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Reasons for and outcome of occupational therapy consultation and treatment in the context of multidisciplinary cancer rehabilitation; a historical cohort study

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Abstract

Introduction: The aim of this study was to investigate reasons why people consulted an occupational therapist following cancer treatment, and to examine the outcome of occupational therapy interventions, in the context of multidisciplinary rehabilitation.

Methods: Data from 181 patients were collected retrospectively. The International Classification of Human Functioning and Health (ICF) was used to describe the reasons for occupational therapy consultation. Patients had completed the Canadian Occupational Performance Measurement (COPM) before and after the occupational therapy intervention. Change scores were calculated with a 95% confidence interval and a two-sided *p*-value obtained from a paired *t*-test.

Results: The reasons for occupational therapy consultation were predominantly within the ICF domain “Activities and Participation”. On average, patients improved 3.0 points (95% CI 2.8–3.2) on the performance scale of the COPM, and 3.4 points (95% CI 3.2–3.7) on the satisfaction scale (both: *p* = <.001).

Conclusion: The result of this study supports the added value of occupational therapy to cancer rehabilitation, and emphasise the positive effect of occupational therapy on everyday functioning. Controlled clinical studies are needed to strengthen the evidence.

KEY WORDS

activities of daily living, cancer, occupational performance, occupational therapy, rehabilitation

1 | INTRODUCTION

After completion of cancer treatment, many individuals experience impairments and disabilities that might negatively affect their quality of life (Berg & Hayashi, 2013; Thorsen et al., 2011). In particular, fatigue, mood disorders and declined exercise tolerance are highly prevalent (Shapiro, 2018;

Silver & Gilchrist, 2011). The recognition of these functional impairments and restrictions in quality of life and social participation have led to the development of specific cancer rehabilitation programs (May et al., 2009, 2008; Passchier et al., 2016; Silver, 2017).

In the Netherlands, multidisciplinary cancer rehabilitation is offered to all people with multiple, interrelated rehabilitation needs, resulting from cancer or its treatment, that require coordinated multidisciplinary care (IKNL, 2018). The goal

of multidisciplinary cancer rehabilitation is to enable cancer survivors to obtain maximal physical, psychological and social functioning within the limits of the disease and its treatment (Silver et al., 2015). Cancer rehabilitation may involve psychosocial support to improve coping with cancer and the effects of treatments, as well as interventions aimed at maintaining or improving physical fitness, activities of daily living, quality of life and re-establishing work ability (Goerling, 2014). Within the context of multidisciplinary rehabilitation, the rehabilitation team typically includes a physical medicine and rehabilitation (PM&R) physician (coordinating the team), social worker and/or psychologist, physical therapist, dietitian and occupational therapist, but other disciplines may be present as well (IKNL, 2018; Passchier et al., 2016).

The envisioned role of occupational therapy in cancer rehabilitation and cancer survivorship care has already extensively been described (Hunter, Gibson, Arbesman, & D'Amico, 2017a, 2017b; Hwang, Lokietz, Lozano, & Parke, 2015; Pergolotti, Williams, Campbell, Munoz, & Muss, 2016). According to Sleight and Duker (2016), the increased need of cancer survivors for psychosocial and education-based supportive care can be met, in part, with occupational therapy interventions. These interventions include, for example, psycho-education on fatigue, sleep and energy conservation, ergonomics, relaxation, self-management and cognitive strategies. The authors emphasise the unique focus of occupational therapy interventions on function, holism and self-management, which is representative for this discipline (Sleight & Duker, 2016).

