. Within 2 months, Alex will create a plan to independently apply job search skills, including how and where to look for job postings, preparing a CV/resume, researching internship opportunities, interview preparation, and professional development. These skills will be achieved with minimal support in Alex's home environment.

2. By the end of 3 months, Alex will be able to perform a comprehensive 30-minute presentation in front of a group of 10-15 people. This presentation will be conducted with minimal support in Alex's school environment.
3. Within 2 months, Alex will make a choice to reengage at least 5 former routines. This goal will be achieved with minimal support in activities within Alex's home, school, and social environments (e.g., regular meetings with friends or participating in hobby groups).
4. By the end of 3 months, Alex will apply coping strategies (such as stress management training or meditation practices) twice a week and independently manage OCD symptoms. This goal will be achieved with minimal support in Alex's home environment (e.g., in his own room or study area).

Table 1. Summary of intervention sessions for Alex.

Sessions	Session Overview
1-4	● Establishing a therapeutic relationship to foster an environment of trust.
	● Identifying the meaning, importance, and priorities of occupations to improve time management.
	● Highlighting Alex's academic strengths and encourage trying new activities, while addressing his weaknesses in time management and focus due to obsessions.
	● Providing guidance on the necessary educational background, job skills, and opportunities for overseas projects.
5-8	● Offering support regarding Alex's interests, values, self-efficacy, and self-control to encourage participation in academic readings.
	● Developing effective communication skills to address problems stemming from Alex's doubt obsession.
	● Enhancing emotional awareness, support, and positive self-perception to improve social interaction.
	● Using drama strategies to practice problem-solving, gestures, facial expressions, empathy, and emotional expression.
	● Developing strategies to manage stress and improve participation in daily activities.
9-12	● Increasing awareness of how disrupted sleep routines affect daily and school tasks.
	● Planning daily activities with a focus on establishing a consistent sleep routine and making lifestyle changes.
	● Teaching breathing and relaxation exercises to help control doubt obsessions and enhance focus.
	● Tackling negative self-perceptions, suicidal thoughts, and beliefs in supernatural beings to improve mental health.
	● Developing strategies to address issues with laughing during public presentations and in serious environments.
12-16	● Encouraging Alex to return to activities he enjoys to boost interest and ensure continuity.
	● Creating new leisure routines to reduce the duration of obsessive behaviors.
	● Discussing the impact of obsessions and compulsions on daily life and use role-plays to support understanding and coping strategies..

Results for Alex

Table 2 shows there has been an increase in MOHOST and OSA scores for Alex. These results and changes are explained more in depth below using the MOHO structure:

Table 2. MOHOST and OSA assessments of Alex.

MOHOST	Pre -Intervention	Post-Intervention
Motivation for Occupation (4-16)	12	13
Pattern of Occupation (4-16)	13	13
Communication & Interaction Skills (4-16)	12	14
Process Skills (4-16)	13	14
Motor Skills (4-16)	14	15
Environment (4-16)	12	12
Total (24-96)	76	81
OSA		
Occupational competence	52	53
Occupational values	52	51

Volition: Since he postponed the maintenance of his home drums, he went to the studio to raise awareness of his talent on this subject. He added to his routine to go to play the drums regularly. By developing self-awareness towards himself, coping strategies were taught for the moments when his mood dropped and negative thoughts increased. While managing the activities and time, a planned schedule was created. It aimed to increase the motivation towards the activities by filling the list of things done as he fulfils his responsibilities. He passed the driver's license exam. He thinks the intervention's motivational interviews and stress management strategies helped him pass the driver's license exam more easily since this is his fourth time taking the exam. The feedback and the resulting products during the intervention activities enabled him to see his power and self-efficacy. He was informed to achieve a good academic career and success in line with the target, and his problem areas were supported by role-playing.

