Non-traditional Occupational Therapy Interventions that Promote Community Reintegration for Individuals with Stroke

Man Wa Shing
Pacific University

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Non-traditional Occupational Therapy Interventions that Promote Community Reintegration for Individuals with Stroke

Disciplines
Occupational Therapy

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Non-traditional Occupational Therapy Interventions that Promote Community Reintegration for Individuals with Stroke

Prepared by: Man Wa Shing, OTS (shin5186@pacificu.edu)
Date: December 2011
Review date: December 2013

CLINICAL SCENARIO:

Individuals with stroke who received multidisciplinary services are more likely to live independently at home one year after stroke (Stroke Unit Trialists’ Collaboration, 2007). However, following discharge, individuals with stroke often feel isolated and have decreased engagement in activities they previously enjoyed. (Rittman, Boylstein, Hinojosa, Hinojosa, & Haun, 2007). In addition, community reintegration remains a challenge for individuals with stroke due to decreased self-efficacy and opportunities to regain self confidence (Wood, Connelly, & Maly, 2010).

In 2006, Latham et al. conducted a descriptive study to summarize the current clinical practice of occupational therapy interventions in six inpatient stroke rehabilitation hospitals. About 40% of the occupational therapy services provided focus on life skills such as activities of daily livings (ADLs) and some instrumental activities of daily living (IADLs). Only about 12% of the services focus on leisure, home management, or community integration. Preparatory activities were used in more than half of the therapy time establishing or restoring body function and structure, or motor skills such as upper extremity control, passive range of motion, postural awareness, sitting balance, etc.

Other non-traditional interventions such as early supported discharge, use of outdoor powered wheelchairs, family-centered leisure education, driving rehabilitation, and attainment of social support had been shown to promote community reintegration for individuals with stroke. Such results suggest that occupational therapy services should increase focus on other important areas of occupation to promote community reintegration for individuals with stroke.

FOCUSED CLINICAL QUESTION:

What non-traditional occupational therapy interventions promote community reintegration for individuals with stroke?

SUMMARY of Search, ‘Best’ Evidence’ appraised, and Key Findings:

- A total of five studies were selected with each study investigating a different non-traditional intervention: early supported discharge, use of outdoor powered wheelchair, family-centered leisure education, driving rehabilitation, and attainment of social support.

- The Mayo et al. (2000) study was deemed as best evidence. A randomized control trial design was used to investigate the benefits of early discharge with home rehabilitation for 114 individuals with stroke. The study concluded that early supported discharge decreases the total length of stay by an average of 6 days and yield better outcome in IADLs and community reintegration than current standard practice.

- The Pettersson, Tornquist, and Ahistrom (2006) study investigated the impact of outdoor powered wheelchairs, Ryan, Stiell, Gailey, and Makinen (2008) evaluated a family-centered leisure education program, Finestone et al. (2010) explored the role of driving status, and Beckley (2007) analysed the effects that qualitative vs. quantitative social support had on community reintegration for individuals with stroke. The results of all four studies showed a significant increase on the level of community reintegration for individuals with stroke.
**CLINICAL BOTTOM LINE:** Other non-traditional interventions: early supported discharge, use of outdoor powered wheelchairs, family-centered leisure education, driving rehabilitation, and attainment of social support, are effective in promoting community reintegration for individuals with stroke. OT services should increase focus in important areas of occupation other than ADLs.

**Limitation of this CAT:** This critically appraised topic has been reviewed by a fellow 2nd year graduate student of the Master Occupational Therapy program. This is not a complete and exhaustive literature research of this topic; only five critically appraised papers were included.

**SEARCH STRATEGY:**

The following terms were used to search in the database of Medline & CINAHL on September 2011. Title and abstract of the articles were reviewed for relevancy of this topic.

**Terms used to guide Search Strategy:**
- **Patient/Client Group:** stroke
- **Intervention (or Assessment):** driving, social support, leisure
- **Comparison:** N/A
- **Outcome(s):** community reintegration, community integration, community participation

<table>
<thead>
<tr>
<th>Databases and sites searched</th>
<th>Search Terms</th>
<th>Limits used</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDLINE - OVID</td>
<td>Search keyword “stroke” AND “community integration”</td>
<td>N/A</td>
<td>20 articles Finestone et al. (2010)</td>
</tr>
<tr>
<td></td>
<td>Search keyword “stroke” AND “community reintegration”</td>
<td>N/A</td>
<td>19 articles Mayo et al. (2000)</td>
</tr>
<tr>
<td></td>
<td>Search keyword “stroke” AND “community participation”</td>
<td>N/A</td>
<td>18 articles Beckley (2007)</td>
</tr>
<tr>
<td>CINAHL - EBSCOhost</td>
<td>Search keyword “stroke” AND “community integration”</td>
<td>Exclude Medline records</td>
<td>34 articles Ryan et al. (2008)</td>
</tr>
<tr>
<td></td>
<td>Search keyword “stroke” AND “community participation”</td>
<td>Exclude Medline records</td>
<td></td>
</tr>
</tbody>
</table>

