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An Investigation of Occupation-based Practice in Upper Extremity Intervention - A Pilot Study

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Abstract

Objectives: The primary purpose of this study was to explore the extent to which therapists focused on functional occupation-based performance in both assessments and goals, and whether this was related to client satisfaction and perceived self-efficacy. The guiding hypothesis of the study was that those therapists who practiced more functional or occupation-based treatment within a biopsychosocial approach would have more satisfied clients than those practicing in more client factor-based hand therapy. The most satisfied clients also would be within client-therapist pairs that perceive the use of clients' interests as a guide for intervention activities. A secondary question was to explore whether client satisfaction and the therapist's perception of client prognosis were related to client stress perception and sense of personal efficacy.

Methods: Seven occupational therapists specializing in upper extremity therapy were recruited, along with their nine clients. Data was collected using questionnaires, in an online format using the online survey distributor, Survey Monkey, or using paper questionnaires, from both the therapists and the clients at the end of a therapy session. Descriptive statistics were used to analyze the data using PASW Statistics 19, Release Version 19.0.0 (SPSS, Inc., 2010, Chicago, IL, www.spss.com).

Results: There were not enough client data to answer the question of whether occupation-based practice led to higher self-efficacy in our study. Similarly, there were insufficient data to answer whether stress influenced prognosis. Clients were very satisfied with therapy; they reported that their therapists listened to them, reviewed goals with them and that they were happy with their relationship with their therapists. Of most interest, there seemed to be a general trend of inconsistency with occupation-based practice. Goals and Clinical

Reasoning had overall trends of occupation-based focuses, but the evaluation tools and interventions implemented were more likely to be client-factor focused, or more focused on decreasing pain, and/or increasing ROM or strength.

Discussion: We hope that if this study is repeated in the future that we would be able to recruit more therapists and more of their clients to explore occupation-based practice in relation to higher client self-efficacy. We also hope to explore further the topic of stress in relation to prognoses. Clients did, however, benefit from client-centered practices. Regarding the trend for client factor-focused evaluation tools and intervention practices, we hypothesized that this might be influenced by the lack of quick and readily available evaluation tools that were applicable and relevant for outpatient hand settings. This lack of occupation-based evaluations might then influence how interventions were designed. Perhaps there should be future research done on how many of these occupation-based evaluations are available and/or research should be done to develop more of these evaluations.

An Investigation of Occupation-based Practice in Upper Extremity Intervention - A Pilot Study

Upper extremity injuries can seriously impact functional performance in life activities, and interventions for upper extremity injuries tend to be complex and varied across individuals with few “tried and true” methods that predict best-possible recovery. Thus, searching for the best practice interventions remain an important part of outcomes research in rehabilitative medicine. As an example of the variability of therapy interventions, in a study with 91 patients with acute hand trauma, 74% of the participants still felt “slightly” or “moderately” limited in performing physical activities one year after their injuries and rehabilitative therapy (Gustafsson & Ahlström, 2004). Rehabilitative upper extremity therapy, delivered by both physical and occupational therapists, involves returning clients back to their meaningful, purposeful tasks and activities following injury or trauma; this process is both specialized and extensive (Trybus, Lorkowski, Brongel & HI’adki, 2006). Participation in meaningful, purposeful tasks and activities is a core feature of occupational therapy and in best practice, guides intervention.

Humans are occupational beings, meaning that they live their lives fulfilling and completing purposeful tasks. Since occupations comprise an entire lifetime, one’s ability and satisfaction while performing them becomes vital to a person’s sense of self and identity (Christiansen, 1999). The tenets of occupational therapy include a purposeful, therapeutic application of an individuals’ meaningful occupations within the rehabilitative setting. However, the medical model currently dominates the field of upper extremity therapy and biomechanical frame of reference used in medical practice settings, which emphasize physical recovery of the body (Fitzpatrick & Presnell, 2004). Many interventions in therapy currently include modalities such as; silicone gel shearing, massage, splinting, low-level laser therapy, moist heat, hot/cold packs, whirlpool, electrical stimulation, ultrasound, and therapeutic exercise.

In contrast, function and occupation-based interventions such as ADLs (activities of daily living) that address psychosocial needs of the individual are not frequently utilized (Amini, 2011; Case-Smith, 2003). In a systematic review, most interventions for shoulder conditions covered were those that prepared patients for occupational performance, such as ROM and exercise, rather than interventions that involved purposeful occupations themselves (von der Heyde, 2011). When occupation-based interventions are used, they accounted for 21-30% of the rehabilitation time allotted to the client (Colaianni & Provident, 2010). One study stated that exercises that involve increasing range of motion (ROM) and strength are used in hand therapy with 61-90% of the client population, whereas occupation-based interventions were used with only 41-51% of the clients (Colaianni & Provident, 2010). One study placed function-based activities as a means of intervention in a “miscellaneous” category in the study (Amini, 2011). While the medical model and biomechanical frame of reference are well reputable approaches to treating a client, both do not address the mental aspect of health (Brown, 1999, as cited in Chan & Spencer, 2004).