The Netherlands Cancer Institute (NKI), a tertiary cancer referral centre located in Amsterdam in the Netherlands, has been offering multidisciplinary cancer rehabilitation, including occupational therapy, to patients with multiple, interrelated rehabilitation needs since 2010. Currently, there are two distinct rehabilitation programs. The first is a general cancer rehabilitation program; the second is a special program for head and neck cancer (HNC) patients. Both multidisciplinary rehabilitation programs have a modular structure, that is, they exist of separate intervention components, which enable tailoring to individual patients. In both programs, validated measurement instruments are routinely used to analyse the current level of functioning, to monitor patients' progress and to predict future performance levels. For occupational therapy modules, this includes the Canadian Occupational Performance Measure (COPM) (Kjeken, 2012).

A previous review demonstrated evidence for the effectiveness of interventions that occupational therapists might apply in the care for cancer survivors. However, in this review, the majority of interventions were not delivered explicitly in the context of occupational therapy treatment (Hunter, Gibson, Arbesman, & D'Amico, 2017a, 2017b; Stein Duker & Sleight, 2018). Consequently, a better understanding of the outcome of occupational therapy delivered interventions in cancer care is needed. Cancer care, including supportive care, is inherently

interdisciplinary. The rehabilitation needs for which cancer survivors consult an occupational therapist in the context of multidisciplinary cancer rehabilitation have received hardly any attention in the literature, to date. Taking advantage of the available data in the NKI, the aim of this study was to systematically describe people with cancer and cancer survivors' reasons for consulting an occupational therapist, and the outcome of occupational therapy interventions regarding performance and satisfaction, using the COPM, in the context of multidisciplinary rehabilitation, based on 15 years of institutional experience.

2 | METHODS

2.1 | Design and study population

A chart review was performed of all patients, treated at the NKI, who started and completed cancer rehabilitation between 1 January 2010 and 31 December 2016. Patients were eligible for the study if they were over 18 years of age, diagnosed with any form of early stage (i.e., non-metastatic) cancer, had completed primary treatment (with intention to cure), and were able to understand the Dutch or English language. All patients in this study had been referred to the occupational therapy department of the NKI by a physiatrist, with the aim to be included in one or more occupational therapy modules as part of a multidisciplinary rehabilitation program, and had successfully set goals after the occupational therapy intake. Patients were excluded if they had not started occupational therapy treatment after the initial intake, either because they did not present with clear goals within the scope of occupational therapy at the first consultation, or when they were considered not teachable/trainable as determined in a joined clinical decision by the PM&R physician and the occupational therapist. Patients who were referred to occupational therapy for one-time psycho-education or specifically for RTW guidance only were also excluded from the current analysis, as these interventions are not evaluated using the COPM.

Due to the retrospective character of the study and the use of data that was collected in a usual care hospital setting, no formal medical ethical assessment was necessary for this study, according to Dutch legislation. The NKI Institutional Review Board approval was obtained for the use of the clinical data for scientific purposes (IRBd19092).

2.2 | Occupational therapy intervention modules

The cancer rehabilitation program as offered in the NKI, has nine different occupational therapy treatment modules, all of which are evidence based to the best possible extent: (a) Psycho-education for (cancer-related) fatigue; (b) Sitting

posture evaluation, correction and support for patients with pain-related sitting problems caused by the oncological treatment; (c) Energy conservation (individual or group therapy); (d) RTW; (f) Performance of daily activities; (g) Shoulder and neck problems, for patients who experience change in body posture, body function, mobility and strength influencing their daily life activities; (h) Performance of daily activities for patients with lymphoedema; (i) Arm and hand rehabilitation and (j) Psycho-education for patients with sleeping disorders or sleeping problems. In the general cancer rehabilitation program, all nine modules are offered. An occupational therapy lymphoedema management module is not yet available for the HNC program, and the specific sitting problems as addressed in module (b) are not relevant to patients with HNC.

2.3 | Measurements and data reduction

All data were gathered retrospectively from electronic patient files using an automated query performed by the research administration of the NKI. To ensure patient anonymity, the data abstracted from the charts were stripped of personal and professional identifiers. To characterise the population, we collected socio-demographic information and disease characteristics including tumour location and time since diagnosis.

