Yaygın Anksiyete Bozukluğu Tanısı Alan Ergenlerin Okupasyonel Katılımlarının İncelenmesi

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ÖZ

Yaygın anksiyete bozukluğu (YAB), özellikle ergenlerde motivasyonu, rutinleri ve sosyal rolleri sınırlandırarak okupasyonel katılım üzerinde önemli bir etkiye sahiptir. Ergoterapi modelleri kullanılarak YAB' ın ergenlerin okupasyonel performansı üzerindeki etkisini inceleyen az sayıda çalışma bulunmaktadır. Bu çalışmanın amacı, YAB tanılı ergenlerde okupasyonel katılım kısıtlamalarını araştırmak ve katılımı kolaylaştıran veya engelleyen faktörleri belirlemek için İnsan Aktivite-Rol Modeli Tarama Aracı'nı (MOHOST) kullanmaktır. Çalışmaya, yaşları 12 ile 18 arasında değişen, 21 YAB tanısı konmuş ergen ve 21 sağlıklı kontrol olmak üzere toplam 42 ergen katılmıştır. Veriler, motivasyon, okupasyonel kalıplar, süreç becerileri, motor beceriler ve çevresel faktörleri değerlendirmek için MOHOST kullanılarak eşzamanlı çevrimiçi görüşmeler yoluyla toplanmıştır. Grupları karşılaştırmak ve temel değişkenler arasındaki ilişkileri keşfetmek için istatistiksel analiz kullanılmıştır. YAB tanılı ergenlerin toplam MOHOST puanları sağlıklı kontrollere kıyasla anlamlı derecede düşüktü ($p<0.001$). Okupasyon için motivasyon, okupasyon kalıpları, süreç becerileri, motor beceriler ve çevresel faktörleri içeren alt ölçek puanları da YAB grubunda anlamlı derecede düşüktü ($p<0.05$). Sınırlı fiziksel ve sosyal kaynaklar gibi çevresel faktörler ile okupasyonel motivasyon ve katılım arasında pozitif yönlü, orta düzeyde bir ilişki bulunmuştur ($r=0.621$, $p=0.014$). YAB tanılı ergenler hem kişisel hem de çevresel faktörlerden kaynaklanan önemli okupasyonel katılım kısıtlamaları yaşamaktadır. Bulgular, ergoterapide bireye özgü ve çevresel faktörleri dikkate alan müdahalelerin, ergenlerin motivasyonunu artırma, günlük rutinlerini düzenleme ve sosyal rollerini desteklemede etkili olabileceğini göstermektedir. Gelecekteki çalışmalar, bu tür müdahalelerin YAB tanılı ergenler üzerindeki uzun vadeli etkilerini araştırmalıdır.

Anahtar Kelimeler: Adölesan, Anksiyete, Ergoterapi, Günlük yaşam aktiviteleri, Ruh sağlığı

Examining the Occupational Participation of Adolescents Diagnosed with Generalized Anxiety Disorder

ABSTRACT

Generalized anxiety disorder (GAD) has a significant impact on occupational participation, particularly in adolescents, by limiting motivation, routines and social roles. Few studies have examined the impact of GAD on adolescents' occupational performance using occupational therapy models. The aim of this study was to use the Model of Human Occupation Screening Tool (MOHOST) to explore occupational participation limitations in adolescents with GAD and to identify factors that facilitate or hinder participation. A total of 42 adolescents, including 21 adolescents diagnosed with GAD and 21 healthy controls, aged between 12 and 18 years, participated in the study. Data were collected through synchronous online interviews using MOHOST to assess motivation, occupational patterns, process skills, motor skills and environmental factors. Statistical analysis was used to compare groups and explore relationships between key variables. Adolescents with GAD had significantly lower total MOHOST scores compared to healthy controls ($p<0.001$). Subscale scores, including motivation for occupation, patterns of occupation, process skills, motor skills and environmental factors were also significantly lower in the GAD group ($p<0.05$). A moderate positive correlation was found between environmental factors such as limited physical and social resources and occupational motivation and participation ($r=0.621$, $p=0.014$). Adolescents with GAD experience substantial occupational participation limitations, driven by both personal and environmental factors. The findings suggest that individualized and environmentally-informed interventions in occupational therapy may be effective in enhancing adolescents' motivation, organizing their daily routines, and supporting their social roles. Future studies should investigate the long-term effects of such interventions on adolescents with GAD.

