

**Occupational Therapy in
Cognitive Rehabilitation**

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Cognition

Cognition refers to mental processes that include the abilities to **concentrate**, **remember** and **learn**, which enable us to think.



Thus people with cognitive deficits may have reduction in these abilities.

Occupational Therapy

"Occupational therapy is as a profession concerned with promoting health and well being through engagement in **occupation**." (World Federation of Occupational Therapists)

Occupation is being described as purposeful and meaningful activities in which a person engage as part of his **normal daily lives**...all aspects of living that contribute to health and fulfillment for an individual (McCull et al., 2003)

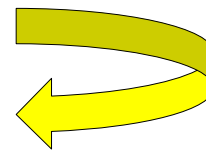
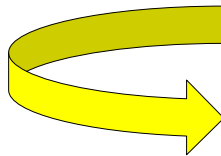


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Scholar develop and formulate theories



Researcher study the disease, intervention...



Implement the knowledge acquired in clinical practice

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Occupational Therapy in Cognitive Rehabilitation – from a clinician perspectives

1. Knowledge on cognitive function and brain structure responsible for a specific cognitive function

2. Understanding of disease that may cause cognitive impairment

3. Understanding of the mechanism of cognitive impairment

4. Theories, models and framework for practice

5. Implications of cognitive impairment for occupational performance

6. Choice of intervention approaches



Knowledge on neuropsychology and medicine



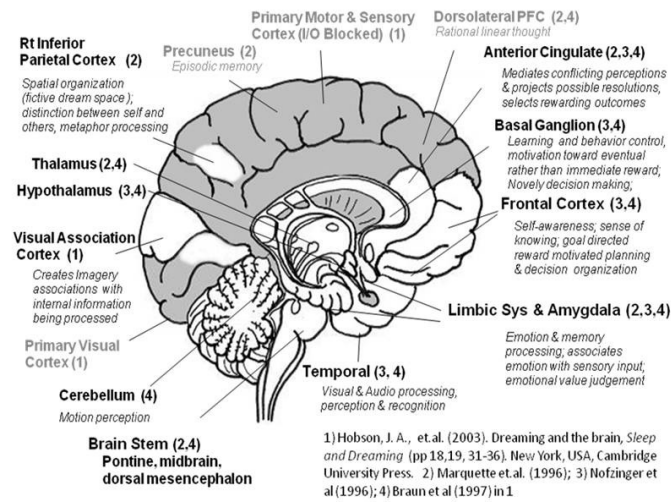
Knowledge of occupational therapy

(1) Knowledge on cognitive function and brain structure responsible for a specific cognitive function

An example of classification of cognitive function:

Cognitive subcomponent:	
Alertness	
Attention	Concentration, selective attention, attentional flexibility
Orientation	Time, place, person
Memory	Length of retention and recall, content relative to time
Intellectual process	Comparing, categorizing, determining relationship, concrete and abstract thinking, logical reasoning, intellectual flexibility, metacognition, insight
Problem solving	Problem recognition, problem identification, problem and situation analysis, selection of a course of action, implementation of the action, execution of the solution chosen, evaluation of problem resolution

(1) Knowledge on cognitive function and brain structure responsible for a specific cognitive function



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Why knowledge of cognition is important?

Understanding of the complex integrated and interrelating functions of multiple cognitive and perceptual functions allows us:

To identify the cognitive dysfunction our patients have

Executive function

To analyze tasks and activities, identify the demand of cognitive competence in each activities

Planning, organization problem solving in cooking

To anticipate the possible problems encountered by our patients on the activities.

Incorrect sequence, overcook food, inability to manage multiple task in kitchen

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(2) Understanding of disease that may cause cognitive impairment (examples given)

1. Drug induced cognitive dysfunction

Benzodiazepines (tranquillizers & sleeping pills), opiates (narcotics), tricyclic antidepressants (TCAs), etc. are known to cause cognitive impairment such as delirium, reduced concentration and difficult thinking.

