



The applicability and feasibility of occupational therapy in delirium care

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Key summary points

Aim To perform a narrative review aiming at evaluating the applicability and feasibility of occupational therapy in people with delirium.

Findings In this article, the current evidence of the role of occupational therapy for the prevention and management of people with delirium across different settings of care (intensive care units, rehabilitation facilities, and nursing homes) is described. Overall, the article summarizes the results of various studies, supporting the feasibility and efficacy of non-pharmacological approaches conducted by occupational therapists.

Message Though further studies are required to confirm initial evidence, there is reason to believe that occupational therapy may be an effective approach to help the management of delirious people across various settings of care. Occupational therapy may therefore be included in the early stages of rehabilitation management for people with delirium.

Abstract

Purpose To perform a narrative review of studies on the applicability and feasibility of occupational therapy in persons with delirium by analyzing evaluation and procedural methods in the therapeutic settings.

Methods Starting from the international classification of disability, the focus was to understand if and how occupational therapy as a multi-component intervention can reduce the duration and intensity of delirium to prevent future disabilities. This review also includes scientific studies demonstrating the benefits of occupational therapy in terms of increased functional and occupational outcomes. Finally, the evaluation modalities and the therapeutic procedures performed by the occupational therapist have been analyzed.

Results The non-pharmacological treatments occupational therapists perform in people with delirium in intensive care settings are supported by scientific evidence.

Conclusions There is preliminary evidence of the benefit of including occupational therapy in early stages of rehabilitation in acute care to prevent and treat delirium. Nevertheless, further studies are necessary to define the different aspects of the multidisciplinary approach that is common in geriatric practice, primarily determining the adequate timing, and intensity of interventions as well as its appropriate settings.

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Introduction

Delirium is a major problem for older persons in acute care settings that requires a multidisciplinary approach including complex and non-pharmacological interventions. Occupational therapists are part of the rehabilitation team, for example in geriatric wards and as such have an important role in delirium prevention and care [1, 2]. In this article, recent developments and discussions about the role, applicability, and feasibility of occupational therapy in delirium prevention and management are presented and some examples of best practice in geriatric rehabilitation, especially in acute care settings, are given.

The role of occupational therapy

Occupational therapy (OT) is a profession aimed at the improvement of the well-being of persons of all ages through enabling occupations to promote health and participation in society. To reach this goal, occupational therapists support the engagement of their clients in occupations and activities they want, need and choose to do, by adapting the physical and social environment. Occupational therapists work in partnership with those involved in persons' life—as for example, families, carers, teachers, and employers—to improve a person's functioning and participation in daily and social life and to promote an inclusive society [3]. One crucial assumption in OT is that—despite its importance—the presence, absence, or limitation of specific body functions and structures of the body does not necessarily ensure the success of performing and engaging in meaningful occupations of a person's daily life. Occupational therapists analyze, train, and adapt personal factors, activity factors, and the social and physical environment to enhance such performance [4]. Rehabilitation is a key area of OT, and people living with chronic disease or disability such as cognitive disorders can especially benefit from OT, ranging from primary care to palliative care [5]. OT interventions include the use of occupations and activities, methods of preparation and tasks, education and training, advocacy, and group interventions to facilitate a person's participation in occupations to promote health and participation [4]. Interventions are tailored to a person's individual needs and focus on occupations that are significant and meaningful for the person. Targets of intervention can be client systems (e.g., a person affected by delirium and her/his family) and client groups (e.g., ward personnel who look after the people affected by delirium in an institution), as well as communities (e.g.,

counseling about the environmental adaptations to facilitate orientation and enhance the engagement in activities during hospital stay).

International classification of functioning, disability and health (ICF)

A framework frequently used for multi-professional and multidisciplinary teamwork is the International Classification of Functioning, Disability and Health (ICF) [6]. The ICF is a classification of health and health-related domains. Since the functioning and (dis)ability of an individual occurs in a context, ICF also includes a list of environmental factors.

