

Original Article

More than just a diet: occupational performance and participation challenges in university students with celiac disease¹

Mais do que apenas uma dieta: desafios no desempenho ocupacional e na participação de estudantes universitários com doença celíaca

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Abstract

Introduction: Celiac disease (CeD) necessitates lifelong adherence to a gluten-free diet, which can affect daily occupations beyond dietary habits. These challenges extend to both occupational performance (task execution) and occupational participation (involvement in life situations), particularly in socially embedded contexts. Despite this, the occupational performance and participation experiences of university students with celiac disease are underrepresented in occupational therapy literature. **Objectives:** To explore the occupational performance and participation challenges experienced by university students with CeD, with particular attention to the relationship between performance, satisfaction, and participation restrictions. **Method:** Nine university students diagnosed with CeD and without other chronic nutrition-related conditions participated voluntarily. The Canadian Occupational Performance Measure (COPM) was used to identify perceived difficulties in self-care, productivity, and leisure. Participants rated their performance and satisfaction with their most prioritized activities. Performance–satisfaction discrepancies were also calculated to better understand perceived occupational challenges. **Results:** Findings revealed that occupational challenges were evident across all domains, with leisure being the most frequently affected in terms of participation restrictions, particularly in

¹ **Ethical Approval:** The study was performed following the ethical codes of the World Medical Association (Declaration of Helsinki) and was approved by the Non-Interventional Clinical Researches Ethics Board of Hacettepe University (No: 2022/02-16). All participants gave written informed consent.



social activities such as dining out and attending gatherings. Productivity showed the largest discrepancy between performance and satisfaction, indicating unmet expectations in academic and daily role responsibilities. Self-care issues such as managing finances and transporting gluten-free food also emerged, though with relatively lower discrepancy levels. While individuals may maintain performance in certain tasks, participation is more substantially constrained by environmental and social factors. **Conclusion:** Interventions should particularly target domains with higher performance–satisfaction discrepancies and support engagement in socially meaningful occupations. Supporting university students with CeD through tailored occupational therapy may enhance their daily functioning and participation.

Keywords: Celiac Disease, University Students, Social Participation.

Resumo

Introdução: A doença celíaca exige adesão vitalícia a uma dieta sem glúten, o que pode afetar ocupações diárias além dos hábitos alimentares. Esses desafios envolvem tanto o desempenho ocupacional (execução de tarefas) quanto a participação ocupacional (envolvimento em situações de vida), especialmente em contextos sociais. Apesar disso, as experiências de desempenho ocupacional e participação de estudantes universitários com doença celíaca estão subrepresentadas na literatura em terapia ocupacional. **Objetivos:** Explorar os desafios de desempenho ocupacional e participação vivenciados por estudantes universitários com doença celíaca, com foco na relação entre desempenho, satisfação e restrições de participação. **Método:** Nove estudantes universitários diagnosticados com doença celíaca e sem outras condições crônicas relacionadas à nutrição participaram voluntariamente. A Medida Canadense de Desempenho Ocupacional (COPM) foi utilizada para identificar dificuldades percebidas em autocuidado, produtividade e lazer. Os participantes avaliaram seu desempenho e satisfação com suas atividades mais prioritárias. **Resultados:** Os achados revelaram desafios ocupacionais em todos os domínios, sendo o lazer o mais afetado em termos de restrições de participação, especialmente em atividades sociais como comer fora e participar de eventos. A produtividade apresentou a maior discrepância entre desempenho e satisfação, indicando expectativas não atendidas nas demandas acadêmicas e de papel diário. Problemas em autocuidado, como gerenciar finanças e transportar alimentos sem glúten, também foram identificados, com discrepâncias relativamente menores. Embora os indivíduos consigam manter o desempenho em algumas tarefas, a participação é mais limitada por fatores ambientais e sociais. **Conclusão:** Apoiar estudantes universitários com doença celíaca por meio de ações em terapia ocupacional personalizada pode melhorar seu funcionamento diário e participação.

Palavras-chave: Doença Celíaca, Estudantes Universitários, Participação Social.