*Habituation (*Roles): He has gained achievements such as knowing platforms where he can reach internships for a good academic career and professional role, body language and verbal communication skills required for job interviews, and CV preparation. He won the role of a volunteer by participating in the events organized by a national organization to support children with cancer. Negative thoughts about a son's role were extinguished by indicating his success and strengths. He gained experience with activities performed in front of the public, such as preparing and making presentations, which are part of the student role.

Habituation (Habits and roles): He follows the schedule for time management as thought. He applies the given strategies to focus on his work. He added breathing exercises, meditation, and relaxation exercises to his routine to relax. He goes to play the drums regularly on Fridays. He knows the activities that take too long and can switch to a new plan. Based on the homework to bring photos of what he did to try different activities with his friends, making clay figures was discovered and included in the routine as a leisure activity after practicing in the sessions. The table tennis he used to play was added to the sessions, and he was encouraged to continue again. Seeing himself as talented in the cookie-making activity used for therapeutic purposes encouraged him to try this activity with her mother.

Skills: The drama was used to feel emotions and develop gestures and facial expressions. Gestures and facial expressions suitable for the environment were learned by giving feedback about reviving memories, vocalizing movies, role-playing, and activity analysis. Emotions were reinforced by talking about mimic exercises and feelings about the events around them. Problem-solving skills were supported by brainstorming various scenarios. He also obtained his driving license. He considers himself courageous to voice his opinions more often among his friends. He experiences less tension and concentration problems while presenting.

Environment: The psychological pressure created by his parents was tried to be extinguished by considering his strengths. He talked about his problems with his friends. Problem-solving skills were repeated over these events.

Subjective experience of Alex on the intervention process:

> *Before I started the occupational therapy, I thought I would suddenly feel better afterward (the sessions), but I did not. After the therapy ended, I found that what I gained was better than I had hoped.' I learned what I can do to feel better (in sessions), that this can be done by participating in life, ways to cope with stress and difficulties, and that it is always worth trying to give new activities a chance* (Alex).

Case 2- Ava

Ava is a 50-year-old female patient with a diagnosis of OCD, referred to occupational therapy, with co-diagnoses of generalized anxiety disorder and panic disorder. Her symptoms have been present for ten years. She has obsessions such as organizing the dishes in the dishwasher, counting stair steps and lampposts, not stepping on lines, checking license plates, doubt, order, contamination, and counting. When she leaves the house, she returns 4-5 times to ensure that all electrical appliances are switched off. Because of this, she was frequently late for hospital visits. Her drive to organize the dishes in the dishwasher causes her to spend more than 30 minutes on this activity on a regular basis, and if she cannot acquire the order she desires, she becomes irritated. Not being able to fix the dishwasher when she is a guest often makes her anxious, and if the order is incorrect, it might lead to an argument with the host. Her obsession with counting electric poles and checking license plates prevents her from having a peaceful trip when she travels out of town. As a result, she no longer wants to go on out-of-town vacations, which she used to take frequently. She lives alone on the first floor in the city center, where sounds at night increase her doubt obsessions, and badly disrupt her sleep schedule. Despite going to bed, she is unable to sleep for 3-4 hours. She used to own a beauty salon, but she closed it down after being diagnosed with cancer. She is not currently employed. She is studying in the Radio and Television Department at the Open Education Faculty, where printed materials and television broadcasting have been used as teaching methods.

Volition (personal causation, values, interests): She believes that she is successful in reading and writing books and is eager to learn new skills. She has a strong bond with her nephew and neighbors, and she carefully considers every detail when making decisions about herself, believing that if she trusts in the decisions taken, she will succeed. She values her studies in the faculty, reading and writing books, taking care of her little niece, and being involved in her community. Her interests include her studies, writing stories and novels, watching the news, taking care of her neighbors and the garden, and visiting bookstores. However, she struggles to cope with her anxiety and finds it difficult to control her emotions, which she projects easily, impacting her interactions with others. She lacks the willpower to quit smoking, and her inability to travel out of town restricts her ability to explore new environments and engage in new experiences. She has lost self-confidence and feels untalented and unproductive. Her fear of the pandemic has intensified her existing fears and anxieties, making it challenging for her to engage in activities outside her home. Not being able to spend time with loved ones due to participation restrictions brought about by obsessions conflicts with her values. She experiences panic attacks that prevent her from focusing on her writing and studies. Additionally, she no longer finds enjoyment in activities she used to enjoy, experiencing decreased enjoyment.

