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The use of occupation-based interventions and assessments in hand therapy: A cross-sectional survey

Kristin Valdes, OTD, OTR, CHT[a,*], Nancy Naughton, OTD, OTR, CHT[b], Raquel Cantero Téllez, PhD, MSc. PT, OT[c], Mike Szekeres, PhD, OT, CHT[d]

[a] Occupational Therapy Department, Touro University, Henderson, NV, USA
[b] Occupational Therapy Department, Hand Surgery Associates, Olyphant, PA, USA
[c] University of Malaga, Malaga, Spain
[d] Hand Therapy Canada, London, Canada

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ABSTRACT

Introduction: The purpose of this study was to *gather information on how* hand therapists incorporate occupation-based interventions in their clinical practice and what outcome measures hand therapists use to measure the occupational performance of their clients
Study Design: Cross-Sectional Survey Design.
Methods: The 16-item Survey was distributed to members of the American Society of Hand Therapists on two occasions.
Results: Three hundred eleven hand therapists responded to the survey. Hand therapists use a variety of occupation-based interventions (OBI) in clinical practice and most believe they are important. Findings from this study reveal that incorporating an occupation-based assessment along with or in place of an assessment of body functions and structures is not performed routinely. One hundred twenty-six (41%) respondents indicated that they use occupation-based activities 26-50% of the time with their clients.
Discussion: The top three OBI interventions used by hand therapists included dressing tasks, cooking and meal preparation, and in hand manipulation of coins and medication. The lack of understanding of the theoretical models regarding occupation-based interventions may be a barrier toward implementation of occupation-based interventions and assessments as many hand therapists may have trained under a medical model.
Conclusion: Most respondents to this survey indicated that they believe OBI should be performed by hand therapists and use them routinely in practice. The most frequently used *type of* assessment was the DASH (Disabilities of the Shoulder Arm & Hand). The least frequently used assessment was the Short Form 36 and patient specific occupation-based assessment.

Introduction

The profession of occupational therapy has adopted and used occupation as the core therapeutic means of intervention.[1] This concept has also been integrated into the physical therapy and the hand therapy professions as well. Conceptually, occupation-based interventions (OBI) seem both logical and practical to include in treatment programs in a variety of clinical settings. In the culture of the medical model and biomechanical framework in healthcare, it has been a challenge to routinely include OBI into hand therapy practice. [1,2] Barriers for the integration of OBI can include issues surrounding logistics and reimbursement or limitations imposed by the client's medical condition.[2]

The hand therapy literature is sparse with respect to the integration and effectiveness of OBI in the treatment of hand and upper extremity patients. A systematic review on the topic reported that the existing literature reflects promising trends in the use of OBI as a treatment intervention for upper extremity musculoskeletal impairments, limitations, and restrictions.[3] But unfortunately, the current scientific evidence concerning the effectiveness of OBI needs to be improved by conducting high-quality studies that appraise the intervention in hand therapy practice.[3] A ran-

* Corresponding author. Occupational Therapy Department, Touro University Nevada, 105 Commercial Center Drive, Henderson, NV, 33573, USA.
E-mail address: Kvaldes2@touro.edu (K. Valdes).

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Table 1
Demographics of respondents

Characteristic					
Occupation		OT	PT	COTA	
		289 (93%)	21 (7%)	1 (0%)	
	22-30	31-40	41-50	51-60	Over 60
Age	24 (8%)	53 (17%)	79 (25%)	101 (33%)	53 (17%)
	0-3	4-15	16-25	Over 25	
Years of experience as a hand therapist	30 (10%)	79 (25%)	90 (29%)	111 (36%)	
	Private Practice	Hospital	Outpatient facility	Academic	Other
Work Setting	134 (43%)	126 (41%)	38 (12%)	11 (4%)	2 (0%)
	Less than 18	18-55	Over 56		
Average client age	7 (2%)	257 (83%)	44 (14%)		

domized trial of young adult patients in a military setting compared a therapeutic exercise only group to therapeutic exercise plus an occupation-based intervention with a focus on activities of daily living (ADL's) group for patients following a hand injury.[4] They found the group which included the occupation-based activities had greater speed and amplitude of recovery than the exercise only group as measured by the Disabilities of the Arm, Shoulder and Hand (DASH) and Jebsen- Taylor Hand Function Test.[4]