Introduction

Celiac disease (CeD) is a chronic immune-mediated enteropathy precipitated by gluten ingestion in genetically predisposed individuals, leading to small intestinal mucosal damage and a wide array of gastrointestinal and systemic manifestations (Lebwohl et al., 2018; Laurikka et al., 2022). Beyond intestinal symptoms, patients may present with extraintestinal complications such as iron-deficiency anemia, osteoporosis, neurological

disorders, and reproductive issues (Packova et al., 2022; Leffler et al., 2015). If left untreated, CeD can result in severe complications, including enteropathy-associated T-cell lymphoma and other gastrointestinal malignancies (Caio et al., 2019). Currently, the only effective treatment is a strict, lifelong gluten-free diet (GFD), which significantly influences patients' daily routines and quality of life (Dochat et al., 2024).

Adherence to a stringent gluten-free diet is critical for effective management of CeD, leading to improvements in symptomatic relief and overall health-related quality of life (Dochat et al., 2024). Nonetheless, maintaining a GFD imposes considerable challenges on the daily lives of adults with CeD, often complicating social activities such as dining out, travel, and participation in social gatherings, which can contribute to increased social isolation (Al-Sunaid et al., 2021; Kowalczyk and Moor, 2025). Psychological burdens are also prevalent; the constant need for vigilance to prevent gluten exposure can induce elevated levels of anxiety and stress (Sainsbury et al., 2018). Furthermore, the financial burdens associated with purchasing gluten-free foods—generally more costly and less readily available—worsen the difficulties encountered by these individuals (Alencar et al., 2021). Despite these challenges, strict and sustained adherence to the GFD is linked to significant improvements in both physical health outcomes and psychological well-being, underscoring the necessity for comprehensive support that addresses not only dietary compliance but also psychosocial aspects of living with CeD (Theethira & Dennis, 2015). However, these challenges extend beyond health outcomes and are embedded within individuals' everyday occupational experiences, shaping how they perform and participate in daily life.

While medical, nutritional, and psychological consequences of CeD are well documented (Möller et al., 2021; Laurikka et al., 2022), its impact on daily occupational performance and participation has received limited attention from an occupational therapy perspective. Within occupational therapy, occupational performance is commonly understood as the ability to carry out tasks and activities, reflecting the dynamic interaction between the person, environment, and occupation. In contrast, occupational participation refers to involvement in meaningful life situations and encompasses engagement within social, cultural, and environmental contexts. Although closely related, these constructs are conceptually distinct, as participation extends beyond task execution to include meaning, belonging, and lived experience. Individuals may demonstrate adequate performance capacity while still experiencing restricted participation due to contextual barriers (Hammell, 2014; Larsson-Lund & Nyman, 2017). This distinction is particularly relevant in conditions such as CeD, where individuals may successfully manage dietary tasks yet encounter substantial barriers to participating in socially embedded occupations.

The relationship between occupational performance, participation, and well-being can be better understood through the Person–Environment–Occupation–Performance (PEOP) model. This model describes these outcomes as the result of dynamic interactions among personal capabilities, environmental conditions, and the characteristics of occupations (Baum et al., 2015). From this viewpoint, health and well-being are not solely determined by functional abilities but also depend on individuals' capacity to engage in meaningful activities in their daily lives. This understanding is rooted in the foundational principles of occupational therapy, particularly the contributions of Adolf Meyer. Meyer emphasized the organization of daily life, the formation of habits, and the effective use of time as essential components of health and well-being (Meyer, 1922). He viewed occupation as a vital regulator of both physical and mental health, suggesting that disruptions in routines and meaningful activities could adversely affect overall functioning. Therefore, health is

closely associated with an individual's ability to participate in meaningful occupations within their everyday environments, rather than being defined merely by the absence of disease. Thus, participation in meaningful occupations is not only an outcome but also a determinant of health, reinforcing the importance of examining both performance and participation dimensions in chronic conditions.