Habituation (Habits and roles): She has a wide circle of friends and enjoys spending time with her neighbors and taking care of them, which provides her with a sense of purpose and social connection. As a student at a university, she follows lectures with interest, supporting her engagement in learning and personal growth. Previously, she held a caregiver role, taking care of her father before he passed away, which provided her with a sense of fulfillment and purpose. However, there are barriers to her participation. She

has been limiting her interactions with friends to phone calls, likely due to her anxiety and fear of leaving the house, which prevents her from fully engaging in her role as a friend. Her desire to organize the dishwasher in her neighbors' houses and to interfere with their way of organizing the dishes causes arguments, impacting her role as a neighbor. As a student, her irregular sleep routine, time management problems, and concentration issues hinder her participation. Since her father's passing, she no longer holds the caregiver role that facilitated her participation, and she misses it. Her habits also present barriers to participation. She engages in various compulsive routines, such as arranging furniture, checking appliances, counting steps and electric poles, and loading/unloading the dishwasher. While these habits provide her with a temporary sense of control and reduce anxiety, they consume significant time and attention, preventing her from engaging in other activities. Additionally, her disrupted sleep routine, characterized by difficulty falling asleep and waking up late, negatively impacts her energy levels and overall well-being, further hindering her engagement in daily activities.

Skills: She has strong communication and interaction skills, enabling her to engage with people of all age groups and facilitating her social participation. Her orientation and visual memory skills allow her to easily navigate and reach her destinations. Additionally, her good posture and balance contribute to her physical abilities. Her past professional experience in a beauty center improved her ability to connect with people and solve problems. However, her psychological state, including OCD, general anxiety disorder, and panic disorder, significantly affects her performance, leading to low energy levels and hindering her participation in activities. These anxieties and fears often result in a sedentary lifestyle, limiting her engagement in physical activities. Although she participates in online courses, her lack of technical knowledge and computer skills hinders her ability to fully engage in these activities. Her limited focus and attention, caused by panic attacks, affect her ability to sustain attention during desk activities. Additionally, her health problems, including shortness of breath due to excessive smoking and unhealthy eating habits, limit her physical abilities and engagement in leisure activities.

Environment: She feels fortunate to have supportive friends and neighbors who provide her with emotional support and encouragement. Living in her own home in the city center offers her various opportunities for participation. The central location, with its good transportation links, supports her engagement in a range of activities and access to necessary resources. However, there are barriers to her participation. Limited family support affects her emotional well-being, particularly due to a strained relationship with her sister. The loss of both parents has added a significant emotional burden, impacting her overall participation. Additionally, she perceives the city center as unsafe because of the presence of refugees and dogs, which limits her engagement in outdoor activities and increases her anxiety. Financial constraints also restrict her ability to afford activities such as going to the gym and photography courses, which affects her participation in these meaningful occupations.

Intervention overview for Ava

In cooperation with Ava, targets were determined, and an intervention was planned. All interventions were supported by homework to ensure continuity. Table 3 shows the intervention sessions overview for her, based on these goals.

Ava's Goals

1. Within 2 months, Ava will prepare at least 5 healthy meals per week and will continue to do so with weekly check-in support using the ingredients and kitchen tools she has.
2. Within 2 months, Ava will select and participate in at least 2 engaging and accessible leisure activities, each lasting 1 hour, and will continue these activities with minimal support using resources available in her neighbourhood and home environment.
3. Within 3 months, Ava will identify and be able to independently use the basic computer skills required for her student role, including file management, email usage, word processing, researching information with Google, and preparing impressive presentations, within the school environment.
4. Within 2 months, Ava will be able to perform a sleep routine and sleep hygiene strategies daily, maintaining this routine independently. This goal will be achieved with minimal support as part of a plan designed to improve her sleep patterns using steps that can be applied in her home environment.