ICF is the World Health Organization (WHO) framework for measuring health and disability at both individual and population levels. ICF was officially endorsed by all 191 WHO member states in the Fifty-fourth World Health Assembly on 22 May 2001 (resolution WHA 54.21) as the international standard to describe and measure health and disability [7] (Fig. 1).

The ICF organizes information in two parts. The first part deals with functions and disabilities, the second part covers contextual factors. Components of functions and disabilities are divided into:

- Body components including body functions and structures. A problem in body function or structure is known as/called an impairment;
- Activity and participation components: an activity is defined as the “execution of a task or action by an individual” and participation as “involvement in a life situation” [6]. A difficulty at the personal level is referred

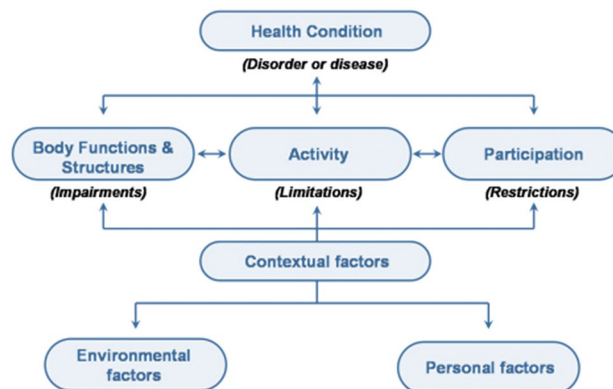


Fig. 1 ICF international classification of functioning [6]

to as an activity limitation, and at the societal level as a participation restriction.

Components of contextual factors are integral to the classification and are subdivided into

- Environmental factors, have an impact on all components of functioning and disability
- Personal factors, have to do with the individual such as age, gender, social level, vital experiences and others, which are not currently classified in the ICF

The conceptualization provided in the ICF makes it impossible to understand disability without consideration and description of the environmental factors.

Implementing the framework of the ICF in their clinical thinking, occupational therapists are experts in conceptualizing and analyzing the factors relating to activity and participation in transaction with environmental and personal factors [8].

Multi-component interventions for delirium, cognitive impairment, and critical illness in acute care settings

Many patients in acute care develop long-term cognitive impairments following critical illness; it is therefore essential to incorporate OT, physiotherapy, and cognitive rehabilitation at an early stage of the illness [9]. This notion has been supported by a recent article by Martinez and Tobar [1] suggesting that OT, physical therapy and avoidance of sensory deprivation are key interventions in delirium prevention. Occupational therapists focus on restoring to a daily routine in the person's day using activities, positioning, performing cognitive assessment and offering cognitive stimulation and thus helping clients in maintaining function [10]. It has been shown that multicomponent interventions are effective, reducing the incidence and duration of delirium, as well as preventing falls, reducing the length of hospitalization, and improving functional and cognitive status at discharge. Multicomponent interventions are preferable, compared to single interventions [11–14]. An ideal rehabilitation process should start with the screening of delirium (using standardized tools known by the whole staff), prompting a timely diagnosis carried out by staff physicians and then managed by all staff members through an accurate and multidisciplinary intervention. The role of the occupational therapist, in this context, is crucial.

It was found that the care of a person with delirium is expected to be appropriate when the following elements are present:

- (a) A rehabilitation team with specific geriatric training;
- (b) A team that has expertise in using delirium screening tools;
- (c) The ability of one or more team members to diagnose delirium;
- (d) The use of scales to assess both motor and cognitive performance, including performance fluctuations.