**INCLUSION and EXCLUSION CRITERIA**

- **Inclusion:**
  - Participants must be individuals with stroke
  - Outcome measure must be community reintegration
  - Peer reviewed articles
- **Exclusion:**
  - Interventions are traditional ADLs and basic IADLs training
RESULTS OF SEARCH

Five most relevant studies were selected and categorized as shown in Table 1 (based on Levels of Evidence, Oxford Centre for Evidence Based Medicine, 2011)

Table 1: Summary of Study Designs of Articles retrieved

<table>
<thead>
<tr>
<th>Study Design/Methodology of Articles Retrieved</th>
<th>Level</th>
<th>Number Located</th>
<th>Author (Year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randomized control trials</td>
<td>I</td>
<td>1</td>
<td>Mayo et al. (2000)</td>
</tr>
<tr>
<td>Historical controlled study</td>
<td>IV</td>
<td>1</td>
<td>Beckley (2007)</td>
</tr>
</tbody>
</table>

BEST EVIDENCE


Reasons for selecting this study were:
- Highest level of evidence (randomized controlled trial) of the five critically appraised papers
- Large sample size (n=114)
- Multiple measurements were used looking at various outcomes
- Intervention was non-traditional
- Obtained statistically significant findings that support research question

SUMMARY OF BEST EVIDENCE

Table 2: Description of randomized controlled trial by Mayo et al. (2000)

Aim/Objective of the Study: The purpose of this study was to investigate the benefits of early discharge with home rehabilitation for individuals with stroke. It was hypothesized that those who received early supported discharge with home rehabilitation would have shorter acute care length of stay, better physical health, community reintegration, and general functions than those who received standard care with no negative effects on basic motor and function recovery.

Study Design: This study was a randomized controlled trial with participants from 5 different acute-care hospitals. Participants were stratified by site and balanced with block method for randomized assignment to home care or usual care. Data were collected before randomization, immediately after the 4-week intervention (1-month follow-up), and two months later upon termination of intervention (3-month follow-up). Assessments were completed by trained physical and occupational therapists who were not involved in the intervention and were blinded about group assignment.

Setting: 5 acute-care hospitals in Montreal, Canada

Participants: A total of 114 participants were recruited. Participants were recruited from the 5 acute-care hospitals. Inclusion criteria were diagnosed with stroke, have persistent motor impairment due to stroke, living with a caregiver, able to ambulate with 1 person assisting by 28 days post-stroke. Individuals with cognitive impairments (had 5+ errors on Short Portable Mental Status Questionnaire) and co-morbidity of chronic illness (i.e. required dialysis or paraplegia) were excluded.

Home care group consisted of 37 males and 21 females with average age of 70.3. Usual care group consisted of 40 males and 16 females with average age of 69.6. There were no significant difference on key demographics or baseline between home care and usual group. A total of 7 participants dropped out...
from home care group, 4 due to refusal, 1 due to illness, and 2 due to death. A total of 11 participants dropped out from usual care group, 7 due to refusal, and 4 due to relocation/ unavailable.

**Intervention Investigated:**

**Control (Usual care):** Participants received standard practices for discharge and/or referrals to other services (physical/occupational/speech therapy) as prescribed by physicians. Services may include extended acute hospital stay, inpatient/outpatient rehabilitation, or home care.

**Experimental (Home care):** Participants were to discharge to home when medically stable (determined by Stroke Ready for Medical Discharge Checklist) with immediate follow-up with nursing, physical, occupational, speech therapy, and dietary services. Rehabilitation services were provided at home with duration and frequency determined by the therapists based on evaluation. Participants were to have only one therapy session a day and at least one nursing home visit and continuous monitoring via telephone. Home visits may be on a therapy day. Additional home visits were provided as needed.

