

Cancer-related cognitive impairment in patients with newly diagnosed aggressive lymphoma compared to healthy controls: An exploratory study

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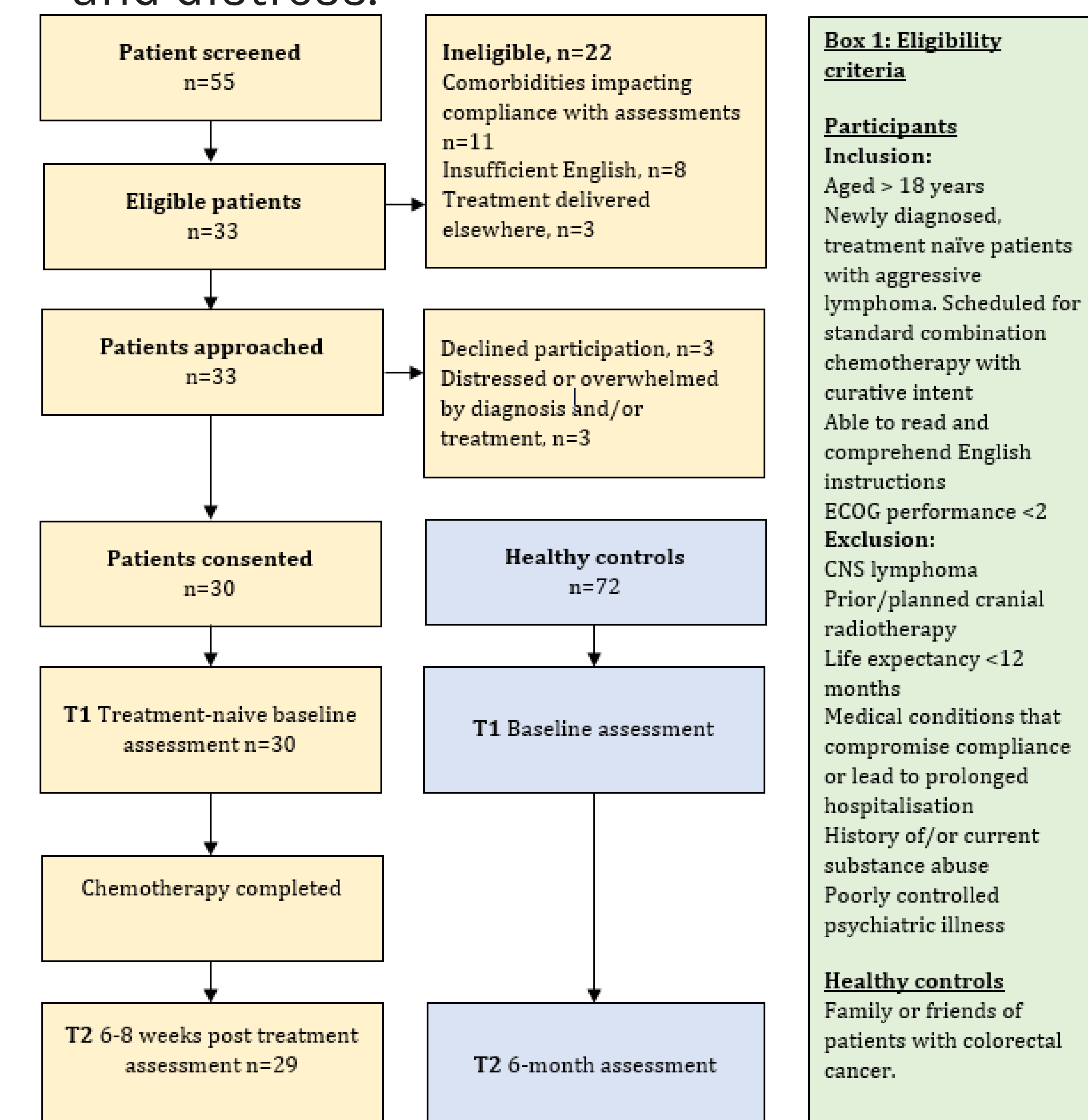
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Background

- Cancer related cognitive impairment is a highly distressing and disabling symptom commonly reported by patients.
- While persistent changes in cognitive function are reported among lymphoma survivors, there is a paucity of data in this population.