The role of occupational therapy in the multidisciplinary team

Older people at high risk of delirium often suffer from multimorbidity and require thorough needs assessment and complex interventions by all staff members, including OT. For example, falls can be a consequence of delirium, which means that an appropriate OT approach should be able to tackle both falls and delirium as joint manifestations of the same problem [15]. Occupational therapists play a key role in assessing and rehabilitating functioning and cognition, particularly in the context of brain injury, stroke, and other cognitive disorders such as dementia [16]. Occupational therapists are experts in rehabilitation and in adapting non-pharmacological interventions to different settings and interventions. However, in the field of delirium care, there have been few studies about OT and its application in delirium prevention and care. It is important to emphasize that OT is not an instrument or single intervention, but a profession that can use multiple strategies to prevent and treat delirium. It has been shown that survivors of the intensive care unit (ICU) often suffer from various forms of cognitive disorders, including though not necessarily delirium. These disorders can last even several months after ICU discharge [17]. A proactive approach could provide these patients with specific pathways to manage their disorders and improve patients' cognitive and functional performance. OT can play a role in educating patients and caregivers, improving cognition and sleep and maintaining functions and functioning. Therefore, early identification and referral to occupational therapists may be appropriate for patients at ICU discharge. Some of the non-pharmacological interventions used in rehabilitation are shown in Table 1.

A randomized control trial (RCT) found that the use of earplugs, alone or together with eye shades and other noise-reducing strategies to promote sleep, was associated with a reduction of delirium in ICU patients [18]. A review of eight studies of a multicomponent care approach reported benefits of OT in five of the studies [19]. The other three studies showed no difference between the treatment and control groups. However, the multicomponent care approach is considered to be a standard good practice and the effect of

Table 1 The rehabilitation practices recommended by the Scottish guidelines on the management of the person with delirium so that each occupational therapist can include these general indications in the specific rehabilitation setting [38]

Multicomponent non-pharmacological interventions in rehabilitation setting		
Behavioral adaptations	Environmental adaptations	Address specific causes of stress
Calm non-confrontational manner	Single room	Hunger
Reassurance	Well-lit area	Feeling too hot/too cold
Reorientation	Clear signs re: day, time, season, place	Thirst/dry mouth
Distraction/de-escalation techniques	Familiar objects	Urinary retention
One-to-one nursing	Family input	Specific fears
Cognitive stimulation	Minimize bed moves	Not understanding what is happening
	Promote personal activity	Hallucinations, delusions, aggression, agitation, and wandering/
	Address sensory impairment	searching
	Promote sleep	
	Facilitate mobility	

multicomponent interventions may not be as evident as in other patient groups given that critically ill patients exhibit ongoing risk factors during their critical care admission [15]. It may be concluded that OT intervention is crucial within the rehabilitation team, focusing at improving patients' motivation and providing specific training and education to caregivers.

In addition, a recent study by Saez de Asteasu et al. showed how an individualized, multicomponent exercise training program may be effective in improving cognitive functions (i.e., executive functions and verbal fluency) in very old hospitalized patients [20]. This was indirectly supported by a review by Resnick et al., finding that a multidisciplinary rehabilitation approach is feasible in delirious patients [21]. However, innovative approaches are required to support this aim.

Last but not least, recent evidence suggests that increased involvement of OT in the acute care setting results in low re-admission rates without increasing hospital expenditure.

This was proven by Rogers et al. with patients with cardio-vascular issues such as heart failure, pneumonia, and acute myocardial infarction [22]. The authors explain this result in the ability of occupational therapists to evaluate complex needs and the functional status of clients with more severe conditions including cognitive impairments and multimorbidity and to subsequently develop strategies with them and their families that result in more comprehensive discharge planning. Additional studies are needed to confirm and expand upon these findings.

Based on our clinical experience we strongly recommend the involvement of occupational therapists in the critical care and early rehabilitation teams. Ideally, OT should be part of the rehabilitation team together with physical and respiratory therapists.

To increase the interprofessional interaction for the prevention and the care of older people with delirium in various settings of care, five scientific societies (European Delirium Association, EDA; European Academy of Nursing Science,

EANS; European Union of Geriatric Medicine Societies, EUGMS; Council of Occupational Therapists for European Countries, COTEC; and International Association of Physical Therapists working with Older People of the World Confederation for Physical Therapy IPTOP/WCP) published a position paper. In this position paper, it is emphasized that delirium care should be based on an interdisciplinary and multidimensional approach with accurate methods of screening and diagnosis of delirium, empowering the different skills of the team towards personalized and individualized care [23].