To assess reasons for occupational therapy consultation and the outcome of the occupational therapy interventions, we used COPM data. The COPM is an occupational therapy specific, valid and reliable measure designed to capture a patient's self-perception of performance in everyday living, and changes therein over time (Law et al., 1990). It is recommended in multiple practice guidelines for occupational therapy to identify patients' problems on occupational performance in daily life (Aragon & Kings, 2010; Steultjens, Cup, Zajec, & Van Hees, 2013). In the rehabilitation programs, the COPM scores are obtained following a standardised five-step process: (a) (occupational) performance problems in areas such as self-care, productivity and leisure, as experienced by patients, are identified using a semi-structured interview; (b) patients rate the importance of each of the identified performance problems on a 10-point rating scale; (c) patients choose at least one and a maximum of five of the most important problems identified in the former step, and formulate occupational therapy goals; (d) patients rate their ability to perform a task and the level of satisfaction with their performance of that task. Scores for performance and for satisfaction are averaged over all chosen problems; (e) after completion of the occupational therapy program, patients are again asked to rate their performance of and satisfaction with the problems addressed, and change scores for both performance and satisfaction are calculated to evaluate treatment success (Law et al., 1990). Research in other patient populations suggests that a difference

of 2–3 points on the COPM represents a clinically important change (CID), dependent on the population (Carswell et al., 2004; Tuntland, Aaslund, Langeland, Espehaug, & Kjekken, 2016). As disease-specific CIDs for the oncology setting are not available, we applied a priori defined differences >2.5 points as representing clinically relevant change. We evaluated both the absolute score (changes) as well as the number of patients reporting a clinically important change to describe the outcome of occupational therapy treatment within the multi-disciplinary rehabilitation program.

To systematically describe the reasons for occupational therapy consultation, we used the International Classification of Human Functioning and Health (ICF) (World Health Organization, 2001). The ICF is the World Health Organization framework for measuring health and disability. It describes human functioning in four domains: body functions, body structures, activities and participation, and environmental factors. Each domain is subdivided into chapters that relate to, for example, specific body functions or activities. Problems identified on the COPM were mapped onto this classification by one researcher. A second researcher was consulted in case the reason of occupational therapy consultation fitted in more than one category, or the reason for consultation was unclear.

2.4 | Statistical analysis

Descriptive statistics of the study population are presented as mean and standard deviation, median and range, or number and percentage, depending on the measurement level and underlying distribution. COPM change scores were calculated with a 95% confidence interval and an accompanying two-sided *p*-value obtained from a paired *t*-test. The formula described by Dunlop, Cortina, Vaslow, and Burke (1996) was used to calculate Cohen's *d* effect sizes from the *t*-tests. Cohen's *d* indicates the standardised difference between two means. Effect can be interpreted as small (0.2), medium (0.5) or large (0.8) (Cohen, 1988). Additionally, the number and percentage of patients with declined scores or no change were calculated.