Occupational therapy best-practice would suggest that a biopsychosocial model, which is holistic and integrates interventions that includes the mind, body and environment, provides a model of intervention that more closely aligns to the foundational core of occupational therapy intervention (Yerxa, 1983, as cited by Colaianni & Provident, 2010). The psychosocial model incorporates the self-selected meaningful activities and occupations in shaping the course of the interventions themselves. Further, this model recognizes mental health as an indicator of client wellness and supports the use of occupations in therapy to attain this mental wellness.

A client’s perceived self-efficacy is part of their mental wellness that can affect the performance efficacy of the activity, task or occupation, and occupation-based therapy might produce greater sense of self-efficacy in clients. Self-efficacy is defined as one’s perception of

his/her own abilities to perform or accomplish a task (Bandura, 1986b). People with weaker self-efficacy are more prone to avoiding an activity rather than finding ways to complete it, while those with stronger self-efficacies are more likely to engage in activities (Bandura 1977; Bandura, 1986a; Bandura 1986b). The selection and engagement of these activities is crucial to the development or mastery of skills (Bandura, 1986b; Christiansen, 1999). Self-efficacy, as perceived by the client, is constantly influenced by his/her personal performances, vicarious experiences in watching others perform the same or similar tasks, verbal persuasion, and his/her own physiological state (Bandura 1977). A client's personal performance in an activity or occupation is often affected after experiencing an injury or disability, which can then disrupt perceptions of self-efficacy. This would address both the "vicarious experience" and "personal performance" influences of self-efficacy. Client-centered practice would also address the client's physiological state towards the activity by using techniques that might include "verbal persuasion" that the client is more able than he/she perceives and introducing ways to make the activity seem less threatening.

In a study researching inpatients' perspectives on occupational therapy in acute mental health, the interventions that were found most helpful were: Cookery Group, Sports and Gym, Pottery, and Discharge Planning (Lim, Morris & Craik, 2007). Fifty-three percent of the participants stated that the occupational therapy interventions gave them opportunity to learn and practice new skills that were relevant and purposeful in their lives. There was also a highly significant and strong positive correlation between high quality therapy that focused on functional performance and improved client confidence (Lim et al., 2007).

In line with interests in research on the value of using occupations as intervention tools, there are a developing number of studies looking at the effects of occupation-based interventions

with clients that have upper extremity injuries. One study that researched the benefits and challenges to using occupation in hand therapy states that rote exercise alone could not best ensure the client's ability to return to occupations: "functional use of the hand involves a varied combination of movements that can only be accomplished using functional tasks" (Colaiani & Provident, 2010). The use of occupation as a means of therapy and intervention allowed clients to be engaged in an interesting activity without realizing they were exercising weak muscles (Colaiani & Provident, 2010). Two studies examined the value of using the occupation of play as a medium to provide the flexibility in learning how to use tools (Birch, 1945; Bruner, 1972; Schiller, 1952). This becomes relevant in relearning the use and function of the upper extremity as a tool to the human body. Another study's authors stated that those individuals who received therapeutic activities that simulated ADLs showed greater improvement than those individuals who underwent traditional exercise-based treatment (Guzelkucuk, Duman, Taskaynatan & Dincer, 2007). A case study noted that occupation-based treatment in upper extremity therapy for shoulder adhesive capsulitis effectively decreased pain, increased ROM and enhanced performance in occupational activities (Earley & Shannon, 2006). Another scenario was a wood worker who experienced lacerations in his left hand from a table saw at work, along with severed flexor tendons to his long and ring finger and an amputated small finger. After 18 weeks of hand therapy with Chinese balls, pegboards, paper wadding, page turning and including various occupation-based interventions, the client was discharged and able to return to his life (Garren, 2009).