Occupational therapy and delirium prevention and care

There is some evidence about the positive role of OT in delirium management. As already stated, a recent review on cognitive stimulation and OT suggest to entail occupational therapists in the ICU approaches to prevent delirium [1, 24]. Another study [25] evaluated the effect of occupational therapy in managing delirium of older ICU patients. The authors carried out a randomized clinical trial on 140 patients without mechanical ventilation older than 60 years. Seventy patients (control group) received standard care to prevent delirium and a same-size group of 70 patients (experimental group) underwent standard care plus occupational therapy, twice a day for 5 consecutive days. The experimental group had lower duration and incidence of delirium, as well as higher scores in the motor items of the functional independence measure (FIM), cognitive performance and improved grip strength in the dominant hand compared with the control group. The study concluded that occupational therapy is effective in decreasing the duration and incidence of delirium in non-ventilated older ICU patients and improves functional performance at discharge. Another study made by Schweickert et al. [26] has shown that occupational therapy and physiotherapy can reduce sedation in people with

Table 2 Current scientific evidence of occupational therapy and delirium

Current scientific evidence of occupational therapy and delirium					
Article and first author	Setting	Year of publication	Main delirium screening method applied	Main assessment tools used by OT	Main results
Schweickert et al. (ICU)	Intensive Care Unit	2009	Rass CAM	Barthel Index Score Rass	Reduction in number of days with delirium Better functional outcomes Less sedation Progress through range of motion, sitting, standing, walking, ADLs
Alvarez et al. (ICU)	Intensive Care Unit	2017	CAM	FIM Functional Impairment Measure [39] Jamar Hydraulic [40] Hand Dynamometer [40] MMSE Mini Mental State Examination	Significantly fewer hours of delirium; Experimental group (OT intervention) had a significantly lower risk of developing delirium; Decreasing on patients' days of Delirium; Functional independence was significantly higher in the experimental group
Pozzi et al. (Rehabilitation Setting)	Rehabilitation	2017	CAM m-RASS	Barthel Index Score Tinetti scale Etnografich Interview caregiver	A multidimensional approach of the occupational therapist is indispensable in the rehabilitation of people with delirium; The occupational therapist has planned from the earliest stages of rehabilitation the process of returning to the home of the elderly person with delirium; The intense upbringing of the family may have influenced the subsequent possibility of returning home, despite the seriousness and severity of the delirium and functional disability
Pozzi et al. (Nursing Home Setting) [28]	Nursing Home Care	2019	Radar 4AT m-RASS D.O.M (Delirium-O-Meter)	Barthel Index C O M P (Canadian Occupational Measure Performance) m-RASS 4AT	The occupational therapist coordinated the interventions with other figures within the NH staff The occupational therapist can act as a facilitator of the engagement in daily life activities, enabling the maintenance of a meaningful routine by implementing the best practice for the management of delirium This approach would allow to correctly identify patients with delirium providing a non-pharmacological treatment delivered by an interdisciplinary team including an occupational therapist This study showed the feasibility of an innovative occupational therapy intervention with tailor made activity in the multidisciplinary team for the management of DSD in a NH setting

mechanical ventilation. Furthermore, the initiation of early occupational therapy and physiotherapy interventions were well-tolerated and led to better functional outcomes at

hospital discharge. In addition, the duration of delirium was reduced and more days of autonomous ventilation were recorded than under standard care management. In

a recent study, Italian occupational therapists evaluated the feasibility of occupational therapy with people with delirium in rehabilitative settings. Pozzi et al. [27] have highlighted strategies that can be successful for the appropriate rehabilitation of delirium once it occurs. Despite the small number of people with delirium included in this feasibility study, the results of this study are important paving the way for additional research Table 2.