The updated framework provided by the World Health Organization *International Classification of Functioning, Disability and Health* (ICF) has brought to light the focus on health versus disability, with a renewed emphasis on the biopsychosocial model and less on the medical model.[5] As the framework makes its way into high level studies, it is possible that there may be a *shift away from the focus on body structures and function* and renewed emphasis on function with the identification of activity and participation. This may ultimately improve the acceptance of OBI in the realm of hand therapy. The American Occupational Therapy Association (AOTA) indicates that the occupation-based and client-centered approach which identifies the participation needs of the client—what he or she wants to be able to do in daily life that is fulfilling, necessary, and/or meaningful—and emphasizes the performance of desired activities as the primary goal of therapy.[6] Evidence for OBI in hand therapy is slowly emerging and there is a gradual increase in the variety of occupation-based assessments and treatments available for this population. The purpose of this study was to *gather information on* how hand therapists incorporate occupation-based interventions in their clinical practice and what outcome measures hand therapists use to measure the occupational performance of their clients.

Methods

Research design

This study used a cross-sectional design. A web-based survey was used to investigate hand therapists use of occupation-based interventions in clinical practice. Three researchers with previous survey development experience devised the survey. The survey asked for demographic data and what frequency OBI interventions and assessments were used in clinical practice. The assessment tools included: Disabilities of the Shoulder Arm & Hand (DASH), Short Form 36 (SF-36), *assessments that measured the participants ability for* Carrying, Moving, & Handling an object (example, Functional Reach Test), a range of motion or mobility assessment (example, Barthel index), a satisfaction assessment and a self-care assessment. *Author consensus was used to determine the categories and assessments included in the survey.* The survey received university Institutional Review Board approval and was peer reviewed by members of the research division for the American Society of Hand Therapists (ASHT). The "Checklist for Reporting Results of Internet E-Surveys" (CHERRIES) was consulted and followed for appropriate design.[7] The survey consisted of 5 demographic questions, 3 multiple choice questions, 3 rating questions, and 5 open-ended questions. **Appendix A**

The web-based survey was distributed through Qualtrics (Qualtrics, Salt Lake City, Utah) to active members of ASHT with an email address on file. The survey was a closed survey available to members of ASHT. The survey was emailed to members 6 weeks apart in December 2020 and January 2021 to improve response rate. Participation was voluntary with no compensation for participation. Anonymity was maintained with protection of names, email and IP addresses through a password protected data base. The survey was designed to allow for each participant to complete only one time. The data was collected from ASHT members who completed the survey.

Data analysis

The raw data was retrieved from Qualtrics and was checked for errors. Descriptive statistics, frequencies and percentages were calculated using Microsoft Excel.

Results

Of the 3,350 *members of ASHT* who received the questionnaire email, 44% of recipients opened the email (n= 1,468). A total of 311 members responded to the survey, resulting in a 21% response rate. Table 1

The first question *assessed the respondents perceived* importance of providing intervention techniques that directly address client occupational needs. One hundred ninety-two (62%) respondents reported this was extremely important, while 103 (33%) respondents identified this as very important, and 16 (5%) of the respondents indicated it was moderately important. No respondents indicated that it was either slightly important or not important.

The next question asked how often they used occupation-based activities with their clients 307 (99%) of the respondents answered the question and 4 (1%) respondents declined to answer the question. One hundred twenty-six (41%) respondents indicated that they use occupation-based activities 26%-50% of the time with their clients. The respondents were asked to estimate the percentage of direct intervention time addressing each domain *in* the International Classification of Functioning (ICF). These responses can be found in Table 2.

Table 3 displays the time *reported to be* spent on occupation-based activities by the respondents.

The respondents were asked if they ever use virtual reality (VR) to improve strength or range of motion and simulate occupations. Two hundred and seventy respondents (89%) indicated that they did not and 32 (11%) indicated that they did use virtual reality in clinical practice. When asked to describe how they used virtual reality in practice, a few categories emerged. The respondents indicated that they used a variety of games including smart phones,

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Table 2
The percentage of time reported to be spent addressing each domain of the ICF

Domain	Mean	SD	Min	Max
Body Function Impairments: the physiological functions of body systems (including psychological functions)	22%	14	0%	80%
Body Structure Impairments: Problems in structure as a significant deviation or loss	29%	17	0%	95%
Activity Limitations: Difficulty an individual may have in executing activities	23%	14	0%	90%
Participation Restrictions: Problems an individual may have in involvement in life situations	13%	9	0%	95%
Environmental factors: Make up the physical, social, and attitudinal environment in which people live and conduct their lives	10%	9	0	100%

