



Reliability of Patient-Led Screening with the Malnutrition Screening Tool: Agreement between Patient and Health Care Professional Scores in the Cancer Care Ambulatory Setting



Alexandra Di Bella, APD^{*}; Claire Blake, APD^{*}; Adrienne Young, PhD, APD^{*}; Anita Pelecanos; Teresa Brown, AdvAPD[‡]

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^{*}APD=Accredited Practising Dietitian (Australia).

[‡]AdvAPD=Advanced Accredited Practising Dietitian (Australia).

ABSTRACT

Background The prevalence of malnutrition in patients with cancer is reported as high as 60% to 80%, and malnutrition is associated with lower survival, reduced response to treatment, and poorer functional status. The Malnutrition Screening Tool (MST) is a validated tool when administered by health care professionals; however, it has not been evaluated for patient-led screening.

Objectives This study aims to assess the reliability of patient-led MST screening through assessment of inter-rater reliability between patient-led and dietitian-researcher-led screening and intra-rater reliability between an initial and a repeat patient screening.

Design/participants This cross-sectional study included 208 adults attending ambulatory cancer care services in a metropolitan teaching hospital in Queensland, Australia, in October 2016 (n=160 inter-rater reliability; n=48 intra-rater reliability measured in a separate sample).

Main outcome measurements Primary outcome measures were MST risk categories (MST 0-1: not at risk, MST ≥2: at risk) as determined by screening completed by patients and a dietitian-researcher, patient test-retest screening, and patient acceptability.

Statistical analysis Percent and chance-corrected agreement (Cohen's kappa coefficient, κ) were used to determine agreement between patient-MST and dietitian-MST (inter-rater reliability) and MST completed by patient on admission to unit (patient-MSTA) and MST completed by patient 1 to 3 hours after completion of initial MST (patient-MSTB) (intra-rater reliability).

Results High inter-rater reliability and intra-rater reliability were observed. Agreement between patient-MST and dietitian-MST was 96%, with "almost perfect" chance-adjusted agreement ($\kappa=0.92$, 95% CI 0.84 to 0.97). Agreement between repeated patient-MSTA and patient-MSTB was 94%, with "almost perfect" chance-adjusted agreement ($\kappa=0.88$, 95% CI 0.71 to 1.00). Based on dietitian-MST, 33% (n=53) of patients were identified as being at risk for malnutrition, and 40% of these reported not seeing a dietitian. Of 156 patients who provided feedback, almost all reported that the MST was clear (92%), questions were easy to understand (95%), and completion time was ≤5 minutes (99%).

Conclusion Patient-led screening with the MST is reliable and well accepted by patients. Patient-led screening in the cancer care ambulatory setting has the potential to improve patient autonomy and screening completion rates.

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THE PREVALENCE OF MALNUTRITION IN PATIENTS with cancer is reported to be as high as 60% to 80%; and malnutrition is associated with lower survival, reduced response to treatment, poorer functional status, and reduced quality of life.^{1,2} Furthermore, malnutrition has been linked to increased length of stay and health care costs.^{3,4} There is evidence to support nutrition intervention in the prevention of nutritional deterioration and

weight loss during cancer treatment.⁵⁻⁸ The importance of nutrition screening is highlighted in safety and quality health care standards from countries including Australia and the United Kingdom, which recommend the completion of malnutrition screening on admission to the hospital and/or at numerous time points across the continuum of care.^{9,10} Despite evidence-based guidelines recommending routine nutrition screening in the cancer care population,^{7,11,12} audits of practice suggest that implementation of nutrition screening in health care facilities is variable and that malnutrition remains largely underdiagnosed and undertreated.^{13,14}

A recent systematic review reports on the numerous barriers to completion of malnutrition screening by health care professionals, including time pressures and competing priorities, lack of training, organizational culture, and staff perception that professional judgment is as useful as validated screening tools.¹⁵ Patient-led screening may provide one solution to the problem of suboptimal malnutrition screening practices. Accurate and reliable self-screening using a validated tool may improve screening completion rates, ensuring that patients at risk for malnutrition are identified for nutrition assessment and intervention.^{16,17} Furthermore, patient self-screening would reduce the burden on health care professionals while improving patient autonomy in health care.

