



Do Older Adults With Cancer Report Less Symptoms? A Prospective Comparison And Its Implication On Survival Prognostication.

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Background

In recent years, patient reported outcomes such as symptom burden have been proven useful in survival prognostication models such as the PROgnostic Model for Advanced Cancer (PRO-MAC) (**Figure 1**). However, there is little evidence regarding the impact of symptom disparity across age groups on survival prognostication.

Aims

We aim to compare symptom severity across age groups and its implication in survival prognostication.

Methods

This is a secondary analysis of a prospective study of subjects with incurable cancer reviewed by a palliative care service of a tertiary university hospital from June 2013 to March 2015.

Subjects were categorized into four groups based on age. One-way analysis of variance with Bonferroni correction was used to compare symptom burden across age groups.

The significance of Edmonton symptom assessment system (ESAS-r) summative as a prognostic variable across age groups was evaluated using multivariate Cox regression analysis based on the PRO-MAC model.

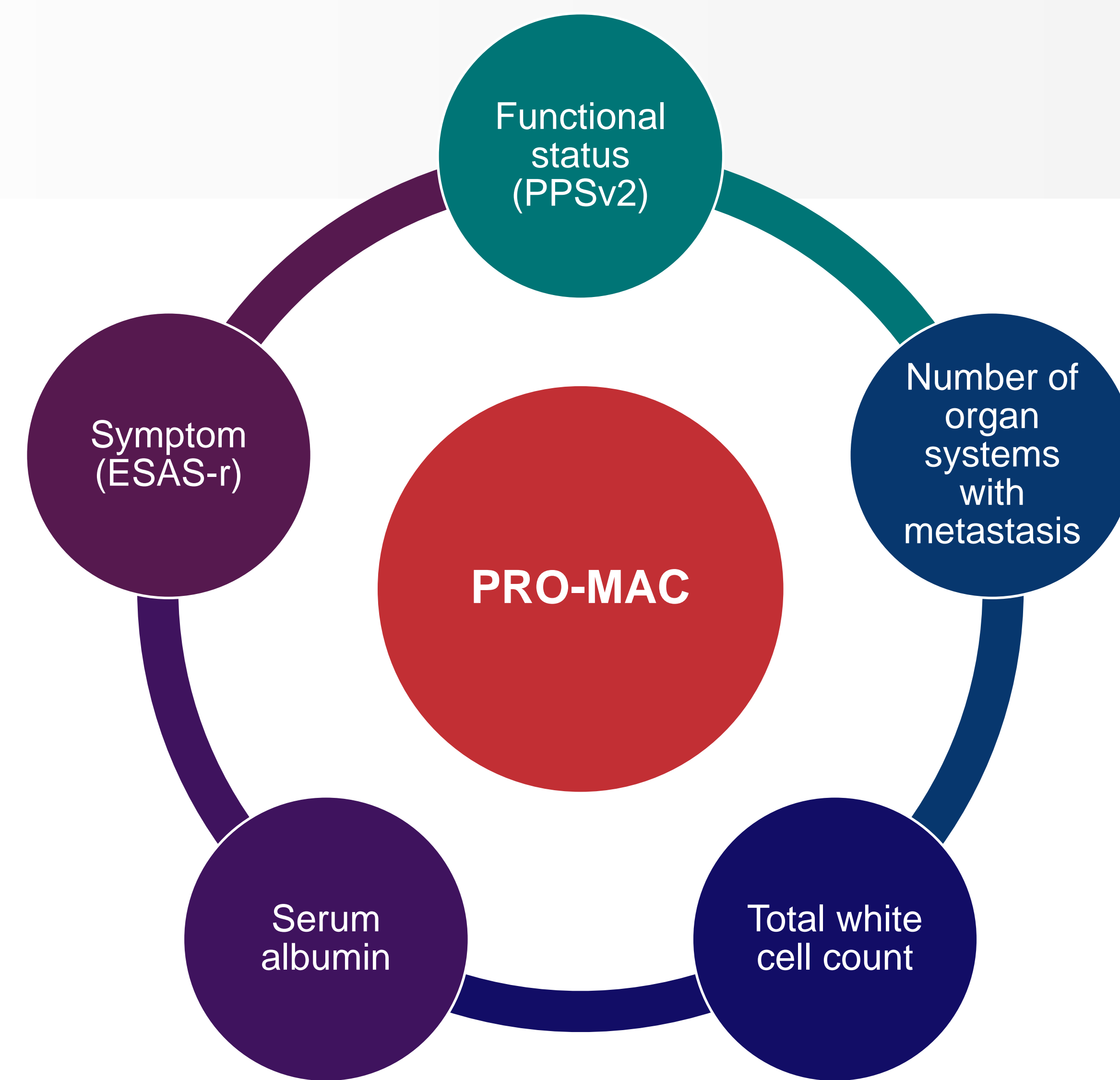


Figure 1. PRO-MAC multi-domain prognostic model.
ESAS-r: Edmonton Symptom Assessment System revised; PPSv2: Palliative Performance Scale version 2

Results

840 subjects were recruited. 