



Facilitators and Barriers to the Use of Outcome Measures by Certified Lymphedema Therapists

David Aaron Doublestein, PT, PhD¹; Bryan A. Spinelli, PT, PhD²; Allon Goldberg, PT, PhD³; Cathy A. Larson, PT, PhD⁴; Amy M. Yorke, PT, PhD³

¹Assistant Professor, Physical Therapy Department, A.T. Still University, Mesa, AZ; ²Assistant Professor, Physical Therapy Department, Thomas Jefferson University, Philadelphia, PA; ³Professor, Physical Therapy Department, University of Michigan-Flint, Flint, MI; and ⁴Associate Professor, Physical Therapy Department, University of Michigan-Flint, Flint, MI

Background: Various outcome measures (OMs) have been used with individuals with breast cancer–related lymphedema (BCRL). There have not been studies investigating the facilitators and barriers to the use of OMs by certified lymphedema therapists (CLTs) on BCRL. The purposes of this study was to (1) identify facilitators and barriers for use of OMs reported by CLTs and (2) investigate the association of personal and professional characteristics of CLTs and their knowledge or beliefs about OMs. **Methods:** Cross-sectional online survey research design. Electronic surveys were distributed to CLTs from various institutions. Data from 70 physical therapists and 41 occupational therapists were analyzed. Point-biserial correlations examined associations and logistic regression examined predictors to OMs facilitators and barriers. **Results:** Certified lymphedema therapists agreed that OMs help direct a plan of care (90.1%), improve quality of care (76.6%), and determine the efficacy of their intervention on BCRL (72.7%). Certified lymphedema therapists reported difficulty knowing the best OM to choose due to numerous options (67.3%). Barriers for OMs included lack of knowledge and time, availability in workplace, and personal preferences. Characteristics associated with barriers and facilitators were few and poorly correlated. **Conclusion:** Certified lymphedema therapists agree on the benefits of and to the use of OMs, however, physical therapist CLTs may value the use of OMs less than occupational therapists. Certified lymphedema therapists experience barriers to use of OMs related to lack of knowledge and implementation skills. Further guidance is needed in selecting OMs for breast cancer survivors with BCRL to reduce barriers to their use. (*Rehab Oncol* 2023;41:121–128) **Key words:** barriers, breast cancer, facilitators, lymphedema, outcome measures

Rehabilitation Oncology
Copyright © 2023 Academy of Oncologic Physical Therapy, APTA.

Grant Support: This project was funded by \$500 Large Grant—MPTA Institute for Education and Research, Inc, and Two \$500 awards from the University of Michigan—Flint Physical Therapy Department's PhD in PT Research Fund.

The authors declare that they have no conflict of interest related to this research.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's Web site (www.rehabonc.com).

Online Publication date: January 24, 2023

Received: August 1, 2022; Accepted: October 30, 2022

Correspondence: David Aaron Doublestein, PT, PhD, Physical Therapy Department, A.T. Still University, 5850 E Still Circle, Mesa, AZ 85206 (daviddoublestein@atsu.edu).

DOI: 10.1097/01.REO.0000000000000331

Standardized outcome measures (OMs) are an essential component of evidence-based practice (EBP) and are often incorporated in the examination of individuals with a disorder and the outcome assessment of interventions for related impairments of body functions and structures and limitations of activities and participation.^{1,2} The results of these OMs provide a foundation for clinical reasoning in the diagnosis, prognosis, and establishment of intervention and/or management of a health condition.³ The use of OMs in the clinical setting can justify the efficacy of a plan of care for chronic conditions such as in breast cancer–related lymphedema (BCRL). Outcome measures are a key component to patient-centered care, value-based health services, and current reimbursement models, especially in complex long-term conditions.⁴

Recommended OMs to be used with individuals surviving breast cancer (BCS), lymphedema, and BCS with BCRL have been established by the Breast Cancer EDGE

Downloaded from <http://journals.lww.com/rehabonc> by 171.155.66.100 on 07/13/2023
10.1097/01.REO.0000000000000331

Downloaded from <http://onlinelibrary.wiley.com/doi/10.1111/1532-2149.14300> by University of Michigan, Wiley Online Library on [07/13/2023]. See the Terms and Conditions (<http://onlinelibrary.wiley.com/terms-and-conditions>) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Task Force and the Dutch Society of Dermatology.^{5,6} A clinical practice guideline (CPG) for the diagnosis of BCRL was developed by the Academy of Oncologic Physical Therapy of the American Physical Therapy Association and recommends OMs for this population.⁷ Beyond these guidelines, there are other OMs being used by certified lymphedema therapists (CLTs) for use in the population with BCRL.⁸ Adding to that fact is that there is a multidisciplinary group of professionals who are CLTs including, physical therapists (PTs), occupational therapists (OTs), massage therapists (MTs), nurses (RNs), and physicians (MDs).⁹ The use of OMs across a number of health care disciplines¹⁰⁻¹² has been meager over the last decade. Furthermore, there is limited evidence on differences in the use of OMs between PTs, OTs, RNs, and MDs.^{12,13} Past studies have reported a greater use OMs by PTs compared with OTs,¹³ and MDs and RNs compared with PTs and OTs.¹² Jette et al¹⁰ reported that 48% of PTs used OMs. Approximately 74% to 85%^{11,14} of clinically practicing certified athletic trainers (ATCs) do not use patient-reported OMs.

Knowledge of and the competence to use of OMs are routinely reported as significant barriers for the use of OMs across health care disciplines.¹⁵⁻¹⁷ Lack of knowledge on OMs may limit a clinician's competence and confidence in their use at work and in research settings, which may lead to undervaluing EBP.¹⁵⁻¹⁸ Other significant barriers reported across disciplines include lack of time to implement, scoring and interpreting OMs, difficulty in patient comprehension, low perceived value of the measurement, lack of suitability of the instrument, lack of appropriate psychometric properties of the instrument, diminished attitude toward EBP and OMs, and lack of advocacy from management and peers.^{10,11,15-17,19-21} Common facilitators of OMs juxtapose the barriers.