**Outcome Measures:**

<table>
<thead>
<tr>
<th><strong>Primary Outcome</strong></th>
<th><strong>Secondary Outcomes</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Health-related quality of life</td>
<td>Physical Component Summary of the Medical Outcomes Study Short Form-36 (SF-36)</td>
</tr>
<tr>
<td></td>
<td>36 items - 8 scales with max. 100 points Standardized score: mean=50 &amp; 1 SD=10 Higher score indicates better quality of life</td>
</tr>
<tr>
<td>Impairment</td>
<td>Canadian Neurological Scale (CNS)</td>
</tr>
<tr>
<td>Stroke Rehabilitation Assessment of Movement (STREAM)</td>
<td>Rate stroke severity Consciousness, orientation, speech, and motor function of leg, arm, and face 6.0, on the range of 1.5-11.5, is the cut-off score for mild stroke from severe stroke</td>
</tr>
<tr>
<td>Disability</td>
<td>Disability – Timed Up &amp; Go (TUG)</td>
</tr>
<tr>
<td>Barthel Index for basic activities of daily living (BI-BADLs)</td>
<td>Measure functional independence Ten ADLs (bowel/bladder control, self-care, ambulation, &amp; stair) Scores indicate the amount of assistance needed</td>
</tr>
<tr>
<td>Older Americans Resource Scale for instrumental activities of daily living (OARS-IADLs)</td>
<td>7 items (telephone, travelling, shopping, meal preparation, completing homework, medication &amp; finance management) Score ranges from 0-14 with 14 as no difficulty with any activities</td>
</tr>
<tr>
<td>Handicap</td>
<td>Reintegration to Normal Living (RNL) Index</td>
</tr>
<tr>
<td></td>
<td>11 items (recreation &amp; social participation, community mobility, comfort with family roles and relationship with others) Score ranges from 0-22 with higher score indicates poor integration</td>
</tr>
</tbody>
</table>

Trained physical and occupational therapists performed the assessments before randomization, upon completion of the 4-week intervention (1-month follow-up), and 2 months after intervention (3-month follow-up). They were not part of the intervention team and were blinded about group assignment.

Baseline data of SF-36, OARS-IADLs, and RNL were not collected due to possible inaccurate reporting given that participants were still hospitalized.

Prepared by Man Wa Shing (Nov. 2011). Available at http://commons.pacificu.edu/otcats
Main Findings:
Length of Stay and Service Received

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Home Care</th>
<th>Usual Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Stay in Acute Care</td>
<td>9.3 days</td>
<td>12.4 days</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>6 visits</td>
<td>9 visits</td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>4 visits</td>
<td>5 visits</td>
</tr>
<tr>
<td>Speech Therapy</td>
<td>2 visits</td>
<td>2.5 visits</td>
</tr>
<tr>
<td>Nursing Service</td>
<td>2 visits</td>
<td>4 visits</td>
</tr>
</tbody>
</table>

Primary Outcome Measure: Physical Health

Physical Health was measured by SF-36 Physical Component Summary. For the Home Care, the mean score was 39.5 at 1-month follow-up and 42.9 at 3-month follow-up. For Usual Care, the mean score was 37.2 at 1-month follow-up, and 37.9 at 3-month follow-up. The group difference had statistical significance with p=0.048 at 1-month and p=0.018 at 3-month follow-up.

The 8 subscales of the Physical Component Summary were compared individually. The Home Care had higher scores than the Usual Care on 3 subscales at 1-month and 6 subscales at 3-month follow-up. Nevertheless, only the Role Physical subscale had statistical significance (p=0.019 at 1-month, p<0.0001 at 3-month follow-up).

Secondary Outcome Measures: Impairment, Disability, and Handicap

STREAM was used to measure impairment with higher score indicating better outcome. The STREAM mean scores at 3-month were 93.3 for Home Care and 92.9 for Usual Care, which was statistically significant of p<0.0001.

TUG was used to measure disability with lower scores indicating better outcomes. The TUG mean scores at 3-month were 14.1 for Home Care and 12.7 for Usual Care with statistical significant of p<0.0001. BI-BADLs was used to measure disability with higher score indicating better outcomes. The BI-BADLs mean scores at 3-month were 97.1 for Home Care and 95.1 for Usual Care with statistical significance of p<0.0001. The OARS-IADLs was used to measure disability with higher score indicating better outcome. The OARS-IADLs mean scores at 1-month were 10.1 for Home Care and 8.6 for Usual Care with statistical significance of p=0.0324, at 3-month were 11.0 for Home Care and 9.5 for Usual Care with statistical significance of p=0.018.

RNL was used to measure handicap with lower score indicating better outcome. The RNL mean scores at 3-month were 4.0 for Home Care and 5.7 for Usual Care with statistical significance of p=0.006.

