

COMPARISON OF PATIENT REPORTED OUTCOMES ACROSS 3 CARE DELIVERY MODELS IN INDIVIDUALS FOLLOWING UPPER EXTREMITY SURGERY

Aviva Wolff, EdD, OT, CHT, Christian Victoria, BS, Daniel Osei, MD, MPH
Hospital for Special Surgery, New York, NY

INTRODUCTION

This study is the first step of a multi-phase project that aims to provide clinicians with a tool to select the best care-delivery approach (in-person, telehealth, or hybrid) for post-operative upper extremity musculoskeletal care based on patient, clinician, and organization specific factors such as demographics, clinical condition, preferences, and cost. The long-term goal of this multiphase study is to identify and describe factors that contribute to and limit successful outcomes and efficient use of resources in 3 care-delivery models for post-operative upper extremity musculoskeletal care: telehealth, in-person, hybrid.

OBJECTIVES

The purpose of this retrospective study was to compare patient reported outcomes in 3 care-delivery cohorts of post-operative upper extremity (UE) care: in person, telehealth, hybrid.

METHODS

- Data was extracted from the electronic medical records of individuals who underwent UE surgery at a single institution between September 1, 2019 - September 30, 2020, for all post-operative visits conducted by hand clinicians (surgeons, therapists, PAs).
- Demographic data extracted included: age, race, ethnicity, and number of post-operative visits.
- Patient reported outcome measures included the Quick Disabilities of the Arm Shoulder Hand Score (Quick-DASH), PROMIS Global-10 Mental Health (PROMIS10-MH), and PROMIS Global-10 Physical Disabilities (PROMIS 10-PH) collected at 4 time points: pre-operatively, 6-weeks post-operatively, 3-months post-operatively, and 6-months post-operatively

DATA ANALYSIS

- Pearson's χ^2 and Fisher's exact tests were used to analyze differences between categorical variables. Analysis of variance (ANOVA) was used to assess difference in continuous variables between groups.
- Tukey's honest significance difference tests were used for pairwise comparisons.
- To adjust for cluster-correlated data, presenting itself as multiple surgeries per patient (cluster), generalized estimated equation (GEE) models were used to investigate the association between each outcome of interest (PROMIS-10PH, PROMIS10-MH, and Quick-DASH) and patient episode category. Pairwise comparisons were adjusted using the Bonferroni correction.

RESULTS

Table 1: Comparison of Clinical and Demographic Characteristics by Type of Visit

	N (%)			P-Value*
	Telehealth (n=45)	In-Person (n=1694)	Hybrid (n=645)	
Sex				P<0.001
Female	32 (71.1)	861 (50.8)	357 (55.3)	
Male	13 (28.9)	833 (49.2)	258 (40.0)	
Race				0.591**
White	35 (81.4)	1318 (80.8)	499 (80.0)	
African American/Black	4 (9.3)	104 (6.4)	31 (5.1)	
Other	4 (9.3)	210 (12.9)	72 (12.2)	
Ethnicity				0.962**
Not Hispanic	39 (90.7)	1487 (90.7)	539 (90.3)	
Hispanic	4 (9.3)	153 (9.3)	58 (9.7)	
Race/Ethnicity (alternate var)				0.185**
Non-White; Non-Hispanic	7 (16.3)	215 (13.4)	76 (12.9)	
Non-White; Hispanic	1 (2.3)	95 (5.9)	26 (4.4)	
White; Non-Hispanic	32 (74.4)	1247 (77.5)	459 (77.7)	
White; Hispanic	3 (7)	51 (3.2)	30 (5.1)	
Age (mean, SD) [#]	47.2; 15.8 ^{ab}	53.4; 17.3 ^a	52.7; 16.5 ^b	0.046
Weighted Elixhauser Score (mean, SD) [#]	0; 1.5	0.4; 2.8	0.4; 2.8	0.569
Total Post-Operative Visits (mean, SD) [#]	1.1; 1.7 ^a	4.3; 6.9 ^b	9.2; 10.5 ^c	<0.001
Average number of days in care (mean, SD) [#]	50.6; 58.2 ^a	49.4; 79.7 ^a	84; 83.6 ^b	<0.001

PH= Physical Function; MH=Mental Health

* Pearson's χ^2 ** Fisher's Exact

[#]Means in a row without a common superscript differ as analyzed by one-way ANOVA and Tukey's HSD.