Although various health care professionals have positive beliefs about EBP and OMs, that they are considered useful for enhancing levels of communication and thoroughness of a plan of care, their use may be limited by CLTs working with BCS with BCRL. Facilitators and barriers to the use of OMs with BCS with BCRL have not been explored in the diverse health care professionals (eg, PTs, OTs, MTs, MDs, and RNs) who are CLTs. The purposes of this study were to (1) identify facilitators and barriers for use of OMs reported by CLTs and (2) investigate the association of personal and professional characteristics of CLTs and their knowledge or beliefs about OMs.

METHODS

Doublestein et al⁸ conducted a cross-sectional study investigating the use of OMs by CLTs with BCS with BCRL.⁸ An online survey design was implemented to gather responses from CLTs from various postprofessional lymphedema continuing education programs and related professional associations in the United States. Detailed description of the survey methodology, variables, and statistical analysis is provided elsewhere.⁸ This study is a follow-up analytic investigation to the study by Doublestein

et al,⁸ which received exempt status by the Health Sciences and Behavioral Sciences Institutional Review Board of the University of Michigan, Flint and from A.T. Still University, Arizona. Respondents gave written informed consent before completing the survey.

The survey was divided into 3 domains to gather (1) demographics and practice characteristics of respondents, (2) levels of use of standardized and clinically relevant OMs, and (3) levels of agreement on facilitators and barriers to using OMs. Outcome measures were separated into 2 domains from the International Classification of Functioning, Disability and Health (ICF): (1) OMs used by CLTs to measure ICF domain of body structures and functions with subdomains of (1.1) joint function, (1.2) flexibility, (1.3) strength, (1.4) volume, (1.5) pain, (1.6) tissue consistency, (1.7) body composition, and (1.8) sensation; and (2) OMs used by CLTs to measure ICF domains of activities and participation with subdomains of (2.1) patient-reported function and health-reported quality of life, (2.2) patient-reported upper quadrant function, (2.3) patient-reported fatigue, (2.4) mobility and balance, and (2.5) upper extremity activity and motor control.⁸ A total of 92 OMs (see Supplemental Digital Content 1, available at: <http://links.lww.com/REHABONC/A46>) were scored a level of use by the respondents. Levels of use for OMs were scaled as frequent, occasional, seldom, and do not use. In addition to the levels of use of OMs, the survey gathered barriers to use of OMs in each subdomain. Barrier options included (1) lack of knowledge of the OMs, (2) lack of skill using OMs, (3) lack of time implementing OMs, (4) too difficult for the patient to perform, (5) examination preference (eg, review of systems, predetermined tests, and measures), (6) OMs not available at workplace (eg, cost, resources), (7) workplace does not support use of OMs, (8) too confusing for the patient to understand, (9) OMs not inclusive (eg, culturally, ethnically, gender), and (10) other. The facilitators and barriers to the use of OMs were categorized from a modified format outlined by Braun et al,²² which includes (1) beliefs of the therapist, (2) knowledge and competence, (3) health care practice, (4) business structures, and (5) health care equality. Levels of agreement were scaled (1) strongly agree, (2) somewhat agree, (3) neither agree nor disagree, (4) somewhat disagree, and (5) strongly disagree.

Data Analysis

Data were analyzed using IBM SPSS version 28 (Armonk, New York). The total sample of respondents (n = 130) included PT (n = 70), OT (n = 41), MT (n = 7), RN (n = 3), and physical (n = 6) and occupational (n = 3) therapist assistants. Because of sparsity of some of the respondent's professions, the sample was collapsed for analysis (n = 111) and included groups most represented, including (1) OT CLTs and (2) PT CLTs. Descriptive statistics were presented as means \pm SD, counts (n), and frequencies (%). Independent samples *t* tests were used to analyze group differences between OTs and PTs for parametric data. Nonparametric data were analyzed with the χ^2 test of

Downloaded from <http://links.lww.com/REHABONC/A47> by 108.158.66.147 on 07/13/2023
Copyright © 2023 by Wolters Kluwer Health | Lippincott Williams & Wilkins
DOI: 10.1097/ROO.0000000000000000

independence and the Mann-Whitney *U* test. Fisher exact test was used when more than 20% of cells had expected counts less than 5. Barriers for ICF subdomains were presented at counts (*n*) and frequencies (%). The Likert scale for OMs was collapsed to (1) Use and (2) Do not use, and collapsed for facilitators and barriers to (1) agree and (2) disagree, with neither agree nor disagree coded into disagree with the rationale being that respondents who answered strongly agree or somewhat agree were those who agreed with the statement.²³ To investigate the association of personal and professional characteristics to individual facilitator and barrier statements, a binomial logistic regression was conducted with the reference criteria being agreement to the statement. To investigate the association of facilitators to the use of OMs used most often (fourth quartile) and barriers to the use of OMs used least often (first quartile) (see Supplemental Digital Content 2, available at: <http://links.lww.com/REHABONC/A47>),⁸ a binomial logistic regression was conducted for each OM with each facilitator/barrier statement. Odds ratios with 95% confidence intervals were reported for significant independent variables.