Table 3. Summary of intervention sessions for Ava.

Sessions	Session Overview
1-4	● Establishing a therapeutic relationship to foster an environment of trust for effective intervention.
	● Identifying the meaning, importance, and priorities of occupations to ensure efficient time management.
	● Highlighting Ava's strengths and interests (e.g., writing, communication skills, professional background, and social network) while addressing the impact of her obsessions and anxieties on her lifestyle.
	● Emphasizing these aspects to boost her motivation and participation in therapy.
	● Enhancing speed and time management by transitioning activities to a technological environment.
	● Developing necessary computer skills for her student role.
	● Providing feedback on Ava's interests, values, self-efficacy, and self-control to motivate occupational participation.
5-10	● Assisting Ava in managing her emotional instability that affects her social interactions.
	● Utilizing drama strategies, including the therapeutic use of dance and life story filming, to reflect emotions and develop self-awareness.
	● Implementing lifestyle changes to reduce time spent on obsessions.
	● Promoting healthy nutrition, reducing smoking, and participating in Back School.
	● Using the Transtheoretical Model for smoking cessation and Goal Assessment Scale (GAS) to track progress and ensure adherence to interventions.
	● Balancing routines through sleep hygiene training to reduce night-time doubt obsessions.
	● Teaching breathing and relaxation exercises to manage doubt obsessions and improve focus.
	● Providing in-home arrangements and reminders to reduce checking compulsions.
11-16	● Conducting motivational interviews about activities like travelling, shopping, and cinema, which are hindered by Ava's obsessions and fears.
	● Reducing the duration of obsessive behaviours by establishing new routines and finding alternative solutions for financially restrictive activities.
	● Discussing the impact of obsessions and compulsions on daily life and supporting awareness through role-plays.

Results for Ava

Table 4 shows there has been an increase in MOHOST, OSA, and PSQI scores for Ava. These results and observed changes are explained more in depth below using the MOHO structure. *Volition:* She has not had a panic attack for two months, and her focus has increased as her anxiety has decreased. With the regularity of her sleep, her attention in her lessons is better. She learned the MS Word program to save time in the book-writing activity. She quit smoking. Although she could not go on long trips, she went out of the city two times during the intervention. As her fears subsided, she

regained her strength and interest in activities by restoring her old habits. She felt strong again. She did breathing and relaxation exercises regularly, which, she thinks, helped her cope with anxiety.

Table 4. MOHOST and OSA assessments of Ava.

MOHOST	Pre-Intervention	Post-Intervention
Motivation for Occupation (4-16)	9	16
Pattern of Occupation (4-16)	13	16
Communication & Interaction Skills (4-16)	13	16
Process Skills (4-16)	13	16
Motor Skills (4-16)	15	16
Environment (4-16)	10	13
Total (24-96)	73	93
OSA		
Occupational competence	59	71
Occupational values	60	66
PSQI		
Subjective sleep quality	0	0
Sleep latency	3	2
Sleep duration	1	0
Habitual sleep efficiency	3	0
Sleep disturbances	2	1
Use of sleeping medication	0	0
Daytime dysfunction	0	0
Total	9	3

Habituation (Roles): She participated in more active activities with her friends and neighbors. She was informed about computer programs for her student role and websites that will contribute to her education.

Habituation (Habits and roles): After the sleep hygiene training, she shaped her diet, room layout, and habits accordingly. Her waking up and going to bed hours have changed. She reduced her tea consumption. She added walking and exercise to her daily routine when she quit smoking. She has started cooking and eating regularly. After practicing in the sessions, she added stone painting and felt design activities to her daily routine. She was taught to take a virtual museum tour, as she was very interested in museums and could not attend them all. Information was given about cost-effective and useful online training sites since she could not afford the courses. A session was held at a nearby museum to increase participation motivation. Learning English was added to the daily routine, and information was provided about the resources. Problem-solving strategies were developed for obsessive-compulsive routines. She integrated these strategies into her daily life.