Keywords: Activities of daily living, Adolescents, Anxiety, Mental health, Occupational therapy

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INTRODUCTION

Occupational participation refers to the active involvement of the individual in daily life activities, and this participation is critical for maintaining and improving quality of life (1). However, many disorders that occur in physiological, psychological and social areas limit individuals' occupational participation and negatively affect quality of life (2). One of these disorders is a psychiatric condition known as generalized anxiety disorder (GAD), which causes constant and excessive anxiety in individuals (3).

GAD is characterised by a constant state of anxiety that does not focus on a specific event or activity and significantly affects the daily functioning of the individual (3). According to the American Psychiatric Association definition, symptoms of GAD include restlessness, fatigue, difficulty concentrating, irritability, muscle tension and sleep disturbances (4). It has a high prevalence and symptoms are observed at early onset (5). Especially during adolescence, these symptoms may significantly limit individuals' participation in social, academic and daily life activities (6).

Research shows that contrary to traditional views that GAD is a mild disorder, it leads to severe limitations in terms of fulfilling daily life roles and social participation (7, 8). It is reported that social skills are weakened, academic performance is affected, and the capacity to establish meaningful relationships is reduced in individuals diagnosed with GAD (9). This situation reveals that GAD negatively affects not only the psychological state of the individual, but also work-life balance and quality of life (10, 11). Zhou et al. found an association between GAD and poor quality of life and this association was independent of sociodemographic factors, social support and sleep quality. GAD alone is a strong factor that reduces quality of life (12).

Approximately 40% of anxiety disorders occur before the age of 14 (13). During adolescence, GAD manifests itself especially with problems related to self-esteem, goal setting and environmental relations (6). According to the findings of McLoone et al., adolescents with GAD constantly set high performance goals due to perfectionism tendency and withdraw from social relationships due to fear of failure (14). Incompatibility in family and peer relationships, combined with academic performance anxiety, increases the social isolation of the individual (15), which further restricts their engagement in meaningful occupations.

Regardless of comorbid conditions, GAD is associated with impairments in various areas of a child's life. Children diagnosed with GAD tend to excessively worry about their competence or the quality of their performance (4) and often strive to achieve perfection in all activities (14, 16). Common areas of concern include academic performance, unfamiliar or new situations, traumatic events, health-related issues, family problems, and social interactions (14).

Affected in terms of academic and social functioning, fear of public speaking at school, wanting to leave school, feeling tense in the classroom. (17). In a study, the group diagnosed with pure GAD reported less adaptive functioning in family and peer relationships compared to the control group, while the comorbid GAD group reported less functionality in housework and self-care activities compared to the healthy

group, in addition to less functionality in family and peer relationships (18).

Moreover, sleep is a fundamental component of occupational participation and overall well-being. Sufficient sleep supports effective engagement in daily roles and activities, whereas sleep disturbances can increase the risk of various health issues (19, 20). In individuals with GAD, common problems such as difficulty falling asleep, hypersomnia, and early morning awakenings are significantly associated with anxiety symptoms (18, 21).

Despite these impacts, there is limited research in the field of occupational therapy examining how GAD affects occupational participation, particularly among adolescents. The Model of Human Occupation (MOHO) provides a comprehensive theoretical framework for understanding this relationship (22). MOHO is a comprehensive occupational therapy model that examines individuals' participation in daily life through their volition, habituation, performance capacity, and environmental influences. MOHO-based assessment tools have been validated for use across various age groups, including adolescents (23). MOHO conceptualises occupational participation as a dynamic interaction between volition (motivation), habituation (roles and routines), performance capacity (physical and mental abilities), and environmental influences. Given that GAD disrupts motivation, daily routines, cognitive and emotional functioning, and social environments, it can be meaningfully analysed through the lens of MOHO (22).

