■ **ORIGINAL ARTICLE**

Long-term Effects of a Group Community-based Constraint-induced Movement Therapy on Motor Recovery and Activities of Daily Living in Community-dwelling Older Adults with Chronic Stroke: A Preliminary Study with 6-month Follow-Up

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Abstract: The standard one-on-one constraint-induced movement therapy (CIMT) recently gained widespread acceptance as a means of effective stroke rehabilitation, but inherent issues associated with cost-effectiveness, safety, lack of dynamic group interaction, and compliance hampered this novel approach. This preliminary study highlights the effect of the group community-based CIMT, which integrated the concepts of the standard CIMT regimen. Eight participants were recruited from a local city community center and trained in the usage of mittens and safety management on the affected upper extremity for 90% of the hours when awake. The community-based CIMT was provided for 2 hours a day over 10 days. Outcome measures include motor recovery, strength, amount of use and quality of movement, self-perceived occupational performance and satisfaction as well as other psychological factors such as motivation, compliance, and enjoyment. These results all showed significant improvement after intervention and were maintained even after the 6-month follow up (P<0.05).

Key words: Canadian occupational performance measure, constraint-induced movement therapy, motor recovery, stroke

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Introduction

Grasping and manipulation are an important basis for normal fine motor skills associated with preparing a meal, gardening, and handwriting (Kwakkel, 1999). In stroke, however, these motor functions are commonly affected (Carr et al.,

1998). As many as 70–80% of all stroke survivors continue to suffer from this residual fine motor dysfunction even after they regained functional independence in ambulation (Wade et al., 1983). Hemiparetic stroke patients tend to compensate with the unaffected or less affected hand rather than re-utilizing the affected hand in their activities of daily living (ADL) (Taub et al., 2006). Subsequently, this leads to disuse or learned non-use of the affected limbs and further impairs fine motor skills in the involved limb (Taub et al., 2006). To restore lost motor skills, improve quality of life, and reduce the long-term socio-economic cost from stroke, annual cost for stroke is estimated to be as much as 30–40 billion dollars (Dobkin, 1995). Hence, there is a great demand for cost-effective stroke intervention to improve motor recovery and skills of the affected limbs.

To improve motor recovery, different neurorehabiliation approaches, including neurodevelopmental treatment (NDT) (Dickstein et al., 1986), muscle reeducation training using functional electrical stimulation (Handa et al., 1987) biofeedback training (Wolf et al., 1983), virtual reality, strength training (Ada et al., 2006), and a various array of constraint-induced movement therapy (CIMT) have been used, but the outcome results were variable (Page et al., 2002; Taub et al., 1999). Among them, the CIMT evolved and accumulated sufficient evidence as an effective intervention paradigm to address the learned non-use of the involved hand, associated muscle weakness and motor skills. For example, an intensive, one-on-one CIMT was found to produce measurable functional motor improvement in a child with a hemiparetic cerebral palsy (Gordon et al., 2005) and adults with chronic hemiparesis (Liepert et al., 1998), but its practicality in a clinical setting warrants further study due to cost-effectiveness, safety, and compliance issues (Page, 2002; Underwood et al., 2006). It was suggested that a community-based CIMT program could help reduce socio-economic costs and also increase accessibility for a number of community dwelling people suffering from chronic hemiparetic stroke (Pang et al., 2006).

To overcome these potential limitations with the conventional CIMT (Hakim et al., 2005; Yen et al., 2005), we have developed a group community-based CIMT paradigm where eight hemipareitc stroke patients were grouped and given CIMT for 2 hours a day, 5 times a week over 2 weeks at a local health community center. Our specific aim was to investigate whether the community-based group CIMT was effective in improving motor recovery of the affected upper extremity, muscle strength, and associated occupational performance. Motor recovery, muscle strength, hand dexterity, occupational performance and satisfaction associated with ADL were assessed by the standardized Fugl-Meyer assessment (FMA), strength test, gross motor dexterity, and Canadian occupational performance measure (COPM), respectively at pretest, post-test, and a 6-month follow-up test. Additionally, a post-intervention survey about enjoyment, motivation, meaningfulness, compliance, accessibility, social interaction, and fatigue related with the participation in therapy was implemented.

Methods

Participants

A convenience sample of 8 older adults with chronic hemiparetic strokes who met the inclusion criteria for CIMT was recruited from the local community. Initially, the total number of 120 target population who registered in the handicap beneficiary recipient list of a local city health center in the city of Wonju was screened for eligibility via a telephone interview. Of 120, only 8 subjects who met the inclusion and exclusion criteria provided signed consent before the participation. The inclusion criteria for CIMT encompass: 1) ≥6 months post-stroke onset; 2) the ability to perform 45° shoulder flexion and abduction, 90° elbow flexion and 20° wrist extension, and 10° finger range of motion (ROM) (Taub et al., 1999). Exclusion criteria included severe cognitive (>22 in the mini-mental state examination, MMSE) and verbal (e.g., receptive aphasia) dysfunctions and non-ambulatory. Additionally, confidentiality was protected to comply with the requirements of ethics and national laws. For example, dummy code procedure and security cabinet were used to

Table 1. Demographic and clinical characteristics of the participants

Participants	Age	Gender	paretic side	Dominant hand	Post-stroke onset time (months)
1	63	F	R	R	6
2	68	M	R	R	144
3	68	M	R	R	48
4	67	M	L	R	60
5	71	M	R	R	24
6	38	M	L	R	33
7	65	F	L	R	24
8	65	M	L	R	48
Mean ± SD	63.13 ± 10.44				48.38 ± 42.23

SD: standard deviation, F: female, M: male, R: right, L: left.

protect identification of participant and safe security. Subjects' demographic and clinical characteristics are shown in Table 1.

Intervention

Intervention was provided at a local the community health clinics of Kangwon province, South Korea. As with the conventional CIMT developed by Taub (2000), the concept and principles of our community-based group CIMT consisted of two components. First, the participants were educated in the usage of restraining mittens and safety management on the unaffected upper extremity for 90% of the hours when awake. Secondly, "shaping" of the CIMT training procedures was then initiated (Morris et al., 2006). Experienced therapists in CIMT provided the intervention for 2 hours a day over 10 days. "Shaping" is a form of motor behavioral technique to develop a target motor behavior by means of presenting motivating and functional activities to the participants (Uswatte et al., 2006). Specifically, this self-directed CIMT exercise included (1) moving objects from one shelf to another; (2) throwing little balls in a bucket; (3) delicate motor practice such as fastening nuts on bolts, putting pegs in a board, buttoning and unbuttoning, rubbing and pressing therapeutic putty; (4) using a spoon and chopstick; (5) brushing of teeth, and so on. Before the intensive training, the participants and the therapist met as a group to discuss efforts how to effectively use the more affected hand, exercised the day before at home, and also to encourage their efforts to continue participating in the training period.

Positive feedback including visual, verbal or tactile cues was given to direct the desirable motor skill acquisition whereas positive reinforcement including immediate and frequent praise or cheering, supportive gestures was provided whenever the participants made meaningful efforts and progressed toward a novel task with an increase in the utilization of the affected extremity (Smania, 2006). Based on the motor learning practice paradigm, functional reaching, grasping, and manipulation tasks along with bearing weight on the arm were broken down in ways that each participant could start practicing on an individual component of the whole task and systematically work toward the entire task (Shumway-Cook et al., 2001). Once the adult successfully acquired a novel motor skill, the therapist challenged him or her to internalize this by gradually increasing the motor task demands for accuracy, fluidity, consistency, strength, coordinated automaticity, and ecological carry-over (Morris et al., 2006). The CIMT was also integrated with daily tasks including preparing a meal, shaving, dressing, eating, and grooming in typical home situations. Shaping motor skills were developed considering (1) client centered goals, motivational and meaningful activities, age- and gender-appropriate self-help skills and independence as determined by the client-centered COPM assessment; and (2)

therapeutic exercises that therapists recommended for optimal functional improvement (Taub, 2000). No additional treatment was provided because all the participants had already completed a routine course of stroke rehabilitation before their participation of this intervention.

Clinical measurements

The pre-test, post-test, and follow-up-tests were scheduled at baseline, 2 weeks after the baseline test, and a 6-month post-intervention, respectively. The standardized motor recovery, muscle strength, and functional motor skill tests were used to determine intervention-related changes in motor recovery, strength, and associated daily living activities and motor skills of the affected upper extremity. In addition, we performed a survey about enjoyment, motivation, meaningfulness, and compliance. The standardized tests included the Fugl-Meyer assessment (FMA), hand grip and pinch strength test, box and block test, and the Canadian occupational performance measure (COPM). The validity and reliability for these standardized tests are well established (Desrosiers et al., 1994; Fugl-Meyer et al., 1975; Law et al., 1990; Mathiowetz et al., 1985). The mean value of three successive trials was calculated in all tests and was used in further statistical analysis.

Fugl-Meyer Motor Assessment (FMA): FMA was used to assess motor recovery of the affected upper extremity and hence only the upper extremity subset of FMA was utilized. The upper extremity subset of FMA includes range of motion, pain, sensation, reflex, synergy, coordination, and speed. The scores ranged from 0 (lowest) to 66 (highest) points (Fugl-Meyer et al., 1975).

Box and Block Test (BBT): The box and block test was used to measure unilateral manual dexterity. The test involves a hand motor performance task that requires moving as many blocks as possible from one container to the other within one minute. An increase in the number of blocks moved represents better performance in manual hand dexterity (Mathiowetz et al., 1985).

Hand strength: Grip and pinch strength were measured with a Jamar dynamometer (Asimow Engineering, US) and pinch gauge (B & L Engineering, US), respectively. For both tests, the subjects were asked to sit on a chair with shoulder adduction, 90° elbow flexion and the wrist in a neutral position. The subjects were then instructed to maximally grip the dynamometer handle for 5 seconds without any compensatory movement. The pinch strength was determined by asking the subjects to maximally press a pinch gauge for 5 seconds (Mathiowetz et al., 1985).

Activity of Daily Living: Canadian Occupational Performance Measure (COPM) : COPM was used to determine a client-centered occupational performance associated with activities of daily living. In the present study, the standardized COPM was used to assess functional carry-over or transfer effects of meaningful occupational performance of each client or individual. Compared to motor activity log (MAL), the advantage of this test is that it involves a semi-structured interview which measures both self-rated occupational performance and satisfaction in the domains of self-care, productivity, and leisure. Therefore, this test reflects the client's actual ADL performance and satisfaction accurately which cannot be measured by MAL. From this test, the top five problem areas were identified and self-rated by each individual based on a scale from 1 (unable to perform) to 10 (able to perform) and for satisfaction from 1 (not satisfied) to 10 (satisfied)(Carpenter et al., 2001; Law et al., 1994).