To further investigate the association of personal and professional characteristics to facilitators and barriers, an exploratory factor analysis (principal axis factoring with direct oblimin rotation) of 38 statements was conducted. Eight factors were identified and named by the investigator based on the content of items loading highly on each factor: (1) Beliefs of therapist on OMs, (2) Time to use OMs, (3) Workplace determinants to use OMs, (4) Comprehension of OMs, (5) Patient determinants to use OMs, (6) Training to use OMs, (7) Opinions about OMs, and (8) Inclusivity of OMs. Unit-weighted factor scores were calculated to express the degree to which participants agreed with the statements comprising each factor. Characteristics of interest were selected on the basis of how commonly they were reported in the literature associated with the use of OMs and EBP, which included (1) age of therapist,²⁴ (2) highest degree earned,^{10,19} (3) years in practice,²⁵ (4) practice specialization,^{10,19} (5) years as CLT,²⁵ (6) Lymphology Association of North America (LANA) certification,^{10,19} (7) practice setting,¹⁰ (8) minutes allocated for initial evaluation,^{10,19} and (9) profession.^{26,27} Profession and highest degree were correlated ($r_s = 0.22, P = .02$) as well as therapist age and years of practice ($r = 0.90, P$ value of less than .001), which resulted in a moderate risk of multicollinearity (variance inflation factor greater than 5). Age of therapist and highest degree earned were removed from the analysis resulting in no risk of multicollinearity. Point-biserial correlations between characteristics and factor scores were calculated to illustrate the association of characteristics to factors. Alpha level was set at 0.05 for all analyses.

RESULTS

Participants

The CLT respondents (*n* = 111) who use OMs with BCS with BCRL were 98% (*n* = 109) female and 2% (*n* = 2)

male, with an average age of 48 ± 10.6 years, which was not significantly different between PT and OT groups ($t_{108} = -0.27; P = .79$). Forty-eight (68.5%) of the PTs pursued National CLT certification through LANA, while 56% (*n* = 23) of OTs pursued this credentialing. There was a statistically significant difference between PT and OT groups on having additional certifications beyond CLT, with OTs having a greater number of specialized therapist certificates ($\chi^2_1 [n = 111] = 5.00; P = .03$). Respondents similarly reported that a mean of $64.2 \pm 29.2\%$ of their practice was devoted to lymphedema management. The allocation of intervention and management for BCRL was similar for PTs and OTs with an average of 3.5 ± 3 BCS with BCRL seen in an 8-hour workday. Further respondent and practice characteristics and their related group differences are evidenced in Table 1.

Barriers to the Use of OMs Within ICF Subdomains

Respondents identified various barriers to OMs within the ICF subdomains (see Supplemental Digital Content 1, available at: <http://links.lww.com/REHABONC/A46>) that they did not use. The frequency of these barriers is presented in Figures 1 and 2. An emerging trend for 4 barriers most frequently reported was identified by their frequency in the upper quartile (75th percentile rank) among other barriers: (1) lack of knowledge of OMs, (2) respondent's examination preference, (3) lack of time to implement the OMs, and (4) OMs not available at the respondent's workplace (Table 2). Although lack of knowledge was a barrier identified across subdomains, lack of time to implement the OMs was a barrier primarily for subdomains of the ICF domains of activities and participation.

Barriers and Facilitators to Use of OMs

The level of agreement of CLTs for facilitators and barriers to the use of OMs was investigated and frequencies are reported in Supplemental Digital Content 3, available at: <http://links.lww.com/REHABONC/A48>. Most CLTs agreed that the use of OMs helps direct the plan of care (90.1%, *n* = 100), improves quality of care (76.6%, *n* = 85), helps in the clinical reasoning for choice of interventions (77.5%, *n* = 86), and is necessary for the practice of BCRL interventions and management (94.6%, *n* = 105). They also largely agreed that use of OMs improves communication with their BCS clients with BCRL (80.2%, *n* = 89) and with other health care stakeholders (eg, insurance providers, referral sources, garment providers) (76.6%, *n* = 85). Eighty percent of CLT respondents (*n* = 88) were consistently incorporating CPGs and systematic reviews in their diagnosis and interventions for BCRL. Certified lymphedema therapists largely agreed that use of OMs helped determine the efficacy of their interventions for BCRL (72%, *n* = 80). Although most CLT respondents in our study reported that they had sufficient skills (70%, *n* = 78) to use and interpret the results (64%, *n* = 71) of OMs for clients with BCRL, 46% (*n* = 51) reported that they had sufficient knowledge about OMs for BCRL. Sixty-seven percent (*n* = 74) reported

TABLE 1
Demographic and Practice Characteristics

Characteristic	Occupational Therapists	Physical Therapists	Significance of Difference
Occupation, n (%)	41 (37)	70 (63)	
Age (n = 111), y, mean ± SD	48 ± 11.2	48 ± 10.3	$t = -0.27, P = .79$
Sex, n (%)			
Female	40 (97.6)	69 (98.6)	$P = 1.00^a$
Male	1 (2.4)	1 (1.4)	
Highest degree earned, n (%)			
Bachelor of arts or science	12 (29.3)	17 (24.3)	$\chi^2 = 11.24, P < .01^b$
Master of arts or science	21 (51.2)	18 (25.7)	
Clinical doctorate	8 (19.5)	35 (50)	
Years in practice (n = 104), mean ± SD	22 ± 12.5	23 ± 11.2	$t = -0.67, P = .50$
Practice specialization, n (%)			
Have a specialization	26 (63.4)	29 (41.4)	$\chi^2 = 5.00, P = .03^b$
Not specialized	15 (36.6)	41 (58.6)	
Years as CLT (n = 111), mean ± SD	11 ± 7.6	11 ± 10.0	$U = 1310, P = .73^c$
LANA certified, n (%)	23 (56.1)	48 (68.5)	$\chi^2 = 1.75, P = 1.86$
Type of practice setting, n (%)			
Acute and subacute care	4 (9.8)	3 (4.3)	$P = .42^a$
Outpatient clinic	37 (90.2)	67 (95.7)	
Percentage of practice devoted to lymphedema treatment, mean ± SD	66 ± 31.7	63.1 ± 27.8	$U = 1283, P = .35^c$
Number of BCRL clients in 8 h work day, mean ± SD	3 ± 2.0	4 ± 3.4	$U = 1683, P = .07^c$
Minutes allocated for initial evaluation, mean ± SD	61 ± 24.6	59 ± 13.2	$U = 1278, P = .29^c$
Minutes allocated for reevaluation, mean ± SD	54 ± 20.6	55 ± 11.2	$U = 1411, P = .87^c$
Hours per week providing lymphedema treatment, mean ± SD	14 ± 13.2	15 ± 10.7	$U = 1550, P = .39^c$

Abbreviations: BCRL, breast cancer–related lymphedema; CLT, certified lymphedema therapist; LANA, Lymphology Association of North America.

