THE USE OF BRIEF CORE SETS FOR TRAUMATIC BRAIN INJURY IN OCCUPATIONAL THERAPY TO MEASURE OUTCOME OF REHABILITATION - PRESENTATION CASE

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Traumatic brain injury (TBI)

- is referred to as the hidden disability,
- it can cause temporary or permanent consequences on the physical, mental, emotional, social or professional field,
- its long term problems are often in the areas of thinking and behaviour,
- they are not as easy to see and recognise as many physical disabilities.
Assessing the functional state

We know number of tools to assess the functional state of a patient:
- ICF model provides a standard language and serves as the basis for the classification of functioning,
- it is too comprehensive and too complicated for use in daily practice.*

Development of ICF Core Sets**:
- the purpose of ICF Core Sets is to make the ICF practical for everyday use,
- they support the interdisciplinary, comprehensive assessment of functioning,
- this is selection of categories from the full ICF developed for various health conditions.

Types of ICF Core Sets

- **Comprehensive ICF Core Set** – includes spectrum of typical problems that persons with specific health condition may face; allows thorough and interdisciplinary assessment.

- **Brief ICF Core Set** – is derived from Comprehensive Core set, used when brief assessment of functioning is necessary; for describing functioning and disability in clinical and epidemiological studies.

- **Generic Core Set** – important for health statistics and public health, can be part of patient’s medical history.
Process of the study

• For this study we used the Brief Core Set for TBI.
• Functional status of the patient was recorded at admission and three years later.
• We investigated if these sets were sensitive enough to detect changes in a single patient and whether all the areas where this patient had problems were covered.
• Sources of information: case history.
• We compare these findings with Functional Independence Measure (FIM), Assessment of Motor and Process Skills (AMPS), Assessment of Awareness of Ability (A3).
Peter

- 21 years old.
- He lives with mother over the week, and for weekends with his father.
- At the age of 18 he suffered traffic accident with severe brain injury.
- He attended secondary school.
- At first admission he was completely dependent in ADL.
- With aphasia, he also had problems with swallowing.
- No active movements in right upper and lower extremity, with increased muscle tone,
- Ataxia in left upper extremity.
- Cooperation was short.
- FIM = 18/126.
Functioning Profile TBI (Brief version)

LEGEND:
In Body Functions, Body Structures, Activities and Participation:
• 0 = no problem,
• 1 = mild problem,
• 2 = moderate problem,
• 3 = severe problem,
• 4 = complete problem;

In Environmental Factors:
• 0 = no barrier/facilitator,
• 1 = mild barrier,
• 2 = moderate barrier,
• 3 = severe barrier,
• 4 = complete barrier,
• +1 = mild facilitator,
• +2 = moderate facilitator,
• +3 = substantial facilitator,
• +4 = complete facilitator,
• 8 = not specified,
• 9 = not applicable.
### BODY FUNCTIONS

<table>
<thead>
<tr>
<th>Code</th>
<th>Function</th>
<th>Impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td>b110</td>
<td>Consciousness functions</td>
<td>X</td>
</tr>
<tr>
<td>b130</td>
<td>Energy and drive functions</td>
<td>X</td>
</tr>
<tr>
<td>b140</td>
<td>Attention functions</td>
<td>X</td>
</tr>
<tr>
<td>b144</td>
<td>Memory functions</td>
<td>X</td>
</tr>
<tr>
<td>b152</td>
<td>Emotional functions</td>
<td>X</td>
</tr>
<tr>
<td>b164</td>
<td>Higher-level cognitive functions</td>
<td>X</td>
</tr>
<tr>
<td>b280</td>
<td>Sensation of pain</td>
<td>X</td>
</tr>
<tr>
<td>b760</td>
<td>Control of voluntary movement functions</td>
<td>X</td>
</tr>
</tbody>
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### BODY STRUCTURES

<table>
<thead>
<tr>
<th>Code</th>
<th>Structure</th>
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<tbody>
<tr>
<td>s110</td>
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### ACTIVITIES AND PARTICIPATION