Post-intervention survey: Upon the successful completion of the intervention, all subjects were instructed to complete a post-intervention survey that asked about enjoyment, motivation, meaningfulness, compliance, accessibility, social interaction, and fatigue associated with therapy. The scale ranges from 1 (worst) to 4 (best).

Statistical analysis

The independent variable was a group community-based CIMT and dependent variables included motor recovery, strength, and occupational performance and satisfaction measures. The mean and standard deviation, and

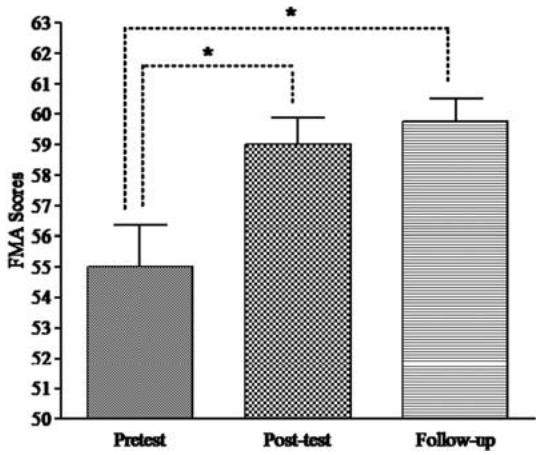

Fig. 1. Effects of the group community-based CIMT on FMA scores. **P*<0.05.

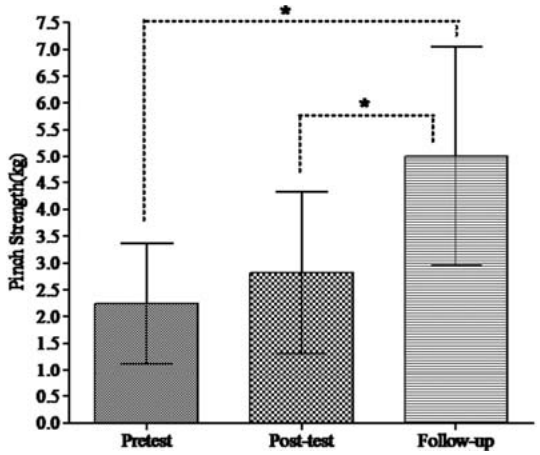

Fig. 2. Effects of the group community-based CIMT on pinch strength. **P*<0.05.

one-way repeated analysis of variance (ANOVA) were computed to compare intervention-related changes across three tests. Post-intervention survey data were analyzed using descriptive statistics. Statistical analysis was performed using SPSS (version 12). All significance level was set at $P<0.05$.

Results

Motor recovery

One-way repeated ANOVA analysis revealed a significant difference across the three points of measurement ($P=0.008$) (Table 3). Post hoc analysis showed that there were significant differences between the pretest and post-test scores ($P=0.012$) as well as between the pretest and follow-up test scores ($P=0.004$). However, there were no significant differences between the post-test and follow-up test scores ($P=0.613$). These findings suggest that the group community-based CIMT was effective in the restoration of motor recovery of the affected upper extremity and this effectiveness was retained in the follow-up test (Fig. 1).

Hand manual dexterity

ANOVA analysis showed no significant difference across the three tests ($P=0.822$). Specifically, post hoc analysis demonstrated that no significant differences between the pretest and post-test scores ($P=0.580$) as well as between the pretest and follow-up test scores ($P=0.605$) were observed. Similarly, these results indicated that the intervention was beneficial in the effective enhancement of manual hand dexterity in individuals with chronic hemiparesis. This intervention effect was maintained even at the 6-month follow-up test.

Muscle strength

Pinch strength data showed significant differences across the three points of measurement ($P=0.006$) (Table 3). Post hoc analysis confirmed that there were significant differences between the pretest and follow-up test scores ($P=0.002$) as well as between the post-test and follow-up test scores ($P=0.013$) (Fig. 2). However, grip strength data analysis was unaffected by this intervention ($P=0.788$). These results imply that only pinch strength was enhanced as a function of intervention and still remained after post-intervention.

Clients' perception of self-rated occupational performance

Table 4 presents significant intervention effects on the occupational performance and

Table 2. Individual Fugl-Meyer Motor Assessment data

Participants	Pretest	Post-test	6-month follow-up test
1	53	59	61
2	52	57	57
3	60	63	63
4	52	56	59
5	55	57	57
6	58	61	61
7	50	58	59
8	60	61	61
Mean ± SD	55.00 ± 3.89	59.00 ± 2.45	59.75 ± 2.12
P-value		0.008*	

SD: standard deviation, *P<0.05.

Table 3. Individual pinch strength (kg) data

Participants	Pretest	Post-test	6-month follow-up test
1	0.5	0.5	3.7
2	2	2	2
3	4	4.5	8.5
4	2.7	4.5	4.5
5	2	2	5
6	3.5	4	5
7	1.5	1.5	4
8	1.7	3.5	7.3
Mean ± SD	2.24 ± 1.13	2.81 ± 1.51	5.00 ± 2.05
P-value		0.006*	

SD: standard deviation, *P<0.05.

satisfaction scores. A significant difference across the three mean COPM performance scores was found (P=0.0001). Post hoc analysis showed that significant differences between the pretest and post-test scores (P=0.000) as well as between the pretest and follow-up test scores (P=0.000) were observed. However, there was no significant difference between the post-test and follow-up test scores (P=0.156) (Fig. 3). A significant difference across the three mean COPM satisfaction scores was found (P=0.0001). Post hoc analysis showed that significant differences between the pretest and post-test scores (P=0.000) as well as between the pretest and follow-up test scores (P=0.000) were observed. There was a significant difference between the post-test and follow-up test scores (P=0.021) (Fig. 4). These findings suggest that the perceived self-rated occupational performance improved after the intervention and was maintained even in the 6-month follow-up test.

Post-intervention survey

The survey revealed that all participants enjoyed the social interaction during the program; were highly motivated and supportive each other. They also reported that the therapy was extremely meaningful, realistic, individualized, and functional because it was a client-centered program. All participants showed perfect attendance, indicating an excellent compliance.

Table 4. Individual Canadian Occupational Performance Measure data

Participants	Performance scores			Satisfaction scores		
	Pre	Post	FU	Pre	Post	FU
1	3.70	7.70	8.60	4.30	7.30	8.60
2	6.00	6.00	7.50	3.50	4.50	7.50
3	1.30	8.30	8.30	3.30	8.00	8.30
4	1.70	7.30	7.30	2.30	7.30	7.60
5	2.00	7.70	7.60	3.00	8.70	8.30
6	4.00	7.30	8.30	3.00	7.70	9.00
7	1.80	6.30	8.00	2.00	5.30	7.80
8	2.30	4.60	6.70	2.00	4.20	7.30
Mean ± SD	2.85 ± 1.60	6.90 ± 1.20	7.79 ± 0.63	2.93 ± 0.80	6.63 ± 1.71	8.05 ± 0.59
P-value		0.0001*			0.0001*	

SD: standard deviation, Pre: pretest, Post: post-test, FU: 6-month follow-up test, **P*<0.05.

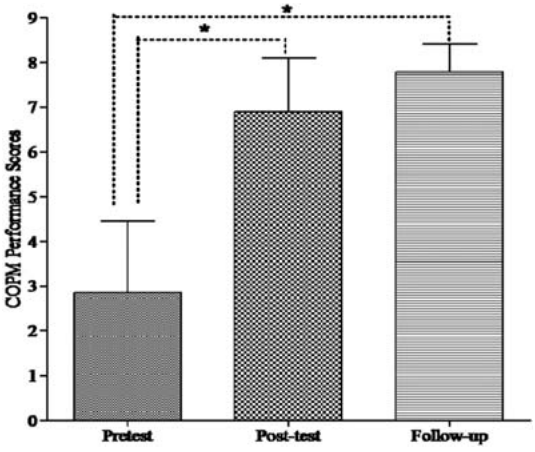

Fig. 3. Effects of the group community-based CIMT on COPM performance. **P*<0.005.

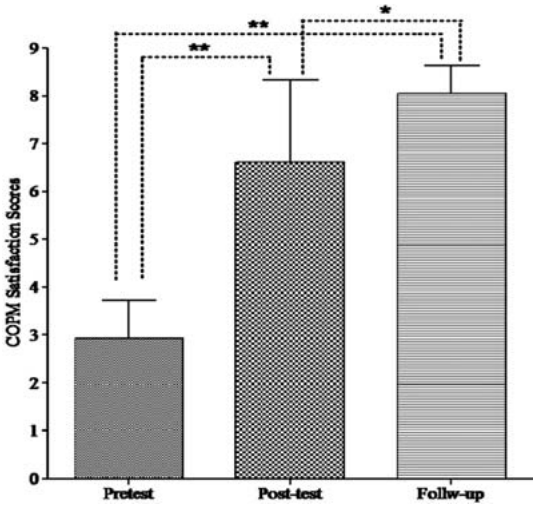

Fig. 4. Effects of the group community-based CIMT on COPM satisfaction. **P*<0.05, ***P*<0.001.

Discussion

Our basic assumption was that the group community-based CIMT may improve restoration of motor function, muscle strength, and associated ADL. As anticipated, our results demonstrated that motor recovery and associated ADL skills of the affected upper extremity increased after the intervention and these improvements were transferred to home environments and retained even during a 6-month follow-up. Certainly, our novel findings suggest that the group community-based CIMT paradigm can be an alternative approach which can appropriately address the socio-economic and compliance issues raised in the conventional CIMT. The target population is community-dwelling chronic stroke survivors and intervention implemented in community health

clinics to increase integration into the community.