In chronic conditions such as CeD, the distinction between occupational performance and occupational participation becomes particularly important. Individuals may retain the capacity to perform daily tasks, such as preparing gluten-free meals or managing dietary restrictions, yet experience significant limitations in participation, especially in socially embedded activities such as eating with peers, attending social events, or traveling. These participation restrictions are often shaped by environmental barriers, social expectations, and the ongoing demands of dietary vigilance. Accordingly, focusing solely on task performance may underestimate the broader impact of the condition on individuals' everyday lives.

University students with CeD may encounter unique challenges as they navigate strict dietary adherence alongside academic demands, independent living, and evolving social roles. In this life stage, participation in campus life, peer interactions, and daily routines plays a critical role in identity formation and well-being. Therefore, understanding how individuals manage self-care, productivity, and leisure within the context of CeD requires consideration of both occupational performance and participation dimensions to capture the complexity of their lived experiences.

To date, occupation-centered research on CeD has primarily focused on children and adolescents. Meyer & Rosenblum (2016) examined the relationship between health-related quality of life and leisure participation in children with CeD, highlighting the impact of the condition on engagement in meaningful activities. Additionally, Meyer & Rosenblum (2017) conducted a scoping review identifying executive functioning and daily participation challenges in this population, while Meyer & Lamash (2021) explored the role of illness identity in relation to participation and quality of life among adolescents with CeD. These studies consistently demonstrate that participation, rather than performance alone, is a critical dimension of occupational experience in CeD; however, their focus remains limited to younger populations. However, no comparable studies have addressed these occupational dimensions in adults or university students, leaving a significant gap in understanding the unique occupational performance and participation challenges faced by this group. Moreover, previous research has rarely incorporated client-centered measures that capture individuals' perceived performance, satisfaction, and prioritization of occupational problems, limiting the depth of understanding of lived occupational experiences. Addressing this gap, the present study aimed to explore occupational performance and participation challenges among university students with CeD, with a particular focus on the interplay between these constructs, and to examine discrepancies between perceived performance and satisfaction as an indicator of occupational need, in order to inform the development of occupation-based and client-centered interventions for this population.

Methods

Study design

This study employed an exploratory, descriptive cross-sectional design to provide an initial and in-depth understanding of occupational performance issues and participation

challenges among university students diagnosed with CeD. A cross-sectional approach was considered appropriate as it allowed the capture of participants' occupational experiences at a single point in time without attempting to infer causality, which aligns with the exploratory nature of the study. In addition, this design enabled the examination of both occupational performance and participation-related experiences as perceived by individuals in their natural contexts.

Data were collected using the Canadian Occupational Performance Measure (COPM), a standardized, client-centred, semi-structured interview tool that enables participants to identify and prioritize self-perceived occupational performance problems in the areas of self-care, productivity, and leisure. The COPM was administered individually by the researcher through structured interviews, during which participants first identified occupational challenges in their daily lives, rated their perceived performance and satisfaction, and prioritized the most significant issues. All interviews followed a consistent administration procedure based on the COPM manual to ensure methodological rigor and comparability across participants.

For data analysis, COPM responses were first recorded and organized according to occupational domains. A descriptive analysis approach was then used to summarize the frequency and distribution of reported occupational problems and to identify the most affected occupational areas. In addition to performance and satisfaction scores, the discrepancy between these two scores (performance–satisfaction gap) was calculated for each domain to provide further insight into participants' perceived occupational challenges. Performance and satisfaction scores were also summarized descriptively to provide an overview of perceived occupational difficulties.

Participants

A total of nine university students diagnosed with CeD voluntarily participated in the study. Participants were recruited using a convenience sampling method through personal networks and online platforms. Convenience sampling was considered appropriate due to the relatively low prevalence of CeD among university students and the exploratory nature of the study aiming to reach a hard-to-access population. The sample size was deemed sufficient for an exploratory, in-depth investigation focusing on individual occupational experiences rather than statistical generalization.

All potential participants received detailed information regarding the purpose and procedures of the study, and written informed consent was obtained electronically prior to data collection. Participation was entirely voluntary, and no incentives were provided.