Original Authors’ Conclusions:

The authors concluded that individuals with stroke who received early supported discharge with home rehabilitation had better improvements in physical health, IADLs skills, and community reintegration than those who received standard care. Moreover, those who received early supported discharge with home rehabilitation had a shorter length of stay in the acute care setting by an average of 6 days than those who received standard care. Early supported discharge with home rehabilitation had no hindrance on basic motor and functional recovery.

Due to an inclusion criterion that required participants to have an available caregiver upon discharge, a large number of potential participants were excluded. Many of those individuals without caregiver returned home alone and without services. The authors believe that those individuals without caregiver would also benefit from the early supported discharge with home rehabilitation services.
CRITICAL APPRAISAL OF BEST EVIDENCE

Table 3: Appraisal of randomized controlled trial by Mayo et al. (2000)

Validity:
Several effective methodologies were used to maximize the validity of the Mayo et al. (2000) study. The study used a randomized controlled trial design with stratified, blocked and balanced method for random assignment to minimize confounding variables and to produce comparable groups with similar characteristics. The use of a large sample size of 114 participants from five different acute setting facilities ensured representation of the population and production of statistically significant and reliable results. Data collectors were not involved in either intervention and were blinded to group assignment to reduced interviewer bias. Multiple assessments were used to measure outcomes. In addition, widely recognized assessments with good validity and reliability were chosen to minimized measurement bias.

Despite the methodical design, several possible biases needed to be noted. The study acknowledged a possible response bias due to the inability to blind subjects regarding group assignment. Participants in the Home Care group may have consciously or subconsciously reported more favorable outcomes on self-report assessments. Nevertheless, the pattern of outcome measures was not consistently favoring Home Care group as predicted by response bias. Selection or sampling bias may have occurred. Ethnicity of the participants was not reported. Six hundred and six individuals with stroke (approximately 39% of potential participants) were excluded due to not having a caregiver upon discharge. Four hundred twenty-eight individuals with stroke (approximately 28% of potential participants) were excluded for requiring assistance from more than one person in ambulation by 28 days after stroke. The exclusion of such large numbers of potential participants may suggest omission bias in sample selection.

PEDro score for the Mayo et al. (2000) study was 7 out of 10. Two points were deducted for inability to blind the participants and therapists who provided the intervention. One point was deducted for the lack of intention to treat analysis of data from the drop-out participants.

Interpretation of Results:
The Mayo et al. (2000) study did not present all the data. Only results with statistical significance were presented in the tables. In addition, effect values and p values were given in the footnote of the tables only if they had statistical significant. The study did indicate that the 5-point difference between the improvements of the Home Care and Usual Care groups was statistically significant. Overall the results favored the Home Care intervention.

Summary/Conclusion:
Mayo et al. (2000) study was well designed. In addition to its randomized controlled trial design, it had a large sample size. Many measures were taken to maximize validity. Unpreventable bias was acknowledged. Moreover, the statistical results showed some very significant differences (p<0.0001) between the improvements of the Home Care and Usual Care groups.

Early supported discharge with home rehabilitation services was deemed more efficient and effective than current standard practice for individuals with stroke. This suggested that our current standard of care for individuals with stroke may not be the most efficient and effective practice. There is a strong need to explore other non-traditional interventions that may be more efficient and effective.

ADDITIONAL STUDIES
Four additional non-traditional OT interventions (outdoor powered-wheelchair, family-centered leisure education, driving status, and social support) for individuals with stroke were reviewed and summarized in Table 4.
**Table 4:** Characteristics of included studies

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>Health Science</td>
<td>Recreational Therapy</td>
<td>Physical Medicine</td>
<td>Occupational Therapy</td>
</tr>
<tr>
<td><strong>Country</strong></td>
<td>Sweden</td>
<td>Canada</td>
<td>Canada</td>
<td>USA</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td>Outdoor powered wheelchair</td>
<td>Family-centered leisure education program</td>
<td>Driving status</td>
<td>Qualitative vs. quantitative social support</td>
</tr>
<tr>
<td><strong>Study Design</strong></td>
<td>Before &amp; after</td>
<td>Before &amp; after</td>
<td>Before &amp; after</td>
<td>Correlational</td>
</tr>
<tr>
<td><strong>Sample size</strong></td>
<td>n = 32</td>
<td>n = 17</td>
<td>n = 43</td>
<td>n = 95</td>
</tr>
<tr>
<td><strong>Outcomes used</strong></td>
<td>Study-specific questionnaire Life-events checklist Individually Prioritized Problem Assessment (IPPA) International Classification of Functioning, Disability and Health (ICF) The World Health Organization Disability Assessment Schedule II [translated into Swedish]</td>
<td>Leisure Diagnostic Batter (LDB) Community Participation Confirmation Interview (CPCI)</td>
<td>Functional Independence Measure (FIM) modified Cumulative Illness Rating Scale (CIRS) Beck Depression Inventory-2nd Ed (BDI-II) Short Form-36 version 2.0 (SF-36v2) Reintegration to Normal Living Index (RNL)</td>
<td>Reintegration to Normal Living Index (RNL)</td>
</tr>
<tr>
<td><strong>Findings</strong></td>
<td>Outdoor powered wheelchair decreased or resolved limitations and restrictions to activity participations, thereby increasing leisure participation for individuals with stroke.</td>
<td>Family-centered leisure education increased the spouses’ perception of leisure competence of the individuals with stroke, decreased the couple’s perceived barriers, and increased community involvement.</td>
<td>Drive status contributed to the individual’s level of community integration regardless of the availability or usage of alternative transportations.</td>
<td>Social support was associated with community reintegration with quantity of social support having a slightly greater influence than quality of social support.</td>
</tr>
</tbody>
</table>
IMPLICATIONS FOR PRACTICE, EDUCATION and FUTURE RESEARCH