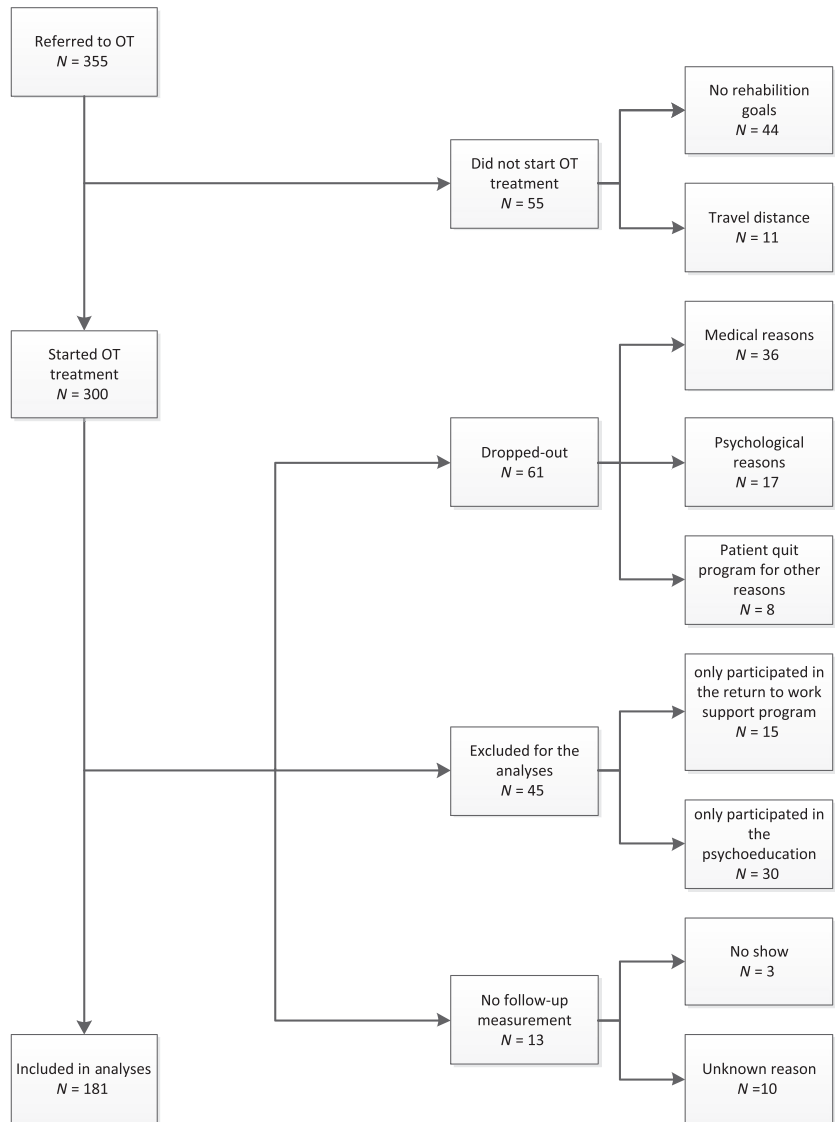
In an exploratory analysis, we tested for differences in reasons for occupational therapy consultation between the general cancer rehabilitation program and the HNC rehabilitation program, using a continuity corrected Chi-squared test. Analyses were conducted using the R statistical program, version 3.2.2 (RStudio Team, 2016).

3 | RESULTS

3.1 | Patient characteristics

Participant flow is depicted in Figure 1. A total of 355 outpatients were referred to occupational therapy, between

FIGURE 1 Flowchart: Inclusion of patients in the study



2010 and 2016, of whom 255 patients started rehabilitation. Sixty-one patients dropped out of the program, of whom 36 due to medical reasons (e.g., cancer recurrence), 17 for psychological reasons (e.g., anxiety, PTSD), and 8 because of other reasons. Three patients had two separate rehabilitation periods, with different indications, and were included in the data twice. For 13 patients who completed the program, no follow-up measurement was available; in 3 cases this was due to no-show, and in 10 cases for unknown reasons. Thus, complete pre–post measurements were available for 184 completed occupational therapy programs of 181 unique patients. The mean age of these 181 patients was 52 years (SD 12.0), and 51% of them was female, the most common types of cancer were head and neck cancer and breast cancer (Table 1). The mean duration of occupational therapy treatment from intake to evaluation was 90 days. Although the exact number of consultations could not be retrieved from the records, clinical experience is that, on average, patients are seen once a week.

3.2 | Reasons for occupational therapy consultation

The most frequent issues for which patients sought occupational therapy consultation belonged to the ICF chapters “Recreation and leisure time” (e.g., sports, hobbies, socialising) ($N = 169$), “Carrying out daily routine” (i.e., performing different occupational roles and habits) ($N = 79$), “Acquiring, keeping and terminating a job” ($N = 64$) and “Driving” ($N = 59$) (Table 2). All these chapters fall within the ICF domain of “Activities and Participation”.