Stress is another factor that potentially influences the rate of client recovery. The amount of stress on the client affects the body's susceptibility to disease and its ability to heal and recover from injuries (Wilcock, 1998). In a study with 37 heterosexual married couples (Gouin et

al., 2010) assessing emotional disharmony's potential effects on stress hormones and wound healing, participants were given 8 small 8-mm blisters on their non-dominant arms performed by a suction blister device. Individuals with the highest levels of oxytocin and vasopressin (suggesting greater positive affiliation with their spouses) exhibited more positive behaviors during the interaction task. There was also trend for those with the highest levels of vasopressin to show fewer negative marital behaviors. These individuals also had blisters that healed faster in comparison to those with lower oxytocin and vasopressin levels (Gouin et al., 2010). In a study on anger expression in relation to wound healing, blisters were also used to measure rates of healing (Gouin, Kiecolt-Glaser, Malarkey & Glaser, 2008). Anger is a behavioral reaction to stress; 57 participants who were given relaxation interventions were compared to 41 participants who were in the control group. In the eight days that they were observed, individuals who displayed a greater ability to control their anger had blisters that healed more quickly than those who were less able. Those with lower abilities to control their anger also secreted more cortisol, a hormone in the body that is associated with stress that affects the body's ability to heal (McEwen, 2002). This suggests that those who are less able to manage their stress heal slower than those who are better able to manage stress.

Pain is also linked to stress; an acute stress reaction can inhibit pain sensations for a short time while chronic stress can exacerbate pain perception. Further, perceptions of pain can cause further emotional stress (White, 2009), making it a potentially vicious cycle that is hard to mediate. However, pain can affect healing rates and should be of concern in rehabilitation. A study measuring the relationship of pain to wound healing followed 17 women who underwent elective gastric bypass surgery (McGuire et al., 2006). Researchers performed a 2mm punch biopsy on an arm of each of the participants and followed the healing process over a span of 5-

weeks. Researchers found that higher ratings of post-surgery pain were related to slower healing of the punch-biopsy wound (McGuire et al., 2006). Potentially, a client's level of stress perception may impact the potential effectiveness of the therapy.

Many factors may influence one's health and their ability to heal after injury or illness. These factors may also affect one's performance in their occupations. Researchers have stated the need for more research looking at the effectiveness of occupation-based therapy within a holistic biopsychosocial model (Colaianni & Provident, 2010). It is vital to discover more efficient methods of intervention so that clients receiving therapy may reach their full occupational potential to continue performing their daily occupations. To do so, researchers must first examine what current hand therapists are using in their assessments and evaluations of clients, their goals for their clients before discharge, as well as their interventions that are being carried out to determine whether function or occupation-based practice is being used in all three areas.

Purpose:

The primary purpose of this study was to explore the extent to which therapists focused on functional occupation-based performance in both assessments and goals, and whether this was related to client satisfaction and perceived self-efficacy. The guiding hypothesis of the study was that those therapists who practiced more functional or occupation-based treatment within a biopsychosocial approach would have more satisfied clients than those practicing in more client factor-based hand therapy. The most satisfied clients also would be within client-therapist pairs that perceived the use of clients' interests as a guide for intervention activities. This was based on the premise that individuals for whom their therapy addressed their interests and desired activities specifically would achieve better outcomes and embrace strategies for prevention over

the long term more so than would clients for whom exercise was the primary focus of therapy. A secondary question was to explore whether client satisfaction and the therapist's perception of client prognosis were related to client stress perception, as stress was considered a possible mediator to perception of effectiveness to therapy.

Methods

Study Design

A survey design using the online distributor Survey Monkey to gather data. Two questionnaires were developed for this study. One asked therapists about their assessment focus, intervention approach, and what evaluations they utilized to make their intervention decision. The second questionnaire was for clients receiving therapy. Some questions drew from established tools that measured perceived stress, self-efficacy and optimism/pessimism. Descriptive data was collected regarding type of injury, length of intended rehabilitation, nature of injury, as well as general demographic information regarding their zipcode and diagnosis. Questionnaires are included in Appendix A & B.

Dependent Measures

Data sources for this study included both questionnaires designed by the researchers specifically for the study as well as two free-access questionnaires that have been used extensively across multiple disciplines.

The Client questionnaire asked the following information:

1. Demographics section. This asked basic demographic information for statistical purposes only. This portion of the questionnaire took approximately less than one minute to complete.

2. Intervention Techniques section. These questions collected information regarding the therapy session the client was receiving at the time. This took approximately five minutes to complete.
3. Perceived Stress Scale (Cohen, 1986) questionnaire. This questionnaire measured the stress levels the client perceived to have experienced in the current month. This took approximately five minutes to complete.
4. Perceived Self-Efficacy (Schwarzer, 1993) questionnaire. These questions collected information regarding the client's perceived ability to perform tasks or activities. This took approximately five minutes to complete.
5. The opportunity for the client to enter his/her name, e-mail and mailing address to receive a gift card to express appreciation for the participation. This section of the questionnaire should take approximately less than a minute to complete.

The Therapist questionnaire asked for the following information:

1. Demographics section. This asked basic demographic information for statistical purposes only. This portion of the questionnaire took approximately less than one minute to complete.
2. Intervention Techniques section. These questions collected information regarding the therapy session the client was receiving at the time. This took approximately ten minutes to complete.