Table 3
Time reported to be spent on specific occupation-based activities

Occupation-based activity	Most of the time	About ½ of the time	Rarely	n=
Instruction in adaptive strategies for ADL tasks	108 (36%)	160 (53%)	34 (11%)	302
Meal preparation	35 (11%)	124 (41%)	145 (48%)	304
Bathing & grooming	34 (11%)	109 (36%)	161 (53%)	304
Hygiene devices (e.g. Razor, toothbrush)	31 (10%)	127 (42%)	141 (47%)	302
Active leisure (bowling, golf, tennis, or other sport)	31 (10%)	110 (36%)	163 (54%)	304
Laundry	20 (7%)	105 (35%)	175 (58%)	300
Play	18 (5%)	73 (25%)	205 (70%)	296
Computer, data entry, keyboarding, browsing	16 (5%)	103 (34%)	183 (61%)	302
Playing cards	14 (5%)	113 (37%)	176 (58%)	303
Listening to music	13 (5%)	31 (10%)	255 (85%)	299
Gardening & lawn tools	10 (3%)	123 (41%)	168 (56%)	301
Shopping	6 (2%)	49 (16%)	246 (82%)	301
Board games	4 (1%)	55 (14%)	258 (85%)	302
Crafts	3 (1%)	41 (14%)	276 (90%)	303
Cars, driving simulators	3 (1%)	49 (16%)	247 (83%)	299
Social Networking	3 (1%)	35 (12%)	260 (87%)	298
Drawing	2	25 (8%)	276 (91%)	303
Journaling	1	24 (8%)	277 (92%)	302
Banking	1	20 (7%)	279 (93%)	300
Dancing	1	14 (5%)	283 (95%)	298

IPad, Wii, Kinect, and the Raphael glove. The respondents indicated that the VR was used to simulate work tasks, improve compliance with home programs, improve engagement, and to encourage functional use of the involved extremity. When respondents were asked how they graded the activity when the patient was performing VR, the respondents indicated they increased the speed or the force, used the game levels present in the application, changed the body position, or increased the time performing the game. The respondents that used VR were asked to rate the satisfaction with the system they used, 18 (70%) indicated they were either extremely or somewhat satisfied with the system and 8 (30%) were either neutral or slightly dissatisfied with the VR system used.

The respondents were provided a free text area to list the top six occupation-based intervention commonly used in practice. Activities of daily living (ADL) and Instrumental Activities of Daily Living (IADL) tasks were the tasks that were most frequently reported. However, leisure activities, play, crafts, hobbies, sports, and mindfulness were also reported. Table 4

The most frequently used type of assessment used by the respondents was the DASH (Disabilities of the Shoulder Arm & Hand). The least frequently reported type of assessment used did not measure IADL status (example: Short Form 36 and the COPM). refer to Table 1. The frequency distributions are found in Table 5.

Finally, the respondents were asked to provide any other feedback regarding the use of occupation-based assessments in their practice. Fourteen respondents *(5%)* provided a comment. *The responses were categorized by the authors.* The respondents indicated that barriers to occupation-based interventions included limited time, space, and equipment and the patients' precautions and ability to perform the intervention. The respondents acknowledged that the performance of occupation-based practice was important, and client centered. Table 6 Non-OBI activities were reported by respondents as well. These included Range of motion (3), Velcro board (2), strengthening (1) weights (1) gripper (1), flex bar (1) joint mobilization (1) scar massage (1), desensitization (1) and performing the wrist maze (1).

Discussion

According to our findings, hand therapists use a variety of OBI in clinical practice and most believe they are important. Findings from this study reveal that incorporating an occupation-based assessment along with or in place of an assessment of body functions and structures is not performed routinely by hand therapists, despite the finding that OBI is considered important.