3.3 | Outcomes of occupational therapy treatment

On average, patients improved 3.0 points (95% CI 2.8–3.2) on the performance scale of the COPM, and 3.4 points (95%

TABLE 1 Sociodemographic and clinical characteristics of the sample ($n = 181$)

	Mean (sd)
Age	52 (12)
	Median (range)
Time since diagnosis	11 months (3 weeks–23 years)
	n (%)
Male	77 (43)
Cancer site	
Colorectal	11 (6)
Gastrointestinal	8 (4)
Gynaecological	15 (8)
Head and Neck	62 (34)
Lung	8 (4)
Lymphoma	10 (6)
Breast	45 (25)
Melanoma	4 (2)
Prostate	5 (3)
Soft tissue	7 (4)
Urogenital	6 (3)

CI 3.2–3.7) on the satisfaction scale. Four patients (2.2%) reported a decline in performance (median [range] -0.75 [-1.2 to -0.2] points), and five patients (2.7%) reported a decline in satisfaction (median [range] -0.5 [-1 to -0.2] points). Three patients (1.6%) reported no change on performance and two (1.1%) reported no change on satisfaction. A clinically important improvement (>2.5 points) was observed in 121 (66%) and 132 (72%) cases, for performance and satisfaction respectively. Table 3 lists the summary change scores per problem.

4 | DISCUSSION

4.1 | Main findings

The aim of this study was to gain insight in the reasons for occupational therapy consultation and to estimate the outcome of occupational therapy interventions on occupational performance and satisfaction, in the context of multidisciplinary rehabilitation. The main reasons for occupational therapy consultation were within the ICF domain of “Activities and Participation”, and included daily routines, leisure time and work ability. Furthermore, the majority of patients reported a clinically relevant improvement in performance and satisfaction on the COPM. Larger improvements were observed in occupational satisfaction than in occupational performance.

4.2 | Interpretation of findings

The reasons for occupational therapy consultation in this study were mostly related to “activities and participation”. This is as expected, as it is in line with the scope of the profession, and it reflects adequate triage and referral to occupational therapy in the context of the NKI’s multidisciplinary rehabilitation program. A survey in the United States showed that almost 90% of occupational therapists focus their current practice on difficulties in ADL, energy conservation and quality of life (Stein Duker & Sleight, 2018). Likewise, Australian occupational therapists working with individuals with cancer reported that return to meaningful activities, including leisure were frequently addressed issues (66.2%) (Buckland & Mackenzie, 2017). The single most often reported area of intervention reported in that study was energy conservation and fatigue management. Energy conservation and fatigue management are also among the main components of occupational therapy as implemented in our multidisciplinary cancer rehabilitation program, as fatigue often is the dominant barrier to occupational performance. It is this focus that sets occupational therapy apart from other professions in the rehabilitation team, that is, physical therapist, dietitian and speech-language pathologist. Whereas these professions often have a stronger focus on improving physical function and structures, occupational therapists support patients to translate their physical and mental capacity into improved performance.

Indeed, after occupational therapy, the majority of the patients in this sample reported a clinically relevant improvement in performance, as well as satisfaction, on the COPM. On average, the increase in occupational satisfaction was slightly higher than the increase in occupational performance. The achievable improvements in performance may be limited by constraints imposed by late effects of cancer and cancer treatment. In such cases, an important goal of occupational therapy is to help patients adopt new coping strategies and adapt to an altered life situation, within these constraints. Occupational therapy interventions thus may help patients recalibrate their expectations, and help them recognise their potential for self-realisation despite disability. This may improve satisfaction with current performance, even if the performance itself remained relatively unchanged. The slightly larger improvements in satisfaction we observed may reflect this.