<table>
<thead>
<tr>
<th>Code</th>
<th>Activity</th>
<th>Performance</th>
<th>Capacity</th>
<th>Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>d230</td>
<td>Carrying out daily routine</td>
<td>P</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td>d350</td>
<td>Conversation</td>
<td>P</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td>d450</td>
<td>Walking</td>
<td>P</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td>d455</td>
<td>Moving around</td>
<td>P</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td>d465</td>
<td>Moving around using equipment</td>
<td>P</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td>d720</td>
<td>Self-care</td>
<td>P</td>
<td>C</td>
<td>X</td>
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<tr>
<td>d760</td>
<td>Complex interpersonal interactions</td>
<td>P</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td>d845</td>
<td>Acquiring, keeping and terminating a job</td>
<td>P</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td>d850</td>
<td>Remunerative employment</td>
<td>P</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td>d920</td>
<td>Recreation and leisure</td>
<td>P</td>
<td>C</td>
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### ENVIRONMENTAL FACTORS

<table>
<thead>
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<th>Factor</th>
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<tbody>
<tr>
<td>e115</td>
<td>Products and technology for personal use in daily living</td>
<td>+4</td>
<td>X</td>
</tr>
<tr>
<td>e120</td>
<td>Products and technology for personal indoor and outdoor mobility and transportation</td>
<td>+3</td>
<td>X</td>
</tr>
<tr>
<td>e310</td>
<td>Immediate family</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>e320</td>
<td>Friends</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>e570</td>
<td>Social security services, systems and policies</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>e580</td>
<td>Health services, systems and policies</td>
<td>9</td>
<td></td>
</tr>
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</table>
After 3 years

- He got tired quickly.
- Did not have sufficient endurance.
- Needed clear instructions.
- Looking for excuses for poor results.
- Immediate memory was below the normal level.
- Learning ability was poor.
- Executive functions were markedly impaired.
• Independent in ADL.
• Communication was better, verbal response was still slow.
• He could walk longer distances.
• His writing was slower.
• Right upper extremity was quite functional (manipulation), still ataxia in left.
• Smoked too much.
• Sometimes he was involved in inappropriate company (abuse of marijuana and alcohol).
• He was included in a secondary school programs but unsuccessfully.

FIM = 112/126 (FIM Motor Subscale = 82, FIM Cognitive Subscale = 30).
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<td>P C X X</td>
</tr>
<tr>
<td>d450 Walking</td>
<td>P C X X</td>
</tr>
<tr>
<td>d455 Moving around</td>
<td>P C X X</td>
</tr>
<tr>
<td>d465 Moving around using equipment</td>
<td>P C X</td>
</tr>
<tr>
<td>d5 Self-care</td>
<td>P C X X</td>
</tr>
<tr>
<td>d720 Complex interpersonal interactions</td>
<td>P C X X</td>
</tr>
<tr>
<td>d760 Family relationships</td>
<td>P C X X</td>
</tr>
<tr>
<td>d845 Acquiring, keeping and terminating a job</td>
<td>P C 9</td>
</tr>
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<td>d920 Recreation and leisure</td>
<td>P C 8</td>
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<td>+4 +3 +2 +1 0 1 2 3 4</td>
<td></td>
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<td>+4 +3 +2 +1 0 1 2 3 4</td>
<td></td>
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<td>+4 +3 +2 +1 0 1 2 3 4</td>
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Self Awareness

• Self Awareness is having a clear perception of our personality, including strengths, weaknesses, thoughts, beliefs, motivation, and emotions.

• Developing self-awareness is a great way of learning more about ourselves and what we’re capable of.
Ability to identify problems

A limited awareness of ability is a well-known clinical problem among persons with various disabilities, resulting in consequences on rehabilitation outcomes.

- As a result of this, they are less motivated to perform activities of daily living during the rehabilitation process,
- they may choose activities beyond their abilities,
- they are often less successful in their everyday life,
- they are in a greater risk of additional damages,
- particular mental problems can impact on their social integration.

Evaluation of the patient`s awareness of his disabilities is important for planning treatment and interventions when necessary.
Assessment of Motor and Process Skills (AMPS)

• The AMPS is a standardized observational assessment administered by an AMPS certified occupational therapist (OT).*

• It measures a person’s performance capacity for activities of daily living (ADL) and/or independent living.

• It measures the quality of a person’s ADL performance by rating the effort, efficiency, safety, and independence while a person actually performs chosen, familiar, and life-relevant ADL tasks.

• After completion of the AMPS tasks, the OT scores the client on the 16 ADL motor and 20 ADL process skill items according to the criteria in the AMPS manual using a 4-point ordinal scale.

  • ADL motor ability: - 0,6 (ADL Motor Cut off = 2)
  • ADL process ability: - 1,3 (ADL Process Cut off = 1)

• He was less efficient, less safe and independent in performing ADLs.

