The propensity to receive haematopoietic stem cell transplantation in diffuse large B-cell lymphoma patients based on sex, ethnicity and deprivation: results from linked real-world datasets in England

HSD88

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OBJECTIVES

To estimate the odds of receiving a haematopoietic stem cell transplantation (HSCT) among a representative cohort of diffuse large B-cell lymphoma (DLBCL) patients in England.

KEY FINDINGS

Individuals with DLBCL who are female, from an ethnic minority, and who experience deprivation are less likely to receive an HSCT.

HSCT comes with a significant burden to patients who are often required to isolate pre- and post-transplantation.

BACKGROUND

- Diffuse large B-cell lymphoma (DLBCL) is the most common subtype of non-Hodgkin lymphoma.[1]
- Whilst R-CHOP chemotherapy results in a cure for many, high dose chemotherapy followed by haematopoietic stem cell transplantation (HSCT) can result in cure amongst the 30-45% with refractory or relapsed disease.[1,2]
- We assessed the probability of receiving HSCT using a representative cohort of DLBCL patients in England.

METHODS

- Patients with DLBCL in the National Cancer Registry[3] for England diagnosed between 01/01/2012 and 31/12/2018 were included.
- Patients were followed from diagnosis until the earliest of death or end of the study. HSCT was identified using linked Hospital Episode Statistics data.
- HSCT patients were matched to non-HSCT, on stage at diagnosis (exact matching) and nearest neighbour matching on age at diagnosis, using a 1:2 ratio.
- Univariable and multivariable conditional logistic regression models were fitted, to estimate the odds of receiving HSCT, adjusted for sex, ethnicity, comorbidities (Charlson Comorbidity Index - CCI score), deprivation (index of multiple deprivation - IMD), and follow-up time.

RESULTS

- A total of 12,982 patients with DLBCL were identified. 1,592 had HSCT and were matched to 3,184 without HSCT. Mean age (standard deviation) was 55 (11), with 53% being diagnosed at stage IV when entering the analysis (Table 1).
- Odds of HSCT were significantly lower in females (odds ratio (OR) = 0.77, p<0.001) compared to men, of the same age and stage of diagnosis.
- Similarly, people of Black ethnicities had lower odds compared with those of white ethnicities (OR = 0.51, p=0.004)
- By deprivation quintile, the odds of HSCT decreased with increasing deprivation (p<0.001), with an OR of 0.60 in the most deprived quintile compared to the least deprived quintile (Figure 1).
- Follow-up time has not been linked to an effect on HSCT assignment as management of DBLCL (OR = 1.00, p<0.001).

CONCLUSION

- Using a national DLBCL study population, we found sociodemographic differences in HSCT receipt; those who are female, from an ethnic minority, and who experience deprivation had lower odds of HSCT.
- HSCT comes with a significant burden to patients who are often required to isolate pre- and post-transplant. The sociodemographic differences in the odds of receiving HSCT may reflect financial and social barriers to accessing HSCT.

Characteristic	Overall (n=4,776)	No HSCT (n=3,184)	HSCT (n=1,592)
Age at diagnosis			
Mean (SD)	55 (11)	55 (11)	55 (11)
Median (25% to 75%)	57 (49 to 63)	57 (49 to 63)	57 (49 to 63)
Follow up time (years)			
Mean (SD)	3.48 (2.14)	3.24 (2.14)	3.96 (2.05)
Median (25% to 75%)	3.15 (1.63 to 5.17)	2.82 (1.37 to 4.93)	
Died	1,535 (32%)	1,100 (35%)	435 (27%)
Sex			
Male	3,019 (63%)	1,951 (61%)	1,068 (67%)
Female	1,757 (37%)	1,233 (39%)	524 (33%)
Ethnicity			
White	4,179 (88%)	2,764 (87%)	1,415 (89%)
Black	128 (2.7%)	102 (3.2%)	26 (1.6%)
South Asian	289 (6.1%)	204 (6.4%)	85 (5.3%)
Mixed or other	180 (3.8%)	114 (3.6%)	66 (4.1%)
IMD			
5 – Least deprived	1,054 (22%)	652 (20%)	402 (25%)
4	1,076 (23%)	690 (22%)	386 (24%)
3	926 (19%)	635 (20%)	291 (18%)
2	902 (19%)	610 (19%)	292 (18%)
1 – Most deprived	818 (17%)	597 (19%)	221 (14%)
Stage at diagnosis			
I	357 (7.5%)	238 (7.5%)	119 (7.5%)
II	459 (9.6%)	306 (9.6%)	153 (9.6%)
III	726 (15%)	484 (15%)	242 (15%)
IV	2,511 (53%)	1,674 (53%)	837 (53%)
Unknown	723 (15%)	482 (15%)	241 (15%)
CCI			
0	3,760 (79%)	2,473 (78%)	1,287 (81%)
1-2	843 (18%)	580 (18%)	263 (17%)
3-4	75 (1.6%)	64 (2.0%)	11 (0.7%)

