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Patient-Reported Outcomes Measurement Information System (PROMIS) Computer Adaptive Testing (CAT) in Hematopoietic Stem Cell Transplantation Patients: A Feasibility Study

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Background

Patient-reported outcome tools have historically been limited to fixed questionnaires that are not tailored to an individual's subjective experience of disease or treatment. Patient-Reported Outcomes Measurement Information System (PROMIS) employs item response theory (IRT) with computer adaptive testing (CAT), which offers the patient an electronic survey with customized questions targeting their primary symptoms or concerns.

Objective

To assess the efficacy and feasibility of the PROMIS-CAT in patients actively undergoing hematopoietic stem cell transplantation (HSCT) to identify common symptoms surrounding transplant with the goal of earlier intervention and improved outcomes.

Materials & Methods

Design: Single-arm prospective design.

Setting: Single academic center in the HSCT inpatient and outpatient setting.

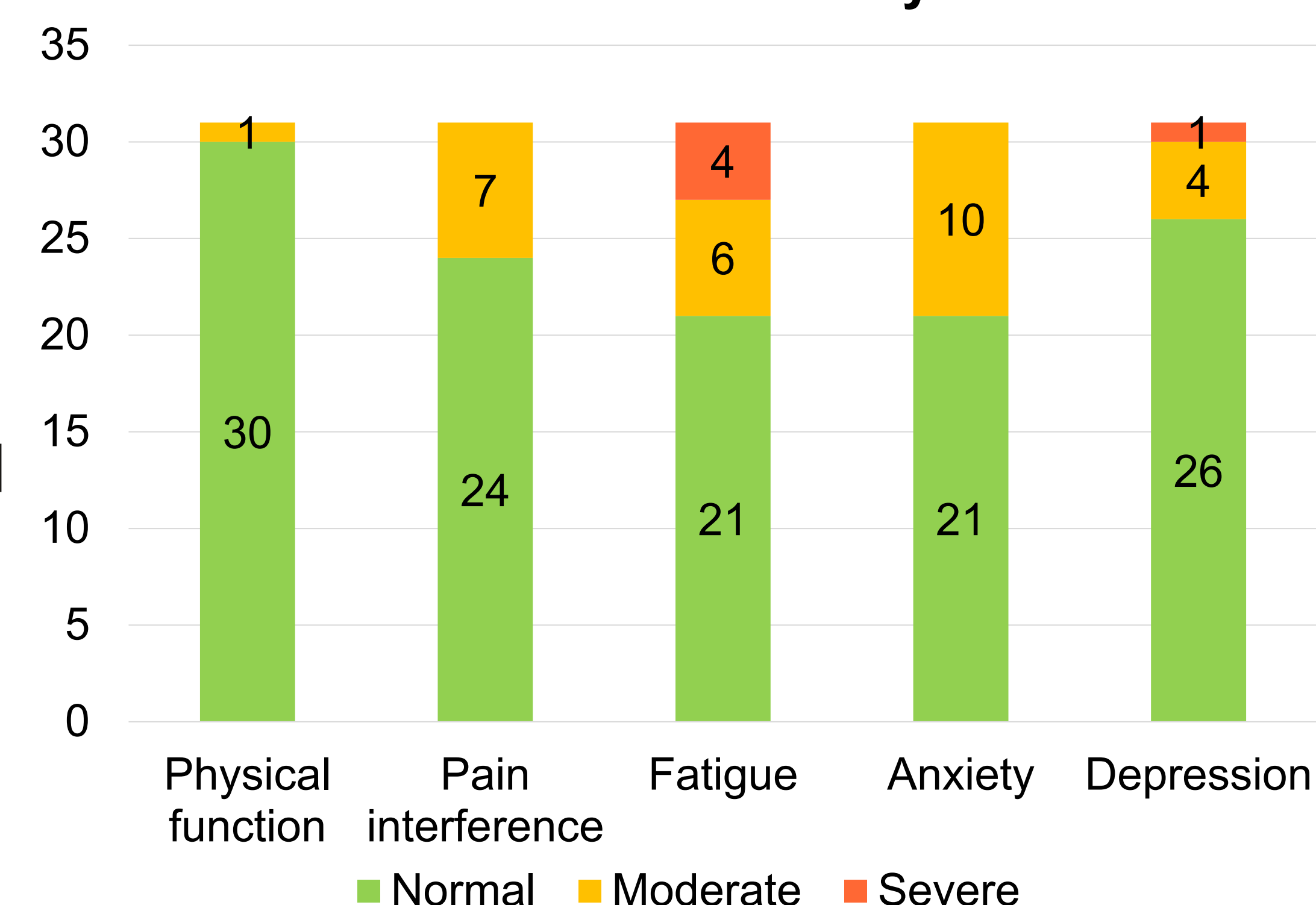
Patients: Patients consented for HSCT were eligible; 13/15 patients enrolled between June 2020 and May 2021; age range 24–74 years.

Interventions: Surveys were prospectively collected on an iPad, which administered and scored the PROMIS-CAT. Survey timepoints were pre-transplant, and day 30, 30–60, 60–90, 180, and 365 days post-transplant. Surveys conducted in person were preferred; however, phone surveys also occurred due to COVID-19 restrictions.

Main Outcomes Measured: After patients complete the survey, a numeric score is calculated that indicates “mild, moderate, or severe” symptoms in the domains of physical function, pain interference, fatigue, anxiety, and depression. Upon completion of each survey, patients are asked to rate how easy/difficult their experience was taking the survey, on a scale of 1 (not at all easy) to 5 (very easy).

Summary

PROMIS CAT Surveys



Thirteen patients ranging in age from 24–74 years completed at least one survey. At interim analysis, 31 surveys were complete. The majority of surveys (29/31) were rated as very easy to complete, taking approximately 7–8 minutes.

Moderate to severe symptom scores were identified in approximately half of the total surveys (15/31), as follows: physical function (1), depression (5), pain interference (7), fatigue (10), and anxiety (10).

Discussion

Electronic data collection via the PROMIS-CAT in HSCT is feasible and can identify important thresholds to signal needed attention to physical function, pain, fatigue, anxiety, and depression. Future use of the PROMIS-CAT could lead to appropriate activation of pathways to provide care to patients surrounding their transplant.

Keywords: HSCT, patient-reported outcomes, PROMIS, CAT