Despite the fact that our community-based CIMT protocol had much less treatment time (2 hours a day for 2 weeks) and was implemented in a group session, the present study showed promising results which could favorably be compared to previous clinical trials investigating the effects of CIMT in stroke rehabilitation. Several CIMT studies have produced measurable neuroplastic changes and associated functional outcomes in participants with hemiparetic stroke (Bonifer et al., 2005; Dettmers et al., 2005; Sunderland et al., 2005). However, considering the current managed health care model, the CIMT approach which often requires a prolonged individual client-therapist session, and associated cost and compliance issues may not be viable, but rather demands for effective alternative neurorehabilitation programs. For example, it was documented that several undesirable behavioral patterns connected with individual client-therapist session for 5 to 6 hours a day during the standard CIMT resulted in boredom and fatigue coupled with stressful and depressing feelings and emotions (Boylstein et al., 2005). In fact, several patients who participated in the CIMT became depressed and required psychological consultations. On the contrary, in our community-based group CIMT intervention, we observed that all participants appeared to enjoy the dynamic group interactions which were evidenced by no attrition rate, perfect attendance, good compliance, supportive atmosphere, and positive body gestures (smile and appraise). Perhaps, the group session may have facilitated motivation and encouraged individual participant to obtain his or her goals via pleasant dynamic group interaction (Pang et al., 2006). Additionally, the cost-effectiveness is another advantage of our community-based group CIMT intervention. In fact, we can reduce the current therapy cost by as much as 50%.

In an attempt to offset cost while improving effectiveness that was neither attempted nor afforded by the standard one-on-one CIMT, recent studies (Lum et al., 2004; Page et al., 2005; Pang et al., 2006; Taub et al., 2005) started to modify the conventional CIMT approach. For example, the paradigm shifted from a clinic to a home setting, thus from an individual basis to a small group basis (2–3 persons), which in addition, resulted in reduced supervision time. However, to our knowledge, this is the first attempt examining the effectiveness of a group community-based CIMT on motor recovery, strength and occupational performance and satisfaction. Our FMA results showed significant changes in motor recovery as a function of intervention and this recovery continued to exist even 6 months after initial intervention. This motor recovery was further corroborated by significantly increased pinch strength and hand dexterity function. Similarly, clients' perception of self-rated occupational performance showed that all participants have achieved their established goals and reported higher satisfaction as evidenced by the COPM satisfaction score.

Most importantly, our primary inquiry addressed in this preliminary experiment, was supported by the fact that there were significant differences in the outcome measures of motor behaviors and ADL performance across the three test points. Such evidence seems to imply the notion that both reduced supervision or treatment time and a group-based approach used in our present group community-based CIMT regimen does not preclude a possible advantage or benefit. Further study warrants elucidating the potential equality or superiority in cost-effectiveness between the standard and group community-based CIMTs.

Post-intervention survey data showed that the participants reported psychosoical benefits including enjoyment, motivation, meaningfulness, compliance. For example, we observed no attrition rate, greater interaction with happy smiles, and supporting and encouraging each other. Probably, these benefits may have facilitated engagement on tasks and the amount of use and quality of the movement of the more affected limb during activities, which in turn contributed to motor recovery, strength, and self-perceived occupational performance and satisfaction.

Limitation of study and suggestions for future study

This preliminary study explored the feasibility of a community-based group CIMT program for the effective management of upper extremity motor dysfunction and associated grasping and manipulation performances in individuals with chronic stroke. Some shortcomings identified in this preliminary study that could assist in improving the design of future research include small sample size, and lack of a control group. Therefore, precaution should be exercised when interpreting our results. This study invites future research that should be implemented with a robust experimental design and a larger sample size to generalize our findings. It would be of great interest to compare cost-effectiveness between the community-based group CIMT and the conventional therapy models in future.

Conclusions

This present study represents a successful steppingstone toward the development of a group community-based CIMT program. Numerous stroke survivors are financially burdened and often discharged to home without receiving the benefits of an essential long-term rehabilitation program to maximize motor recovery (Lum et al., 2004). Consequently, stroke victims who were not properly rehabilitated may predispose them to fatal falls or other medically debilitating conditions such as pneumonia, contracture, decubitis ulcers, and atrophy due to a lack of physical activity and meaningful occupational performance (Taub et al., 2006). This may lead to a vicious cycle of physical disabilities and socio-economic constraint to the individual, family, and society at large. The group community-based CIMT program may thus be an alternative choice of intervention that embraces both emerging health promotion and prevention in individuals with chronic disabilities resulting from stroke. In addition, this program can accommodate a large number of community dwelling older adults and does not require individual attention as in the standard CIMT, thereby reducing costs and maximizing therapeutic efficacy.

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■ **ORIGINAL ARTICLE**

More Appropriate, Practical Outcome Measures in Clinical Trials for Rehabilitation: A Survey of Medical Literature from 1996–2005

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Abstract: This study aimed to characterize outcome measures used in trials of rehabilitation for stroke patients using the "International Classification of Functioning, Disability, and Health (ICF)". We investigated descriptions of randomized controlled trials (RCTs) published between 1996 and 2005. We then identified and classified outcome measures into three ICF-based categories: "body functions and structure," "activities and participation," and "other." Within rehabilitation RCTs, 21 focused on community residents and 20 focused on hospitalized patients. We identified 215 mentions of the measures in total and 103 types were used in 41 stroke rehabilitation RCTs from 1996–2005. Of the 41 articles, 7 were RCTs of occupational therapy while 6 RCTs focused on community residents. The percentage of outcome measures in the domain of "body functions and structures" has increased since ICF adoption. It is necessary to demonstrate evidence that outcome measures are useful in patient-oriented decision-making in occupational therapy and rehabilitation.

Key words: stroke, rehabilitation, occupational therapy, outcome measures

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Introduction

In order to maintain quality of life, stroke survivors require support such as proper living assistance and nursing care due to physical and mental disabilities. The Japanese society has been rapidly aging in recent years. Stroke mortality rate is decreasing (Health and Welfare Statistics Association, 2005), but cerebrovascular disorders including strokes comprise 29.1% of causes which require elderly patients to seek nursing care (Ministry of Health, Labour and Welfare, 2004).

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This trend is particularly pronounced among younger seniors, for whom this is the primary reason they require nursing care. Until they return to home life, stroke patients are recommended to continue to receive care for various disabilities from the period immediately after the stroke through the period of rehabilitation and maintenance (Shinohara, Yoshimoto, Fukuuchi, & Ishigami, 2004).

Evidence-based medicine (EBM) seeks to facilitate better decision-making in clinical medicine, integrate "patients' preferences and actions," "clinical state and circumstances" and "research evidence," and provide patients with the best treatment possible (Haynes, Devereaux, & Guyatt, 2002). These principles are applied to both individual clinical situations and public health (J.A. Muir Gray, 2004). Randomized controlled trials (RCTs) are thought to yield the best assessment of treatment efficacy (Shinohara, Yoshimoto, Fukuuchi, & Ishigami, 2004; Fletcher, Fletcher, & Wagner, 1996; Straus, Richardson, Paul Glasziou, & Haynes, 2005). In the field of occupational therapy, evidence is limited in both quantity and quality.

In May 2001, the World Health Organization (WHO) adopted the International Classification of Functioning, Disability, and Health (ICF) as a measure to assess human life functioning. Human life functioning and disability are classified by a total of 1500 items, which consist of domains such as "body functions and structure," "activities and participation," and "environmental factors" (World Health Organization, 2001). Furthermore, the codes for each medical condition are now being standardized (Geyh, Cieza, Schouten, Dickson, Frommelt, et al., 2004).

In rehabilitation of stroke patients, indicators for measuring effectiveness vary according to anatomical location and time from onset of the stroke. It is often true that different patients require different rehabilitation goals. Occupational therapists strive to help patients improve "occupational performance" in the hospital, at home, and within their community. Consequently, the evidence necessary to select the best treatment method varies by setting. As a result, gaps arise between patients and providers in treatment expectations and information-sharing, which make shared decisions regarding rehabilitation goals difficult. Geyh, Kurt, Brockow, Cieza, Ewert, et al. (2004) reviewed outcome measures used in stroke trials and found that the most frequently used ICF categories were "walking," "defecation functions," and "support and relationships, unspecified". Duncan, Jorgensen, and Wade (2000) reviewed RCT of pharmacological interventions in the acute phase of stroke and recommended that future studies include extended/instrumental activities and advanced mobility. It does seem, however, that clinical purpose and treatment effects vary depending on whether patients are community residents or hospital patients. To our knowledge, no studies have examined the effect of these settings on measurement trends.

This study was conducted to better understand RCT outcome measures in different settings. We divided target research articles into two groups according to the characteristics of research participants as community residents or hospital patients. We then investigated the outcome measures used in RCTs of stroke patient rehabilitation published between 1996 and 2005. We reviewed relevant literature and considered the following questions: (i) For the outcome measures used, was there a difference in percentages of the ICF domains, "activities and participation," and "body functions and structures" in RCTs focused on community residents versus hospital patients? (ii) Did percentages of ICF domains of the outcome measures differ between the period beginning 5 years before ICF adoption and 5 years after adoption? (iii) Did the special characteristics of outcome measures used in multiple studies differ between RCTs of community residents and hospital patients? (iv) For the outcome measures used, was there a difference in percentages of the ICF domains and analyzed outcome measures used in multiple studies in occupational therapy?

Methods

We performed a quantitative literature review. The method used can be divided into three main steps:

Step 1: Among studies on rehabilitation intervention for stroke patients that are listed in the medical database, MEDLINE (PubMed), we reviewed studies involving RCTs. For the current study, selection criteria included: (i) clinical medical research using human subjects, (ii) studies including subjects at least 65 years of age, (iii) studies noting that the distribution of intervention was random, (iv) studies written in English or Japanese, and (v) studies published between January 1, 1996 and December 31, 2005. Two searches were performed in PubMed as described below. The following types of studies were excluded from our review: designs which could be judged from the title or abstract not to involve RCT; designs involving pharmaceutical or surgical interventions; and studies which either did not clarify whether subjects were community residents or hospital patients, or combined both types of subjects.

[Search method 1]: Searched on May 18, 2006

Search: "Cerebrovascular Disorders" [majr] AND "rehabilitation" [majr]

Limits: Age of 65+years, English, Japanese, Publication Date from 1996 to 2005, Randomized Controlled Trial, Humans.

[Search method 2]: Searched on May 1, 2007

Search: "Cerebrovascular Disorders" [majr] AND "occupational therapy" [majr]

Limits: Age of 65+years, English, Japanese, Publication Date from 1996 to 2005, Randomized Controlled Trial, Humans.

Step 2: When reviewing research articles, we identified (i) the journal title and year of publication, (ii) whether research subjects were local residents or hospital patients, (iii) period of intervention, (iv) evaluation period used to measure outcome, and (v) outcome measures used.

Step 3: Outcome measures identified were divided into three domains in accordance with the ICF: "body functions and structures," "activities and participation," and "other," a category that includes factors such as environment and quality of life (QOL).

After steps 1 and 2 were performed by the first reviewer (TO), results were checked by a second reviewer (TN) when necessary to resolve any inconsistencies. In addition, steps 2 and 3 were checked against the results of third reviewer (CN), who worked independently of the first and second reviewers. Inconsistencies were also discussed by the first and third reviewers (TO, CN).