Considering the positive effects on both occupational performance and satisfaction, this study provides support for the role of occupational therapy in cancer rehabilitation. Of course, in the absence of a control group, these changes cannot be attributed with certainty to the occupational therapy intervention. However, the majority of patients were included in the cancer rehabilitation program because they had serious

TABLE 2 ICF domains as mapped from the reasons for occupational therapy consultation, in descending order of prevalence

ICF code	Domain	Frequency	Percentage
Component D-Activities and participation			
d920	Recreation and leisure	169	21.2
d230	Carrying out daily routine	79	9.9
d845	Acquiring, keeping and terminating a job	64	8.0
d475	Driving	59	7.4
d450	Walking	50	6.3
d640	Doing housework	40	5.0
d650	Caring for household objects	25	3.1
d415	Maintaining a body position	22	2.8
d630	Preparing Meals	18	2.3
d620	Acquisition of goods and services	17	2.1
d430	Lifting and carrying objects	13	1.6
d550	Eating	13	1.6
Component B-Body Functions			
b134	Sleep functions	36	4.5
b130	Energy and drive functions	25	3.1
b140	Attention functions	11	1.4
b164	Higher-level cognitive functions	9	1.1
b152	Emotional functions	7	0.9
Other (Category B, D and E)	Mobility	34	4.3
	Interpersonal interactions and relationships	21	2.7
	Learning and applying knowledge	17	2.1
	Self-care	15	1.9
	General tasks and demands	10	1.3
	Functions of the cardiovascular, haematological, immunological and respiratory systems	9	1.1
	Mental functions	8	1.0
	Major life areas	6	0.8
	Communication	6	0.8
	Domestic life	5	0.6
	Products and technology	3	0.4
	Community, social and civic life	2	0.3
	Functions of the digestive, metabolic and endocrine systems	2	0.2
	Genitourinary and reproductive functions	1	0.1
	Neuromusculoskeletal and movement-related functions	1	0.1
Voice and speech functions	1	0.1	

functioning problems that had been present for a prolonged period of time and which they could not resolve themselves. It is therefore likely that the observed changes are at least in part a result of rehabilitation, and—given the specific scope of occupational therapy within the rehabilitation program—of the occupational therapy intervention.

Currently, there is little robust evidence to support the effectiveness of occupational therapy in cancer care. In a recent systematic review, Hunter et al reported positive effects of

interventions aimed at improving physical activity, symptom management, mental or emotional health, RTW and wellbeing (Hunter, Gibson, Arbesman, & D'Amico, 2017a, 2017b). However, the studies included in this review merely provided evidence for interventions that might be employed in the context of occupational therapy, and not for the occupational therapy approach per se or for the added value of occupational therapy in the context of multidisciplinary rehabilitation. As such, despite its observational nature, the current study

TABLE 3 Summary scores per problem

Problem	Performance Start Median (IQR)	Performance End Median (IQR)	Performance change Mean (95% CI)	t-value (df) and p-value of the change score	Cohen's d	Satisfaction Start Median (IQR)	Satisfaction End Median (IQR)	Satisfaction change Mean (95% CI)	t-value (df) and p-value of the change score	Cohen's d
1	4.0 (2.0; 5.3)	7.0 (6.0; 8.0)	2.9 (2.6; 3.3)	16.9 (182) <0.001	1.7	3.0 (1.0; 5.0)	7.0 (6.0; 8.0)	3.9 (3.5; 4.3)	19.4 (182) <i>p</i> < .001	1.9
2	4.0 (2.0; 5.0)	7.0 (6.0; 8.0)	3.11 (2.8; 3.5)	17.2 (176) <0.001	1.6	3.0 (2.0; 5.0)	8.0 (6.0; 9.0)	3.6 (3.2; 3.9)	18.7 (176)	1.8
3	4.0 (2.0; 5.0)	7.0 (6.0; 8.0)	2.84 (2.5; 3.2)	14.58 (166) <0.001	1.3	4.0 (2.0; 5.0)	7.0 (6.0; 8.0)	3.0 (2.6; 3.4)	14.4 (166) <i>p</i> < .001	1.5
4	4.0 (2.3; 5.0)	7.0 (6.0; 8.0)	2.64 (2.3; 3.0)	14.6 (148) <0.001	1.4	7.0 (6.0; 8.0)	7.0 (6.0; 8.0)	3.1 (2.7; 3.4)	15.8 (149) <i>p</i> < .001	1.6
5	4.0 (1.0; 5.0)	7.0 (6.0; 8.0)	2.94 (2.5; 3.4)	12.5 (116) <0.001	1.3	3.0 (1.3; 5.0)	7.0 (7.0; 8.0)	3.3 (2.8; 3.8)	13.3 (116) <i>p</i> < .001	1.5