Individual and tailored procedures used in the study by Pozzi et al. [27, 28] were:

- A caregiver interview with the Model of Human Occupation Screening Tools (MOHOST) [29] to obtain the occupational history and occupational profile of the patient and of the caregiver to collect key information to begin the reorientation and to identify ordinary but meaningful occupations for the patient [4];
- An intervention providing multisensory and cognitive stimulation by occupational therapy performing meaningful occupations. These were identified as important to the patient according to the caregiver interview (it is very important that the staff is also familiar with the activities that the occupational therapist performs with the patient. The staff must also be an active part of the stimulation);
- A basic activity daily living (ADL) training including activities that promote independent living, including mobilization, hygiene, personal grooming, and eating during morning sessions;
- Systematic involvement of the family and other relatives and education about how to properly provide assistance for performing basic activities of daily living. Moreover,

general education about and explanations of the phenomenology of delirium was provided to the family.

- Changes of the environment to facilitate rest, and promote the sleep–wake cycle, and support spatial–temporal orientation with for example (using aid and prompts as calendars, clocks, label pads...) (Fig. 2)

The occupational therapist should be familiar with the most important delirium assessment scales, such as the Abbreviated Mental Test-4 (4AT) [30], the modified Richmond Agitation Sedation Scale (m-RASS) [31], the Confusion Assessment Method (CAM) [32]. In addition, the occupational therapist could use the m-RASS as a screening tool to assess the presence of delirium in people with pre-existing dementia while receiving treatment (Fig. 3).

For specific evaluation, the OT can use specific scales to identify the individual goals, e.g., with the Canadian Occupational Performance Measure (COPM) that rates subjective change in occupational performance over time [33]. In case of a temporary or moderate cognitive impairment, the Pool Activity Level Instrument [34] would be an alternative to assess the person's ability to engage in activity. Alternatively, the Assessment Motor and Process Skills (AMPS) can be used to measure the quality of the occupational performance in activities of daily livings [35]. To determine the level of personal motivation and relationship with the environment, the Volitional Questionnaire can be helpful [36]. Because the Volitional Questionnaire is based on observations, it can be used in people with more severe cognitive impairment.

In summary, the transaction of three dimensions that are considered by occupational therapists are [37]:

Fig. 2 Personalized and individualized procedures in occupational therapy for people with delirium