Next, the following analyses were performed: (i) comparison of the percentage of RCTs of community residents and hospital patients among the types of outcome measures used over a period of 10 years and the frequency of mentions of outcome measures; (ii) comparison of the percentage of studies from 1996–2000 and from 2001–2005 in terms of the types of outcome measures used and the frequency of mentions of outcome measures; (iii) examination of the number of times that outcome measures were used at least twice during the 10-year period and descriptions of the domains of these measures. Descriptive statistics were used to analyze the number of times the various outcome measures were mentioned. Data were analyzed statistically by the Chi-square and Fisher's exact test using SPSS 16.0 Japanese, whereby statistical significance was set at the 0.05 level. Then Bonferroni correction was made for multiple comparisons, after which statistical significance was set at the 0.017 level (p=0.05/3).

Results

Among the 70 articles found on PubMed in steps 1 and 2 of our process, there were 53 studies of rehabilitation intervention based on RCTs. Of these studies, 41 met the selection criteria by stating whether RCT subjects were community residents or hospital patients (21 RCTs focused on community residents, 20 RCTs focused on hospital patients), as shown in Fig. 1. Of the 41 articles that described rehabilitation intervention RCTs on specific subject types, 26 articles were published between 2001 and 2005. For the number of outcome measures used per study, the mode was 4 and the median was 5 (lowest 1, highest 10). For the number of outcome measures in each study analyzed by test subject, the mode was 3 and 7, and the median was 6 (lowest 2, highest 10) for RCTs of community residents, whereas in studies of RCTs of hospital patients,

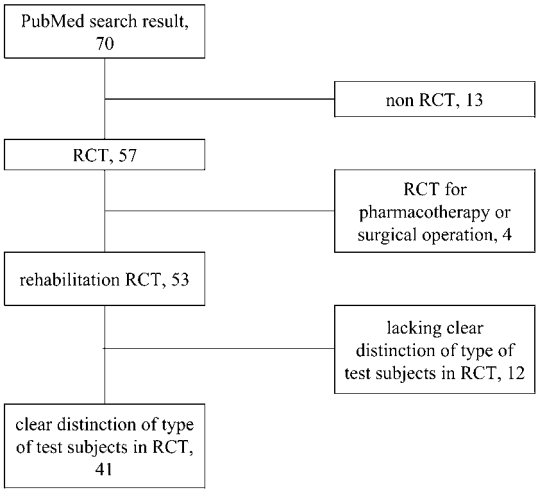

Fig. 1. RCT inclusion criteria for the present study

the mode was 4 and the median was 4 (lowest 1, highest 9).

Step 3 of our process demonstrated that all 41 studies used at least one outcome measure in the domain of "activities and participation." In stroke rehabilitation intervention RCT studies published in the 10-year period from 1996 to 2005, 103 types of outcome measures were used, with a total of 215 mentions of measures. Of the mentions of outcome measures, 62 (28.8%) were in the domain of "body functions and structures," 123 (57.2%) were in the domain of "activities and participation," and 30 (14.0%) were in the "other" domain.

The ICF breakdown of outcome measures used in RCTs of community residents and hospital patients is shown in Table 1. Of outcome measures mentioned in RCTs of community residents, 59.2% belonged to the domain of "activities and participation," which was greater than the 54.7% of outcome measures from the same domain in RCTs of hospital patients. On the other hand, there was a tendency for outcome measures in the domain of "body functions and structures" to constitute a greater percentage of total mentions of outcome measures among RCTs of hospital patients. However, no statistically significant difference was found in the composition of the two groups.

Table 2 compares the percentages of ICF outcome measures mentioned in studies from 1996–2000 and from 2001–2005. Mention of

Table 1. Outcome measures used in 41 RCTs in different patient settings

	Community residents		Hospital patients		*p* value*
	n	(%)	n	(%)	
All	120	(100)	95	(100)	
Body functions and structures	31	(25.8)	31	(32.6)	0.292
Activities and participation	71	(59.2)	52	(54.7)	0.579
Other	18	(15.0)	12	(12.6)	0.694

* Chi-square test and Fisher's exact test were used to determine the composition of the two groups.

Table 2. Outcome measures used in 41 RCTs

	1996–2000		2001–2005		*p* value*
	n	(%)	n	(%)	
All	78	(100)	137	(100)	
Body functions and structures	14	(17.9)	48	(35.0)	0.008
Activities and participation	50	(64.1)	73	(53.3)	0.152
Other	14	(17.9)	16	(11.7)	0.233

* Chi-square test and Fisher's exact test were used to determine the composition of the two groups.

Table 3. Comparison of outcome measures from different patient settings in 1996–2000 and 2001–2005

	1996–2000		2001–2005		*p* value*
	n	(%)	n	(%)	
Community residents					
All	39	(100)	81	(100)	
Body functions and structures	5	(12.8)	26	(32.1)	0.027
Activities and participation	26	(66.7)	45	(55.6)	0.322
Other	8	(20.5)	10	(12.3)	0.279
Hospital patients					
All	39	(100)	56	(100)	
Body functions and structures	9	(23.1)	22	(39.3)	0.122
Activities and participation	24	(61.5)	28	(50.0)	0.300
Other	6	(15.4)	6	(10.7)	0.542

* Chi-square test and Fisher's exact test were used to determine the composition of the two groups.

outcome measures in the domain of "body functions and structure" increased from 17.9% in 1996–2000 to 35.0% in 2001–2005, whereas mentions in the domain of "activities and participation" decreased from 64.1% in the earlier period to 53.3% in the later period. Thus, in recent years, percentage of outcome measures in the domain of "body functions and structures" has significantly increased (p=0.008). A comparison of studies from 1996–2000 and 2001–2005, sorted by type of test subject studied in RCT, is shown in Table 3. In RCTs of community residents, percentage of outcome measures in the domain of "body functions and structures" increased (p=0.027), however, it was not significant after the Bonferroni correction was made.

During the 10-year period between 1996 and 2005, 23 types of outcome measures (of a total of 63 types) were used in at least 2 RCTs of community residents, whereas 18 types (of a total of 57 types) were used at least 2 times in RCTs of hospital patients (of a total of 57) (Table 4). "Walking speed," "gait distance," and "Barthel Index" were used in studies of either group of test subjects. Although the "activities and participation" outcome measures used in RCTs of hospital patients consisted of measures related to basic movements and self-care, RCTs of community residents included measures related to handicaps and leisure.

Of the 41 articles found in steps 1 and 2, 7 were RCTs of occupational therapy, while 6 of these focused on community residents. In RCTs of occupational therapy for stroke patients published from 1996 to 2005, 23 types of outcome measures were used, with a total of 37 mentions of the measures. Of these, 6 (16.2%) were in the domain of "body functions and structures," 22 (59.5%) were in the domain of "activities and participation," and 9 (24.3%) were in the "other" domain. From 1996 to 2005, 5 types of outcome measures (out of a total of 21 types) were used in at least 2 RCTs of community residents (Table 5).

Discussion

We found that outcome measures in the domain of "activities and participation" represented over half of all outcome measures used in RCTs of either community residents or hospital patients. There were no major differences in the ICF composition between the two groups of participants. Given the advances in medical and rehabilitation management, it has been previously suggested that the currently used outcome measures that focus on functional assessment are limited (Jette, & Haley, 2005), and that there is a need to adopt measures related to more practically applicable movements within the domain of "activities and participation" (Geyh, Kurt, Brockow, Cieza, Ewert, et al., 2004). With regard to rehabilitation outcomes of adult stroke patients, assessment of stroke-related impairments and functional status and encouragement of patient

Table 4. Type and frequency of outcome measures used in ≥2 of 41 RCTs

Outcome measures in RCTs of community residents	RCT (times)	Outcome measures in RCTs of hospital patients	RCT (times)
Body functions and structures			
Maximum VO_2	3	National Institutes of Health Stroke Scale score	2
Muscular strength	5	Heart rate	2
Grasping power	2	Blood pressure	2
Fugl-Meyer Assessment	4	Ashworth Scale	4
		Fugl-Meyer Assessment	2
		Rivermead Motor Assessment Score	3
		Lower extremity portion of an early version of the Stroke Rehabilitation Assessment of Movement (STREAM)	2
Activities and participation			
Action Research Arm Test	2	Action Research arm test	2
Functional Reach Test	2	Berg Balance Scale	2
Motor Activity Log	2	Time for standing up/ sitting down	2
Jebsen Test of Hand Function	2	Gait distance (e.g., in 6 minutes)	6
Berg Balance Scale	5	Walking speed (e.g., in a 10 m gait)	8
Timed Up and Go test	2	Maximal workload	2
Gait distance (e.g., in 6 minutes)	7	Barthel Index	7
Walking speed (e.g., in a 10 m gait)	5	Functional Independence Measure (FIM)	4
Stair climbing	2	Nottingham Extended Activities of Daily Living Scale	2
Barthel Index	7		
Functional Independence Measure (FIM)	3		
Lawton Scale of Instrumental ADL	2		
Nottingham Extended Activities of Daily Living Scale	5		
Nottingham Leisure Questionnaire	2		
London Handicap Scale	2		
Other			
Nottingham Health Profile	2	Nottingham Health Profile	2
Sickness Impact Profile	4	Length of hospital stay	2
Medical Outcomes Study short-form, 36-item questionnaire (SF-36)	2		
General Health Questionnaire	4		

Table 5. Type and frequency of outcome measures used in ≥2 of 6 RCTs (occupational therapy intervention for community residents)

	Outcome measures in RCTs	RCT (times)
Activities and participation		
	Barthel Index	4
	Nottingham Extended Activities of Daily Living Scale	5
	Nottingham Leisure Questionnaire	2
	London Handicap Scale	2
Other	General Health Questionnaire	4

participation in community and social activities have been recommended (Duncan, Zorowitz, Bates, Choi, Glasberg, et al., 2005). We found, however, that these criteria have not been fully incorporated when trials of rehabilitation for stroke patients are planned and conducted.

Since adopting the ICF, the focus has been on "activities and participation" as an outcome measure. Nevertheless, in considering the characteristics of outcome measures used before (1996–2000) and after (2001–2005) ICF adoption, it is clear that the percentage of outcome measures in the domain of "body functions and structures" has increased. Although not statistically significant after Bonferroni correction, this tendency was observed more in RCTs of community residents than in those of hospital patients. There are two possible reasons for this finding. First, prior to ICF adoption, "body functions and structures" outcome measures were used less frequently in RCTs of community residents, compared with RCTs of hospital patients. Secondly, these outcome measures may be less influenced by environmental factors during the research design stage, which makes it easier to observe changes in patient outcomes. When conducting evidence-based clinical practice, it is perhaps necessary to understand the special characteristics and limitations of outcome measures used in quantitative research.