2. Electrolyte imbalance

Electrolyte imbalance	Possible signs and symptoms
Sodium	Delirium with symptoms include memory loss, attention deficit, alteration in sleep-wake cycles, hallucination and delusion.
Calcium	Difficulty focusing, trouble maintaining conversation, mood swings, problems with following instructions.
Potassium	Apathy, inability to recite months backward, difficulty with repetitive tasks, disorganized thought processes, lethargy, reduced consciousness.

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(3) Understanding of the mechanism of cognitive impairment

Anemia secondary to lack of erythropoietin production by the kidneys in patients with chronic kidney disease.

First

- ↓hematocrit leads to ↓brain O₂ delivery, with a detrimental effect on brain metabolism.

Second

- ↓hematocrit leads to increasing cerebral blood flow to high levels, perhaps resulting in ↑delivery of uremic toxins to the brain.

Third

- ↑cerebral blood flow may ↑ICP and thus ↑the level of brain edema.

Acute Vs Chronic disorder

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Why understanding disease causing cognitive dysfunction is important?

1

• Clear about the possible **profile of cognitive dysfunction** e.g. disorientation and impaired delayed recall are the problems demonstrated by demented patients.

2

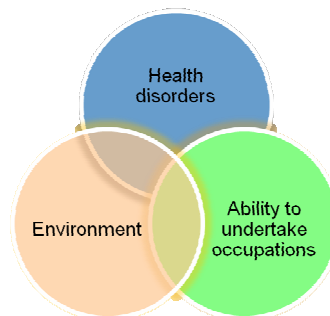
• Have an impression of whether the **cognitive impairment manifested is reversible or not** e.g. we would not jump to a suggestion of cognitive training after assessing a patients with cognitive problem due to electrolyte imbalance, instead, would repeat assess on another day when it is corrected.

3

• Guide the **intervention strategies and approach** - remedial or compensatory e.g. patients with mild cognitive impairment after stroke could benefit from retraining approach than a demented patient.

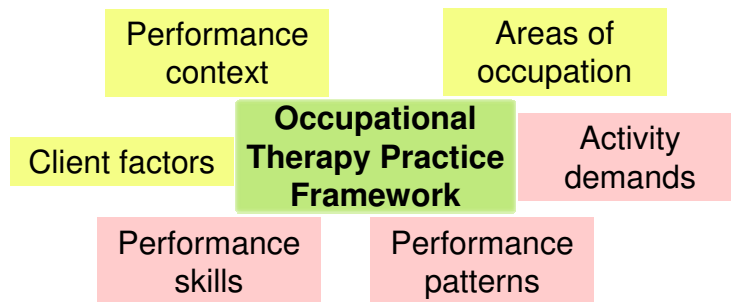
(4) Theories, models and framework for practice

- A framework is used to gather and organize information for designing effective intervention.
- A framework addresses the interrelationship of the **person**, **occupations** with the **environment**, and contexts in which they occur.
- International Classification of Functioning, Disability and Health (ICF) (WHO 2001)