In the field of occupational therapy, there is limited research on how GAD affects individuals' occupational participation, particularly within the adolescent population. While some studies have addressed the impact of anxiety disorders on occupational functioning in adults, there is a noticeable gap in the literature focusing specifically on adolescents. This study aims to fill that gap and provide a framework from an occupational therapy perspective by examining in detail the occupational participation of adolescents diagnosed with GAD. Using MOHOST, a Model of Human Occupation (MOHO)-based assessment tool, our study analyses the effects of an individual's volition, habituation, performance capacity, and environmental factors on occupational participation.

To clarify the distinction, relevant literature on occupational therapy interventions and assessments in anxiety disorders generally targets adults or mixed-age samples (24, 25). However, studies explicitly focusing on adolescents with GAD remain scarce. The aim of this study is to examine the occupational participation levels of adolescents diagnosed with GAD using MOHOST.

MATERIAL AND METHODS

Participants and procedure

This study was conducted in a local hospital. Twenty-one individuals diagnosed with GAD and their parents were informed and invited to the study. Twenty-one adolescents who volunteered to participate and 21 healthy adolescents in a matched control group were included in the study. Participants in the control group were recruited using purposive sampling through personal networks and acquaintances of the researchers. The control group was matched to the GAD group based on age, gender, and sociodemographic characteristics. The following inclusion and exclusion criteria were applied for the participants:

Inclusion Criteria
- Being diagnosed with GAD by a psychiatrist according to DSM-5 diagnostic criteria.
- To be between the ages of 12-18.
- To have the cognitive and communicative competence to actively participate in the research.
Exclusion Criteria
- Having an additional psychiatric or neurological diagnosis.
- Showing a lack of communication or co-operation that prevents participation in the assessment process.
The healthy group (HG) of the study included individuals who did not have any psychiatric diagnosis and were similar to the GAD group (GADG) in terms of demographic characteristics. Written informed consent was obtained from all participants and their parents.
The lower age limit was set at 12 years based on developmental and cognitive considerations. At this age, adolescents are typically able to express themselves clearly, comprehend abstract questions, and actively engage in structured interviews and assessments. For this reason, children under the age of 12 were excluded to ensure the accuracy and reliability of the data collected.

Power Analaysis

Prior to the study, the required sample size was calculated using the G*Power 3.1.9.7 software. A power analysis was conducted for group comparison using a t-test, with a large effect size of d=0.8, an alpha level of 0.05, and a power of 0.80. Based on this, the minimum required sample size was determined to be 21 participants per group (26, 27).

Data Collection

The evaluation was conducted via Zoom, an online platform due to the COVID-19 pandemic process. The evaluations were conducted by an experienced occupational therapist with a background in pediatric populations. Each participant was interviewed individually in the presence of their parent, who also gave informed consent prior to the session.
The interviews were semi-structured and lasted approximately 30 to 45 minutes per participant. During these sessions, demographic data were collected, and the occupational participation of the adolescents was assessed using the Model of Human Occupation Screening Tool (MOHOST). The therapist guided the participants through the evaluation process, asking structured questions based on MOHOST domains (volition, habituation, performance capacity, and environment), while also observing behavioral cues and interaction patterns. All interviews were conducted in a quiet and private setting to ensure the participants' comfort and confidentiality. Additional notes were taken by the therapist to support the interpretation of responses.

Instruments

1. Sociodemographic Questionnaire

The demographic information of the participants, such as age, gender, education level, socioeconomic level and number of siblings, were recorded through a form developed by the researchers.

2. Model of Human Occupation Screening Tool (MOHOST)

MOHOST was used to assess occupational performance and participation. MOHOST is an occupational therapy assessment tool that comprehensively analyses individuals' participation in activities of daily living, taking into account the dimensions of volition, habit, performance capacity and environment (22).

MOHOST Structure: The scale consists of 24 items that assess an individual's motivation for occupation (MO) (volition), pattern of occupation (PO) (habituation), communication and interaction skills (CIS), process skills (PS), motor skills (MS) and environmental influences in basic occupational areas such as personal care, productivity and leisure activities (22).

Rating System: It is a 4-point rating scale (F=Facilitates, A=Allows, I=Inhibits, R=Restricts). High scores indicate factors that facilitate participation, while low scores indicate factors that restrict participation (22).

