



The Impact Of Education And Literacy On Written Versus Verbal Administration Of Upper Extremity Patient-reported Outcome Measures

Roland Zama, BS^{1,2}, Desraj M. Clark, MD^{1,3}, Aygul Iskandarova, MD¹, Gabriel J. Yohe, MS¹, Chao Long, MD^{1,4}, Aviram M. Giladi, MD, MS¹

¹The Curtis National Hand Center, Baltimore, MD, USA, ²Georgetown University School of Medicine, Washington, DC, USA, ³Department of Orthopedic Surgery, Walter Reed National Military Medical Center, Bethesda, MD, USA, ⁴Department of Plastic and Reconstructive Surgery, Johns Hopkins Hospital, Baltimore, MD, USA.

Introduction

- The quick Disabilities of the Arm, Shoulder, and Hand (QuickDASH) and the Patient-Reported Outcomes Measurement Information System Upper Extremity Short Form (PROMIS-UE) are commonly used patient-reported outcome measures (PROMs) in upper extremity care and research.
- While existing studies demonstrate acceptable reliability between written and verbal administration of these instruments, they overlook the potential influence of patient literacy and education levels.

Objective

- **We sought to determine how closely scores obtained from written QuickDASH and PROMIS-UE completion correlate with verbal completion and whether patient literacy and education levels affect this correlation**

Methods

- Cohort: adults from the Curtis National Hand Center with a GED/high school diploma or lower.
- Patients completed the QuickDASH and PROMIS-UE surveys in written format and then verbally.
- Administered REALM-SF survey to categorize patients into high and low-literacy groups.
- Analyzed the correlation between verbal and written responses, focusing on differences in responses (discrepancy) and total scores.
- Examined the impact of literacy and education by comparing responses between those with and without a high school diploma/GED and across literacy levels.
- Analysis methods: independent t-tests and Pearson's correlation.

Results

- 114 patients
- 95 had a high school diploma /GED and 19 had no degree
- REALM-SF survey categorized 63 patients as high literacy and 51 as low literacy. (Table 1)
- Survey responses (QuickDASH and PROMIS-UE) showed more significant changes in the lower education cohort.
- Average number of changed response (Discrepancy) for PROMIS-UE:
 - 4.4 in the no-diploma group
 - 1.8 in the GED/high school diploma group (p < 0.05).
- Average number of changed response (Discrepancy) for QuickDASH
 - 5.1 in the no diploma group
 - 3.4 in the GED/high school diploma group (p<0.05) groups.
- Higher total score change in no degree group (9.33) than the GED/HS group (5.74) (p<0.05)

Table 2: Assessment Score Differences by Educational Level

This table summarizes the mean differences and standard deviations (Mean ± STD) in assessment scores between participants with a GED/High School diploma and those without. It also details the discrepancy in responses, measured as the number of survey questions answered differently between written and verbal survey methods.

	PROMIS-UE Difference in Total Scores	QuickDash Difference in Total Scores	Discrepancy in PROMIS-UE	Discrepancy in QuickDash
GED/HS Degree	1.71 (± 3.9)	5.74 (±6.29)	1.79 (±1.76)	3.45(±2.31)
No Degree	2.68 (±2.05)	9.33 (±6.1)	4.36 (±4.53)	5.11 (±2.18)
p value	0.19	< 0.05 *	< 0.05 *	< 0.05 *

Table 1: Demographic Characteristics

Stratified by High School Education and then by Literacy Level (Based on REALM-SF Survey)

	GED/ HS (n=95)	No Degree (n=19)
Age (mean)	50	50
Male	51	12
Female	41	7
Total	95	19
	High Literacy (n=63)	Low Literacy (n=51)
Age (mean)	50	51
Male	25	23
Female	38	28
Total	63	51

Limitations

1. The cohort consisted predominantly of participants with lower educational levels; therefore, the results may differ from populations with higher educational attainment.
2. Using the Rapid Estimate of Adult Literacy in Medicine (REALM) as a tool for literacy assessment may not comprehensively capture the multidimensional nature of literacy.
3. The small cohort size limits the generalizability of our findings.

Conclusion

- Education level was significantly associated with the consistency of PROM responses between written and verbal formats, as less educated patients showed more changes in responses from written to verbal PROMs.
- This indicates a strong likelihood of limitations in interpretability or understanding of written PROMs in those with less than high school equivalent education.

References

1. Beaton DE, Wright JG, Katz JN. Development of the QuickDASH: comparison of three item-reduction approaches. J Bone Joint Surg Am. 2005;87(5):1038-46.
2. Kaat AJ, Buckenmaier CT, Cook KF, Rothrock NE, Schalet BD, Gershon RC, et al. The expansion and validation of a new upper extremity item bank for the Patient-Reported Outcomes Measurement Information System® (PROMIS). Journal of Patient-Reported Outcomes. 2019;3(1).

Acknowledgements

The authors would like to acknowledge the mentorship and support from the Curtis National Hand Center.