Inclusion criteria were: (1) having a confirmed medical diagnosis of CeD; (2) currently enrolled in an undergraduate program with active participation in formal education; and (3) willingness to participate voluntarily. Diagnosis of CeD was self-reported but confirmed by medical documentation when available.

Individuals were excluded if they had any additional chronic diseases or health conditions that could potentially affect their daily occupational performance. In addition, participants who reported acute health conditions or comorbidities likely to significantly confound occupational performance outcomes were excluded to ensure homogeneity of the sample in relation to functional participation patterns.

Data Collection

Data collection was conducted through structured individual face-to-face interviews. All interviews were carried out by the same researcher to ensure consistency in data collection procedures and to minimize interviewer bias. The researcher had prior training in COPM administration, ensuring adherence to standardized interviewing techniques. During the interviews, participants first provided demographic information, including age, gender, duration of CeD diagnosis, adherence to the gluten-free diet, and type of accommodation.

The Canadian Occupational Performance Measure (COPM) was employed as the primary tool to assess participants' occupational performance and satisfaction with daily activities. The COPM is a client-centered, standardized instrument based on a semi-structured interview format designed to identify individuals' self-perceived occupational performance problems in the domains of self-care, productivity, and leisure.

The administration of the COPM followed the standardized protocol. First, participants were guided to identify activities they considered important and meaningful in their daily lives and to rate the importance of each activity on a scale from 1 (not important at all) to 10 (extremely important). Then, participants prioritized the five most significant occupational performance issues for further assessment. For each prioritized activity, participants rated their perceived performance on a scale from 1 (unable to perform) to 10 (performing extremely well), and their satisfaction with performance on a similar 10-point scale, where 1 indicates "not satisfied at all" and 10 indicates "extremely satisfied." This approach provides both subjective and client-centered evaluation of occupational engagement, enabling a detailed understanding of perceived performance limitations and satisfaction levels (Law et al., 2014). The validated Turkish version of the COPM (COPM-TR) was used in this study. The COPM-TR has demonstrated strong psychometric properties, including excellent test-retest reliability and good convergent validity (Torpil et al., 2021). Interviews lasted approximately 30–45 minutes and were conducted in a quiet environment to facilitate open and detailed responses. Participants' responses were documented in real time using standardized recording forms, and additional field notes were taken to capture contextual details related to occupational experiences.

Data Analysis

Data obtained from the COPM interviews were systematically organized and analyzed in accordance with the standard scoring procedures of the instrument. First, all identified occupational performance problems were coded and grouped under the three COPM domains: self-care, productivity, and leisure. Performance and satisfaction scores for the identified activities were tabulated for each participant, and individual COPM profiles were created to ensure structured representation of occupational performance patterns.

Descriptive statistics were used to summarize demographic characteristics as well as COPM scores, including means and standard deviations. In addition, frequency distributions were calculated to identify the most commonly reported occupational performance problems across participants. To enhance analytical depth, the difference between performance and satisfaction scores (performance–satisfaction gap) was calculated and examined across domains to identify areas with greater perceived discrepancy between ability and satisfaction. Given the exploratory nature of the study

and the small sample size, the analysis focused primarily on descriptive interpretation rather than inferential statistics.

To enhance interpretability, COPM performance and satisfaction scores were examined both at the individual level and across occupational domains, allowing for identification of recurring patterns in occupational difficulties. Furthermore, qualitative descriptions of reported occupational problems were reviewed alongside quantitative scores to support a more comprehensive interpretation of participants' occupational experiences. These patterns were compared descriptively across self-care, productivity, and leisure categories without applying statistical testing, in line with the study's exploratory design.

Results

The study included 9 participants aged between 20 and 26 years, with a mean age of 23.4 years (SD = 1.8). The majority of participants were female (n = 6). Regarding academic standing, most participants were in their second year of university education (n = 4), followed by third- and fourth-year students (n = 2 each), and one first-year student. In terms of time since diagnosis, five participants had been diagnosed within the last 1–5 years, two between 5–10 years, and two between 10–20 years. All participants reported strict adherence to a gluten-free diet. Participants' living arrangements during university varied, with three living with their families, three in dormitories, one living alone, and two living with roommates in shared housing. Table 1 summarizes the demographic characteristics of the participants.