^aFisher exact test; n (% of cases).

^bSignificant.

^cMann-Whitney U test.

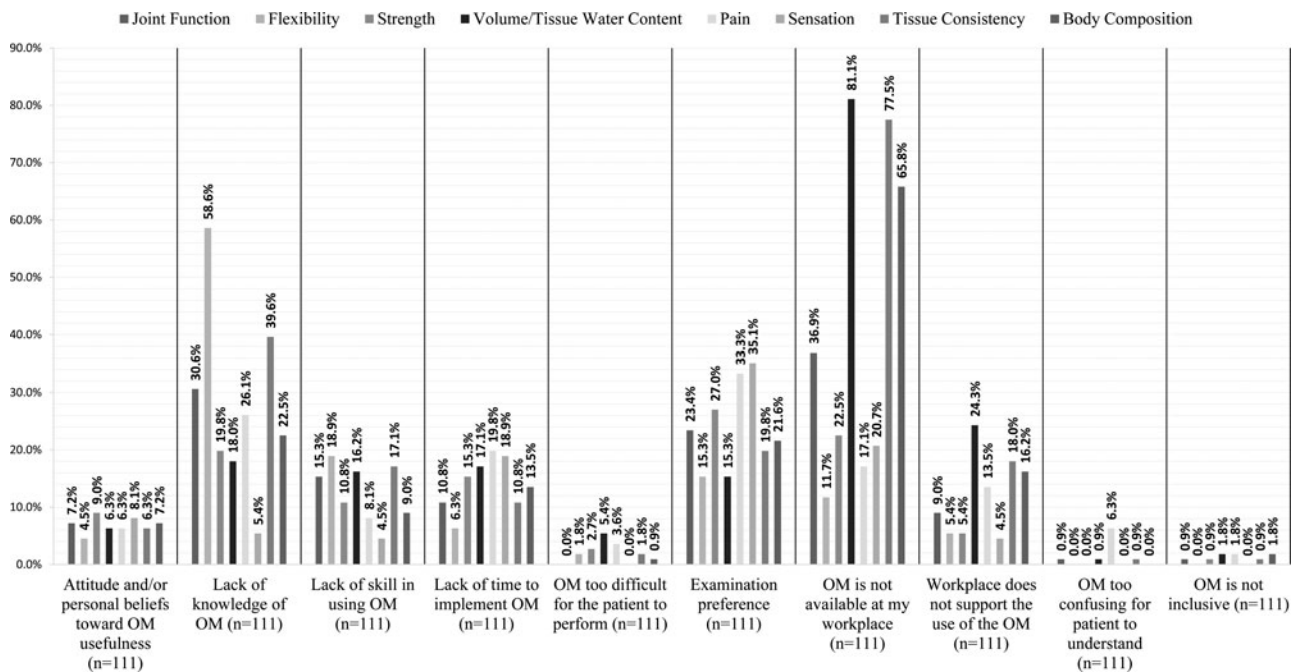


Fig. 1. Frequency of barriers to OMs in subdomains of International Classification of Functioning, Disability and Health domain of body structures and functions. OM indicates outcome measure.

Downloaded from http://journals.lww.com/pt/abstract/2023/07132023_top5xz1n014k3m0p0dwa0c= on 07/13/2023

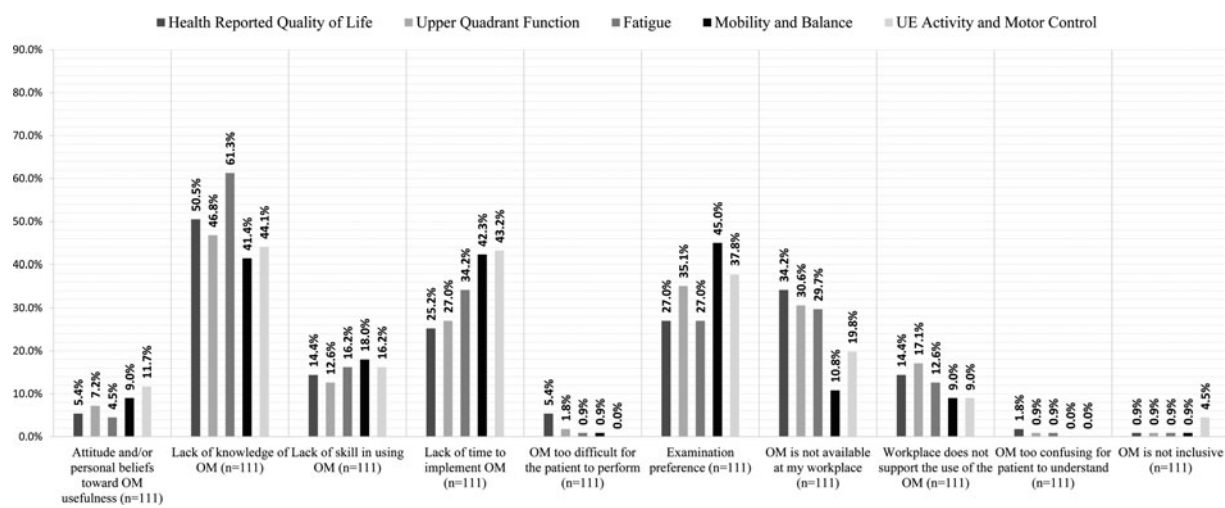


Fig. 2. Frequency of barriers to OMs in subdomains of International Classification of Functioning, Disability and Health domain of activities and participation. OM indicates outcome measure; UE, upper extremity.