Aims

- To describe self-reported cognitive function and neuropsychological performance in a lymphoma population and compare with healthy controls.
- To examine the associations between patients' neuropsychological performance, cognitive function and distress.



Method

Secondary analysis of data from a feasibility of 30 patients with newly diagnosed aggressive lymphoma¹ and 72 healthy controls² (Figure 1).

Results

Patients and healthy controls were well matched on key demographic variables.

Most differences between patients' and healthy controls' neuropsychological test scores were large-sized; the performance of patients was worse both before and after chemotherapy (most $p < 0.001$). The same pattern was observed for the impact of perceived cognitive impairment on quality-of-life (both $p < 0.001$)³

Associations between neuropsychological performance, self-reported cognitive function and distress were trivial to small-sized ($r < 0.1$, $p > 0.10$).

Table 1: Differences in self-reported cognitive function and neuropsychological performance in patients (n=30) and healthy controls (n=72) at baseline and follow-up

Measure/(sub)scale	Between-groups comparisons			
	Baseline		Follow-up	
	Diff (95% CI)	Cohen's d	Diff (95% CI)	Cohen's d
FACT-Cognitive Function				
PCI	1.9 (-2.6, 6.4)	0.18	-2.6 (-7.1, 2.0)	0.25
Impact of PCI on QOL	-3.9 (-5.1, -2.8)***	1.44	-3.5 (-4.7, -2.3) ***	1.27
PCA	0.8 (-1.6, 3.2)	0.14	-1.9 (-4.4, 0.5)	0.35
Trail Making Test (executive functioning)				
A score	-10.0 (-14.2, -5.8) ***	1.03	-10.2 (-14.4, -6.0) ***	1.06
B score	-10.2 (-15.1, -5.3) ***	0.90	-11.6 (-16.7, -6.7) ***	1.03
Hopkins Verbal Learning Test (verbal learning and memory)				
Total Recall	-8.4 (-12.7, -4.1) ***	0.85	-6.4 (-10.7, -2.1) ***	0.65
Delayed Recall	-11.6 (-16.3, -7.0) ***	1.09	-9.7 (-14.3, -5.0) ***	0.91
Retention	-8.2 (-12.6, -3.9) **	0.82	-8.0 (-12.4, -3.6) ***	0.80
Digit Span (attention/working memory)				
Total	-4.4 (-8.4, -0.4) *	0.47	-6.0 (-10.0, -2.0) ***	0.65

Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Conclusion

In many people newly diagnosed with aggressive lymphoma, cognitive impairment and the impact of perceived impairment on quality-of-life precede chemotherapy and remain evident after chemotherapy.

There is need for larger scale longitudinal studies over a longer time to inform the development of targeted interventions to address cognitive impairment and the optimal time in the disease trajectory to deliver them.

References

1. Gates, P., Krishnasamy, M., Wilson, C. *et al.* Cancer-related cognitive impairment in patients with newly diagnosed aggressive lymphoma undergoing standard chemotherapy: a longitudinal feasibility study. *Support Care Cancer* **30**, 7731-7743 (2022).
2. Vardy JL, Dhillon HM, Pond GR, Rourke SB, Bekele T, Renton C, Dodd A, Zhang H, Beale P, Clarke S, Tannock IF. Cognitive Function in Patients With Colorectal Cancer Who Do and Do Not Receive Chemotherapy: A Prospective, Longitudinal, Controlled Study. *J Clin Oncol*. 2015 Dec 1;33(34):4085-92
3. Gates, P., Dhillon, H.M., Krishnasamy, M. *et al.* Cancer-related cognitive impairment and wellbeing in patients with newly diagnosed aggressive lymphoma compared to population norms and healthy controls: an exploratory study. *Support Care Cancer* **32**, 238 (2024).

Box 2: Study assessments
Demographics
PROMS: FACT-Cog
Neuropsychological testing: Trail Making Test Part A & B, HVLT-R and WAIS-R