The reliability coefficient of the Turkish version of MOHOST (Cronbach Alpha=0.89) has been confirmed in previous studies (28).

Ethical Approval

The study was approved by the relevant ethics committee with decision number 04/56. All procedures of the study were conducted in accordance with the Declaration of Helsinki.

Statistical Analysis

Statistical analysis was performed using IBM SPSS 24.0 (SPSS Inc., Chicago, IL, USA). The normality of the data was initially assessed using visual methods such as histograms, normal probability plots, and Q-Q plots, along with descriptive statistics including skewness and kurtosis values. Since the data were not normally distributed, non-parametric tests were applied. Continuous variables were presented as mean and standard deviation, and categorical variables as frequency and percentage. Mann-Whitney U test was used to compare the scores of MOHOST subdomains (volition, habituation, skills, and environment) between the GAD and control groups. Spearman correlation analysis was conducted to examine the relationships between MOHOST subdomains and overall participation scores within the GAD group. The strength of the correlation coefficients was interpreted as follows: 0.1–0.3=weak, 0.3–0.5=moderate, and ≥0.5=strong. Statistical significance was accepted at $p \leq 0.05$.

RESULTS

In the present study, 21 adolescents diagnosed with GAD and 21 healthy adolescents were included. Descriptive statistics showed no significant group differences for age, sex or education between GAD and HG groups ($p>0.05$) (Table 1).

All MOHOST subdomain scores, MO, PO, PS, CIS, MS, and Environment were significantly lower in the GAD group compared to the healthy control group, with the most pronounced differences observed in the total MOHOST score as well as in the MO, PO, and PS subdomains ($p<0.001$).

Table 1. Demographic characteristics of adolescents in the GAD and healthy groups

		GADG (n=21)		HG (n=21)		p
		Mean±SD	Min-Max	Mean± SD	Min-Max	
Age		14.40 ±1.88	12-18	15.00±2.20	12-18	0.430
		n	%	n	%	
Gender	Female	13	61.90	13	61.90	0.471
	Male	8	38.10	8	38.10	

GADG: Generalized anxiety disorder group; HG: Healthy group; n: Number of participants; %: Frequency; SD: Standard deviation; Min: Minimum; Max: Maximum.

While MO, PO, PS scores of the total and sub-scores of MOHOST were statistically significantly lower in the GAD group than in the healthy group ($p<0.001$), CIS, MS and Environment scores were statistically lower in the healthy group ($p=0.026$; $p=0.035$ and $p=0.013$) (Table 2 and Figure 1).

Table 2. Comparison of scale results between GAD and healthy groups

	GADG (n=21)		HG (n=21)		
	Mean±SD	**Min-Max**	**Mean±SD**	**Min-Max**	**P**
MOHOST	77.07±9.71	54-90	91.33±3.70	84-96	**<.001****
MO	11.60±2.61	5-16	15.53±0.52	15-16	**<.001****
PO	11.13±2.56	4-16	15.07±1.03	13-16	**<.001****
CIS	13.33±2.53	9-16	15.20±1.15	12-16	**0.026***
PS	13.20±1.78	10-16	15.53±1.13	12-16	**<.001****
MS	15.67±0.62	14-16	16.00±0.0	16-16	**0.035***
Environment	12.13±2.07	9-15	14.00±1.31	12-16	**0.013***

*p<.05; **p<.01; GADG: Generalized anxiety disorder group; HG: Healthy group; n: Number of participants; SD: Standard deviation; Min: Minimum; Max: Maximum; MO: Motivation for occupation; PO: Pattern of occupation; CIS: Communication and interaction skills; PS: Process skills score; MS: Motor skills.