that they had difficulty knowing the best OM to use due to numerous options. A majority (68%, n = 75) of respondents agreed that they did not receive sufficient training in their professional education on OMs for clients with BCRL. Whereas an equal proportion of respondents reported that they did (45%, n = 50) or did not (44%, n = 49) receive adequate training in their postprofessional CLT courses on OMs for clients with BCRL.

The significant differences between professions for the facilitators and barriers are presented in Table 3. Compared with OTs (2.4%, n = 1), PTs (18.6%, n = 13) disagreed that OMs improve quality of care for clients with BCRL. A similar scenario is noted with 18.8% (n = 13) of PTs disagreeing that OMs are necessary to determine intervention efficacy for clients with BCRL, compared with 2.4% (n = 1) of OTs. Physical therapists were relatively uncertain whether OMs increase the efficiency of evaluations, with 40% (n = 28) of the profession both agreeing and disagreeing. However, a majority (68.3%, n = 38) of OTs felt that OMs increased the efficiency of evaluations. Twenty percent of PTs (n = 14) neither agreed nor disagreed that OMs improved communication with other health care stakeholders, compared with 2.4% of OTs (n = 1). A majority of OTs (92.7%, n = 38) agreed that the use of OMs helps in the clinical reasoning for choice of interventions on clients with BCRL, whereas 68.6% (n = 48) of PTs agreed and 14% (n = 10) neither agreed nor disagreed.

Characteristics Associated With Individual Statements and Factors

Profession was a unique predictor for individual statements. The odds of disagreeing with the following statements were greater for PTs than for OTs (see Supplemental Digital Content 3, available at: <http://links.lww.com/REHABONC/A48>). “The use of OMs improves communication with clients who have BCRL” (odd ratio [OR] = -2.01, P = .03, 95% confidence interval [CI]: -0.25 to -3.76), “The use of OMs improves communication

with other health care stakeholders” (OR = -1.85, P = .03, 95% CI: -0.23 to -3.48), and “The use of OMs is necessary to determine intervention efficacy for clients with BCRL” (OR = -1.51, P = .04, 95% CI: -0.11 to

TABLE 2
Predominant Barriers to Use of Outcome Measures Within Subdomains (n = 111)

Subdomains	Barrier	n (%)
Joint Function	Lack of knowledge	34 (30.6)
	Not available at workplace	41 (36.9)
Flexibility	Lack of knowledge	65 (58.6)
	Examination preference	30 (27)
Strength	Not available at workplace	90 (81.1)
	Lack of knowledge	29 (26.1)
Volume	Examination preference	37 (33.3)
	Lack of knowledge	39 (35.1)
Pain	Examination preference	44 (39.6)
	Lack of knowledge	86 (77.5)
Sensation	Not available at workplace	73 (65.8)
	Lack of knowledge	56 (50.5)
Tissue consistency	Lack of knowledge	28 (25.2)
	Examination preference	30 (27.0)
Body composition	Not available at workplace	38 (34.2)
	Lack of knowledge	56 (50.5)
Patient-reported HRQOL	Lack of time to implement	28 (25.2)
	Examination preference	30 (27.0)
Patient-reported upper quadrant function	Not available at workplace	38 (34.2)
	Lack of knowledge	56 (50.5)
Patient-reported fatigue	Lack of time to implement	28 (25.2)
	Examination preference	30 (27.0)
Mobility and balance	Not available at workplace	33 (29.7)
	Lack of knowledge	46 (41.4)
Upper extremity activity and motor control	Lack of time to implement	47 (42.3)
	Examination preference	50 (45.0)
	Lack of knowledge	49 (44.1)
	Lack of time to implement	48 (43.2)
	Examination preference	42 (37.8)

Abbreviation: HRQOL, health-reported quality of life.

TABLE 3
Group Differences for Facilitators and Barriers to Use of OMs

Beliefs of the Therapist		OT (n = 41) n (%)	PT (n = 70) n (%)	Significance of Difference
Statement	Likert Scale			
The use of OMs improves quality of care toward clients with BCRL.	Agree	36 (87.8)	49 (70)	$\chi^2 = 6.47, P = .04^a$
	Neither agree nor disagree	4 (9.8)	8 (11.4)	
	Disagree	1 (2.4)	13 (18.6)	
The use of OMs helps in the clinical reasoning for choice of interventions on clients with BCRL.	Agree	38 (92.7)	48 (68.6)	$\chi^2 = 9.65, P = .01^a$
	Neither agree nor disagree	0 (0.0)	10 (14.3)	
	Disagree	3 (7.3)	12 (17.1)	
The use of OMs improves communication with other health care stakeholders.	Agree	36 (87.8)	49 (70)	$\chi^2 = 6.97, P = .03^a$
	Neither agree nor disagree	1 (2.4)	14 (20)	
	Disagree	4 (9.8)	7 (10)	
The use of OMs increases the efficiency of evaluations with clients who have BCRL.	Agree	28 (68.3)	28 (40)	$\chi^2 = 8.83, P = .01^a$
	Neither agree nor disagree	6 (14.6)	14 (20)	
	Disagree	7 (17.1)	28 (40)	
Healthcare Practice		OT (n = 41), n (%)	PT (n = 70), n (%)	
Statement	Likert Scale			
The use of OMs is necessary to determine intervention efficacy for clients with BCRL.	Agree	36 (87.8)	44 (63.8)	$\chi^2 = 8.51, P = .01^a$
	Neither agree nor disagree	4 (9.8)	12 (17.4)	
	Disagree	1 (2.4)	13 (18.8)	

Abbreviations: BCRL, breast cancer–related lymphedema; OMs, outcome measures; OT, occupational therapist; PT, physical therapist.
Significant.