Only a few of the outcome measures used in RCTs between 1996 and 2005 appeared in at least two studies; rather, each study tended to use its own unique measures of outcomes. Although outcome measures in the domain of "activities and participation" comprised over half of the total, many of these measures assessed basic movements. In several RCTs of community residents, measures of Instrumental Activities of Daily Living (IADL) and leisure were used in addition to outcome measures of basic movement abilities (such as balance and walking) and Activities of Daily Living (ADL). On the other hand, RCTs of hospital patients primarily used outcome measures related to basic movement ability and self-care. This difference in outcome measures may reflect the fact that recovery of function and achievement of self-care are viewed as more important aspects of treatment in RCTs of hospital patients.

Furthermore, the pattern of outcome measures used in RCTs of occupational therapy differed from those of rehabilitation in general. Six out of 7 RCTs of occupational therapy were conducted in community settings. Three of 5 types of outcome measures used in at least two studies were adopted in more than half of those RCTs.

One main limitation of our literature review was that it was limited to RCTs of rehabilitation intervention in the field of medicine. Moreover, the only database used was MEDLINE, and databases in the fields of psychology and sociology were not utilized. Our review was also limited to studies written in English and Japanese. Finally, because our study sought to characterize outcome measures considering ICF domains by clinical setting (community or hospital), RCTs that did not clearly state the type of participants were excluded.

Conclusions

In recent years, the percentage of outcome measures in the domain of "body functions and structures" has increased in RCTs of stroke both in community residents and in hospital patients. Outcome measures used at least 2 times in RCTs were limited, and "activities and participation" in hospital patients were limited to only basic ADLs. As stroke patients have long survival periods, evidence that focuses on patient perspective is vital for selection of treatment methods. Therefore, in order to build evidence that supports clinical practice, it is important for researchers to make use of practical outcome measures that consider patient quality of life, including "human social life," rather than outcome measures that focus solely on parameters such as basic movements and self-care. In particular, to build evidence in occupational therapy, it is necessary to consider these domains when conducting RCTs, non-randomized control trials, as well as observational studies.

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*Minimum Standards for the Education of Occupational Therapists: Building Occupational Therapy Communities in WFOT Member Countries**

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Abstract: The Standards for the Education of Occupational Therapists were based upon three documents fundamental to international educational, cultural and human rights. This presentation will describe the documents; discuss how they are embedded in the Standards and through the use of a case study illustrate how the Standards support the building or rebuilding occupational therapy communities among WFOT member countries.

Key words: occupational therapy, education, minimum standard

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Introduction

In 2002 the World Federation of Occupational Therapists (WFOT) revised the Minimum Standards for the Education of Occupational Therapists (Standards), which were initially developed in 1958 and revised many times since then. However, this time the revision was major and radically changed the Standards to meet the needs and demands of the many countries and cultures that comprise the WFOT. The rationales for revising the Standards were that member countries wanted clearer guidance for the development and monitoring of educational programs and that there be greater flexibility in curricular content to reflect cultural, economic, and political realities.

Purposes

The overall purpose of the Standards is to make occupational therapy services more evident internationally in order to provide quality health and welfare services. More specifically, these standards promote the consistency and quality of occupational therapy practice and education internationally through: (1) encouraging a shared understanding of occupational therapy education,

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(2) fostering international research on occupation, and occupational therapy education and practice, and (3) supporting the development of occupational therapy in countries where it is not established. The Standards facilitate an international exchange of knowledge as well as the international mobility of occupational therapists. They guide the planning of new educational programs in institutions of higher learning and assist in monitoring the quality of established programs.

Revisions

The revised Standards were founded in international contexts of health and welfare perspectives as well as educational perspectives along with the developments in occupational therapy and occupational science. The documents that helped to frame the revisions included the Declaration of Alma-Ata (1978) and the Ottawa Charter (WHO, 1986) for their social perspective on health requiring a reorientation of health services toward using occupation to build healthy communities and to enhance individual wellness through occupations that support well-being. Other United Nations documents (United Nations, 1982, 1993, 2002; UNESCO, 1995, 1998) that advance health promotion and equalization of opportunities for those with disabilities and the International Classification of Functioning, Disability and Health (ICF) (WHO, 2001) helped to focus occupational therapy education toward how health conditions and health related factors in the environment impact upon health, well-being, and participation.

From an educational point of view the revised Standards encouraged occupational therapy educational programs to be relevant to local health, social and community contexts, to have mechanisms to improve the quality of the program, and to have links to the international occupational therapy community.

An Occupational Therapy Educational Program

The starting point for the development of an occupational therapy program is the international and local contexts together with the areas of essential knowledge skills and attitudes for competent occupational therapy practice (WFOT, 2002). The components of the educational program enable students who enter the program to become competent practitioners of occupational therapy.

Contexts

Local contexts help to place the program within the economic, cultural, political and institutional environment. An occupational therapy educational program must be designed so that its students have the appropriate, relevant knowledge, skills and attitudes for effective practice applicable to local health needs, occupations and services. Therefore the experiences of students who are entering the program, local health and welfare needs, the local views of health giving occupations, local health systems, and local occupational therapy history are all germane to the development of an occupational therapy educational program.

Program components

Occupation is central to all occupational therapy education programs and therefore all components of the educational program; the curriculum content and sequence, educational methods, fieldwork, educators and resources and facilities, are informed by an occupational perspective. Each component is congruent with each other component, has sufficient depth and breadth to reinforce student learning, balances local and international knowledge, and demonstrates a mechanism for consistent evaluation and quality improvement. The educational program is expected to enable substantial knowledge, skills and attitudes essential for competent practice framed by the program philosophy and purpose.

Practice competencies

The essential knowledge, skills and attitudes for competent practice of graduates of occupational therapy education programs are the person-occupation-environment relationship, the

relationship of occupation to health and welfare, therapeutic and professional relationships, the occupational therapy process, professional reasoning and the context of professional practice.

The 'person-occupation-environment' relationship includes knowledge of theories and research evidence about people's participation in occupation, skills of assessment, analysing, adapting and grading occupation, using occupation therapeutically and understanding the attitudes about different people's participation in occupation. Essential aspects of practice competencies enabled through the education program include knowledge about people, skills in working with people and attitudes towards people; knowledge of the environment and skills in analysing and modifying environments to promote participation and attitudes about environmental issues. Finally students must be exposed to knowledge about how occupation affects health and participation and how health and participation impact upon occupation.

Knowledge, skills and attitudes concerning therapeutic and professional relationships enable students to establish effective working relationships with recipients of occupational therapy services and with professional colleagues and peers. The occupational therapy process embraces clinical reasoning, problem solving, enabling, empowering collaboration and consultation when working with recipients of occupational therapy services. Professional reasoning and behaviour means using research evidence or information to inform practice, practicing in an ethical manner, evaluating and improving current knowledge skills and attitudes, and reflecting on practice. The final component of an occupational therapy educational program is the context of professional practice which are those aspects of the physical, attitudinal and social environments that affect peoples' health and participation as well as an occupational therapy practice.

An occupational therapy education program includes a variety of learning opportunities for the student, such as case studies, reflective exercises, experiential or problem-based learning, lectures and/or small group experiences. Clinical fieldwork of at least 1000 hours is a required element of an occupational therapy program fieldwork as it is essential that students in occupational therapy programs be given sufficient opportunity to develop their knowledge, skills and attitudes related to the occupational therapy process with live clients.

Building Occupational Therapy Communities

In recent years there have been a number of newly approved programs in member countries, which has enabled the establishment of occupational therapy communities in those countries. WFOT approval of existing educational programs has facilitated the development of a professional occupational therapy organization in some countries (WFOT, 2004), while in other countries WFOT approval of existing educational programs using the Standards has given legislative legitimacy to the educational program and to the profession (WFOT, 2006). WFOT approval of new educational programs has provided a strong base for growth and development of the profession in many countries (WFOT, 2004).

Summary

The revised WFOT Minimum Standards for the Education of Occupational Therapists — 2002 are not prescriptive but emphasize program outcomes within an international and local context that focus on a person-occupation-environment relationship and an educational process that facilitates graduates to achieve essential practice competencies. More specifically the changes move occupational therapy education (1) from having a biomedical focus to an occupational perspective, (2) from a universal orientation to one that is culturally sensitive, (3) from a diagnostic label to a health and welfare perspective, (4) from a having a focus on only the individual to having a focus on the individual, groups and populations, (5) from concentrating only on treatment to including prevention and health promotion, and (6) from academic content to practice competencies. As such these Standards foster

building occupational therapy communities both in countries with established occupational therapy programs, and in countries where there is little or no formal occupational therapy community.

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International Agreement on Occupation

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Abstract: All the WFOT member countries endorsed and welcomed the resurgence of discussion about occupation that has been demonstrated in pivotal WFOT documents, such as the minimum standards (WFOT, 2003), definition of OT (WFOT, 2004a) and the Community Based Rehabilitation (CBR) position paper (WFOT, 2004b). These documents confirm that occupational therapists are well placed to facilitate community development, health promotion and participation in community through occupation. Occupational Therapists use a people-centered process applying an enabling occupation approach which integrates medical and social knowledge and skills in tune with the WHO's ICF and the underlying philosophy of occupational therapy.

Key words: occupation, community based rehabilitation, human rights, ICF

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The World Federation of Occupational Therapists (WFOT) produces documents and position papers for use by occupational therapists internationally. They include definitions of occupation and occupational therapy for use in the global arena. The international views of health at World Health Organization (WHO) level coincide with the Occupational Therapy (OT) perspective that occupation is the basis of health. All the WFOT member countries endorsed and welcomed the resurgence of discussion about occupation that has been demonstrated in pivotal WFOT documents, such as the minimum standards (WFOT, 2003), definition of OT (WFOT, 2004a) and the Community Based Rehabilitation (CBR) position paper (WFOT, 2004b). These documents confirm that occupational therapists are well placed to facilitate community development, health promotion and participation in community through occupation.

Occupational therapy is a profession concerned with promoting health and well being through occupation. The primary goal of occupational therapy is to assist people to participate in the activities of everyday life and enhance the quality of their lives. Occupational therapists achieve this outcome by enabling people to do things that will enhance their ability to participate or by modifying the environment to better support participation (WFOT definition of Occupational Therapy, WFOT, 2004a).