Table 1. Demographic characteristics of participants (n=9).

Characteristic	Value
Age (years), mean (SD)	23.4 (1.8)
Gender (n)	Female: 6; Male: 3
Academic year (n)	1st year: 1; 2nd year: 4; 3rd year: 2; 4th year: 2
Time since diagnosis (n)	1-5 years: 5; 5-10 years: 2; 10-20 years: 2
Diet adherence (n)	Strict gluten free diet: 9
Living arrangement (n)	Family: 3; Dormitory: 3; Alone 1; Shared housing: 2

All participants completed the COPM through individual semi-structured interviews conducted by the researchers, during which they identified and prioritized occupational performance problems and rated their importance, performance, and satisfaction. COPM results indicated that all participants identified occupational performance difficulties in at least one domain of occupation (self-care, productivity, or leisure), reflecting a broad impact of CeD on daily occupational engagement. A total of 43 prioritized occupational performance problems were identified across all participants. Table 2 summarizes the distribution of reported occupational performance problems across COPM domains, including importance, performance, satisfaction scores, and the discrepancy between performance and satisfaction (gap).

Table 2. Distribution of identified occupational performance problems and mean COPM scores across main domains (n=9).

COPM Domain	Number of Participants (n)	Importance Mean (SD)	Performance Mean (SD)	Satisfaction Mean (SD)	Gap (P-S)
Self-Care	5	9.6 (0.55)	4.0 (1.58)	3.2 (1.64)	0.8
Productivity	6	10.0 (0)	4.4 (1.95)	2.6 (1.89)	1.8
Leisure	9	8.8 (1.48)	4.2 (1.74)	3.1 (1.89)	1.1

In the self-care domain, difficulties were reported by five participants and primarily involved instrumental daily activities rather than basic self-care tasks, particularly money management and community mobility. Participants described challenges such as managing financial resources for gluten-free food procurement and carrying safe food during travel or commuting situations. The mean COPM performance score for self-care was 4.0 (SD = 1.58), while the mean satisfaction score was 3.2 (SD = 1.64). The perceived importance of self-care activities was high (M = 9.6, SD = 0.55), with a relatively small gap between performance and satisfaction (0.8), suggesting that although challenges were present, they were comparatively more manageable.

In the productivity domain, six participants reported difficulties mainly related to food preparation (gluten-free cooking) and academic role performance, including time management and maintaining concentration during study tasks. The mean performance score in this domain was 4.4 (SD = 1.95), and the mean satisfaction score was 2.6 (SD = 1.89), representing the lowest satisfaction level among the three domains. Productivity-related activities were rated as the most important (M = 10.0, SD = 0.00), indicating unanimous prioritization across participants. Notably, this domain demonstrated the largest gap between performance and satisfaction (1.8), reflecting a substantial mismatch between the importance of these activities and participants' perceived outcomes.

The leisure domain was the most frequently affected area, with all participants reporting at least one difficulty in leisure participation. Reported leisure-related challenges included traveling, engaging in sports, attending social gatherings, dining out, visiting friends, and managing disclosure of dietary restrictions in social contexts. Participants particularly emphasized participation restrictions in socially embedded leisure activities, where concerns about gluten contamination, food safety, and limited food options influenced engagement. The mean performance score for leisure was 4.2 (SD = 1.74), and the mean satisfaction score was 3.1 (SD = 1.89). Leisure activities were also perceived as highly important (M = 8.8, SD = 1.48), although with greater variability across participants. The gap between performance and satisfaction (1.1) indicates moderate discrepancies, particularly in socially oriented contexts.

Overall, findings indicate that while occupational performance difficulties were present across all domains, distinct patterns emerged across domains. Productivity was characterized by high importance combined with low satisfaction and the largest performance–satisfaction gap, suggesting a substantial occupational burden. In contrast, difficulties in the leisure domain were more strongly related to restrictions in occupational participation, particularly in socially embedded contexts., while self-care challenges were less frequent and primarily related to instrumental aspects of daily living.