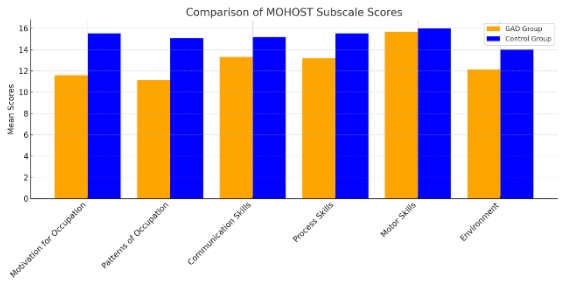

Figure 1. MOHOST sub-Scores of GAD Group and Healthy Group

Table 3. Results of corelations analysis of GAD groups

n=21		MO	PO	CIS	PS	MS	Environment
MO	**r**						
	p						
PO	**r**	0.744					
	p	**0.001***					
CIS	**r**	0.756	0.539				
	p	**0.001***	0.038				
PS	**r**	0.233	0.376	0.448			
	p	0.404	0.167	0.094			
MS	**r**	0.388	0.259	0.445	0.091		
	p	0.153	0.352	0.097	0.746		
Environment	**r**	0.621	0.431	0.636	0.315	0.310	
	p	**0.014***	0.109	**0.011***	0.253	0.261	

*p<.05; MO: Motivation for occupation; PO: Pattern of occupation; CIS: Communication and interaction skills; PS: Process skills score; MS: Motor skills

The results of the correlation analysis conducted on the GAD group indicated a strong positive correlation between the PO score and the MO score (r=0.744, p=0.001), between the MO score and the CIS score (r=0.756, p=0.001), between the MO score and the Environment score (r=0.621, p=0.014), and between the CIS score and the Environment score (r=0.636, p=0.011) (Table 3).

DISCUSSION

To our knowledge, this is one of the first studies to assess the occupational participation of adolescents diagnosed with GAD using MOHOST and makes important contributions to the occupational therapy literature. The findings revealed that adolescents with GAD scored significantly lower than their healthy peers across key MOHOST domains, including motivation, habits, process skills, and environmental factors.

Occupational participation and GAD

The results of the study showed that adolescents diagnosed with GAD had statistically significantly lower motivation, occupation patterns, process skills, communication interaction skills, motor skills, and environmental support compared to the control group. This aligns with findings from previous research.

For instance, Kim et al. (29) reported that adolescents with generalized anxiety disorders exhibit avoidance behaviors and reduced engagement in social activities, which parallels our findings of diminished volition and habituation. Similarly, Alsharji's study (30) highlighted the reduced levels of physical activity among individuals with GAD and emphasized the critical role of physical engagement in mitigating anxiety and depressive symptoms. This finding is consistent with the lower motor skills and environmental

resources observed in our study. These earlier findings support our conclusion that limitations in occupational participation among adolescents with GAD are multidimensional and align with MOHOST's comprehensive framework. We anticipate that the inclusion of an occupational perspective in health promotion initiatives for young people will significantly strengthen the population of healthy young people.

Findings showed that the most significant limitations in adolescents with GAD were observed in the MOHOST domains of MO, PO, and PS. Lower scores in the volition domain indicate decreased willingness and drive to initiate and sustain meaningful activities (31). This is likely compounded by perfectionism and fear of failure, traits often associated with GAD, which further inhibit engagement in purposeful occupations (14). Occupational therapy interventions that emphasize volitional strengthening—such as goal-setting, graded task engagement, and interest exploration—may help support these individuals.

Low scores in the PO domain suggest that adolescents with GAD experience difficulty establishing daily routines and maintaining life roles. Such difficulties may manifest as school absenteeism, social withdrawal, and reduced engagement in independent living activities (32). Habit-formation strategies such as structured daily schedules, routine-building interventions, and time-use education can be beneficial in addressing these challenges.

With regard to process skills, deficits observed in the PS domain highlight challenges in problem-solving, task organization, and attention management (22). These cognitive limitations can negatively impact academic performance and task completion (33). Occupational therapists may implement cognitive-behavioral approaches and executive functioning interventions to target these specific deficits, promoting improved occupational performance.

