

Reducing the Stress of Repeated Assessments: a Comparison of Multidimensional Fatigue Inventory and Visual Analogue Scale in Adjuvant Breast Radiotherapy

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BACKGROUND

Cancer patients suffer a range of symptoms as a consequence of treatment which may continue into survivorship. Symptom prevalence and impact is an issue in treatment, survivorship, and palliation. A wide range of instruments to evaluate symptoms are available and have been used successfully in cancer settings. These instruments take time to administer and repeated assessment reduces reliability and may add to patient fatigue or anxiety. Whilst a large percentage of patients report symptoms which functionally affect their quality of life, fewer than 30% are clinically recognized and referred for support. Time to administer and interpret instruments is suggested as a barrier. Brief screening instruments can roughly characterize individual behavior and target those most in need of change. Anecdotal evidence suggests that patients may become tired of answering the "same questions" repeatedly. Patients complacency about repeated assessments, will limit instrument validity and increase their stress. Thus, simplified symptom tests that reduce time and stress are desirable. Considering the chronic nature of cancer treatment patient stress when completing multi-item questionnaires becomes even more profound. One alternative is a visual analogue scale (VAS), widely used in some fields of science and validated against longer instruments.

AIMS

1. To measure fatigue during adjuvant breast radiotherapy.
2. To compare the Multidimensional Fatigue Inventory (MFI) with a 100mm visual analogue scale (VAS).

METHODS

Eighteen usual care patients (UCG) with early stage breast cancer scheduled for adjuvant radiotherapy were recruited and compared with 23 age-matched controls (CON). UCG were subsequently measured during treatment, and one month post treatment. Instruments

The MFI is a validated fatigue instrument which measures five (5) domains; general, physical, mental fatigue, reduced activity and motivation.

The VAS consists of a 100 mm line with two anchor points. Subjects mark along the line their perceived symptom intensity. Measuring with a ruler provides a numerical value.

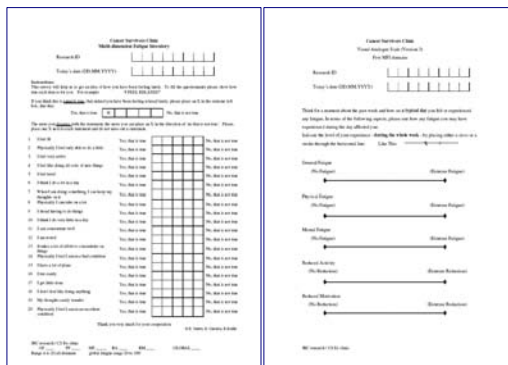
Fatigue measures were global fatigue; sum of MFI scores (range, 20–100); five domains (range, 4–20); and domain matched VAS scores (range, 0–100).

Table 2. Baseline correlations between MFI and VAS instruments for Patients and Controls.

Domain		MFI		VAS		correlation
		mean	sd	mean	sd	
global fatigue	UCG	52.8	17.9	34.0	20.1	0.874 **
	CON	48.0	14.8	37.5	19.2	0.523 **
general fatigue	UCG	12.1	4.6	40.1	25.2	0.834 **
	CON	10.8	4.1	34.0	20.4	0.465 *
physical fatigue	UCG	12.1	5.3	39.8	23.9	0.776 **
	CON	10.3	4.4	37.5	20.3	0.309
mental fatigue	UCG	9.7	4.9	32.2	23.9	0.457
	CON	9.2	4.1	43.8	26.5	0.342
reduced activity	UCG	11.2	4.7	32.2	23.7	0.780 **
	CON	9.7	3.6	40.5	24.0	0.196
reduced motivation	UCG	7.7	3.1	25.7	21.8	0.283
	CON	8.0	2.9	31.1	22.0	0.399

** highly significant (p<0.01), * significant (p<0.05)

INSTRUMENTS



Multidimensional Fatigue Inventory ©
20 item questionnaire covering five (5) domains of fatigue; and
Visual Analogue Scale with 100mm anchor points

Table 3. Fatigue scores and correlations between MFI and VAS scores for UCG over the course of treatment and post treatment.