–2.91). Not having an additional specialization beyond CLT was a unique predictor for individual statements (see Supplemental Digital Content 3, available at: <http://links.lww.com/REHABONC/A48>). The odds of agreeing with the following statements were greater in those with an additional specialization; “The use of OMs improves communication with other health care stakeholders” (OR = 1.43, $P = .03$, 95% CI: 0.12-2.74), “The use of OMs is necessary to determine intervention efficacy for clients with BCRL” (OR = 1.18, $P = .04$, 95% CI: 0.05-2.31). The odds of a CLT with a bachelor’s degree agreeing with “The interpretation of the results obtained by OMs are easily interpreted for clinical reasoning pertaining to BCRL” was 1.80 ($P = .02$, 95% CI: 0.32-3.28) times that of other degrees. If the CLT worked in an acute or subacute practice setting, there was nearly 3 times the odds of agreeing that “It is important to execute OMs at regular intervals for patient progress summaries” (OR = 2.99, $P = .01$, 95% CI: 0.84-4.15) than those who worked in an outpatient setting.

The association of the therapist and practice characteristics and beliefs of therapists on OMs (factor 1) was poorly associated with profession (PT and OT) ($r = 0.24$, $P = .05$) and practice specialization ($r = -0.22$, $P = .05$). Training to use OMs (factor 6) was poorly associated with practice specialization ($r = -0.23$, $P = .05$) and inclusivity of OMs (factor 8) was poorly associated with practice specialization ($r = -0.26$, $P = .01$).

Barriers and Facilitators Associated With Use of OMs

Results from the CLT respondents suggest that clients with BCRL have difficulty understanding the written instructions of the Functional Assessment of Cancer Therapy—Breast (OR = 2.36, 95% CI: 0.51-4.21) and the Functional Assessment of Cancer Therapy Breast +4 (OR = 2.68, 95% CI: 0.73-4.63) patient-reported OMs. These 2 OMs were least used by CLTs (0%-25%) (see Supplemental Digital Content 2, available at: <http://links.lww.com/REHABONC/A47>). Statistically significant facilitators associated with most often used OMs in the fourth quartile (75%-100%) (see Supplemental Digital Content 2, available at: <http://links.lww.com/REHABONC/A47>) were not evident.

DISCUSSION

Facilitators and Barriers to the Use of OMs

Although literature supports incorporating OMs for the enhancement of patient examinations and for navigating choice of interventions, not all CLTs value OMs for these purposes. A greater number of PTs than OTs have suggested that the use of OMs does not improve quality of care or determine intervention efficacy. In contrast to OTs, more PTs do not agree that the use of OMs increases the efficiency of evaluations and are uncertain

Downloaded from <http://journals.lww.com/rehabonc> by 171.156.241.156 on 07/13/2023
oafymkz35QDITXNUZjRqnb028KkVSmvTgijB1YRlRISQJ8phtKop05oYLThmAf+agG/XZqQKRoE9ooZDeaEmSvsgnQP/wb71
t0PsXZNI014K3MOPDwZa0C= on 07/13/2023

whether their use improves communication with other health care stakeholders. Compared with OTs, more PTs disagree that the use of OMs helps in the clinical reasoning for choice of interventions on clients with BCRL. These results are contrary to other studies, which suggest that PTs believe that OMs enhance examination thoroughness and improve directing and focusing a plan of care.^{2,10} Although professional differences exist, overall the CLT respondents value the use of OMs and find them necessary for the interventions and management of BCRL, which is similar to other studies on EBP and OMs.^{2,10,26}

Although 51.8% of the respondents agreed that they had access to the tools needed to conduct OMs, 35.5% did not agree, which may be explained from the prominent barrier that OMs were not available at the respondent's workplace. There may be many reasons existing in the workplace where OMs may not be available. For instance, some tools may be too costly to purchase for a clinic. Having too many OMs options may be equally to blame as noted by 67.3% of respondents. This is evidenced in the ICF domains of activities and participation with a plethora of patient-reported OMs (see Supplemental Digital Content 1, available at: <http://links.lww.com/REHABONC/A46>), which may not be available at the workplace.

In this study, examination preference was considered as one of the main barriers to implementing specific OM(s) in many of the ICF subdomains. Al-Muqiren et al¹⁹ identified reasons for using OMs that may align with respondent's examination preference response, such as ability to be completed quickly, easy for patients to understand, and being most commonly used in practice. These factors may limit a specialist's ability to identify the comorbidities of BCRL, such as proliferative fibrosis and adiposity, discoordination, and balance. Having a routine set of OMs can increase the efficiency of an evaluation; however, if the preferential routine does not capture the essential components of assessment laid out in CPGs or the comorbidities of a chronic disease, then service to the individual patient and to the practice of lymphedema management as a whole is at risk.

As evidenced in this study and previous studies, lack of time is a common barrier to the use of OMs.^{2,17,19} Respondents in this study reported that lack of time exists when conducting a battery of OMs (62.7%), analyze the results (61.8%), and completing documentation (64.5%). Contributing factors may also include the patient's difficulty in understanding written (34.5%) and verbal (50.0%) instructions, which may increase the time taken to complete the OMs.