248 subjects were younger than 65 years (young); 216 subjects were aged between 65 to 74 (young-old); 236 subjects were between 75 to 84 (old-old) and 140 were older than 85 years (oldest-old). Baseline data is presented in **Table 1**. There were no between-arm differences for baseline demographics; cancer subtypes; cancer stage and survival. Across age groups, older age subjects had higher Charlson comorbidity index, higher incidence of dementia diagnosis and lower performance status based on palliative performance scale (all $p < 0.05$).

Table 1. Subject's baseline data

	Age < 65 (n=248)	Age 65 – 74 (n=216)	Age 75 – 84 (n=236)	Age >85 (n=140)
Age in years	55.36 (7.32)	69.50 (3.01)	79.21 (2.95)	89.13 (3.29)
Male, n (%)	155 (62.5)	136 (63.0)	135 (57.2)	66 (47.1)
Chinese ethnicity, n (%)	198 (79.8)	202 (93.5)	216 (91.5)	134 (95.7)
CCI (with age and cancer diagnosis removed)	2.15 (2.03)	3.16 (2.50)	3.02 (2.19)	3.29 (2.08)
Diagnosed with dementia, n (%)	0 (0.0)	7 (3.2%)	15 (6.4%)	19 (13.6)
PPSv2	52.6 (22.2)	48.8 (22.0)	48.0 (21.5)	43.2 (17.8)
Cancer subtype, n (%)				
Head and neck cancer	22 (8.9)	10 (4.6)	8 (3.4)	2 (1.4)
Lung cancer	67 (27.0)	57 (26.4)	70 (29.7)	30 (21.4)
Upper GI tract cancer	53 (21.3)	54 (25.0)	62 (26.3)	39 (27.8)
Lower GI tract cancer	42 (16.9)	37 (17.1)	34 (14.4)	38 (27.1)
Genitourinary tract cancer	18 (7.3)	20 (9.2)	40 (16.9)	16 (11.4)
Breast cancer	28 (11.3)	13 (6.0)	5 (2.1)	4 (2.9)
Cancer of unknown origin	6 (2.4)	10 (4.6)	7 (3.0)	6 (4.3)
Others	12 (4.8)	15 (6.9)	10 (4.2)	5 (3.6)
Cancer stage, n (%)				
1	2 (0.8)	1 (0.5)	1 (0.4)	4 (2.9)
2	8 (3.2)	6 (2.8)	10 (4.2)	9 (6.4)
3	11 (4.4)	14 (6.5)	23 (9.7)	15 (10.7)
4	227 (91.5)	195 (90.3)	202 (85.6)	112 (80.0)
Survival days	85 (135)	98 (155)	86 (138)	98 (156)

Data presented in mean (SD) unless otherwise stated
CCI: Charlson comorbidity index; PPSv2: Palliative performance scale version 2