The Perceived Stress Scale (PSS; Cohen, 1983) was used to assess perceived stress levels at the time the questionnaire was answered. It is a 1-page scale that measures an individual's perception of his/her daily stress level and has been used extensively in stress research.

Perceived Self-Efficacy Scale (PSE; Bandura, 1997; Maddux, 1995; Schwarzer, 1992, 1994) was used to assess perceived self-efficacy at the time of the questionnaire. It is a 1-page scale that measures an individual's general perception of his/her own capabilities.

To address the study purposes, several questions were addressed:

1. Do higher levels of client stress perception impact:
 - a. Therapists' perceptions of their clients' likely prognoses?
 - b. Clients' perceptions of the effectiveness of therapy?
2. What is each client's satisfaction level and does satisfaction level relate significantly to therapist-described intervention methods?
3. To what extent did therapists focus on function in activities/occupations in therapy in regards to *goals, evaluations, interventions, and clinical reasoning behind the interventions?*
4. Did therapy that was function/occupation focused relate to higher levels of client self-efficacy?

Procedure

Clients were invited by their therapist to participate in the study after they had completed a pre-arranged appointment for an upper extremity injury. After the therapy session, therapists gave the clients a printed sheet with the survey website to the client questionnaire. If they agreed to participate, it was requested that the survey be filled out regarding that session as soon as possible. Clients also had the option of filling out a paper questionnaire and mailing their responses to the researchers using pre-addressed and pre-paid envelopes. Only two people elected to complete the questionnaire by paper and mail it back to the PI at the university. The client questionnaire took approximately 15-20 minutes to complete, and the therapist

questionnaire took 10-15 minutes to complete. Once the clients agreed to participate in the study, therapists filled out their therapist questionnaires, either online or on paper, with information regarding that therapy session. Confidentiality was protected by anonymous responses.

Researchers were aware of who the therapists were but not the clients by name. Therapists were assigned a code and given a code sheet listing codes for all their participating clients. Clients used their given codes on their questionnaires to identify themselves to the researchers. Clients' responses were kept confidential from their therapists to safeguard the clients' responses and protect anonymity.

Participants had the option of submitting their email and mailing addresses at the end of the survey to receive a \$25 Visa gift card, given at the end of the study. Therapists were not aware of who participated, and they did not have access to any information submitted by their client. Any information shared about the study was in aggregate form only, with no identifying information that allowed identifying therapists, clients or facilities.

Incentives to participate in this study included clients receiving a \$25 Visa gift card for completing a questionnaire. At the end of a completed online questionnaire, clients were automatically directed to a separate link where they had the opportunity to enter their e-mails and mailing addresses to receive their gift cards. For a paper questionnaire, clients were given an index card to indicate their names, e-mails and mailing addresses to receive their gift cards, which were immediately separated from their questionnaires once received by the researchers to maintain anonymity. Therapists also received documentation for ½ an hour of research participation for continuing education units (CEU) for every client who agreed to enter the study. Researchers calculated this by the number of therapist questionnaires each therapist completed, regardless if the client submitted his/her own client questionnaire.

Participants

Participants in the study included therapists and their clients. Therapists were recruited from hand clinics identified as practicing hand therapy in the traditional client factor-based approach and/or practice a function or occupation-based approach. Therapist participants included registered and licensed occupational therapists (OTR/L's) and certified hand therapists (CHT's) working in hand rehabilitation and their clients. The primary investigator (P.I.) and secondary investigator recruited therapists by utilizing the American Society of Hand Therapy database, word-of-mouth, snowball referral, and flyers given out at the 2011 NHOTA conference. We, the investigators, then asked the therapists to recruit their own clients into the study.

While a total of eleven therapists were recruited for the study, only seven (N=7) were able to recruit interested clients and submit a total of twenty-one therapist questionnaires on 21 clients. Of these 21 possible client participants, 9 elected to participate in the study. All seven therapists were OTR/L's: 57.14% (n = 4) were CHT's. Questions were not asked about their length of time as a practicing OT or the years of experience in the field of upper extremities. Each therapist recruited at least one client; others recruited multiple clients. Most (88.8%, n = 8) were from New Hampshire; 11.1% (n = 1) was from Georgia.

Two clients were receiving therapy for arthritis in their hands, two for fractures in the hands, one for a ligament tear in the wrist, one for the severance of the small finger, one to regain the use of his/her upper extremities after a spinal cord injury, one for tennis elbow and one for general neck and shoulder pain. One client was being seen for co-morbidities of arthritis, tendonitis, and general pain in the upper extremities and neck. The names, sex, gender, ethnicity and ages of clients were not collected. The range of time since injury before beginning therapy was one week to ten months. The length of time in therapy from the time of admission to the

questionnaire ranged from one week to six months. Two out of ten clients (20.0%) were also receiving physical therapy in addition to occupational therapy for their injuries or conditions.

