# The Abridged Patient Generated Subjective Global Assessment Predicts Quality of Life and Physical Performance in People with Cancer

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## INTRODUCTION

- Malnutrition, present in approximately 40% of the general cancer population, negatively impacts quality of life (QOL) and treatment outcomes. To date, there is no consensus on how to systematically assess and monitor nutrition status in adult cancer patients.

- Many nutrition screening and/or assessment tools available only measure weight changes and appetite. These may be of little clinical value for the health professional working with cancer patients as they do not assess physical performance or nutrition impacting symptoms (NIS) (ex: nausea, vomiting, and pain) known to be associated with nutrition status and QOL.

- The abridged Patient Generated Subjective Global Assessment (aPGSGA) is a tool encompassing these dimensions (weight loss, food intake, NIS, and physical performance) and could be used to simultaneously assess nutrition status as well as measure the effectiveness of nutrition interventions.

## OBJECTIVES

To evaluate whether the abridged Patient Generated Subjective Global Assessment…

1) can detect differences in QOL and physical performance in cancer patients.

2) can predict changes in QOL in cancer patients undergoing nutritional and exercise interventions.

## METHODS

- Retrospective cohort study

- Data obtained from patients of the Cancer Rehabilitation and Cachexia clinic at the McGill University Health Centre (MUHC) enrolled November 2013 to September 2015.

- Physical performance measures: 6-minute walk test (6MWT) and hand grip strength (HGS).

- Quality of life measures: Edmonton Symptom Assessment System (ESAS).

- Patients' nutritional status was categorized using pre-existing aPGSGA cut-offs: no risk for malnutrition (score 0 – 1), mild risk (score 2 – 3), moderate risk (score 4 – 8) and severe risk (score ≥ 9).

- Cross-sectional analyses (n = 207) included Pearson's correlations, multiple regression, one-way ANOVA and Kaplan-Meier survival analysis. Repeated measures analyses (n = 113) included repeated measures ANOVA and mixed models. Significance was accepted at $p < 0.05$.

- Main Inclusion criteria: adult patients with all cancer diagnoses

- Main Exclusion criteria: estimated prognosis < 3 months, uncontrolled pain and/or ECOG Performance Status >2/4

## RESULTS

- On average, patients were overweight and visited approximately 3 times (median = 3, mean = 3.7).

- Weight, but not BMI, differed between men and women (figure 1)

**Table 1: Baseline characteristics**

| | Total (N = 207) | | Male (n = 114 ) | | Female (n = 93) | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD |
| Age (years) | 63.9 | 13.4 | 66.2 | 13.0 | 61.2* | 13.4 |
| Number of visits | 3.7 | 2.6 | 3.7 | 2.8 | 3.6 | 2.3 |
| Height (m) | 1.68 | 0.1 | 1.73 | 0.7 | 1.61* | 0.1 |
| Weight (kg) | 71.6 | 17.0 | 74.6 | 15.2 | 68.0* | 18.5 |
| BMI (kg/m²) | 25.4 | 6.1 | 24.8 | 5.0 | 26.2 | 7.2 |
| | No. | % | No. | % | No. | % |
| Diagnosis | | | | | | |
| -Lung | 69 | 33.3 | 43 | 37.7 | 26 | 28.0 |
| -Female | 29 | 14.0 | 0 | 0 | 29 | 31.1 |
| -Digestive | 32 | 15.5 | 23 | 20.2 | 9 | 9.6 |
| -Lymphatic and Haematological | 42 | 20.3 | 20 | 17.5 | 22 | 23.7 |
| -Other | 35 | 16.9 | 28 | 24.6 | 7 | 7.5 |
| Ethnicity | | | | | | |
| -Caucasian | 181 | 88.3 | 103 | 91.1 | 78 | 84.7 |
| -Asian | 15 | 7.3 | 5 | 4.4 | 10 | 10.9 |
| -Black | 9 | 4.4 | 5 | 4.4 | 4 | 4.3 |

**Legend:** BMI = Body Mass Index * = different from men, $p < 0.05$

- Total ESAS score, ESAS-wellbeing and 6MWT differed according to aPGSGA categories (**Table 2**).
- Patients with the worse nutritional status (aPGSGA score ≥ 9) faring the worst in all measures.
- There were no differences in HGS, weight or BMI