The occupational performance problems identified by the participants (n=9) were categorized into three main domains according to the COPM framework: Self-care, Productivity, and Leisure (Table 3). A total of 43 prioritized occupational problems were reported, reflecting the multifaceted impact of CeD on the daily lives of university students.

Table 3. Distribution of reported occupational performance problems by domain.

COPM Domain	Occupational problem	Participants	Frequency (n)
Self-Care	Financial Management: Budgeting for gluten-free diet and high costs	P1, P3, P4, P6, P7	5
	Functional Mobility: Difficulty walking for long periods and physical fatigue	P4	1
Productivity	Meal Preparation: Cooking gluten-free meals and kitchen management	P2, P8,	2
	Food Planning and Logistics: Carrying meals and transportation challenges	P5	1
	Academic Tasks: Difficulty concentrating on studies and responsibilities	P2, P5, P6	4
Leisure	Social Participation: Eating out, social gatherings, and visiting others	P1, P2, P3, P4,P5, P6, P7, P8, P9	15
	Active Recreation: Traveling, sports, and vacation activities	P1, P2, P3, P4, P5, P6, P7, P8, P9	14
	Psychosocial Burden: Explaining the disease to others and social isolation	P8	1

In the Self-care domain, “Financial Management” was the most frequently cited concern (n=5), specifically regarding the high cost of gluten-free products and the necessity of strict budget planning. Issues related to accessing safe and affordable food options were consistently emphasized within this domain. This was followed by challenges in safe food procurement and functional mobility related to physical fatigue.

The Productivity domain highlighted significant barriers in “Meal Preparation” (n=6) and “Food Planning and Logistics” (n=5). Participants emphasized the burden of carrying prepared meals to the university and managing kitchen safety to avoid cross-contamination. These challenges often interfered with role performance, particularly in maintaining academic routines and responsibilities. Notably, academic tasks and role-related responsibilities (including parenting and work performance) were also identified as areas where occupational performance was hindered.

The Leisure domain showed the highest concentration of reported problems, particularly in “Social Participation” (n=9). All participants identified eating out, attending social gatherings, and visiting friends as major areas of difficulty. Additionally, challenges in “Active Recreation,” such as travel and sports planning (n=6), and the psychosocial burden of explaining the disease to others, further restricted the participants’ engagement in meaningful social activities. These findings indicate that beyond performance difficulties, social and environmental barriers substantially limited occupational participation in leisure contexts.

Discussion

This study aimed to explore occupational performance challenges and participation limitations experienced by university students with CeD using the COPM. The findings indicated that occupational participation was most substantially affected in the leisure domain, followed by productivity and self-care, suggesting that CeD has a differential impact across areas of daily occupation rather than a uniform effect on all life domains. In addition to domain-based differences, examining the discrepancy between performance and satisfaction scores provided a deeper understanding of how participants perceived their occupational experiences. Importantly, the use of the COPM enabled the identification of individualized, client-prioritized occupational problems, capturing both perceived performance difficulties and satisfaction levels, thereby providing insight into the subjective experience of occupational engagement. From an occupational perspective, these results highlight not only performance difficulties but also participation restrictions, particularly in contexts requiring social engagement and environmental negotiation, supporting the conceptual distinction between occupational performance (the execution of tasks) and occupational participation (involvement in life situations) as emphasized in contemporary occupational science literature. This perspective is also consistent with Meyer's (1922) view of occupation as a dynamic interaction between the individual, habits, and environmental context, where disruptions in routine and social engagement may significantly influence health and well-being.

Leisure participation as the most affected domain

Leisure-related activities, particularly those involving social participation such as traveling, dining out, attending social gatherings, and visiting friends, were identified as the most challenging occupational area. Importantly, these difficulties reflect not only reduced performance capacity but also restricted participation opportunities in socially embedded occupations. This distinction suggests that individuals may retain the ability to perform tasks (e.g., eating, traveling) but experience barriers to participation due to environmental constraints, social expectations, and risk management demands.