This revised definition reflects terminology of the WHO International Classification of Functioning, Disability, and Health (2002) and is welcomed by member countries. It has been translated into the official languages of WFOT. It is important to note the emphasis on participation

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through occupation in all of these documents.

Through our documentation, WFOT plays a role in leading occupational therapists and other international agencies in understanding occupational issues faced by disadvantaged people around the world. e.g. concepts of occupational deprivation, occupational apartheid - and promoting societies where people get fair access to a range of occupations that will sustain health - occupational justice for all people.

Occupational therapists are committed to advance certain core principles, one of which is the right of all people—including people with disabilities—to develop their capacity and power to construct their own destiny through occupation, which seems congruent with the basic tenets of CBR. (WFOT position paper on CBR, WFOT, 2004b)

The emphasis is on participation through occupation and daily life activities.

WHO developed the International Classification of Functioning Disability and Health (2002) in response to the changes in social thinking over the past two decades. Where 20 years ago there was an emphasis on institutionalization for people with impairment or disabilities, there is now an emphasis on issues of participation and equalization for all people in society. These concepts are very much reinforced by documents produced by the United Nations as well. The framework for participation has, of course, a foundation of the philosophy of occupational therapy.

Participation in meaningful occupation has an important positive influence on health, and lack of participation has been shown to lead to poor health and well being. Many examples of disruption and deprivation in occupation exist in the world today, including persons who are unemployed, refugees, belong to minorities, or those living in areas of conflict and living with disabilities.

WHO (2001a) has focused attention on the participation perspective with the development of the International Classification of Function (ICF). The ICF provides common language to describe how people live with a health condition. It highlights the international concern about healthcare outcomes and proposes a shift of emphasis away from viewing a person in terms of impairment and handicap and towards the perspective of a person as a human being-functioning in daily tasks, undertaking a variety of roles, and being a member of society.

WHO defines participation as involvement in a life situation and uses the domains of learning and applying knowledge, general task and demands, communication, mobility, self care, domestic life, interpersonal interactions and relationships, major life areas such as work, or school, community, social and civic life. (You can see that occupational therapists had a big hand in writing this document.) It implies being involved, making choices and taking risks.

The implications of this major WHO document for occupational therapy are in reinforcing the client-centered and community approaches that are already being implemented in many aspects of occupational therapy practice. From the occupational therapists' view, now reinforced by this document, the focus should be on a person's occupations within his or her natural environment and on occupational routine for quality of life. The focus should be on the client's opportunity to make choice, set goals and better control circumstances to make life more meaningful.

As noted in *Rethinking Care from the Perspective of Disabled Persons*, WHO (2001b) points out that there should be a holistic approach of access, legislation and funding. Occupational therapists are involved in improving opportunities and access for people with mobility related impairments, establishing accessible information media for people with learning difficulties, as well as appropriate support services for those with mental health problems and multiple impairments.

Occupational therapists are involved at all levels (national, international and local) with consumer groups and organizations and take up grass roots public awareness initiatives of the importance of occupation in and with the community.

As mentioned earlier, WFOT Council ratified the WFOT position paper on community based rehabilitation in 2004. The paper incorporates the concepts of participation and equalization and

notes where occupational therapists facilitate this process. The development of this paper was an excellent example of international cooperation and global communication. WFOT had the input of occupational therapists working in CBR in virtually every part of the world. We discussed, collaborated and agreed on the principles that we as occupational therapists uphold as well as strategies to empower and enable communities and community members to go beyond strict rehabilitation services to build on the principles of sustainable livelihoods, service integration and social inclusiveness. We found some of our therapists are working with the addictions, sexual abuse and family/community violence which constitute common occurrences in war zones. We note that the role of occupation as a primary tool for individual and collective recovery.

Considering the service focus of occupational therapists—enabling people to choose, organize and perform those daily life activities that they find meaningful and useful in their environments, affording them with opportunities to gain greater control over their health and their destinies—occupational therapists are particularly able to facilitate the process of establishing CBR program development at both government and community level. Occupational therapists provide and pass on to community workers and disabled people relevant knowledge and skills to enable them to more actively participate in and take control of their lives and the lives of others within the community.

A good example comes from South Africa's Grandmothers Against Poverty and Aids (GAPA). An occupational therapist worked with grandmothers of children who had lost their parents to AIDS. The Occupational Therapist brought these depressed, distressed, and frustrated women together through a patchwork quilting group. Over their quilting activities, they discussed their mutual problems of their orphaned teenagers and found solutions and support from each other. From one small class within two years 17 quilting groups developed and are run by the grandmothers who also offer support within their own communities.

In conclusion, occupational therapists use a people-centered process applying an enabling occupation approach which integrates medical and social knowledge and skills in tune with the WHO's ICF and the underlying philosophy of occupational therapy.

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Global Community of Occupational Therapists

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Abstract: The World Federation of Occupational Therapists (WFOT), with 65 country members, is a dynamic and proactive organization as demonstrated by the tremendous level of activity and project work presently taking place. Reflections on international involvements of WFOT as well as present and future global projects taking place within the WFOT are described.

Key words: World Federation of Occupational Therapists, global occupational therapy activities

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The World Federation of Occupational Therapists (WFOT), with 65 country members, is a dynamic and proactive organization as demonstrated by the tremendous level of activity and project work presently taking place.

As we look toward the future, we must also reflect on the past few years that have been fulfilling and exciting. We have been able to accomplish a great deal through excellent teamwork and commitment to important development through projects. Areas of achievement for our team include smooth transition in management, major projects in Community Based Rehabilitation (CBR), human rights, and disaster preparedness and response. Relations with the World Health Organization (WHO) and other international and national organizations have been extended by responding quickly to requests and by taking the initiative to advance WFOT and occupational therapy perspectives.

The WFOT is the international voice and representative of the profession in an ever-shrinking world. As the profession achieves greater recognition for its unique perspective on occupation and its power to make a difference in people's lives, there is an increased demand for our expertise and participation in the global community.

The Federation's continually increasing efficiency has resulted in a major expansion in international liaison activity. The WFOT is the key international representative of the profession and liaises regularly with WHO, United Nations (UN) agencies such as UNESCO and other international non-governmental organizations (NGO's).

In the last few years, these interactions have multiplied and the WFOT has developed even

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stronger working partnerships internationally. In 2006, WHO commended WFOT for its stellar participation in WHO initiatives in relation to WFOT triennial report on collaborative activities. As WFOT enters its 50th year as an NGO member of WHO, the high profile reflects increased awareness of the occupational therapy contribution to world health.

WFOT coordinates, facilitates and participates in the development and transfer of occupational therapy's knowledge and expertise for the international scene through its projects, through International Advisory Groups, and through personal contact in meetings and conferences. WFOT has embarked upon identifying and liaising effectively with its international experts through the International Advisory Groups.

WFOT is able to coordinate the profession's response to global health and wellness needs through participating in social and economic development initiatives. WFOT is aware of the relationship between poverty and disability and accepts the need for more integrated multi-sectoral approaches for all forms of development.

An example of this is in the WFOT responses in January 2006 and again in June that year, to Mental Health Guidelines and action sheets for the Inter-Agency Standing Committee (IASC) Task Force on Mental Health (World Health Organization: IASC, 2007) and Psychosocial support in Emergency Settings. Another is involvement in the illuminating World Bank e-discussions on 'Disabled and other Vulnerable People in Natural Disasters' (World Bank, 2006).

The new management model enables more people beyond council members to participate in project teams. The Federation is undertaking in excess of 175 individual projects both minor and major in the last five years.

The Federation's projects are becoming more proactive, e.g. the Tsunami Project/Disaster Relief and Preparedness project—this initiative serves as the basis for the development of the WFOT Disaster Preparedness and Response Package (WFOT, 2007) which is now available to members through the WFOT on-line shop. WFOT is assuming the leadership role here in consolidating, promoting and employing the profession's vast knowledge and expertise. This is to assist the international community in dealing with the ramifications and the aftermath of devastating events that impact on the fundamentals of human occupation. Major donations have substantially contributed to the ability of WFOT to make a significant response.

Strengthening engagement with government coordination and programming systems at national, district and local levels will be crucial to progressing successful Occupational Therapy involvement in Disaster Preparedness & Response initiatives. National workshops took place in the first half of 2006 in Indonesia, Thailand, and Sri Lanka, with members of the Executive acting as facilitators.

Occupational Therapy national action plans to address disaster preparedness and response have been drawn up and national task forces established in these countries. The regional and national workshops which resulted from this initiative will inform international actions.

The capacity building which took place at these workshops will support local therapists to contribute to disaster response e.g. the tragic Indonesian earthquake where Occupational Therapists and Occupational Therapy students are involved in recovery efforts. A culturally sensitive manual on disaster preparedness and response for occupational therapists has been produced.

This project which started in response to a major world emergency has developed into an initiative for future action to raise awareness to disaster and to prepare occupational therapists to be involved at all stages to re-engage people in meaningful occupations within their communities.

WFOT initiated a major project in human rights to address issues of human rights in relation to our profession. Integral to the work of occupational therapists is the right of all people to occupational engagement (participation), meaning a person's right to take part in necessary or meaningful occupations.

Within the human rights master project plan, two projects have emerged with prominence. One is 'voices of people with disabilities-consumer interface' which focuses on the involvement of

occupational therapy service consumers in the development of the future vision for occupational therapy. Another project 'Inclusive Occupational therapy Education' has been completed. Its team gathered data on access to admissions and access to learning in occupational therapy education program worldwide.

A discussion paper on human rights leading to a position statement from WFOT was in the works for over two years. The position paper on human rights ratified in 2006 was also developed over this period with much e-discussion as it is important to include global and cultural perspectives (WFOT, 2006). The position paper challenges the profession to address accessibility through universal design, to address health promotion needs of groups, communities and populations with a wider recognition of people's rights to meaningfully and purposefully occupied.

The project on 'Community Based Rehabilitation (CBR) data collection and analysis' was very fruitful in establishing the extent and level of occupational therapy involvement in community based rehabilitation. The results of this project will provide a foundation for education modules, promotion of international fieldwork exchange programs and advancement of occupational therapy involvement in CBR around the world.

Major projects are also taking place in the support of development of professional services and education in both Egypt and Mongolia. The Egypt based project has really taken off. Regular newsletters have been published to promote coordination and collaboration between project members and a network of supporters. The newsletters were published on the WFOT website and stimulate a lot of international attention. Out of that project, two occupational therapy education programs have evolved in Egypt which are already admitting students.