For Practice

Although rehabilitation services for individuals with stroke have been revolutionized over the years, there is still a need for continuous improvement. Many individuals continued to suffer from the residual impairments from the stroke. Reduced social contacts and decreased leisure engagement greatly impact one’s quality of life. Community reintegration continues to be a struggle.

In 2008, Korner-Bitensky, Desrosier, and Rochette conducted a national survey to explore the current occupational therapy stroke rehabilitation practice in Canada. The authors discovered that none of the occupational therapists used standardized assessments that focus on participation. Less than half of the occupational therapists provided interventions with the focus of social or leisure participation. Such findings suggested that there is “a gap between what could be done to enhance community reintegration and what is done” (p. 296).

According to the American Occupational Therapy Association, occupational therapy practitioners help individuals of all ages to participate in activities that they want and need to do (2011). It is important to regain basic self-care skill to increase independence. However, occupational therapy practitioners need to look beyond self-care and increase our focus on other important areas of occupation.

Other important areas of occupation include community mobility, leisure pursuit, and social interaction. Pettersson et al. (2006) investigated outdoor powered wheelchair and Finestone et al. (2010) explored driving status of individuals with stroke. The findings from both studies suggested that limited community mobility restricted community reintegration of individuals with stroke. As occupational therapy practitioners, we need to explore independent transportation options in collaboration with the individuals with stroke to assist them in their transition to home and community.

Many times community mobility determines our access to leisure activities. Surprisingly, family member’s perception also determines the access to leisure activities for individuals with stroke. Pure activity engagement with their partners, spouses and significant others greatly increased their perception of the ability of the individuals with stroke (Ryan et al, 2008). Subsequently the individuals with stroke had more opportunities to demonstrate independence and participate in the community. As occupational therapy practitioners, we need to continue to involve family members in the recovery process and help them recognize the capability of the individuals with stroke.

While family members contribute greatly to the recovery process, the quantity of the social support may have a greater influence in community reintegration than the quality of social support (Beckley, 2007). As occupational therapy practitioners, we need to assist individuals with stroke to develop social opportunities to increase community involvement. A 10-min interaction with a store clerk may be more valuable than a 2-minute interaction with a family member.

Finally, as the Mayo et al. (2000) study demonstrated that stroke rehabilitation services in the actual environment (at home) are most beneficial. This omitted the step of learning the skills in a stimulated environment and generalizing it to the home environment. As occupational therapy practitioners, we can improve the effectiveness of our service by providing occupation-based interventions and creating an environment that is as close to the actual environment as possible to increase carrying over skills of the individuals with stroke at home and in the community.
For Education

It is definite that occupational therapy academic programs need to continue to provide education on stroke rehabilitation with focus beyond self-care to all areas of occupation. Education for the public, such as policy makers and third-party payers, are particularly needed. Insurance policy and reimbursement guidelines have a strong influence in our focus of interventions. We need to educate the public that social and leisure participation are important components of our lives. Policy makers and third-party payers need to support the occupational therapy services that enhance social and leisure participation.

For Research

The gap between research and practice needs to be lessened. The knowledge gained in the scientific world needs to be applied in practice. Furthermore, the trend toward emphasizing evidence-based practice will continue to impact the delivery of occupational therapy. The threat of payment denial for non-evidence-based interventions will likely persist. We need to conduct research to support our field of practice. We need to explore additional non-traditional occupational therapy interventions to achieve best practice.
REFERENCES