The Assessment of Awareness of Ability (A3) is an innovative approach in evaluating awareness of ability, developed by Kerstin Tham and Anders Kottorp, Karolinska Institutet, Stockholm, Sweden.

- The A3 was developed to be used by occupational therapists with a client-centered and top-down approach in intervention planning.
- It is based on a semi-structured interview, which is used in conjunction with the AMPS.
- A3 consists of an interview guide that includes 11 questions (items) that are asked directly after the performance of each AMPS task.
- Judging the amount of discrepancy between the client’s observed ADL limitations and the experienced and self-described ADL limitations is based on a 4-point criterion rating scale.*

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>OBSERVE</th>
<th>TASK 1 OT</th>
<th>TASK 1 PATIENT</th>
<th>DISCREPANCY</th>
<th>TASK 2 OT</th>
<th>TASK 2 PATIENT</th>
<th>DISCREPANCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When you think about..., did you do well? How do you think it went</td>
<td>Increased effort Decreased efficiency Decreased safety Need of assistance</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1,2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. Describe for me any parts that were hard for you to manage when you...?</td>
<td>Primary ADL performance limitation</td>
<td>1,2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>3. How was it for you to use your hands when you...?</td>
<td>Coordination, mani-pulation, flows, calibrates, grips, handles</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1,2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>4. How was it for you to move or transfer your body when you...?</td>
<td>Stabilizes, aligns, walks, moves, transports, navigates</td>
<td>2</td>
<td>2 (not all problems)</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>5. How was it for you to reach for and get the objects when you...?</td>
<td>Stabilizes, positions, reaches, bends, lifts</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>6. How was it for you to pace yourself and keep going when you...?</td>
<td>Endures, paces</td>
<td>2,3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7. When you think about..., did you perform the task as we decided beforehand?</td>
<td>Attends, heeds, chooses inquires, restores</td>
<td>1,2,3</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8. When you..., did it progress smoothly from beginning to the end</td>
<td>Attends, initiates, continues, sequences, terminates</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2,1</td>
<td>2</td>
</tr>
<tr>
<td>9. How was it for you to find and gather the things you needed when you...?</td>
<td>Searches/locates, gathers</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1 (not all)</td>
<td>3</td>
</tr>
<tr>
<td>10. How was it for you to organize and use the things ou needed when you...?</td>
<td>Uses, handles, gathers, organizes</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1,2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>11. Based on..., did you change the way you were... to make it esier or better? How did it work?</td>
<td>Based on the lowest score of awareness on questions 3-10</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Legend:
4 = no discrepancy
3 = minimal discrepancy
2 = moderate/obvious discrepancy
1 = major discrepancy
Patient's wishes

He and his mother wanted to finish one of secondary schools.

He was admitted at Department for Vocational Rehabilitation.

Their work is based on comprehensive assessment of functional abilities of an individual, of his or her work endurance and efficiency, learning skills, work behaviour and of the necessary adjustments and adaptations of his or her tasks and work environment.

After a thorough evaluation of the functional status of the patient's abilities and limitations by all team members he was suggested to go to Specialised Centre for Education and Rehabilitation of Children and Adolescents with motor impairments or chronic illnesses.

Their opinion was that educational program for electrician (middle level vocational programme) was suitable for him.
Specialised centre for education

- Educational programmes there are modified (subjects, length of programmes, teaching methods, methods of testing, the certificate is of equal validity to that from other schools.
- Professionals have specialized knowledge.
- The number of students in a class is considerably less than in regular schools.
- Centre also offers the possibility of accommodation.
Results

• Both FIM and ICF Brief Core Set showed evident improvement in the patient`s functional status.
• The majority of problems were found at the level of Body Functions particularly in the area of mental functions.
• We got similar results when we used AMPS.
• AAA questioner where patient described his performance showed us that he was not aware of his limitations (discrepancy obvious and major).
• Self awareness is missing part in Brief ICF Core Sets for TBI. It is partially included in Comprehensive ICF Core Sets for TBI.
Conclusions

• ICF is based on bio-psycho-social model*,
• Positive side of ICF Core Sets is that they are significantly shorter,
• They are developed for specific health conditions,
• Brief core sets consists of a minimum number of concepts and is recommended for research purposes,
• Some experts criticize core sets that they are more like the medical model*.

• Occupational therapists will complemented ICF Core Sets with their tests which are more client-centered.

THANK YOU

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