The criteria for clients were placed to prevent the inclusion of injuries that would not improve over time. Entry criteria included those clients with injuries of the hand, wrist, elbow and shoulders including tendonitis or lacerations. Persons experiencing progressive chronic conditions such as multiple sclerosis or other systemic progressive disorders affecting the neuromuscular system were excluded from the study. Only persons ages 18 and over were eligible to participate.

Table 1: Client Demographics and Goals for Therapy

| Client | Diagnosis/Injury | Time Since Injury Prior to Starting Therapy | Time in Therapy at Time of Questionnaire | Goals for Therapy |
|--------|---|---|--|---|
| 1 | Left Thumb Trigger Release & Sesamoidectomy | 2 Weeks | 6 Months | Use of hand without pain |
| 2 | Left TFCC Tear | 9 Months | 2 Weeks | No pain or less pain |
| 3 | Right Neck and Shoulder Pain | 1 Month & 2 Weeks | 1 Month & 1 Week | Relief of pain and numbness |
| 4 | PIP Joint Fracture | 1 Month | 1 Week | Full function and straightening of injured finger |
| 5 | CMC Arthroplasty | 1 Month | 1 Month | Regain functional use of left hand and thumb. Reduce post-operative pain. Reduce possible injury to hand during post-operative period. Avoid operative repair |

| | | | | |
|---|--|-----------------------|---------------------|---|
| 6 | Right Small Finger Amputation | 1 Week | 1 Month & 1 Week | Gain back the use of finger |
| 7 | SCI C-4 ASIA D (Incomplete) | 3 Months & 3 Weeks | 3 Weeks | Improve mobility and fine motor skills |
| 8 | Left Lateral Epicondylitis | 3 Months & 1 Week | 1 Month & 1 Week | Regain movement |
| 9 | Bil. CMC Arthritis; Thumb/Wrist Tendonitis; Shoulder/Neck Sprain and Pain | 1 Week | 1 Week | At minimum, lower the pain to a manageable level &possibly learn new work techniques |

The questionnaires used to analyzed therapist-client paired data (N= 9) will be referred to as *therapists with clients* questionnaires. When discussing therapist questionnaires in aggregate form (N=7), all 21 therapist questionnaires were used. When discussing client data not involving information from the therapist questionnaires, information from client-only questionnaires (N=9) were used.

Data Analysis and Results

In order to prepare for data analysis, researchers first coded information given on the questionnaires into categorical variables. For example, therapist goals were nominally coded 1, 2, or 3 depending on whether they were focused on client factor/biomechanical factors, functional/occupation based or both. *Client factor-focused* included goals, evaluations, interventions and reasoning that focused on addressing issues regarding pain, sensation, wounds, or biomechanics (movement and strength). *Function or occupation-based* include goals, evaluations, interventions and reasoning that focused on the functional status of the upper

extremity, onsite modifications to an environment or the therapeutic incorporation of an activity. See Appendix C for study coding.

To establish reliability of coding for *goals*, *interventions*, *evaluations*, and *reasoning*, the codes were reviewed by the P.I. and advisor, as well as by two experienced hand therapists for inter-reliability. The two experienced therapists assigned codes from the coding rubric independently from the P.I. We found common areas of agreement and coded accordingly. Thus, all codes represent agreement amongst all three reviewers. In the cases where the therapists agreed, but the P.I. disagreed, the P.I. deferred to the therapists' experiences and responses. In cases where one therapist out of two disagreed with the P.I., the code that denoted less assumption regarding occupation-based practice was used.

To address the questions regarding perceived stress levels and self-efficacy of the clients, data from the client questionnaires were analyzed. In order to address questions regarding the extent to which therapists focused on functional activities/occupations in their practice, we were able to use therapist characterization of the *goals* identified for their clients, *evaluation tools*, *intervention methods* and *clinical reasoning behind the intervention methods* to note general trends. We compared general trends between clients' and therapists' descriptions of what occurred during therapy in order to look at the percentage of agreement between the clients' and therapists' perceptions of goals and interventions. For these trends in agreement and synchronization, *therapists with clients* questionnaires were used. Client questionnaires were also used to answer questions regarding trends of client satisfaction in therapy.