The use of occupation-based assessments has been identified as being valuable in identifying functional performance limitations.[6,8] This is like the findings of a survey regarding occupation-based assessments and interventions which found trivial use an occupation-based assessment, the Canadian Occupation Performance Measure (COPM). [9]Our survey found only 9% of the respondents incorporated the COPM *assessment* routinely in clinical practice. *The 2015 therapist survey*[8] *reported that the COPM was used only 1% of the time with all clients*, 1% with most clients and 87% of the respondents indicated that they had never using this measure.[8] This is similar to the findings of a 2014 survey of hand therapists and their use of outcome measures that found 1% of the respondents used the COPM in clinical practice.[9] Time constraints was identified as a factor for not using an occupation-based assessment in two surveys.[9,10] Although the administration of the COPM can be timely, a recent study found that the use of the COPM can save the need to use an additional outcome measure to determine the patient satisfaction.[11] Hand therapists could choose to use an occupational profile to determine their client's perspective on their occupational performance.[12]

Although the DASH questionnaire is not specific to assess patients 's occupation, it was identified as the mostly frequently used assessment in this survey which is in line with the study of hand

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Table 4
Occupation-based activities used the most frequently by respondents

Occupation-based Activity	n=
Dressing tasks	67
Cooking and meal preparation	66
In hand manipulation of coins, nuts, medication	62
Carrying & lifting of objects	59
Work simulation	56
Utensil use	54
Writing	53
Tool use	51
Keyboarding and computer use	50
Sports (golf, tennis, ball handling)	50
Grooming & Hygiene	40
Opening containers, jars, packages	38
Reaching or removing of objects in cabinets	28
Laundry	27
Board games	22
Playing cards	21
Housecleaning, sweeping, vacuuming	20
Gardening & yard maintenance	19
Crafts & Hobbies	19
Turning a key or object	18
Baltimore Therapeutic Equipment (BTE) work simulator	17
Driving	14
Washing dishes	13
Exercise as an occupation	13
Filling pots and pans	8
Play	6
Leisure activities	5
Playing. musical instrument	5
Phone	5
Wringing out towels	4
Turning pages	4
Painting	4
Coloring	3
Home maintenance	3
Drawing	3
Childcare	3
Knitting	3
Making bed	2
Tying knots	2
Mindfulness	2
Sleeping	2
Dancing	1

therapists use of patient rated outcome measures which reported that the DASH was used by the overwhelming majority (89.6%) of respondents.[9] The majority of respondents to this survey indicated the use of impairment-based measures, which measure limitations of body structures and function, such as range of motion, grip and goniometry and these findings are consistent with other surveys.[8-10] Informal assessment of ADL's has been identified as a common method of assessing ADL status.[8-10] *Therapists may choose to ask the patient or watch the patient perform an ADL task rather than using a standardized measure, but the routine use of this technique makes ADL status difficult to quantify or determine progress.* Our study found that measures that assess ROM were used "most of the time" by 50% of therapists. Other research has found that most therapists identify the need and advantage to performing occupation-based assessments and interventions.[8-10] Our survey reveals the scope and use of occupation-based assessments by hand therapists is narrow and limited in clinical practice. Availability[12] and familiarity[10] are cited reasons for not using an occupation-based assessment. The Patient-Specific Functional Scale (PSFS) can be used in any patient population because the patient selects functional items that they are having difficulty with, and therefore the items are patient specific.[13] It was found that the DASH and the Patient Specific Functional Scale measure different constructs and should not be used interchangably.[14] Research[15,16] on this topic will improve the hand therapist's awareness of occupation-based assessments but knowledge translation to clinical practice takes time.[17]

An exploratory study[18] suggested that a client centered, functionally oriented assessments is critical to fully capture the essence of a patient's function and assessments that focus on body structures and function may not be sufficiently effective in identifying functional deficits. This echoes the sentiment of the WHO ICF which similarly places the emphasis on activity and participation and less on impairment.[5] A systematic review[19] identified that none of the most used Patient Reported Outcomes (PRO's) represent all categories of the ICF Core Sets for Hand Conditions. Activity and participation are captured by more PRO's than personal and environmental factors.[19]. *The findings of our study reinforce previous studies that reported that the most used assessments do not measure occupational performance or participation.*

Interventions in hand therapy often aim toward restoring occupational participation and 62% responders reported that directly addressing the client's occupational needs was an extremely important intervention technique. However, their reported interventions did not consistently relate to OBI when respondents indicated they performed passive range of motion, scar massage, and other preparatory methods when asked to list the six most common OBI used in clinical practice. However, a variety of specific OBI interventions were reportedly used by hand therapists. The top three OBI interventions used by hand therapists included dressing tasks, cooking and meal preparation, and in hand manipulation of coins and medication. Limited studies have been performed on the effectiveness of occupation and purposeful activities as a therapeutic agent in hand therapy. OBI has shown positive effects on satisfac-