Table 2. Comparison of symptom burden across age groups

	Age < 65 (n=248)	Age 65 – 74 (n=216)	Age 75 – 84 (n=236)	Age >85 (n=140)	p-value
Pain	2.22 ± 2.77	1.49 ± 2.40^a	1.47 ± 2.46^a	1.01 ± 2.08^a	<0.001
Tiredness	1.84 ± 2.58	1.21 ± 2.08^a	1.44 ± 2.33	0.84 ± 1.84^a	<0.001
Drowsiness	0.98 ± 2.31	0.99 ± 2.40	1.14 ± 2.46	1.04 ± 2.38	0.89
Nausea	0.46 ± 1.57	0.40 ± 1.33	0.27 ± 1.10	0.24 ± 1.02	0.26
Appetite	1.98 ± 2.76	1.76 ± 2.60	1.96 ± 2.77	1.90 ± 2.72	0.83
Breathlessness	1.08 ± 1.99	1.03 ± 2.11	0.97 ± 1.98	0.73 ± 1.73	0.39
Depression	0.67 ± 1.77	0.51 ± 1.34	0.39 ± 1.33	0.23 ± 0.99 ^a	0.24
Anxiety	0.38 ± 1.42	0.22 ± 1.03	0.08 ± 0.55 ^a	0.05 ± 0.37 ^a	0.002
Wellbeing	1.55 ± 2.43	1.27 ± 2.19	0.72 ± 1.61 ^{ab}	0.69 ± 1.61 ^{ab}	<0.001
Summative	11.1 ± 10.4	8.83 ± 8.36^a	8.39 ± 8.13^a	6.66 ± 7.14^a	<0.001

Values denote means ± SD unless specified otherwise; a: $p < 0.05$ compared with age <65 by post hoc test; b: $p < 0.05$ compared with age 65 – 74 by post hoc test; c: $p < 0.05$ compared with age 75 – 84 by post hoc test; bold denote mean difference compared to age <65 reached minimal clinically important difference

With increasing age, there is a decrease in mean scores for pain, tiredness and ESAS-r summative (**Table 2**). For these three variables, the score differences between oldest-old and young reached minimal clinically important difference. ESAS-r summative maintained significance as a prognostic variable in the young and young-old groups only.

Table 3. Multivariate Cox regression analysis on prognostic variables across age

	Age < 65 (n=248)	Age 65 – 74 (n=216)	Age 75 – 84 (n=236)	Age >85 (n=140)
Total WBC (cells per litre)	1.58 (1.20 – 2.09)	1.44 (1.03 – 2.00)	1.28 (0.95 – 1.74)	1.24 (0.81 – 1.90)
Albumin level (g/L)	1.87 (1.39 – 2.52)	1.21 (0.85 – 1.71)	1.08 (0.78 – 1.50)	1.39 (0.89 – 2.17)
PPSv2 (%)	1.74 (1.41 – 2.14)	1.47 (1.17 – 1.84)	1.66 (1.35 – 2.06)	1.50 (1.09 – 2.06)
Number of metastatic sites	1.55 (1.17 – 2.05)	1.13 (0.84 – 1.52)	0.96 (0.72 – 1.28)	0.77 (0.52 – 1.16)
ESAS-r total	1.30 (1.09 – 1.56)	1.49 (1.20 – 1.84)	1.14 (0.93 – 1.39)	1.17 (0.87 – 1.59)

Values denote hazard ratio (95% confidence interval); bold denotes $p < 0.05$

PPSv2: Palliative Performance Scale Version 2; WBC, white blood cell

Conclusions

Pain, tiredness and ESAS-r summative scores decreased with increasing age, potentially affecting their value in survival prognostication. However, a subset of older adults may not fully appreciate such a complex symptom grading system due to higher prevalence of dementia. Further studies should evaluate the role of a simpler system of symptom measurement in the older adult and its potential in prognostication.