Perceived Stress Scale and Perceived Self-Efficacy: Total Therapist with Clients and Total Client Questionnaires

In order to assess whether higher levels of client stress affected therapists' perceptions of clients' likely prognoses, the researchers examined the therapists' prognoses of the clients in *therapists with clients* questionnaires and the clients' Perceived Stress Scale (PSS) scores from the client questionnaires. The therapists were asked to give their perceived prognoses of their clients and compare those prognoses to others with the same diagnoses. Two of the nine clients (22.2%) had prognoses unknown by their therapists at the time of the questionnaire. Results from descriptive analyses revealed that of the remaining clients with therapist-reported prognoses, three (33.3%) were poorer than the typical. Three clients (33.3%) had prognoses that were the same as the typical. One (11.1%) was better than the typical. Perceived Stress Scores were available for 8 out of the 9 clients, however all 8 clients scored within -1 and +1 standard deviations from the normed mean indicating that their stress perceptions fell within typical expectations: Client $\bar{x} = 12.22$ (sd 4.21); Normed sample $N = 2,387$, $\bar{x} = 12.0 - 14.7$ (sd 5.0 - 7.2; Cohen 1988; Cohen, 1994). Since none of the participants reported high stress, further analyses was not reasonable.

In order to assess whether there was a relation between higher levels of client perceived self-efficacy (PSE) and function or occupation-based therapy, PSE, client goals, therapist intervention methods, and the client efficacy scores were examined. Results of that analysis were that all 9 clients reported high scores in perceived self-efficacy. Results indicated that they fell within the mean: Client $\bar{x} = 31.30$ (sd 5.68); Normed sample, $N = 7,767$, $\bar{x} = 28.63$ (sd 6.18) (Schwarzer, 1993). Thus, as with perceived stress, there was very little variation in self-efficacy, and we did not explore this further.

Client Goals Written by Therapists: Total Therapist Questionnaires

In order to assess the extent to which therapists wrote occupationally-based goals, researchers examined the written goals. Results revealed that 90.5% (n=19) of all 21 questionnaires in the study described functional status or return to occupations as the client's primary goal. Only two of all therapist questionnaires in the study (9.5%) specified improving client factors as a primary goal (see Table 2a).

Therapy Evaluations: Total Therapist Questionnaires

In order to assess the extent to which therapists used occupational-based evaluations, descriptive statistics were used to examine the evaluations described by the therapists. Results of this analysis were that the majority of therapists used evaluations that did not target functional performance in activities or occupations (see Table 2a). In total, 16 out of 21 (76.2%) therapist questionnaires stated the use of the client factored-focused measurements as evaluation tools. Five of twenty-one (23.8%) therapist questionnaires indicated the use of function or occupation-based evaluations; however, these were subjective client responses (e.g. the DASH, Kennedy, Beaton, Solway, McConnell, Bombardier, 2006). Only two of those five (40.0%) therapists reported using an evaluation tool that objectively measured occupational performance, which was an occupation-based ergonomic workstation evaluation. Two of the five (40.0%) function-based evaluations were in-house questionnaires, and one of the five (20.0%) was an activity/physical demands analysis. Researchers were not given the in-house evaluations to examine and judge.

An interesting trend found was that 9 out of 21 (42.86%) of therapist questionnaires used the DASH. One therapist stated that the DASH was used to assess the client's functional status;

however, this tool is based on subjective report only and does not assess skills or performances objectively (see Table 3).

Therapy Interventions: Total Therapist Questionnaires

In order to assess the extent to which therapists were implementing occupation-based interventions, the researchers examined interventions described by the therapists. Results of these analyses were that the majority of therapists described the use of client-factored approaches in intervention. In total, 18 of 21 (85.7%) therapist questionnaires stated using client factor-focused interventions in therapy. Only three of twenty-one (14.3%) therapist questionnaires indicated the use of functional or occupation-based approaches with/without client education in their intervention techniques (see Table 2a).

Clinical Reasoning: Total Therapist Questionnaires

Researchers examined the clinical reasoning described by the therapists by assessing the extent to which therapists described occupational performance in their clinical reasoning of the interventions. Results indicated that a little over half of the therapists focused on returning clients back to their functional status or to their occupations. In total, 14 out of 21 (66.7%) therapist questionnaires indicated that *return of function or to occupations* was the reasoning behind the interventions. The remaining seven out of twenty-one therapist data (33.3%) stated client-factored reasoning as their clinical rationale (see Table 2a).

The Extent to Which Therapists were Consistent in their Clinical Reasoning Around Function or Occupational Performance in Evaluations, Goal Writing, and Interventions in Total Questionnaires.

In order to address the question regarding the synchronization of goals, evaluations, interventions and reasoning in the focus of *return of function or to occupations*, the researchers

examined the data for potential relationships between the four categories from the 21 therapist questionnaires. To analyze these questions, the researchers used descriptive statistics. Table 4 presents an analysis of consistency among occupation-based practice in the areas goal writing, evaluations, interventions and clinical reasoning behind the interventions. Results indicated that most therapists were inconsistent in providing occupation-based practices in all four categories.