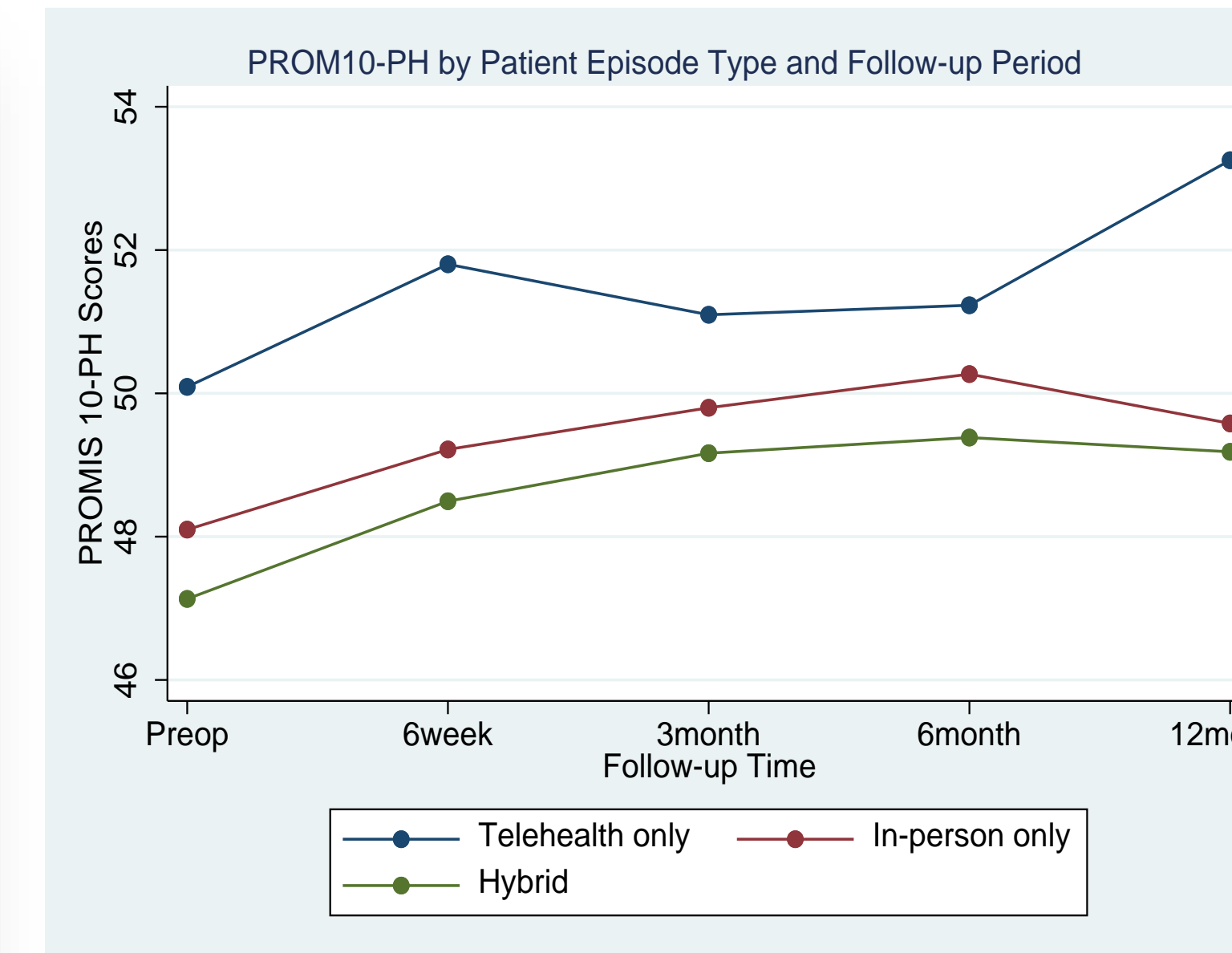


Figure 1: PROMIS GLOBAL-10 PH scores by visit type across time

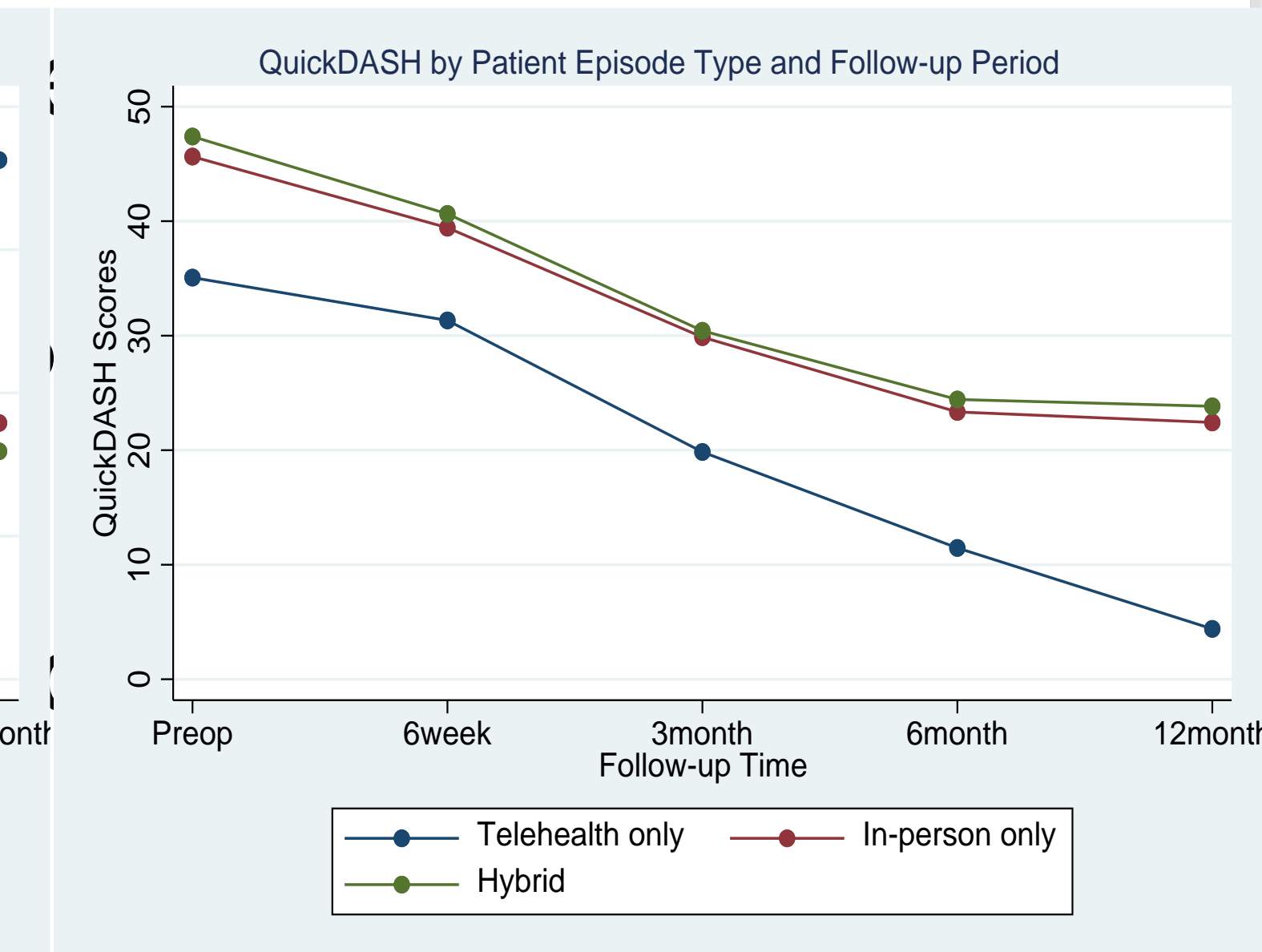


Figure 2: DASH Scores by visit type across time

- No differences were noted among Quick-DASH and PROMIS10-MH scores across time periods. However, preoperative PROM-10PH scores were worse (lower) among hybrid patients compared to telehealth only patients (p=0.005).

CONCLUSIONS

Our findings of no broad differences in patient reported outcomes between care-delivery groups supports further study of personal preference of patients and clinicians, the cost and reimbursement of services, as well as individual patient, diagnostic and clinical factors that influence outcomes on a patient-specific level. Further analysis of the effect of individual factors on outcomes will help clinicians identify and select the care-delivery model to most benefit each individual patient.

REFERENCES

- Wolff AL, Nguyen J, Osei D. A proposal for the study of a conceptual framework to inform optimal use of telehealth for post-operative upper extremity care. *HSS Journal*. 2020.
- Pugliese M, Wolff AL. The Value of Communication, Education, and Self-Management in Providing Guideline-Based Care: Lessons Learned from Musculoskeletal Telerehabilitation during the COVID-19 Crisis. *HSS Journal*. 2020
- Eannucci, E. F., Hazel, K., Grundstein, M. J., Nguyen, J. T., & Gallegro, J. (2020). Patient Satisfaction for Telehealth Physical Therapy Services Was Comparable to that of In-Person Services During the COVID-19 Pandemic. *HSS Journal* 2020