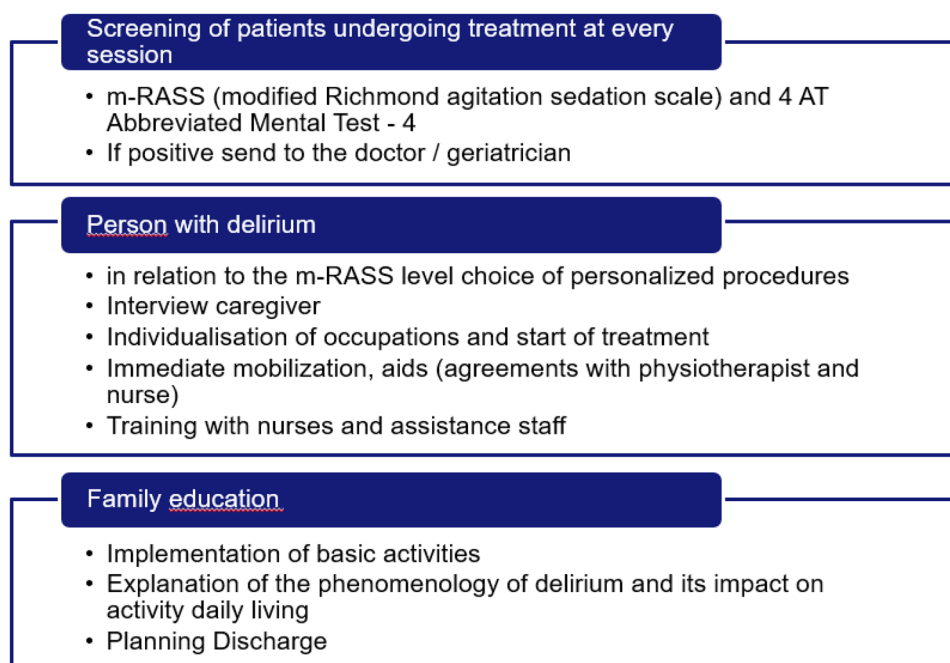
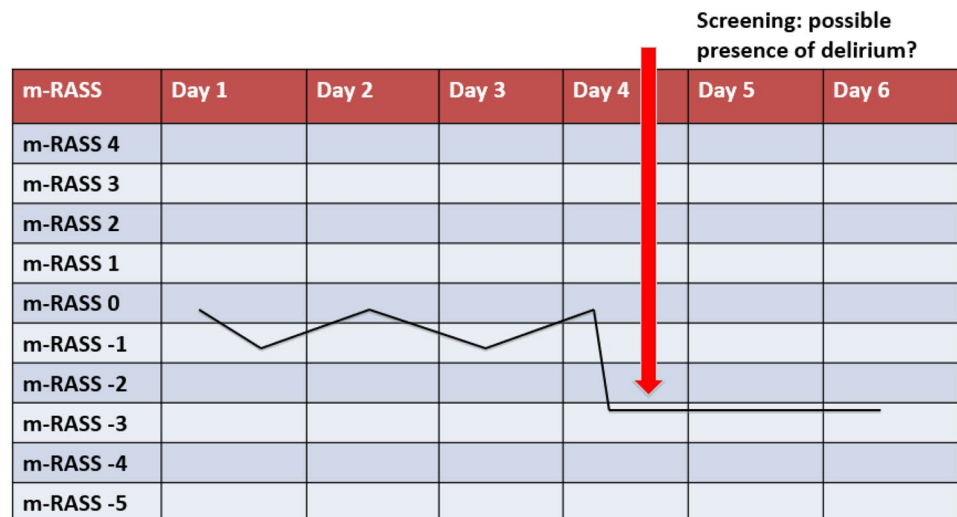


Fig. 3 With the permission of Alessandro Morandi, inter-relationship between delirium and dementia, European Union Geriatric Medicine Society Meeting, 2019



- Personal factors (e.g., physical abilities and limitations, including difficulties with motor planning and his/her lack of initiative to seek help from others etc.)
- Environmental factors (e.g., cultural, institutional, physical characteristics of the environment, values and roles of the caregiver, etc.)
- Occupational factors (e.g., routines, interests, personal choices regarding activity and occupations, values maintained throughout life, motivation, expectations etc.).

Conclusion

There is preliminary evidence of the benefit of including occupational therapists in early stages of rehabilitation in acute care to prevent and treat delirium. In clinical practice, occupational therapists are often involved in delirium management and prevention. Occupational therapists understand and analyze the complexity of human beings; they focus on activity and meaningful occupation using a systematic approach to the analysis of occupational performance problems, organizing a routine, in a hospital context that generates imbalances and changes in the elderly. Further studies are necessary to define the effective components of a multidisciplinary approach that is common in geriatric practice: determining the adequate timing and intensity of interventions as well as its appropriate settings.

In fact, further research is essential to improve the practice of occupational therapists with regard to the prevention and treatment of delirium: the limited scientific evidence does not allow to support a large implementation of the occupational therapist in the delirium treatment settings. For the future, occupational therapists will need to better understand evaluation methods, objectives, and procedures

to be put in place to improve the functional outcomes of the person with delirium.

Compliance with ethical standards

Conflict of interest The authors declare no conflicts of interest.

Ethical approval All procedures performed in the study were in accordance with the ethical standards of the 1964 Helsinki declaration.

Informed consent Informed consent was obtained from patients' authorized surrogates at study enrollment.

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