The introduction of patient-led screening aligns with the international focus on patient-centered care. Patient-centered care has become internationally recognized as an integral dimension required for a safe and high-quality health care system¹⁸⁻²⁰ and encompasses care that is respectful of and responsive to individual patient preferences, needs, and values.²¹ In Australia, patient-led screening aligns with the Australian Council on Healthcare Standards Standard 2: Partnering with Consumers, whereby involving patients in their own care is recognized as an element of high-quality health care.⁹ Strong evidence suggests that patient-centered care improves health care quality by improving safety; cost-effectiveness; and patient, family, and staff satisfaction.^{9,20,21}

The Malnutrition Screening Tool (MST) was developed by Ferguson and colleagues²² as a valid, simple, and reliable tool for identifying patients at nutrition risk. The MST has good sensitivity and specificity for identifying malnutrition assessed by Subjective Global Assessment and the Patient-Generated Subjective Goal Assessment in outpatients receiving cancer care when it is administered by a health care professional or trained researcher.²³⁻²⁷ To date, three studies have assessed the reliability of patient-led screening processes by focusing on the use of the Malnutrition Universal Screening Tool (MUST) in general outpatients^{17,28} and individuals with inflammatory bowel disease.²⁹ In one previous study, the inter-rater reliability of the MST was investigated in a geriatric rehabilitation population, causing concern about the accuracy of malnutrition screening.³⁰ Malnutrition screening with the MST has been integrated into routine clinical practice in the institution at which this study was conducted, with nursing staff screening patients at the commencement of radiotherapy and/or on each presentation to the day therapy unit as part of the nursing assessment. Local audits of MST completion in the unit highlight that screening is either inaccurate or not completed. Given the high prevalence of malnutrition in patients in the cancer care

RESEARCH SNAPSHOT

Research Question: Can patients reliably screen for their own malnutrition risk using the validated Malnutrition Screening Tool (MST)?

Key Findings: In this cross-sectional study of 208 patients (n=160 inter-rater; n=48 intra-rater), there was 96% agreement between patient-MST and dietitian-MST, with “almost perfect” chance-adjusted agreement ($P<0.001$). Patient intra-rater reliability was similarly high, with 94% agreement in repeat administrations by patients ($P<0.001$). Patient-led screening was also well accepted by patients, with 95% reporting questions as easy to understand and 99% reporting a completion time of 5 minutes or less.

ambulatory setting,² investigation into the reliability of patient-led malnutrition screening is warranted in this population. This study aims to determine the agreement between screening undertaken by patients and health care professionals (inter-rater reliability), patient test–retest (intra-rater) reliability, and acceptability of patient-led screening in the cancer care ambulatory setting. A secondary aim of this study is to audit the current screening and referral processes, as determined by the number of at-risk patients who reported being referred to the hospital dietitian.

METHODS

Study Design and Participants

This cross-sectional study was conducted in the cancer care ambulatory setting in the oncology day therapy unit and radiation therapy outpatient unit at a metropolitan teaching hospital in Queensland, Australia. Consecutive patients attending the units for systemic or supportive therapies or radiotherapy on the 2 study days in October 2016 were eligible for participation if they were 18 years of age or older. Patients were only excluded if they were unable to complete the MST because of physical or mental incapacity, severe visual impairment, or a non-English-speaking background. Patients provided oral consent to participate. Common diagnoses of patients attending the unit included hematologic cancers and cancers of the head and neck, lung, gastrointestinal tract, breast, and prostate. Ethical approval was obtained through the hospital Human Research Ethics Committee (HREC/16/QRBW/483).

Data Collection

The MST was completed by each participant on arrival to the unit. The MST consists of two questions: 1) Have you been eating poorly due to a decreased appetite? 2) Have you lost weight recently without trying?²² A numerical score between 0 and 5 is generated based on responses, with nutrition risk defined as a score of 2 or more. Participants received basic written instructions from the dietitian-researcher on how to complete the MST; that is, participants were instructed to circle their response to each MST question and to add the scores for their selected responses to calculate a total MST score. On completion of the MST by the participant (“patient-MST”), the form was placed in a sealed envelope marked only

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