Table 5
Frequency distributions of assessment use

Assessment	Most of the time	n=	About half the time	n=	Rarely	n=	Total
DASH (Disabilities of the Shoulder & Hand)	77 %	196	8 %	21	15 %	37	254
Range of Motion/ Mobility Assessment (example: ADL index, AM-PAC basic mobility, Barthel Index	50 %	122	10%	26	40%	98	246
Satisfaction Assessment	38 %	94	17 %	42	45 %	110	246
Self-Care Assessment	28 %	70	24 %	60	48 %	119	249
Short Form 36	15 %	35	2 %	5	83 %	200	240
Carry, Moving, or Handling of objects (example: Functional Reach Test, Arm Motor Ability Test, Wolf Motor Function Test	14 %	34	15 %	36	71 %	172	242
Occupation Based Assessment (example: COPM)	9 %	22	11 %	28	80%	196	246

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Table 6
The use of occupation-based interventions in hand therapy practice

Categories	Comment	n=
Limitations	*"Use of occupation-based interventions is limited by time, space, equipment, & environment"* *"It is limited by space and resources"* *"Time limitations are an issue"*	5
OBI is important	"I believe is an occupational therapist it's very important and a part of my practice to include occupation-based interventions into my practice. And I feel my patients are more confident to return into their communities" *"It is important to incorporate occupations so the client can return home and continue to use the injured UE in a purposeful way"* *'I think it is very valuable and helps patients to get more involved in their therapy'*	5
Preparatory activities lead to OBI	*"I feel that most of the time is spent restoring function such as increase PROM, AROM, and strength so client is able to perform occupational based treatments. However, by that time insurance has already limited visits or will not allow for continued tx"* *"Hand therapists use preparatory activities initially and then build to occupation-based activities when patient is able"* *"I support occupation-based interventions whenever feasible and beneficial, often utilizing other interventions improves actual occupations at home/work/or with sports and hobbies"*	4

tion, motivation, sense of autonomy and control on life more than rote exercise in upper limb injuries.[20] Although it is necessary to evaluate the patient's tissue response and stage of the healing before establishing a treatment program focused on the client's occupation, OBI allows patients to perform components of the rehabilitation program at home.[21]

According to our results, most hand therapists understand that applying occupation-focused models to improve client engagement is important, but some therapists do not routinely use these models when treating or assessing their clients. This could be due to the lack of a variety of validated instruments for the measurement of specific occupations. There could also be a lack of understanding of the theoretical models regarding OBI as many hand therapists may have trained under a medical model or biomechanical framework and may have a limited ability to select and apply an appropriate OBI for maximum client benefit.

Limitations

Although the survey was emailed to all ASHT members with an email address on file, not all ASHT members opened the email or responded to the survey, therefore the results may not be a comprehensive representation of the opinion of all ASHT members. The survey did not include open-ended responses to garnish reasons for not implementing occupation-based assessments. The survey was sent out at the height of the COVID-19 pandemic and therapists may have been struggling to maintain their jobs and practices. This could have impacted our response rate. *Finally, the survey tool may have influenced participant responses because occupation-based interventions were provided.*

Clinical implications

The inclusion of patient specific occupation-based assessments is limited amongst hand therapists. This study *found* that many of the outcome measures used by hand therapists generally assess body structures and functions. *However, most of the hand therapist respondents were able to identify specific OBI interventions that they use in clinical practice to restore the client's functional level indicating that OBI interventions are routinely used.*

Future research

A consideration for future research should include investigating barriers associated with integrating and performing occupation-based assessments. Future studies should be able to indicate if the performance of OBI demonstrates improvement in objective impairment measurement, patients' satisfaction, *function*, and treatment adherence. Future studies that focus on the effectiveness of different occupation-based interventions could facilitate a return to more occupation-based practice by hand therapists. *Additional rigorous OBI intervention studies with a variety of hand injuries are also needed.*

Conclusion

Most respondents to this survey indicated that they believe OBI should be performed by hand therapists and were able to provide specific OBI that they use in clinical practice. The most frequently used type of assessment was the DASH (Disabilities of the Shoulder Arm & Hand). The least frequently used assessment type reported used by our respondents were occupation-based assessments.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jht.2021.10.008.

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