**Table 2: Differences in quality of life and performance according to nutritional status**

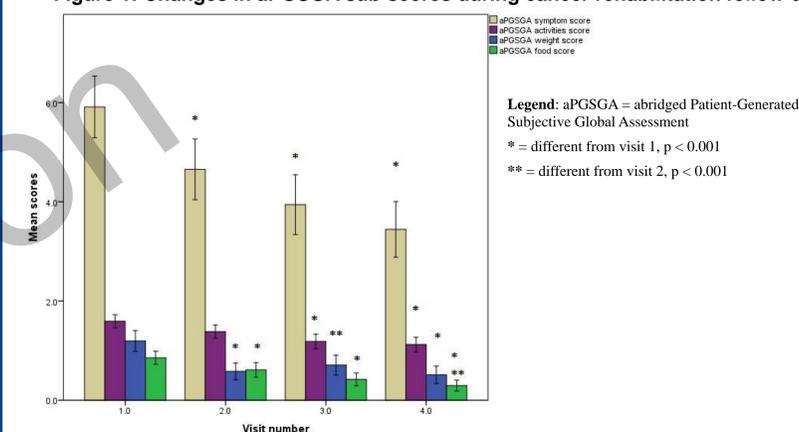| | 0 - 1 | 2 - 3 | 4 - 8 | >9 |
|---|---|---|---|---|
| | n = 18 Mean (SD) | n = 25 Mean (SD) | n = 60 Mean (SD) | n = 104 Mean (SD) |
| aPGSGA | 0.8 (0.4) | 2.5 (0.6) | 6.4 (1.4) | 14.6 (4.5) |
| Weight (kg) | 77.1 (16.0) | 73.4 (11.3) | 73.5 (18.7) | 69.1 |
| BMI (kg/m²) | 28.1 (5.5) | 25.9 (3.7) | 26.1 (6.6) | 24.5 (6.2) |
| HGS (kg) | 33.4 (13.1) | 34.5 (10.4) | 33.0 (10.7) | 32.2 (11.4) |
| 6MWT (m) | 371.3 (137.1) | 367.9 (136.3) | 376.2 (103.1) | 299.9 (136.0)* |
| ESAS | 18.7 (10.7) | 22.6 (13.4) | 27.7 (13.7) | 36.2 (15.9)*,**,*** |
| ESASWellbeing | 3.9 (2.6) | 3.9 (2.6) | 4.1 (2.5) | 5.1 (2.6)** |

**Legend:** BMI = Body Mass Index, HGS = Hand grip strength, 6MWT = 6 minute walk test, aPGSGA = abridged Patient-Generated Subjective Global Assessment, ESAS = Edmonton Symptom Assessment System;

* = different from aPGSGA triage category 0 – 1, $p < 0.05$; ** = different from aPGSGA triage category 2 – 3, $p < 0.05$;*** = different from aPGSGA triage category 4 – 8, $p < 0.05$

- Total aPGSGA score had a moderate strength correlation with total ESAS score (r = 0.478, $p < 0.001$).
- There was a moderate effect in the ability of the aPGSGA to predict ESAS scores ($R^2$ 24.2%, adjusted $R^2$ of 22.3%).
- In a predictive model adjusted for age, diagnosis, ethnicity and gender, each 1 point increase in total aPGSGA score, corresponded to and increase of total ESAS score of 1.2 point ($p < 0.001$)

- Total aPGSGA score improved from visit 1 (mean = 9.4, SD = 5.8) to visit 4 (mean = 5.3, SD = 3.8), $p < 0.001$, as did total ESAS score (mean = 29.8, SD = 14.9 to mean = 24.2, SD = 14.3, $p < 0.001$) (Figure 1).
- Mixed model linear regression (maximum likelihood) determined that aPGSGA score predicted changes in ESAS score over time, $F(1, 413.52) = 54.32$, $p < 0.001$ when controlling for age, sex, ethnicity, diagnosis, follow-up duration and baseline aPGSGA scores.

**Figure 1: Changes in aPGSGA sub-scores during cancer rehabilitation follow-up**



**Legend:** aPGSGA = abridged Patient-Generated Subjective Global Assessment

* = different from visit 1, $p < 0.001$

** = different from visit 2, $p < 0.001$

## CONCLUSION

- This study demonstrated that the aPGSGA can detect differences in physical performance and QOL in a heterogeneous group of adult cancer patients.
- The use of aPGSGA as a repeated measure can predict shifts in in nutritional status, performance and quality of life often encountered by cancer patients **before, during and after** treatment.
- These findings support the use of the aPGSGA as a nutrition assessment tool in routine oncology practice

## PATIENT IMPACT

- This study supports the routine use of a nutritional assessment tool, specifically the aPGSGA, in out-patient oncology clinics across all partnering institutions
- Future studies and projects could take advantage of the digital version of the aPGSGA which would facilitate the record-keeping and referral processes

## TRANSLATION ACROSS THE RCN

Nutritional assessment at oncological treatment visits using the aPGSGA would:

- Optimize the referral process to dietitians in order to provide timely interventions for malnourished patients.
- Measure the effectiveness of these interventions
- Serve as an additional tool the health care team can use to identify needs of the oncological patients.