Domain		Peak		correlation	Post		
		mean	sd		mean	sd	
global fatigue	MFI	55.9	23.7	0.743 **	55.2	18.2	0.616 *
	VAS	44.2	24.8		44.1	22.7	
general fatigue	MFI	13.3	4.9	0.503 *	12.8	3.3	0.535
	VAS	45.7	26.9		43.2	23.7	
physical fatigue	MFI	12.7	5.9	0.661 *	12.8	5.5	0.653 *
	VAS	50.3	27.6		45.2	23.6	
mental fatigue	MFI	9.9	5.4	0.732 **	10.2	5.2	0.622 *
	VAS	39.8	29.5		35.8	23.2	
reduced activity	MFI	12.8	6.1	0.693 **	12.1	4.7	0.557
	VAS	47.3	26.9		50.6	28.5	
reduced motivation	MFI	8.7	3.8	0.590 **	8.3	3.2	0.620 *
	VAS	42.5	23.6		45.6	20.8	

** highly significant (p<0.01), * significant (p<0.05)

RESULTS

No significant differences were found between patients and controls. Fatigue scores for UCG and CON at baseline are shown in Table 2. Both groups show strong correlations between instruments for global fatigue and domains of general and physical fatigue. UCG also showed correlation for the domain of reduced activity.

Both instruments showed a persistent elevation in fatigue during treatment across domains and reflected a small decrease post-treatment. Peak and recovery measures, shown in Table 3. The correlation of MFI and VAS scores was consistently positive over treatment. Interestingly, correlations for mental fatigue and reduced motivation improved over time.

This study was approved by the Edith Cowan University Human Research Ethics Committee.

Table 1. Subject characteristics

	CON (n= 23)	UCG (n=18)
Age (yrs)	52.4 (± 11.0)	54.5 (±5.4)
Height (m)	1.6 (± 0.1)	1.6 (± 0.1)
Mass (kg)	66.1 (± 10.4)	71.8 (± 13.1)
BMI	24.7 (± 3.9)	26.8 (± 4.8)

DISCUSSION

Both Instruments showed fatigue changes over the time course of radiotherapy. MFI and VAS responses were similar and consistent over treatment. This suggests they are sensitive for use in cancer settings. Of interest was the similarity of values for patients and controls. Prior to radiotherapy there is not a significant rise in fatigue for patients. Some level of fatigue appears commonplace among women and high test scores should not be considered alone. Changes in fatigue may be more useful in assessing the functional impact of adjuvant treatments. Patients had a consistent, non-significant, increase over treatment and tended to decline (recover) by one month post-treatment. Patients appear to show a keener fatigue acuity, which may make repeated questionnaires redundant. The strength and consistency of both instruments and the ease of VAS completion indicate that it may be a more user friendly instrument in clinical and palliative settings. The VAS is quicker to administer and less stressful to evaluate.

CONCLUSIONS

- Pre-treatment patients are no more fatigued than healthy controls.
- Treatment increases fatigue somewhat, but women recover fairly soon after treatment.
- Stress of repeated measures may be reduced by using a VAS.

Take Home Message

- VAS may be less stressful for both patients and clinical staff.
- Further investigation of VAS's for symptom assessment in palliative settings is required.

KEY REFERENCES

- Galvão, D. A., & Newton, R. U. (2005). *Journal of Clinical Oncology*, 23, 899-909.
- Gil, F., Grassi, L., Travado, L., Tomamichel, M., & Gonzalez, J. R. (2005). *Supportive Care in Cancer*, 13, 600-606.
- Smets, E. M. A., Visser, M. R. M., Garssen, B., Frijda, N. H., Oosterveld, P., & de Haes, H. C. J. M. (1998). *Journal of Psychosomatic Research*, 45(3), 277-293.