strengthens the current evidence base for the role of occupational therapy in cancer rehabilitation.

4.3 | Implications for occupational therapy research and practice

Studies show a limited uptake of occupational therapy by people living with and beyond cancer (Hwang et al., 2015; Pergolotti et al., 2016). It has been suggested that this is, in part, due to lack of awareness of the scope of practice of occupational therapy and the potential benefits it has to offer to patients may be one of the reasons for limited uptake of occupational therapy in this population (Rijpkema, van Hartingsveldt, & Stuiver, 2018). Our 6-year experience with occupational therapy in cancer rehabilitation has taught us that clearly delineating the domains in which occupational therapy can contribute to attaining rehabilitation goals, and firmly embedding occupational therapy in the multidisciplinary team, safeguards adequate referral to and uptake of occupational therapy for individuals with cancer. We believe that such structured integration of occupational therapy in survivorship care is also worth striving for in other settings. To further legitimise the role of occupational therapy, there is a clear need for randomised controlled intervention studies that assess the cost-effectiveness of occupational therapy on reducing disability or participation limitations of people living with and beyond cancer.

4.4 | Strengths and limitations

This study is the first to report the reasons for occupational therapy consultation among adults who had completed primary cancer treatment, in a multidisciplinary setting. Also, the relatively large sample size can be considered as a strength of this study. Still, the study has some limitations that should be acknowledged. Besides the lack of a control group, this includes the retrospective data gathering via patient files. Our chart review approach may have induced some information bias. On the other hand, the data have been prospectively recorded in dedicated fields of the electronic patient files, and we therefore believe that the impact on the validity of our findings is minimal. Inherent to the nature of multidisciplinary rehabilitation programs, co-interventions might have had an effect on the outcomes of this study. Whereas this complicates the interpretation of the findings, it is a desirable situation in the context of care delivery. In fact, the proposition that the greatest health gains for a client do not come from a single monodisciplinary intervention, but from a patient-focussed approach and interdependent collaboration and complementary efforts of various disciplines, is the fundamental rationale for providing multidisciplinary rehabilitation (Nancarrow et al., 2013).

5 | CONCLUSIONS

Our study indicates that participants in cancer rehabilitation have several unmet needs related to everyday occupational performance, the majority of which were within recreation and leisure time domain. This underscores the need to include occupational therapists in cancer rehabilitation teams. Both satisfaction with and performance of activities improved after multidisciplinary rehabilitation including occupational therapy. Future controlled clinical studies are needed to establish that these improvements are a causal effect of rehabilitation and to establish the added value of occupational therapy in the rehabilitation context, to further strengthen the evidence base of occupational therapy in cancer care.

KEY POINTS FOR OCCUPATIONAL THERAPY

- Problems with recreation and leisure time are the most frequent reasons for consulting occupational therapy in cancer rehabilitation
- Occupational therapists add value to the cancer rehabilitation team through their specific focus on translating capacity into improved occupational performance and satisfaction
- Clearly positioning occupational therapy in clinical care pathways supports uptake of occupational therapy interventions in cancer rehabilitation

CONFLICT OF INTEREST

The authors declares that there is no conflict of interest.

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