

Inter-rater reliability in performance status among health care professionals: a systematic review

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Objective

- Investigate the performance status (PS) scores evaluated by different health care professionals (HCPs)

Methods

- A literature search was conducted in Ovid MEDLINE and OLDMEDLINE from 1946 to Present (July 5, 2016), Embase Classic and Embase from 1947 to 2015 Week 26, and Cochrane Central Register of Controlled Trials up to May 15
- Information of interest was whether there was a difference of PS assessment between HCPs; statistical information provided was noted

Results

- Of the fifteen articles, eleven compared PS assessments between HCPs of different disciplines; the other four compared attending and resident physician, similarly-specialized physicians and between two unspecified-specialty physicians
- Three studies reported a lack of agreement, four reported moderate inter-rater reliability, two reported mixed reliability and six noted strong reliability
- 4 studies concluded that Karnofsky performance status (KPS) had better reliability than both the Eastern Cooperative Oncology Group Performance Status (ECOG PS) and palliative performance status (PPS)

Study	Included or Excluded	Assessment tools used by health care professionals
Kim et al 2015	Included	ECOG PS assessments by palliative care specialists, nurses and medical oncologists
May et al 2012	Included	PS scores of multidisciplinary teams and oncologists
Addy et al 2012	Included	ECOG PS scores of respiratory physicians and oncologists
Culleton et al 2011	Excluded	KPS and PPS scores of different disciplines
Zimmerman et al 2010	Included	ECOG, PPS and KPS scores of nurses and physicians
Campos et al 2009	Included	PPS scores of oncologist, radiation therapist and research assistant
de Borja et al 2004	Included	ECOG PS scores of doctors, nurses, radiation therapist and radiation therapy student
Liem et al 2002	Included	KPS scores of both attending and resident physician
Ando et al 2001	Included	PS scores of nurses and oncologists
Fantoni et al 1999	Included	Modified KPS scores of experienced physician, young physician and nurse
Taylor et al 1999	Included	KPS and ECOG PS scores of clinical oncologist, ward resident medical officer, and principal treating nurse
Miller et al 1998	Excluded	SCPS scores of nurse practitioner students
Litwin et al 1998]	Excluded	KPS score between urologists and patients
Sorenson et al 1993	Included	ECOG PS score between three oncologists
Roila et al 1991	Included	ECOG PS and KPS scores between two oncologists
Conill et al 1990	Included	ECOG PS and KPS scores between two physicians
Schag et al 1984	Included	KPS scores of primarily oncologists and primarily psychologist/psychiatrist who work with cancer patients on daily basis
Hutchinson et al 1979	Included	KPS scores of two pairs of physicians (emergency room physician with senior medical resident on admitting ward, and two renal physicians)

Study	Comparison Groups	Comparison Statistic
Kim et al 2015	PC specialists and medical oncologists	kappa = 0.26
	PC nurses and medical oncologists	kappa = 0.23
	PC specialists and PC nurses	kappa = 0.61
May et al 2012	Multidisciplinary team and oncologists	kappa = 0.19
Addy et al 2012	Oncologists and respiratory physicians	Krippendorff's alpha (oncologist) = 0.61 Krippendorff's alpha (respiratory) = 0.63
Zimmerman et al 2010	Physicians and nurses (ECOG PS)	kappa = 0.67
	(KPS)	kappa = 0.74
	(PPS)	kappa = 0.72
Campos et al 2009	Oncologists and radiation therapists	Spearman Rank Correlation Coefficient = 0.69
	Oncologists and research assistants	Spearman Rank Correlation Coefficient = 0.83
	Radiation therapists and research assistants	Spearman Rank Correlation Coefficient = 0.76
de Borja et al 2004	Doctors and radiation therapist students (ECOG PS)	Spearman Rank Correlation Coefficient = 0.81
	(KPS)	Spearman Rank Correlation Coefficient = 0.81
	Doctor and nurses (ECOG PS)	Spearman Rank Correlation Coefficient = 0.77
	(KPS)	Spearman Rank Correlation Coefficient = 0.74
	Doctor and radiation therapists (ECOG PS)	Spearman Rank Correlation Coefficient = 0.57
	(KPS)	Spearman Rank Correlation Coefficient = 0.67
Liem et al 2002	Attending and resident physicians	kappa = 0.29 Pearson's Correlation = 0.85 Spearman Rank Correlation Coefficient = 0.76 Kendell's Correlation = 0.67
Ando et al 2001	Nurses and oncologists	kappa = 0.63
Fantoni et al 1999	Experienced and young physician	Kendall's Correlation = 0.82
	Experienced physician and nurse	Kendall's Correlation = 0.77
	Young physician and nurse	Kendall's Correlation = 0.76
Taylor et al 1999	Clinical oncologist and resident medical officer (ECOG PS)	Spearman Rank Correlation Coefficient = 0.6-1.0
	(KPS)	Spearman Rank Correlation Coefficient = 0.6-1.0
	Clinical oncologist and nurse (ECCOG PS)	Spearman Rank Correlation Coefficient = 0.6-1.0
	(KPS)	Spearman Rank Correlation Coefficient = 0.6-1.0
	Resident medical officer and nurse (ECOG PS)	Spearman Rank Correlation Coefficient = 0.6-1.0
	(KPS)	Spearman Rank Correlation Coefficient = 0.6-1.0
Sorenson et al 1993	Overall between three oncologists	kappa = 0.44
	ECOG PS score of 0	kappa = 0.55
	ECOG PS score of 1	kappa = 0.48
	ECOG PS score of 2	kappa = 0.31
	ECOG PS score of 3	kappa = 0.43
	ECOG PS score of 4	kappa = 0.33
Roila et al 1991	Two oncologists (ECOG PS)	kappa = 0.914
	(KPS)	kappa = 0.921
Conill et al 1990	Two physicians (ECOG PS)	Kendall's Correlation = 0.76
	(KPS)	Kendall's Correlation = 0.75
Schag et al 1984	Physicians and mental health professionals	Pearson's Correlation = 0.89 kappa = 0.53
Hutchinson et al 1979	Emergency physician and senior resident	kappa = 0.50
	Two renal physicians	kappa = 0.46

Conclusions

- Existing literature cites both good and bad inter-rater reliability of PS scores
- It is difficult to conclude which HCPs' PS assessments are more accurate

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