A concern exists about the identified barriers related to the knowledge of OMs and the skills needed for their use. Lack of knowledge and competence of OMs has been previously investigated as being a barrier to their use.^{16,17,19,24} In this study, respondents reported that they did not receive sufficient training about OMs on BCRL in their professional education (68%, n = 75) or postprofessional CLT courses (44%, n = 49). This is concern-

ing for professional and postprofessional educators and researchers. Educators play a significant role in exposing PTs, OTs, and CLTs to the knowledge and skills related to these OMs. Previous studies suggest that therapists practicing with a specialty tend to use OMs,^{10,19,28} and perhaps the best placement for education on OMs for BCRL, outside of entry-level OM skill sets, should be included in the training for CLTs. The barrier of extensive choices of OMs can be addressed by narrowing these choices to guide specialists and researchers alike to gather best outcome evidence, as well as the educators to properly prepare the CLT specialists. Efficiently capturing baseline measures and comorbidities identified in BCRL may require a consensus-based set of outcomes, also known as a core outcome set (COS). A COS for BCRL can not only be used in clinical trials but also be assisted in the examination of a disorder and related comorbidities and for the purpose of outcome assessment of interventions.^{1,2} Reducing the inconsistency in clinical use and reporting of OMs and variability of reporting across interdisciplinary medical fields that represent CLTs who treat BCRL can be fostered by a COS.^{29,30} Creating a COS for BCS with BCRL is a worthy endeavor through uniting various stakeholders to expand and then refine a list of outcome domains identified by the Breast Cancer EDGE Task Force studies. Not only is establishing a COS a feasible undertaking but providing guidance as to "when" to use specific OMs is also attainable.

Associations of Characteristics With Facilitators and Barriers

Results of this study demonstrated that therapist and practice characteristics were weakly associated with the beliefs of the therapist on OMs. However, while the results demonstrate that there are differences in opinions between professions, professional and practice characteristics may not necessarily be predictors of their opinions. Further research is warranted to further understand these associations and may best be fitted as a mixed-methods (ie, qualitative and quantitative) study.

LIMITATIONS

The sample size for the analysis (n = 111) included a sample of OTs and PTs from the total sample (n = 130). This limits our ability to generalize the findings to the CLT population consisting of PT, OT, MT, and RN despite that the sample appears to be unbiased to the true population of CLTs. There is concern that the lack of other professions and practice settings may have limited our understanding of the facilitators and barriers to the use of OMs and the predictive contribution that these characteristics provide. In addition, the density of CLTs that practice in outpatient clinics may have limited insights into the facilitators and barriers to the use of OMs in other settings (eg, home health care, long-term care). Finally, our study demonstrated a diverse distribution of opinions for most facilitators and barriers, which will require further future investigation and would benefit from a mixed-methods

research study, combining components of quantitative and qualitative research strategies, especially in categories of health care equality, business structures, and knowledge and competence.

CONCLUSIONS

Certified lymphedema therapists agree on the benefits of and to the use of OMs; however, PT CLTs may value the use of OMs less than OT CLTs. Most CLTs are incorporating CPG into their practice and their workplace encouragement and support are facilitators to their use of OM. Certified lymphedema therapists experience barriers to use of OMs related to lack of knowledge and implementation skills. In the clinical setting, barriers are related to OMs not being available, personal preferences, and lack of time. Further guidance is needed in selecting OMs for BCS with BCRL to reduce barriers to their use.

REFERENCES

1. Duncan PW, Jorgensen HS, Wade DT. Outcome measures in acute stroke trials: a systematic review and some recommendations to improve practice. *Stroke*. 2000;31(6):1429-1438. doi:10.1161/01.STR.31.6.1429.
2. Jette DU, Bacon K, Batty C, et al. Evidence-based practice: beliefs, attitudes, knowledge, and behaviors of physical therapists. *Phys Ther*. 2003;83(9):786-805. doi:10.1093/ptj/83.9.786.
3. Fulk G, Field-Fote EC. Measures of evidence in evidence-based practice. *J Neurol Phys Ther*. 2011;35(2):55-56. doi:10.1097/NPT.0b013e31821ba134.
4. Elf M, Flink M, Nilsson M, Tistad M, von Koch L, Ytterberg C. The case of value-based healthcare for people living with complex long-term conditions. *BMC Health Serv Res*. 2017;17(1):24. doi:10.1186/s12913-016-1957-6.
5. Stout N, Harrington S, Pfalzer L, Fisher M. Breast cancer rehabilitation: clinical examination and outcomes assessment. *Geriatr Rehabil*. 2015;31(4):258-272. <https://www.ingentaconnect.com/content/wk/tgr/2015/00000031/00000004/art00006>. Accessed October 4, 2018.
6. Damstra RJ, Halk A-B, Dutch Working Group on Lymphedema. The Dutch Lymphedema Guidelines based on the International Classification of Functioning, Disability and Health and the Chronic Care Model. *J Vasc Surg Venous Lymphat Disord*. 2017;5(5):756-765. doi:10.1016/J.JVSV.2017.04.012.
7. Levenhagen K, Davies C, Perdomo M, Ryans K, Gilchrist L. Diagnosis of upper-quadrant lymphedema secondary to cancer: clinical practice guideline from the Oncology Section of APTA. *Rehabil Oncol*. 2017; 35(3):E1-E18. doi:10.1097/01.REO.0000000000000073.
8. Doublestein DA, Spinelli BA, Yorke AM, Goldberg A, Larson CA. Use of outcome measures by certified lymphedema therapists with breast cancer survivors with breast cancer-related lymphedema [published online ahead of print June 28, 2022]. *Rehabil Oncol*. doi:10.1097/01.REO.00000000000000310.
9. Lymphology Association of North America. LANA certified lymphedema therapist candidate information booklet (CIB). <https://www.clt-lana.org>. Published 2017. Accessed September 10, 2018.
10. Jette DU, Halbert J, Iverson C, Miceli E, Shah P. Use of standardized outcome measures in physical therapist practice: perceptions and applications. *Phys Ther*. 2009;89(2):125-135. doi:10.2522/ptj.20080234.
11. Snyder Valier AR, Jennings AL, Parsons JT, Vela LI. Benefits of and barriers to using patient-rated outcome measures in athletic training. *J Athl Train*. 2014;49(5):674-683. doi:10.4085/1062-6050-49.3.15.
12. Burton L-J, Tyson S, McGovern A. Staff perceptions of using outcome measures in stroke rehabilitation. *Disabil Rehabil*. 2013;35(10):828-834. doi:10.3109/09638288.2012.709305.