Skills: Being involved in activities made her feel better psychologically; experimenting and exploring different activities made her lead a more active life. Solving her sleep problem helped her create a routine for the day so she could spare more time for homework and chores. With the information about waist and neck health, protective

measures were obtained about doing housework, sitting, and sleeping in the right position. Dexterity activities were carried out during the sessions, making her aware of her skills. Using goal attainment tools was suggested so she could materialize her plans. Various activities were carried out in the sessions to focus and maintain attention. Various games, puzzle-making, and computer applications are suggested as homework.

Environment: She strives to strengthen family dynamics and to gather and act. She was financially relieved by quitting smoking. She wants to save up and enroll in courses, sports, and travel. It explores different possibilities in the surrounding area.

Subjective experience of Ava on the intervention process:

> *I was weak in the discipline. I gained the ability to gain discipline. I started doing what I should have done by gaining awareness, such as eating regular meals, going to bed early, and getting up early. I quit smoking. I have benefited a lot; I feel comfortable here. I think I can express myself because you (the therapist) are listening. I am more interested in the outside; I was confined at home for too long. I was refusing invitations from friends and neighbors. Now, I am more in contact and participating. If the doctor tells me to stop the medicine now, I will stop; I feel comfortable. I learned a lot of new things. I added new activities to my life. My fears have subsided. I can cope with my obsessions with your (the therapist's) suggestions* (Ava).

Discussion

This study utilized the Model of Human Occupation (MOHO) framework for assessing occupational performance and participation in two individuals diagnosed with obsessive-compulsive disorder, as well as for designing an individualized intervention program. Based on the evaluations, it was noted that the individuals exhibited limitations in occupational performance and participation. However, significant improvements were observed in these issues following the implementation of the intervention program specifically tailored to individual needs. The intervention successfully reduced anxiety and stress levels in the participants, enabling them to actively engage in new leisure occupations and enhancing their communication and interaction skills. In both cases, the participants were able to regain their former meaningful occupations. For Ava, the sleep routine was regulated, and smoking was discontinued after the intervention. The individuals gained a heightened sense of self-awareness regarding their condition and have experienced positive outcomes in personal, academic, and professional realms.

A recent review study on MOHO, a widely used theory among occupational therapists, affirmed that the model has demonstrated effectiveness in addressing physical and mental health problems throughout the years. It has shown significant potential in improving patients' well-being and helping them achieve their goals (Cheung & Fung, 2020). In our study, we employed MOHO to thoroughly evaluate the occupational performance and participation difficulties faced by the participants, as well as to devise an intervention plan. Our findings have supported the suitability of utilizing MOHO in mental health, particularly with patients diagnosed with OCD, due to its capacity to facilitate a person-centred, holistic approach.

Studies have demonstrated that a diagnosis of OCD has significant implications for individuals and their families, with a chronic and debilitating course that results in functional impairment and negative consequences on daily life and quality of life (Velloso et al., 2018; Walseth et al., 2019). This includes poor social relationships, increased use of health services, financial difficulties, and disruptions in sleep, productivity, leisure activities, and social interactions (Bobes et al., 2001; Kohler, 2017). In the present study, the scores derived from standardized measures, coupled with the comprehensive analysis of the findings obtained through interviews carried out with participants at the beginning of the study, provide support for the documented effects of OCD within the existing literature.