Synchronization of Therapists' and Clients' Perceptions of Practice

Client Satisfaction: Total Client Questionnaires

To assess whether there is a relationship between occupation-based interventions used in therapy and client satisfaction, the researchers examined the client's overall satisfaction with therapy, the overall satisfaction with their therapist-client relationship, the satisfaction with their outcomes at the time of therapy, and any desires to make any changes in therapy. Researchers also examined whether clients felt their therapist listened to them and reviewed goals with them and whether this aligned to therapists' perceptions of the frequency of goal reviews. Results revealed that all 9 clients (100.0%) were "mostly or very satisfied" with the therapy that they received and indicated no desire to make any changes. All 9 clients (100.0%) reported feeling "mostly or very satisfied" with their relationship with their therapist and reported that their therapists listened to them and worked with them in their goals for recovery.

Client Goals: Total Client Questionnaires and Total Therapists with Clients

Of note, all (N = 9) therapists who were in client pairs described *return to functional status or return to occupations* as primary goals. Five out of nine clients (55.5%) reported goals that differed from the therapist reports and indicated more client factor-focused goals than function or occupation-focused. In summary, the majority of the therapists stated that they focused on functional or occupation-based goals, but only about half of the clients perceived the

goals as being functional or occupation-based (see Table 2b). This indicates a misalignment of client and therapist perspectives; there was a trend for therapists and clients not to be coordinated with their goals. Therapists indicated a trend of *return of function or to occupations* in the goals, but clients reported equal trends of *client factor-focused goals* and *function or occupation-based* goals.

Interventions: Total Client Questionnaires and Total Therapists with Clients

Therapists with clients data indicated that seven out of nine (77.7%) therapist questionnaires stated the use of client-factored approaches in interventions. In contrast, only two out of nine (22.2%) *therapists with clients* questionnaires stated using functional or occupation-based approaches in intervention. Only one of the eight clients (12.5%) stated a functional or occupation-based method was used in the intervention. One client (11.1%) did not answer the question (see Table 2b). Therapist and client perception are somewhat aligned in perspective regarding therapeutic interventions (see Table 3).

Table 2a: Descriptive Statistics of Goals, Evaluations, Interventions, and Clinical Reasoning from Total Therapist Questionnaires

| Total Therapist Questionnaires (N=21) | | | | |
|---------------------------------------|-------------------|-----------------------|--------------------|--------------------------|
| | Goals for Therapy | Evaluation Tools Used | Interventions Used | Reasons for Intervention |
| Client Factored | 9.5% | 76.2% | 85.7 % | 33.3% |
| Function/Occupation-based | 90.5% | 23.8% | 14.3% | 66.7% |

Table 2b: Descriptive Statistics of Goals and Interventions from for client and therapist pairs

| Therapists with Clients (N=9) | | | | |
|-------------------------------|-------------------|-----------------------|--------------------|--------------------------|
| | Goals for Therapy | Evaluation Tools Used | Interventions Used | Reasons for Intervention |
| Client Factored | 0.0% | | 77.7% | |
| Function/Occupation-based | 100.0% | | 22.2% | |

| Client Questionnaires (N=9) | | | | |
|-----------------------------|-------------------|-----------------------|--------------------|--------------------------|
| | Goals for Therapy | Evaluation Tools Used | Interventions Used | Reasons for Intervention |
| Client Factored | 55.5% | | 88.8% | |
| Function/Occupation-based | 44.4% | | 11.1% | |

Table 3: Commonly Occurring Therapist Goals, Evaluations, Interventions, and Reasoning

| Goals | Evaluations | Interventions | Clinical Reasoning |
|-------------------------------------|--|---|--|
| Decrease pain, numbness, and edema | DASH | A/PROM and strengthening | Assistance in wound closure/healing |
| Increase strength and ROM | Goniometry, dynamometer, pinch meter and MMT | Ergonomic modifications on workstations | Primary complaints of pain from client |
| Increase functional use of hand/arm | Pain scale and Semmes-Weinstein | Splinting and modalities | Maximize mobility and participation around work, home and leisure activities |
| Increase ability to perform ADLs | Job or worksite evaluation | Edema/scar management and wound care | Address anxiety around moving or caring for extremity |
| Increase comfort at work | In-house questionnaires | Functional therapeutic activities & client educations | Address and prevent current and future injuries |