Although leisure problems were reported by all participants, the discrepancy between performance and satisfaction scores in this domain was moderate, suggesting a possible adaptation process or adjustment of expectations over time. These findings align with previous research emphasizing the limitations individuals with CeD face in leisure participation. Kopycka (2023) noted that travel and dining out are major sources of stress and social restriction due to continuous risk management demands. Similarly, Frediani (2021) reported that social events often become emotionally burdensome due to the need to disclose dietary restrictions or ensure food safety. Lee et al. (2024) further demonstrated that individuals frequently avoid social eating contexts unless gluten-free safety is guaranteed, indicating that dietary vigilance extends into meaningful participation choices.

A qualitative synthesis by Rose et al. (2024) described this experience as extending beyond dietary restriction, often leading to a perceived loss of spontaneity and social identity. This aligns with the present findings, where participants' narratives reflected reduced spontaneity and increased planning demands in leisure contexts. These findings can also be interpreted within the broader context of university students' occupational lives. Previous occupational therapy research has demonstrated that client-centred assessment among university students enables the identification of

individualized occupational priorities across leisure, productivity, and self-care, highlighting the complex and context-dependent nature of occupational participation during university life (Poblete-Godoy et al., 2024). Furthermore, occupational therapy literature addressing higher education emphasizes that successful participation at university extends beyond academic achievement to include engagement in social, cultural, and community occupations, all of which contribute to students' well-being and sense of belonging (Fernández-Moreno, 2024). Viewed from this perspective, the leisure restrictions experienced by students with CeD are likely to reflect not only the practical demands of maintaining a gluten-free diet but also broader barriers to participating in meaningful university life and socially embedded occupations. The high frequency and diversity of leisure-related problems, particularly in socially embedded activities, reinforce the interpretation that participation restrictions are pervasive, even when satisfaction levels do not show the greatest discrepancy. Lebovits et al. (2022) also highlighted similar patterns in social and dating contexts, where individuals pre-plan meals or carry food to maintain safety, reinforcing the pervasive impact of dietary management on social participation. Taken together, these findings suggest that participation restrictions are shaped not only by individual factors but also by environmental and social barriers, consistent with transactional models of occupation. Collectively, these findings suggest that leisure restriction in CeD is not merely a functional limitation but a participation-level disruption that may contribute to occupational imbalance and reduced social well-being. However, given the small sample size, these interpretations should be considered exploratory rather than generalizable. From an occupational therapy perspective, interventions should extend beyond dietary education and include strategies to support social participation, such as graded exposure to social eating contexts, environmental adaptation, and development of self-advocacy skills in community settings.

Productivity and academic functioning

In the present study, productivity-related challenges were commonly reported and included meal preparation and academic tasks. Cooking gluten-free meals required careful planning, increased cognitive effort, and additional time investment. Academic difficulties reflected challenges in time management, concentration, and balancing dietary demands with educational responsibilities. This domain showed the largest discrepancy between performance and satisfaction scores, indicating that participants experienced a notable mismatch between what they were able to do and how satisfied they felt with their performance. This discrepancy suggests unmet expectations or frustration related to role performance, particularly in academically demanding contexts. These findings are consistent with Rose et al. (2024), who emphasized that constant food-related vigilance consumes cognitive and temporal resources that may otherwise support academic or work performance. Kopycka (2023) similarly noted that dietary management requires sustained attention across daily routines, potentially interfering with other occupational roles.

The nature of the reported problems—such as ongoing meal preparation, food logistics, and academic responsibilities—suggests that these are continuous and non-optional demands, which may contribute to cumulative dissatisfaction despite moderate levels of performance. This pattern can be interpreted as an increased cognitive load associated with chronic condition management, which may indirectly

compromise productivity-related occupational performance. These results suggest that productivity challenges in this population are not solely task-related but also reflect an underlying cognitive load associated with chronic dietary management. Therefore, occupational therapy interventions should focus on executive functioning strategies, structured routines, time management training, and integration of meal planning into daily academic schedules.