13. Chesson R, Macleod M, Massie S. Outcome measures used in therapy departments in Scotland. *Physiotherapy*. 1996;82(12):673-679. <https://www.sciencedirect.com/science/article/pii/S0031940605663754>. Accessed August 4, 2021.
14. Coulombe BJ, Games KE, Eberman LE. The use of patient-reported outcome measures: secondary school athletic trainers' perceptions, practices, and barriers. *J Athl Train*. 2019;54(2):142-151. doi:10.4085/1062-6050-86-17.
15. Stevens JG, Beurskens AJ. Implementation of measurement instruments in physical therapist practice: development of a tailored strategy background and purpose. *Phys Ther*. 2010;90(6):953-961. <https://academic.oup.com/ptj/article-abstract/90/6/953/2737882>. Accessed July 18, 2020.
16. Jae Y, Kim J, Jin S, Hyun L, Jung S. Clinical nurses' beliefs, knowledge, organizational readiness and level of implementation of evidence-based practice: the first step to creating an evidence-based practice culture. *PLoS One*. 2019;14(12):e0226742. doi:10.1371/journal.pone.0226742
17. Duncan EA, Murray J. The barriers and facilitators to routine outcome measurement by allied health professionals in practice: a systematic review. *BMC Health Serv Res*. 2012;12(1):96. doi:10.1186/1472-6963-12-96.
18. Meerhoff GA, van Dulmen SA, Cruisberg Juliette K, Nijhuis-van der Sanden MWG, Van der Wees PJ. Which factors influence the use of patient-reported outcomes measures in Dutch physiotherapy practice? A cross-sectional study. *Physiother Canada*. 2020;72(1):63-70.
19. Al-Muqiren TN, Al-Eisa ES, Alghadir AH, Anwer S. Implementation and use of standardized outcome measures by physical therapists in Saudi Arabia: barriers, facilitators and perceptions. *BMC Health Serv Res*. 2017;17(1):748. doi:10.1186/s12913-017-2693-2.
20. Stapleton T, McBrearty C. Use of standardised assessments and outcome measures among a sample of Irish occupational therapists working with adults with physical disabilities. *Br J Occup Ther*. 2009; 72(2):55-64. doi:10.1177/030802260907200203.
21. Demers M, Blanchette AK, Mullick AA, et al. Facilitators and barriers to using neurological outcome measures in developed and developing countries. *Physiother Res Int*. 2018;24(1):e1756.
22. Braun T, Rieckmann A, Weber F, Grüneberg C. Current use of measurement instruments by physiotherapists working in Germany: a cross-sectional online survey. *BMC Health Serv Res*. 2018;18(1):810. doi:10.1186/s12913-018-3563-2.
23. Jeong H-J, Lee W-C. The level of collapse we are allowed: comparison of different response scales in safety attitudes questionnaire. *Biometrics Biostat Int J*. 2016;4(4):128-134. doi:10.15406/BIJ.2016.04.00100.
24. Cruz JP, Colet PC, Alquevez N, et al. Evidence-based practice beliefs and implementation among the nursing bridge program students of a Saudi university. *Int J Health Sci*. 2016;10(3):405-414.
25. Yoo JY, Kim JH, Kim JS, Kim HL, Ki JS. Clinical nurses' beliefs, knowledge, organizational readiness and level of implementation of evidence-based practice: the first step to creating an evidence-based practice culture. *PLoS One*. 2019;14(12):e0226742. doi:10.1371/journal.pone.0226742.
26. Weng Y-H, Kuo KN, Yang C-Y, Lo H-L, Chen C, Chiu Y-W. Implementation of evidence-based practice across medical, nursing, pharmacological and allied healthcare professionals: a questionnaire survey of nationwide hospital settings. *Implement Sci*. 2013;8:112.
27. Stokke K, Olsen NR, Espehaug B, Notvedt MW. Evidence based practice beliefs and implementation among nurses: a cross-sectional study. *BMC Nurs*. 2014;13(1):8.
28. Valdes K, MacDermid J, Algar L, et al. Hand therapist use of patient report outcome (PRO) in practice: A survey study. *J Hand Ther*. 2014; 27(4):299-308. doi:10.1016/J.JHT.2014.07.001.
29. Williamson PR, Altman DG, Bagley H, et al. The COMET handbook: version 1.0. *Trials*. 2017;18(suppl 3):280. doi:10.1186/s13063-017-1978-4.
30. Pohl J, Held JPO, Verheyden G, et al. Consensus-based core set of outcome measures for clinical motor rehabilitation after stroke—a Delphi study. *Front Neurol*. 2020;11:875. doi:10.3389/fneur.2020.00875.

Downloaded from <http://journals.lww.com/rehabonc> by 0k-11WMS6dUPeISW79X84NVC9P8R8311UgAXQZVJZ2WJAH on 07/13/2023
oajyMkZ35QDITXNUNZURqmbOZ8kKvSnmVTgIBYRtRtR5CJ9J8phtKopP5ofyLThmAFA+agG/XZqK8oEg9ooZDeAemsvSgnQP7wib71
t0PsXZNI014K3MOpDwZa0Q= on 07/13/2023