Despite the remarkable results achieved through lifestyle changes and cognitive behavioral therapy (Brierley et al., 2021; Guzick et al., 2018), nearly 80% of patients continue to experience symptoms following psychological intervention for OCD. Therefore, it is expressed that there is a necessity for improvements in enhancing the efficacy of psychological interventions for individuals diagnosed with OCD (Fisher et al., 2020). Besides that, it is known that occupational therapist-led interventions have the potential to improve the mental well-being and participation of individuals with mental health difficulties, including post-traumatic stress disorder, depression, and anxiety disorder (Fox et al., 2019; Kirsh et al., 2019). Our study's person-centered holistic occupational therapy intervention revealed promising results, suggesting that such interventions could be beneficial for improving mental health and participation of individuals with OCD.

Although the positive impact of occupational therapy on mental health field is acknowledged, the existing body of research on the effectiveness of occupational therapy for individuals diagnosed with OCD is currently constrained in its scope (Bavaro, 1991; Söchting & Third, 2011). For instance, a case report involving a young adult with autism, intellectual disability, and obsessive-compulsive disorder revealed a positive effect of tele-occupational therapy on self-determined routine task performances (Swaminathan & Pai, 2020). Another study investigated the effectiveness of cognitive behavioral treatment and provided supporting evidence for group treatment in adolescents with OCD (Söchting & Third, 2011).

Based on our current understanding, there appears to be only one study thus far that has used the MOHO framework as a tool to design interventions for individuals diagnosed with OCD. This study, conducted in 1991, employed MOHO in an occupational therapy intervention. A treatment plan, incorporating pre-vocational skills, participation in social groups, and art activities, was devised through the utilization of an interest checklist, role checklist, and interviews. The intervention provided a comprehensive understanding of an individual's lifestyle, enabling the identification of impairments in volition and habituation and their interaction with the environment (Bavaro, 1991). The findings of our current study are consistent with that case report, as the increase in MOHOST and OSA scores suggests similar outcomes.

Limitations

There are several limitations pertinent to our study, including the presence of co-occurring diagnoses of the participants and the absence of follow-up assessments

subsequent to the intervention. Accordingly, it is recommended that future investigations focus on different methodologies and approaches to validate the results and enhance the generalizability of the findings.

Conclusion

In conclusion, our study demonstrates the potential effectiveness of MOHO-based occupational therapy intervention for two individuals diagnosed with OCD. By utilizing the MOHO framework, we were able to gain a comprehensive understanding of the occupational challenges faced by these individuals and design targeted interventions to promote meaningful occupational participation.

This study contributes to the field of occupational therapy by filling a significant gap in research on individuals with OCD, particularly in terms of occupational therapy intervention strategies and outcomes. The limited existing research on this population highlights the novelty and importance of our study. Furthermore, our utilization of the MOHO model, which supports holistic, occupation-centered, person-centered, and evidence-based practices.

Overall, our study represents a significant initial step toward future research aimed at improving the standard of care and outcomes for individuals with OCD. We anticipate that the outcomes of this study will play a pivotal role in incorporating MOHO into both the realm of mental health disorders and OCD research.

References

Abramowitz, J. S., & Reuman, L. (2020). Obsessive-compulsive disorder. In V. Zeigler-Hill & T. K. Shackelford (Eds.), *Encyclopedia of personality and individual differences*. USA: Springer.

Agargun, M. Y., Kara, H., & Anlar, O. (1996). The validity and reliability of the Pittsburgh Sleep Quality Index. *Türk Psikiyatri Dergisi*, *7*(2), 107-115.

Baron, K., & Kielhofner, G. (2006). *A User's Manual for the Occupational Self Assessment (OSA)(Version 2.2)*. Chicago: University of Illinois at Chicago.

Bavaro, S. M. (1991). Occupational therapy and obsessive-compulsive disorder. *The American Journal of Occupational Therapy*, *45*(5), 456-458.

Bobes, J., González, M. P., Bascarán, M. T., Arango, C., Sáiz, P. A., & Bousoño, M. (2001). Quality of life and disability in patients with obsessive-compulsive disorder. *European Psychiatry*, *16*(4), 239-245.