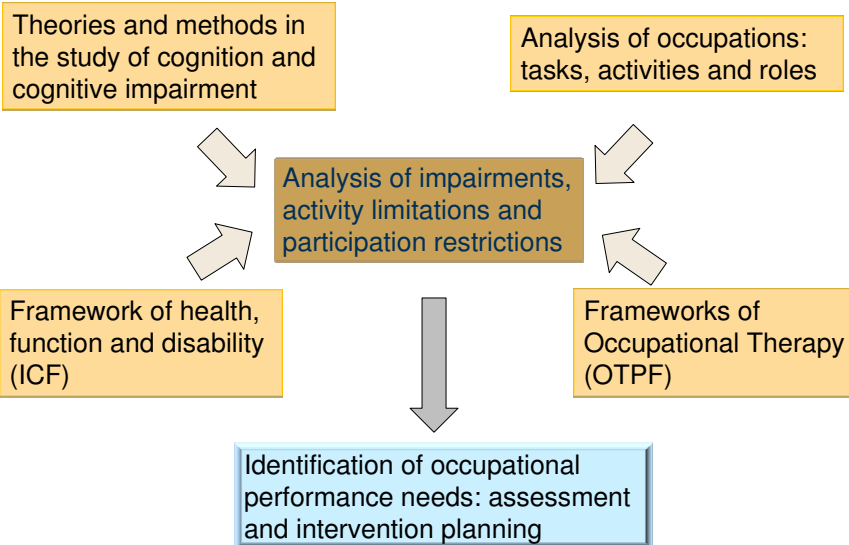


(4) Theories, models and framework for practice

An occupational therapy specific framework for practice



(4) Theories, models and framework for practice



(4) Theories, models and framework for practice

ICF	OTPF
Body functions & body structure	Client factors: body functions & body structure
Activities and participation	Areas of occupation: ADL, IADL, education, work, play & leisure, and social participation
Environmental factors	Performance contexts: physical, social, temporal, virtual, spiritual and personal
Personal factors	Performance skills: motor skills, process skills, communication/interaction skills
	Performance patterns: habits, routines, roles
	Activity demands: Required action, sequence and timing, objects and their properties, space demands and social demands

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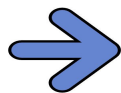
Why are frameworks important?

It helps us to identify in a systematic way how a change in cognitive status impacts upon occupational performance.

ICF



OTPF



1. Analyze the characteristics and demands of any given task.
2. Determine the individual's impairments, activity limitations and participation restrictions that need further investigation and assessment.

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(5) Implications of cognitive impairment for occupational performance

Neuropsychological assessment: examine how **specific functions** of the brain are working. for example, speed of thinking, sustaining concentration.

Occupational therapy cognitive assessment: determining how cognitive deficits can **impact everyday activities**



1. Global cognitive screening:
 - Mini mental State Examination (MMSE)
 - Neurobehavioral Cognitive State Examination (NCSE)
 - Montreal Cognitive Assessment (MoCA)
2. Specific assessments:
 - Test of Everyday Attention (TEA)
 - Rivermead Behavioral Memory Test (RBMT)
 - Behavioral Assessment for Dysexecutive Function (BADS)
 - Behavioral Inattention Test (BIT)...

(6) Choice of intervention approaches

Popular approaches for guiding practice with patients who have cognitive and perceptual problems:

1. The information-processing approach and the quadraphonic approach
2. The dynamic interaction approach
3. The retraining approach
4. The neurofunctional approach
5. The cognitive disability approach

More consistent and structure intervention program with specific rationale behind

A community based cognitive workshop – the mildly impaired ones

1. All elderly attend the assessment session would be undergone **MMSE**.
2. Those scored above cut-off in MMSE would be further assessed by **MoCA**.
3. Clients with MoCA scores between 17-20 were invited to attend the cognitive workshop in a closed group format.
4. **RBMT** was conducted for all participants before the commencement of the workshop.
5. Specific **problem areas** were identified and used to plan the workshop content – recall name, leaving things behind, recall message...
6. Participants were also asked their **daily problems** concerning memory, which were consistent with the RMBT pictures.
7. A **retraining approach** was adopted for use in the workshop.
8. Selected strategies (based on previous experience) and selected tasks were taught and practiced in the workshop.

The community cognitive workshop – the more impaired ones

1. Clients coming from the same community centre.
2. MMSE far below the cut-off. They were identified by the social workers
3. The workshop was also in a closed group format.
4. **Common problems** – poverty of speech, poor immediate recall, could not recognize persons and their names, isolated relationship with other members...
5. **Focus of the workshop** was to provide a contextual environment for them to speak more and interact more.
6. Use the five senses as themes of sessions - taste, smell, touch, see, hear.
7. **Stimulation oriented** approach

Development of OT program for chronic kidney disease with cognitive deficits

Target patients:

End stage renal failure patients receiving dialysis

Needs assessment survey:

Age above 65, n=14, other than 3 elder patients (21.4%) with **MMSE** scored below the cut-off, there were 5 cases (50%) with **MoCA** below the cut-off,

Age below 65, n=27, there were 5 cases (17.2%) with **MoCA** below the cut-off

Activities involved:

Medication management, monitoring health status, managing complex dialysis regime

Upcoming actions:

- Collaborate with renal and geriatric physician to identify what causes these cognitive problems.
- Identify the functional implications.
- Determine intervention direction and approach.
- Measure outcome.