Other projects include development of global competencies, translation of the WFOT glossary into Chinese, and many other areas which support the profession's continuing advancement. The number of successful projects has increased dramatically with individual members taking up leadership roles. We commend those who have volunteered their time and energy to these noteworthy tasks.

Regional groups produce synergies through geographically proximity of conferences, workshops and consultations. An example is the regional conference of the Occupational Therapy Africa Regional Group (OTARG) in August 2005. The Occupational Therapy Latin American Regional Group (CLATO) held the VIth Latin-American Occupational Therapy Congress and XIVth Colombian Occupational Therapy Congress, also at the end of August 2005. The Council for Occupational Therapy in the European Community (COTEC) holds regular congresses, the past in Athens in September 2005 and the next in Hamburg in 2008. The Asia Pacific region (APOT) held their congress in June 2007.

The Japan Association of Occupational Therapy's Conference and WFOT Symposium held in June 2008 in Nagasaki are part of the continuing opportunity to share and develop occupational therapy for the 21st century.

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Culture and Psychosocial Elements Impacting on Disaster Recovery: Response in Indonesia

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Abstract: Natural disasters are common place in the world but the 2004 tsunami created a critical mass of WFOT member countries confronted by the monumental destructive forces of nature. Destroyed were environments and the natural occupations central to the lifestyle of citizens. Working within the WFOT Disaster Preparedness and Recovery Framework, two Indonesia occupational therapists one working in Aceh, Sumatra and the other responding to a major earthquake in south central Java (2006) were confronted by psychosocial and cultural issues which affected their assistance efforts. The unique cultural perspectives of these two distinct Indonesian geographic areas presented some very different and unique challenges. The first author worked with the two therapists to identify the critical phenomena experienced in accommodating psychosocial barriers. The analysis serves to increase knowledge transfer. Highlighted is the important contribution the profession makes to interpreting more sensitively social phenomena and its impact on disaster recovery process.

Key words: psychosocial, disaster response, culture, occupational performance

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Introduction

The tsunami of 2004 was a major wake up call for the world. Even with natural disasters occurring annually around the world, few had the impact that tsunami did in alerting global citizens of their collective vulnerability and interconnectedness. The magnitude of the event's destruction was highlighted by expansiveness of the geographic footprint of Mother Nature's violent action.

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Four member organizations of the World Federation of Occupational Therapists (WFOT), India, Indonesia, Thailand and Sri Lanka were hit by the monumental forces of nature, which destroyed lives, environments, and disrupted the natural occupations central to the lifestyle of their citizens.

Many citizens of the world live under circumstances of constant "disaster": natural and man made. They lack the resources and the opportunities to avoid being in harm's way and their lives are a constant struggle in anticipation of the next assault on their living state. For them, their usual occupational focus is on subsistence and survival. Their occupational performance is seen as extraordinary to many, but in the face of the tsunami and accompanying earthquakes the best of their well honed survival skills were not enough. Occupational therapy, as a profession focusing on individuals interacting with their environment, needs to be proactive in gathering its resources to support the life sustaining activities of all people responding and living in disaster circumstance. Two disaster situations in Indonesia are analyzed by the first author to increase knowledge transfer to other occupational therapists developing disaster preparedness and response plans and to alert them to psychosocial considerations, which can impact on service effectiveness. Furthermore, this discussion highlights a "taken for granted" skill set of occupational therapists relating to cultural sensitivity. Taken together, culture and psychosocial issues influence response strategies and can make the difference in the successful acceptance of assistance from disaster survivors. The paper's context is the experiences of two Indonesia occupational therapists in greatly different areas of a country made up of over 17,500 islands and 237,000,00 million people (Central Intelligence Agency, 2008). The Indonesian lessons learned by these occupational therapists' interactions with local residents and their application of strategic adaptation of disaster response program to fit social needs will be shared.

One therapist assisted with the post tsunami recovery work in Aceh, Sumatra through involvement with a well known international non governmental organization (NGO). The second therapist contributed to a regional response to the earthquake disaster in the south of Central Java (Yogyakarta) using students to assist the process. The experiences of both therapists are explored from the unique cultural perspectives of these two distinct Indonesian geographic areas.

Background

The World Federation of Occupational Therapist (WFOT) took a leadership role in preparing occupational therapy professionals for disaster response. Following the December 2004 tsunami, the WFOT coordinated a regional environmental scan in April 2005 and later developed and offered a training workshop for therapists from the affected countries (WFOT, 2006). This information can be found elsewhere in the form of reports and documents (WFOT, 2007). Following this initial event sponsored by Direct Relief International (DRI), the WFOT and various other donors including DRI, initiated national training workshops for member organizations in the affected four countries.

The Indonesian Association of Occupational Therapists (IAOT) conducted its National Workshop in Disaster Preparedness & Response (DP & R) in Jakarta April 6–8 2006. There were 40 participants including the authors and it was supported by a coalition of funders: Direct Relief International (Washington DC), the WFOT, the Ministry of Health, Republic of Indonesia, the Indonesian Association of Occupational Therapists and specifically the Surakarta Health Polytechnic.

The national workshops built on the framework developed for the regional workshop by WFOT's consultant Kerry Thomas of Australia. This included developing specific project/action proposals for priority areas to be part of the Occupational Therapy National Action Plan such as identifying project activities and considerations for implementation strategies (e.g. resources needs, funding sources, approval, support etc). More specifically it drew on occupational therapy knowledge and thinking processes. The focus was on the profession's

unique "tool kit" based on occupation within a holistic and environmental approach to evaluation and intervention. A response strategy was formulated to meet the local cultural and social perspectives.

The outcomes of the national workshops were to be integrated with the country's national disaster preparedness and response strategy. One major objective was to prepare occupational therapists to be leaders and contributing members of disaster response teams. Though able to provide assistance to any disaster situation, the primary consideration for the profession was to ensure that the needs of minority and vulnerable groups particularly persons with disability were being addressed within the general response strategy.

Indonesia is an Island nation and due to internal cultural diversity (34 acknowledged ethnic groups), developing a DP & R nation plan is challenging. As previously noted, the principles from the regional workshop helped shape the planning process and prepare for future responses.

Indonesia offers unique challenges in that it is a country where the tensions of different dialectics must be negotiated along with other cultural differences from secular and traditional, insular and open, transcendence and immanence and most importantly nature and culture (Manzoor, 2003). As the largest Islamic nation in the world, Islam transcends all forms of interaction and forms of "being and doing." From a secular perspective or if from a more fundamentalist one, there will be an impact on the response of citizens based on their particular culture and the Islamic practices of their indigenous social group (Manzoor, 2003). The history of Indonesia has been characterized by forced national unification (Sarsito, 2006). Indonesia is held together by a set of five principles (Pancasila): a unifying language (Bahsa Indonesian) and a strong "hand": first that of Sukarno who lead the revolt against the re-establishment of Dutch colonialism and then Suharto up to 1998. Ethnic identity and cultural norms can be stronger than a national identity (Chandra, 2004).

Case Scenario Number One—Sumatra

The first scenario is based in Banda Aceh; the closest land mass to the ocean epi-centre of the earthquake that precipitated the December 2004 tsunami. Entire communities where wiped from the map including their infrastructure and services. The reader needs to be familiar with the special circumstances that enveloped this north western area of the island of Sumatra. A number of situational and cultural considerations existed, which would impact on the usual disaster response strategies and the acceptance of aide by the citizens of the area. But at the time of the emergency these were not major considerations.

Banda Aceh is a very conservative Islamic area. Before the disaster, it was an area of prolonged armed conflict between those embracing these former views and the Jakarta-based Indonesian national government. Thus the immediate response of survivors to relief efforts and ultimately to the recovery process were affected.

In keeping with more traditionalist values, there existed specific gender roles limiting women's participation in the community, including the restriction of the succession of property titles.

Given the absolute destruction or severe incapacitating damage to large portions of the transport system and other civilian infrastructures and services, the Indonesian army was given the task of disaster response. They were already in the region and had the resources to respond. Military involvement in national disaster responses is a common strategy in many parts of the world. But in this case, the survivors were reluctant to take assistance from soldiers who earlier were seen to be the aggressors during the many years of conflict. With the monumental state of the damage, there was a lack of coordination of response activities across the government and the many NGO that quickly mustered resources to the area. Few health facilities remained in operation to treat survivors. Many members of the region's health manpower network expected to respond also died There was limited local health manpower to offer health services (Java Reconstruction Fund,

2007).

In the long term joblessness in both traditional areas (fishing) and general services would add additional stressors. Also there was a greater focus on the physical recovery of people, things and processes as there was a lack of understanding of psychosocial rehabilitation needs of survivors by rescue teams.

The loss of human connections were devastating as extended family networks and generational ties were lost. Social looting took place by people claiming to be survivors. People taking advantage of the relief efforts came from other areas unaffected by the present disaster but suffering from longstanding economic depression. They sought food as well help to obtain living allowances and housing support not formerly availbale to them. Based on records from the four districts, 126 disabled persons were identified including only one who was disabled before the tsunami.

As is often the case during catastrophic times, people also resolved conflicts during this time of need. Conflicts between the Aceh Independence Movement and Indonesian Army were reduced and finally an agreement to end the war was signed. Members of the movement went to villages and cities from their camps to look for their families. The central government established a Board of Tsunami Recovery and Reconstruction and began building infrastructures in unaffected areas in all of the Aceh province. But the magnitude of physical devestation and state of survivors was alarming.

The World Health Organization expected that the psychological state of survivors would reflect an increase in certain psychiatric disorders such as depression, anxiety, and sleep disorders (WHO, 2005) but there were few available services to respond to mental health needs. Aid workers attempted to provide psychosocial support indirectly through empowering women, children, families and the communities in order to restore their resilience capacity. Even the public press reported psychosocial issues.

Adding to the acute trauma of the tsunami was the pre existing context of the environment and the results of a culture of suppression due to central government policies. The area is mountainous and travel is difficult. Earthquakes are frequent. As a conflict zone there is fear of both the Rebels and the Army. A constant fear exists about outsiders and sensitivity to new persons (Non governmental organizations (NGOs), local & international) who have different religious backgrounds. This state of lack of trust made it difficult to take assistance especially from the Army who controlled supplies and were issuing coffee and food. Few would leave their home go to distribution centres. Poverty and malnutrition were already common.