Boop, C., Cahill, S. M., Davis, C., Dorsey, J., Gibbs, V., Herr, B., Kearney, K., Lannigan, E. Q. L. Q. G., Metzger, L., Miller, J., Owens, A., Rives, K., Synovec, C., Winistorfer, W. L., & Lieberman, D. (2020). Occupational Therapy Practice Framework: Domain and Process Fourth Edition. *American Journal of Occupational Therapy*, *74*(S2), 74124100101-741241001087.

Brierley, M. E. E., Thompson, E. M., Albertella, L., & Fontenelle, L. F. (2021). Lifestyle interventions in the treatment of obsessive-compulsive and related disorders: a systematic review. *Psychosomatic Medicine*, *83*(8), 817-833.

Buysse, D. J., Reynolds, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Research*, *28*(2), 193-213.

Cheung, P., & Fung, X. C. (2020). A review on the case studies of using the model of human occupation. *Social Health and Behavior*, *3*(1), 3-9.

Dougherty, D. D., Wilhelm, S., & Jenike, M. A. (2014). Obsessive-compulsive and related disorders. In R. E. Hales, S. C. Yudofsky, & L. W. Roberts (Eds.), *The American Psychiatric Publishing textbook of psychiatry* (6th ed., pp. 431-454). Washington: American Psychiatric Publishing, Inc.

Fisher, G., Parkinson, S., & Haglund, L. (2017). The environment and human occupation. In R. Taylor. *Kielhofner's model of human occupation* (5th ed., pp. 91-106). USA: Wolters Kluwer Health & Lippincott Williams & Wilkins.

Fisher, P. L., Cherry, M. G., Stuart, T., Rigby, J. W., & Temple, J. (2020). People with obsessive-compulsive disorder often remain symptomatic following psychological treatment: a clinical significance analysis of manualised psychological interventions. *Journal of Affective Disorders*, *275*, 94-108.

Foss, W. T. (2023). Case series: Design, measures, and classic example. *Translational Interventional Radiology*, *2023*, 177-180.

Fox, J., Erlandsson, L. K., & Shiel, A. (2019). A systematic review and narrative synthesis of occupational therapy-led interventions for individuals with anxiety and stress-related disorders. *Occupational Therapy in Mental Health*, *35*(2), 179-204.

Grant, J. E. (2014). Obsessive–compulsive disorder. *The New England Journal of Medicine*, *371*(7), 646-653.

Guzick, A. G., Cooke, D. L., Gage, N., & McNamara, J. P. H. (2018). CBT-Plus: a meta-analysis of cognitive behavioral therapy augmentation strategies for obsessive-compulsive disorder. *Journal of Obsessive-Compulsive and Related Disorders*, *19*, 6-14.

Kielhofner, G. (2008). Introduction to the model of human occupation. In G. Kielhofner. *Model of human occupation, theory and application* (pp. 1-9). USA: Lippincott Williams & Wilkins.

Kielhofner, G., Dobria, L., Forsyth, K., & Kramer, J. (2010a). The occupational self assessment: stability and the ability to detect change over time. *OTJR (Thorofare, N.J.)*, *30*(1), 11-19.

Kielhofner, G., Fan, C. W., Morley, M., Garnham, M., Heasman, D., Forsyth, K., Lee, S. W., & Taylor, R. R. (2010b). A psychometric study of the Model of Human Occupation Screening Tool (MOHOST). *Hong Kong Journal of Occupational Therapy*, *20*(2), 63-70.

Kielhofner, G., Forsyth, K., Kramer, J., & Iyenger, A. (2009). Developing the Occupational Self Assessment: the use of Rasch analysis to assure internal validity, sensitivity and reliability. *British Journal of Occupational Therapy*, *72*(3), 94-104.

Kirsh, B., Martin, L., Hultqvist, J., & Eklund, M. (2019). Occupational therapy interventions in mental health: a literature review in search of evidence. *Occupational Therapy in Mental Health*, *35*(2), 109-156.

Kohler, K. C. (2017). *The daily functioning and quality of life of adults with obsessive compulsive disorder: a qualitative inquiry* (Master thesis). Stellenbosch University, Stellenbosch.