Table 4: Trends of Occupation-based Clinical Reasoning, Evaluations, Goal, and Interventions in Total 21 Therapist Questionnaires (N= 7 Therapists)

| # of Therapist Questionnaires | Clinical Reasoning for Intervention: Client Factor-focused | Clinical Reasoning for Intervention: Occupation-based | Evaluation Tools Used: Client Factor-focused | Evaluation Tools Used: Occupation-based | Goals for Therapy: Client Factor-focused | Goals for Therapy: Occupation-based | Interventions Used: Client Factor-focused | Interventions Used: Occupation-based |
|-------------------------------|--|---|--|---|--|-------------------------------------|---|--------------------------------------|
| 1 | + | | + | | + | | + | |
| 1 | | * | * | | * | | * | |
| 1 | | | | * | | * | | * |
| 2 | | -- | | -- | | -- | | -- |
| 2 | | * | | * | | * | * | |
| 5 | * | | * | | | * | * | |
| 9 | | * | * | | | * | * | |
| Total: 21 | | | | | | | | |

Key:

+Consistent in client-factor based therapy (n=1 response)

--Consistent in occupation-based therapy (n=2 responses)

*Inconsistent across phases of therapy (n=18 responses)

Data from Questionnaires of Unique Therapists and Client Pairs

The researchers wished to verify that therapist responses from unique client-therapist pairs were similar to pairs in which the therapist responded for multiple clients. In order to do this, we looked at questionnaires submitted by each therapist for only one client. There were six unique therapist responses on five unique clients. The rationale was to ensure that we were

capturing unique clinical reasoning from each therapist regarding clients and not skewing results because of a therapist's tendency to be either more occupation-based or client-factor based.

Results indicated that the trends were very similar on all variables. The only exception was minor; half (50%) of the unique therapists focused on returning clients back to their functional status or to their occupations in clinical reasoning, while 66.7% of the 21 therapist questionnaires focused on function or occupation.

Discussion

Synchronization of Client and Therapist Perspectives

Several interesting findings were identified in this study that help understand the nature of evaluation, goal setting and interventions applied in hand therapy. Most impressively, all of clients, from the total questionnaires and the first-time questionnaires, were happy with their therapists and did not feel that they needed to change their therapy. More specifically, they felt that their therapist listened to them. All clients, even those who were perceived by their therapists as having "poor" prognoses, reported satisfaction with their therapeutic outcomes at time of the questionnaire. Therapists also described frequently reviewing goals with the clients, which might have contributed to the overall satisfaction with the therapy and outcomes. This might be an indication of the value of client-centered practice in improving rapport and increasing positive perceptions of the effectiveness of therapy.

Clients perceived there to be an equal amount of client factor-focused goals and functional or occupation-based goals, which did not align with therapist high reports of occupation-based goals. However, clients did perceive the use of more client-factored approaches in therapeutic interventions, validating the therapist data. Even though clients experienced more client factor-focused methods, all the clients had high self-efficacy scores and

did not report high stress. This might speak to perceived effectiveness of study; however, there was very little variation in the sample, so some questions of study were not able to be addressed.

General Therapist Trends Regarding Occupational Practice

Therapists generally identified with more client-factor focused evaluations and interventions, even though they embrace function and occupation in their goals. Therapist data from the total 21 questionnaires indicated that more than half of them embraced function and occupation in their clinical evaluations. These results show that overall there were intentions to return the client to functional status or to occupations even when evaluation tools and intervention methods used were client-factored. These are interesting findings, as it suggests that there is a need to develop better tools to evaluation and assess clients' functional and occupational performances in objective manners. This also poses the question of what it means to be occupation-based in hand clinics.

Conclusion

The results of this study suggest that in this small sample, clients benefitted from the client-centered practices. However, therapists and clients gave descriptions of interventions that were primarily focused on client factors rather than return to function or desired occupations. A minority of therapists described this as their primary reason for goal setting. Further, few therapists used occupation-based evaluations.

The findings of this study also suggest that there is a need to develop more occupation-based evaluations for therapists to use in practice. Many described the use of the DASH as an evaluation, which is a subjective report of perceived function rather than an objective measure of functional performance. There seems to be a need for improved occupation-based tools in this area that are not only quick to administer, but also relevant to outpatient hand settings.

Limitations

There was difficulty in recruitment and the small number of participants was not representative of the population of clients in need of hand therapy. The number of participants was also not enough to run statistically significant correlations. In addition, to protect the identities of the clients, much demographic information was not asked. Researchers were then unable to find any trends related to age, sex, gender, or ethnicity in relation to health or prognoses. Therapists were also not asked to indicate the length of time they spent practicing in the field of hand and upper extremity, which would have given researchers a context to frame their responses.

Most questions asked on the questionnaires were also subjective of both the therapists and the clients regarding their perceptions of what occurred during therapy. Reliability of what actually occurred might have been affected. Also, the P.I. was not able to obtain copies of the in-house evaluation tools that therapists used as “functional evaluations,” so the benefit of the doubt was given to those evaluations regarding functional or occupation-based.

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