One Indonesian occupational therapist was recruited by Handicapped International to assist with the rehabilitation and recovery phase. He provided physical rehabilitation services in six primary healthcare facilities (remote areas), worked on capacity building and developing livelihood support such as pre-vocational training. He used occupation related to recovery needs as interventions and dealt with psychosocial issues he found coexisting with physical phenomena.

The social experiences associated with disasters focus on losses of family connections, networking opportunities and changes in the performance of traditions and habits.

Examples of social Losses are:

- Withdrawal for social contacts
- Disruption of support networks
- Family deaths: immediate & extended
- Friends, coworkers & neighbors gone
- Gathering at Mosque, coffee house, market, well, etc. is no longer possible

These losses and disruptions in social habits created problems for survivors in their new roles as widows and widowers and as persons with disability. The role changes impacted on intimacy needs, ability to earn a living and to access support. The occupational therapists in Aceh dealt with some of these issues by running group therapy sessions for survivors through an NGO; raising community awareness regarding disability to refocus attention in helping others during recovery. Occupation was central to the interventions such as encouraging home modifications to decrease the barrier for disabled person. The occupational therapist also worked to

support public health needs through education to take steps to prevent outbreaks of polio. He did skills training and hygiene education (animals out of houses) to increase effective health promoting habits for all while focusing on enabling the quality of life of persons with disability.

When asked how he did his job he noted using environmental and holistic approaches in finding persons with disability and providing them with services. He worked with families, religious leaders, local authorities, traditional Healers, anyone available to assist and participate in the recovery process. He used local/ natural resources (designed splint from palm tree) as supplies were limited. Working through local NGOs, he went door to door, sent out fliers and contacted his own network of Javanese to promote awareness and encourage contact.

He travelled long distances for many hours on poor roads for short visits and professional sessions. Though he stayed in a larger centre, there were feelings of isolation due to the lack of possibilities to communicate with other professional's and his own family. He had to use satellite communications and was able to return to Java every two months, which he paid for himself. Consequently, high stress levels ensued. As a team leader, he also had the support of two physical therapists with whom he debriefed. Eventually after a year he returned home, where he practices in a large oncology facility. The contract in Banda Aceh was a challenging personal and professional experience.

Case Scenario Number Two—Java

Approximately one month after the Jakarta Disaster Preparedness and Response Workshop in April 2006 an earthquake hit the heavily populated Yogyakarta district in Central Java. This is an area known for volcanoes and tremors. The occupational therapy faculty of the Surakarta Health Polytechnic (SHP) occupational therapy program were able to contribute to relief efforts in a timely manner, in part due to their participation in the aforementioned Disaster Preparedness & Response workshop. The faculty joined others in first responding to the needs of victims and those visibly suffering from trauma. The faculty then organized a team, which included students who worked to assist the emergency teams to look after trauma victims. In a parallel effort, the team focused on identifying and assisting persons with disabilities. As an aside, Surkarta where the Surakarta Health Polytechnic (SHP) is located, is approximately 60 kilometres north of Yogyakarta but was not greatly affected by the shock waves.

The Islamic and socio-cultural context of Central Java is thought to be different from the pre-tsunami Banda Aceh. Although Java too is primarily Islamic, its religious practice and cultural roots are in old animistic origins and its integration of old religious mysticism is mixed with the practices of modern day Islam. These old beliefs predate Islam and Hinduism and speak to the spirits and or Gods of the natural world.

Java's culture is also based on a hierarchical society (Chandra, 2004). Individuals respond to authority but leaders are held responsible through "wahyu": disasters and events can be attributed to a lack of integrity and living according to Javanese spiritual traditions. This belief is still held by some and complimentary to the Islamic view of nature (Adcock, 2006).

Fewer of the social and interpersonal barriers of Aceh: paranoia, fear and suspicion of strangers existed. Survivors accepted the first wave of assistance as it came from other Javanese and thus they were able to help each other. The occupational therapy students participated in distributing food to survivors in response to the basic needs for survival and support.

Thousands of survivors lost their homes and businesses. Restoring shelters was very important to address immediately, because extended families frequently lived together in compounds made up of several buildings. After helping the critically injured, the work began to find and assist people with disability.

Given the closeness of the earthquake to Surakarta many students had their own transport and being familiar with the area was a major advantage in making personal contact with survivors. Some had family and friends in the area unlike the Aceh region, where the relief workers were "foreigners". The "OT" Team assisted with

the set up of a disaster relief post in a village hall and then after a debriefing, the students began home visits in search of persons with disabilities (PWD). Within the disaster relief post they served in access of 50 to 60 clients everyday. Home visits gave the opportunity to problem solve first hand and provide consultations directly in the social context of the problem. The destruction though not as environmentally catastrophic as Banda Aceh still disrupted livelihoods, social patterns and daily habits. Working, tending the home, going to school were stopped as the physical structures were destroyed and all effort and free hands went to creating emergency shelters and re-establishing physical order.

As the schools were destroyed, classes were held outside. It was easy in this social gathering of young peers for the OT to offer play therapy sessions for the children as a means to relate their experiences and fears. Though the literature on adults is mixed on the benefits of debriefing (Raphel, 2003) the children settled with the normalizing activities of familiar games. Social gatherings were instigated for the adults. Many of the adult survivors were taken to the Orthopaedic Hospital in Surakarta as there was a lack of treatment space in Kalten one of the major quake sites. This put additional stress on the family unit.

The family is a primary social group; the moving of the injured to another city meant that a relative had to go with the patient to provide care and meals. This is customary in the region. As a result some "helpers" were lost to the area but this also gave some peace to the family members left behind who had to deal with the physical recovery process and the construction of temporary tent shelters.

Students assisted with the record keeping on persons with disabilities. Use of their "expert" knowledge helped to provide relief to local health care practitioners. By teaming up with local NGOs, the students facilitated access and distribution of materials such as medicines, blankets and some building supplies. With the shared cultural values and habits of the local residents, there was a compatible mix of values and concerns of helpers and those helped.

The challenges in Central Java were less about culture and more about the disruptions to social institutions. There was an initial lack of coordination in the disaster relief strategies. Government emergency response with the services they controlled was delayed and or lacking in some areas but not to the degree found in Aceh and for some different reasons:

- Unequal local services and distribution of relief
- Bureaucratic system of oversight delayed action
- Legal aspect of those who could provide assistance (Certified/competency)
- Suspiciousness on the part of some survivors about non Javanese relief workers
- Environment was inaccessible due to mountainous terrain

The citizens were quick in starting to restore their lives by cleaning debris and engaging in trade through their micro industries where possible. International aid helped restore destroyed structures, homes and service facilities(Java Reconstruction Fund, 2007).

How Occupational Therapists Helped

In this second disaster case scenario, the occupational therapists (OT) and the OT students played multiple roles in the disaster response phase and later in the recovery. The disaster relief worker role was one shared with other emergency response providers as was the health services providers but some aspects of the roles were unique. With their ecological perspective of the person and their environment, the OT was a an interpreter of the barriers related to cultural norms for external relief workers, a therapist and clinician in detecting high levels of stress and anxiety states and physical rehabilitation and a community member sharing the disaster experience with friends and family. The OT professional was a "filter of behaviour" but this role required additional sensitivity of local conditions and expressions of religious and social practices. As community members sharing the cultural values it was easier to be accepted and they had less adjustment as a response worker in entering the community.

The knowledge and skills of the professional occupational therapist in dealing with psychosocial phenomena was of great assistance in dealing with the burden of loss felt by the family ccompounded by the cultural expressions of roles:

Some of these issues were experienced as: (1) Responsibility for family cohesion and the burden of financial losses, (2) Wife or husband unable to earn money or work because must stay with partner (survivor in bed or in a wheelchair), (3) Physical & emotional burden of taking care of survivors, (4) Social burden of helping others, (5) Feeling isolated (unable to go visit around), and (6) No answers to needs through networking.

Sexuality was a major concern for many. Therapists helped persons explore reasons why sex no longer was satisfying or providing pleasure. Clients talked about:

- Lack of privacy generally
- Anger & denial of interruptions in sexual performance
- Being ignored by spouse
- Bed (emergency cots) were too small for sexual activity
- Private space and time was not available to engage sexual activities

For persons with disability there were different needs and issues. Some existed before the earthquake and others were a direct result of the changes in health status following the earthquake:

- Afraid to engage sexual activity because of injuries
- Husband/wife thinking of exchanging partner
- Taking a longer time to engage sexual activity
- Sexual organ must be cleaned and clean water limited.
- Interruptions in require bladder/bowel management
- Divorced and no sexual partner
- Love affair/cheating perceived thus disrupting thinking and sexual expressions
- No sexual desire because hygiene is bad (pressure sore, bladder/ bowel incontinent) or trauma
- Couple unaware of alternative sexual activities (oral sex, petting, etc)

Many of the items above could be addressed by education. The occupational therapists were able to bring up intimacy roles because of their specific education and shared cultural values. These factors made it easier to connect to people and speak of these very personal needs. In some cases their age (young students speaking to older people) was a barrier due to hierarchical structure of society. If the student felt there was an issue from the initial interaction, they would get a more senior person to assist.

Conclusions

These two cases from the same country highlight our need to base our practice soundly on theory and context, because of the uncertainties that emerge as people's lives unfold. Moreover, local cultural expressions and social phenomena colour interactions, perceptions and responses. Theory provides a tool on which to base evaluations and services so that interventions can be more culturally sensitive.

The ecological approach of occupational therapy provides a framework to systematically analyze the persons' action and reaction in relation to the various aspects and forces of their environment. The focus of everyone' activities are therefore broader than the immediate desired output as it is then becomes the outcome of cultural and social exchanges and interactions. The world is becoming increasingly diverse and all health practitioners are being challenged to understand illness and trauma experiences from multiple perspectives. Failing to do so will further increase the disparities in service provision noted between ethnic groups (Srivastava, 2008).

Occupational therapists are underutilized by the health system for addressing psychosocial phenomena and occupational therapists themselves tend to deal more easily with physical states. Reports to the World Federation of Occupational Therapists (WFOT) indicate a continued decline in occupational therapists indentifying with psychosocial or mental health practice in some countries (Brintnell, Haglund, Larsson & Piergrossi, 2005). This latter behaviour

pattern perpetuates the lack of awareness by other health professionals and policy makers of the utility of the occupational therapy professional in situations where both physical and psychological injuries interact with changes in social structure and supports. This is also a description of the aftermath of disaster states.

Focusing on the physical to the almost exclusion of psychological and social issues also contradicts our own statements about being holistic in our practice. Nor does it support our claims of integrating a mind, body and spirit perspective in our approach to occupational performance and behavioural issues.

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