Lee, S. W., Taylor, R., Kielhofner, G., & Fisher, G. (2008). Theory use in practice: a national survey of therapists who use the Model of Human Occupation. *The American Journal of Occupational Therapy*, *62*(1), 106-117.

Lin, T. T., & Fisher, G. (2020). Applying the model of human occupation during the pandemic stay-at-home order. *The Open Journal of Occupational Therapy*, *8*(4), 1-7.

Parkinson, S., Forsyth, K., & Kielhofner, G. (2006). Model of human occupation screening tool. *British Journal of Occupational Therapy*

Paterson, J. L., Reynolds, A. C., Ferguson, S. A., & Dawson, D. (2013). Sleep and obsessive-compulsive disorder (OCD). *Sleep Medicine Reviews*, *17*(6), 465-474.

Pekçetin, S., Salar, S., İnal, Ö., & Kayıhan, H. (2018). Validity of the Turkish occupational self assessment for elderly individuals. *OTJR (Thorofare, N.J.)*, *38*(2), 105-112.

Rocamora-Montenegro, M., Compañ-Gabucio, L. M., & de la Hera, M. G. (2021). Occupational therapy interventions for adults with severe mental illness: a scoping review. *BMJ Open*, *11*(10), 1-11.

Söchting, I., & Third, B. (2011). Behavioral group treatment for obsessive-compulsive disorder in adolescence: A pilot study. *International Journal of Group Psychotherapy*, *61*(1), 85-97.

Stuber, C. J., & Nelson, D. L. (2010). Convergent validity of three occupational self-assessments. *Physical & Occupational Therapy in Geriatrics*, *28*(1), 13-21.

Swaminathan, A., & Pai, A. (2020). Effect of tele-occupational therapy on self-determined routine task performances in a young adult with autism, intellectual disability, and obsessive-compulsive disorder: A case report. *The Indian Journal of Occupational Therapy*, *52*(4), 151-154.

Taylor, J., Mynard, L., & Farnworth, L. (2022). Occupational therapists' experiences using the model of human occupation in forensic mental health. *Occupational Therapy in Mental Health*, *38*(1), 67-85.

Taylor, R., Bowyer, P., & Fisher, G. (2023). *Kielhofner's model of human occupation*. Filadélfia: Lippincott Williams & Wilkins.

Varinelli, A., Caricasole, V., Pellegrini, L., Hall, N., Garg, K., Mpavaenda, D., Dell'Osso, B., Albert, U., the International College of Obsessive-Compulsive Spectrum Disorders (ICOCS) Expert Survey Workgroup & Fineberg, N. A. (2022). Functional interventions as augmentation strategies for obsessive-compulsive disorder (OCD): scoping review and expert survey from the international college of obsessive-compulsive spectrum disorders (ICOCS). *International Journal of Psychiatry in Clinical Practice*, *26*(1), 92-107.

Velloso, P., Piccinato, C., Ferrão, Y., Perin, E. A., Cesar, R., Fontenelle, L. F., Hounie, A. G., & do Rosário, M. C. (2018). Clinical predictors of quality of life in a large sample of adult obsessive-compulsive disorder outpatients. *Comprehensive Psychiatry*, *86*, 82-90.

Walseth, L. T., Launes, G., Sunde, T., Klovning, I., Himle, J., Haaland, V. Ø., & Håland, Å. T. (2019). Present in Daily Life: Obsessive Compulsive Disorder and Its Impact on Family Life from the Partner's Perspective. A Focus Group Study. *Journal of Family Psychotherapy*, *30*(3), 185-203.

Zainal, Z. (2007). Case study as a research method. *Jurnal Kemanusiaan*, *5*(1), 1-6.

Zakarneh, M. (2015). *Assessing the occupational functioning for the residents in the houses of hope in Ankara according to the model of human occupation* (Master thesis). Hacettepe University, Ankara.

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