The role of environmental factors

The low scores of individuals diagnosed with GAD in the environment subscale indicate that lack of physical and social support limits adolescents' participation in social and daily life activities. According to the MOHOST framework, the environment includes not only social support systems such as family, peers, and teachers, but also physical factors like transportation, accessibility of spaces, and availability of resources (22). These findings suggest that adolescents with GAD may face barriers in both dimensions. For instance, limited access to supportive school environments or extracurricular facilities may reduce opportunities for social engagement and physical activity (34). On the other hand, environmental support within the community, school, and home can enhance adolescents' daily occupational performance and facilitate their participation across various contexts (35). In collectivist cultures such as Turkey, while family support might enhance social engagement, high performance expectations may also contribute to withdrawal and isolation. Intervention plans should consider both the physical and social dimensions of the environment, integrating family education programs, accessible activity spaces, and school-based supports to enhance adolescents' participation.

Communication and social functioning

Low communication and interaction skills in the GAD group clearly indicate that these individuals have difficulties in peer relationships and social roles. Social norms and cultural dynamics in Turkey may also

influence the development of these skills. For example, gender roles or social status expectations may limit adolescents' social relationships and freedom of expression. Occupational therapists' use of strategic approaches such as group therapy and social skills training to improve individuals' social skills can help young people overcome these difficulties (36).

Key takeaways for mental health professionals

The findings of the study have critical implications for mental health professionals in Turkey:

Individualized interventions: It is important to develop individualized intervention plans specific to the cultural context for individuals diagnosed with GAD. The use of comprehensive assessment tools such as MOHOST allows the identification of factors that facilitate and restrict the participation of individuals.

The importance of environmental modifications: Environmental arrangements such as strengthening social support groups, expanding family education and developing school-based interventions can increase adolescents' social participation.

Early intervention: Early identification and intervention of occupational imbalances that occur during adolescence can improve an individual's long-term mental health and quality of life.

CONCLUSION

This study underscores the significant impact of GAD on the occupational participation of adolescents, revealing marked limitations particularly in motivation, habit formation, process skills, and environmental interactions. Utilizing the MOHOST, our findings offer valuable insights into the specific domains affected by GAD and highlight the relevance of a holistic, occupation-centered perspective in addressing the needs of this population. The study's results suggest that interventions should not only target the internal experiences of anxiety but also the broader environmental and occupational disruptions it creates. Addressing the social environment, promoting motivation, and supporting skill development should be key components of therapeutic approaches. Given the limited research in occupational therapy focusing specifically on adolescents with GAD, this study provides a foundational step toward integrating MOHO-based assessments and interventions into mental health services.

Limitations and Future Research

This study has certain limitations. First, the data collection process was conducted online, which limited the researcher’s ability to directly observe participants and may have impacted the depth of the responses. Secondly, the relatively small sample size may limit the generalisability of the findings. Additionally, the study was conducted within the Turkish cultural context, where mental health stigma and family dynamics may influence adolescents’ occupational participation and willingness to engage in assessment processes. Therefore, the cultural context may act as a limiting factor in interpreting and generalizing the findings to other populations. Future research conducted in diverse cultural settings could offer more comprehensive insights and improve the external validity of the results. Another limitation is the lack of data on GAD symptom severity. This study focused on the general impact of GAD on occupational participation without considering symptom severity. Future studies should include severity measures to better understand how different levels of anxiety affect

occupational functioning. In addition, further research is needed on the impact of GAD in early childhood and on occupational therapy interventions tailored to this age group. In particular, future studies may focus on interventions targeting specific MOHOST domains such as habit formation, volition development, and environmental structuring, which are especially relevant in early developmental stages. The occupational therapist who applied the MOHOST assessment was aware of the participants' GAD diagnosis, and the assessment was not blinded. This is a limitation of the study. Future studies may benefit from blinded assessments for more reliable results.

Author Contributions

All authors contributed to the design and conduct of the study. Material preparation, data collection and analysis were performed by BD. The first draft of the manuscript was written by BD and SA, and all authors commented on the previous versions of the manuscript. All authors read and approved the final manuscript.

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Declaration of interest

The authors report no conflict of interest.

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Ethics Approval

The study was approved by the local institutional ethical board (Bezmialem Vakıf University, Non-Interventional Clinical Research Ethics Committee), and it was examined by the ministry of health and were found in accordance with the regulation (File number: 04/56), dated, 2021. All the procedures performed were in accordance with the ethical standards of the national research standards and with the Helsinki declaration and its later amendments. Informed consent was obtained from all the individual participants included in the study.

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