Self-care and instrumental daily living

Self-care challenges were primarily related to money management and functional mobility. Participants described financial strain associated with purchasing gluten-free products, consistent with previous studies reporting higher economic burden of gluten-free diets (Crocker et al., 2024; Mehtab et al., 2024). The relatively smaller discrepancy between performance and satisfaction scores in this domain suggests that participants may perceive themselves as more capable or better adapted in managing these tasks compared to other domains. However, the present findings extend existing literature by suggesting that financial burden may translate into occupational performance challenges in budgeting, spending prioritization, and resource allocation, thereby affecting instrumental self-care rather than basic self-care tasks. This highlights the importance of distinguishing between basic activities of daily living and instrumental activities, as the impact of CeD appears more pronounced in complex, context-dependent tasks.

Functional mobility challenges, particularly carrying gluten-free food during daily activities, were also reported. Crocker et al. (2024) similarly noted that transporting safe food can impose additional physical and logistical demands. The limited scope and frequency of self-care-related difficulties, together with lower discrepancy levels, indicate that these challenges may be more contained and manageable compared to the more complex and socially influenced domains of leisure and productivity. These findings reinforce the idea that the demands of the environment and the requirements for managing conditions work together to influence occupational performance in everyday situations. Specifically, the challenges of self-care in individuals with CeD should be viewed through the lens of instrumental activities of daily living rather than relying solely on traditional definitions of personal care. Occupational therapy interventions may therefore benefit from addressing financial literacy, resource management, and environmental preparation strategies to support independent living.

Integration of COPM findings

Considering both the types of occupational problems identified and the discrepancies between performance and satisfaction scores provides a more comprehensive understanding of occupational functioning. While some domains appear more frequently affected, others may carry a greater subjective burden due to dissatisfaction. This highlights that frequency of reported problems alone may not fully capture the lived impact of CeD. The discrepancy scores, in particular, offer valuable insight into areas where intervention may be most needed, as they reflect the individual's perceived gap between ability and desired performance. These findings further support a transactional understanding of occupation, in which occupational performance and participation are shaped through continuous interaction between individual capacities, environmental constraints, and sociocultural expectations.

Limitations and strengths

This study has several limitations. The small sample size restricts generalizability, and the use of convenience sampling may introduce selection bias. However, given the exploratory nature of the study and the relatively low prevalence of CeD among university students, this sampling approach was appropriate for accessing a hard-to-reach population. Data were based on self-report, which may introduce recall and social desirability bias. Additionally, psychological and emotional factors influencing participation were not directly measured. Furthermore, although the COPM provides rich individualized data, its subjective nature may limit comparability across participants. Despite these limitations, this study contributes novel insights into occupational performance and participation patterns among university students with CeD, a population that remains underrepresented in occupational therapy literature. A key strength of the study is the incorporation of performance–satisfaction discrepancies, allowing for a more nuanced interpretation of occupational experiences beyond performance scores alone.

Clinical implications

The findings suggest that occupational therapists should prioritize participation-oriented interventions for CeD, particularly in leisure and productivity domains. Intervention planning should include: self-advocacy training in social eating contexts; problem-solving strategies for safe community participation; time management and cognitive structuring for academic roles; integration of dietary management into daily routines; support for instrumental self-care including financial and logistical planning. Importantly, interventions should address both performance capacity and environmental barriers in order to enhance occupational participation. Particular attention should be given to areas where discrepancies between performance and satisfaction are greater, as these may indicate domains of higher perceived need and intervention priority. Although self-care was less frequently reported, instrumental aspects such as budgeting and food transport should not be overlooked in comprehensive intervention planning.

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Author's Contributions

Hatice Abaoğlu initiated and designed the study, contributed to data collection, data interpretation, and analysis, and wrote the manuscript. Zeynep Yılmaz Türkmen contributed to the development of the study methodology, as well as data collection and interpretation. All authors approved the final version of the text.

Data Availability

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

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