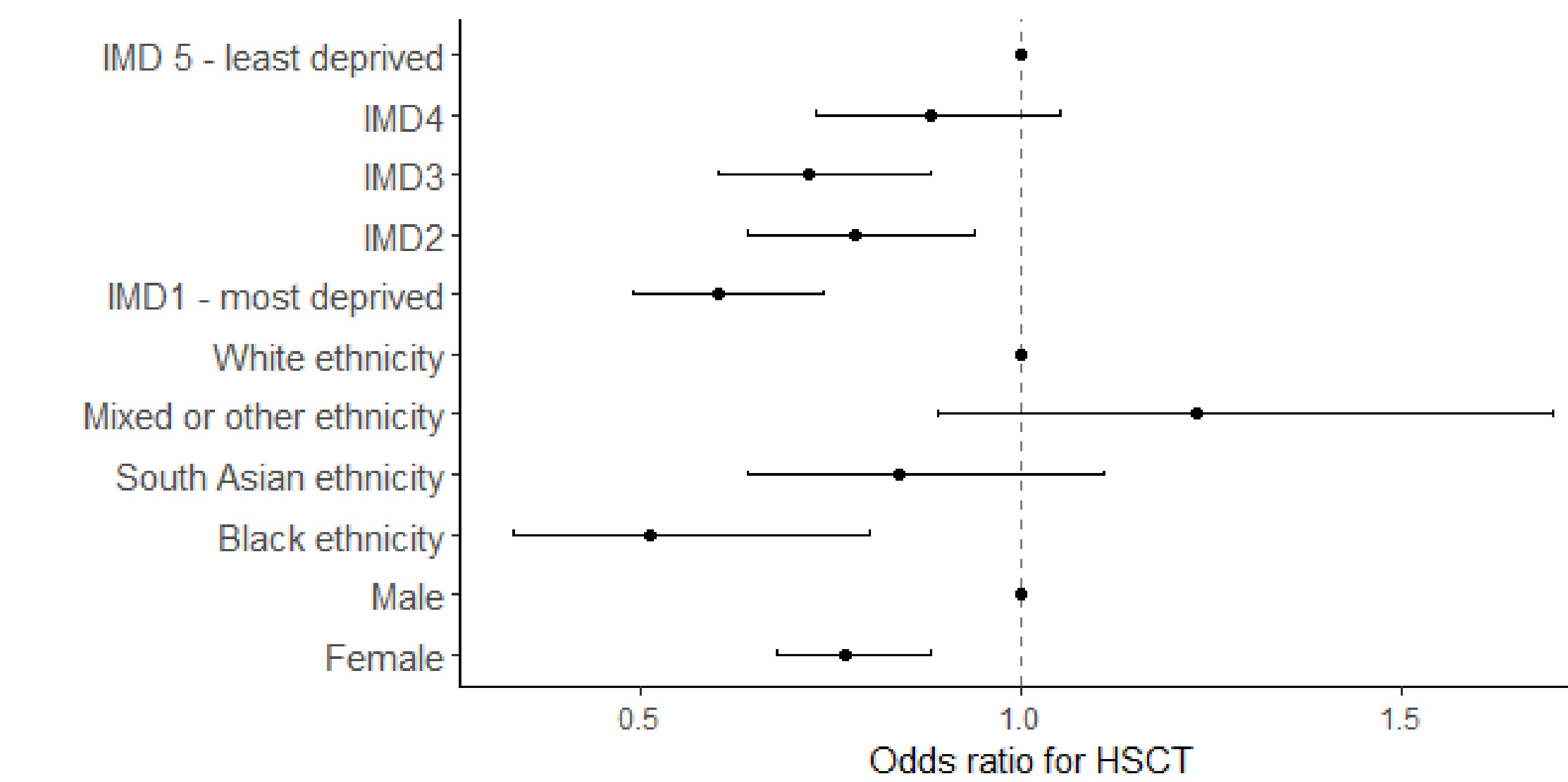*Table 1. Baseline characteristics of included patients*

Figure 1. Adjusted odds ratios of receiving HSCT among DBLCL patients
Continuous covariates CCI (OR = 0.94, p = 0.067) and follow-up time (OR = 1.00, p<0.001) were omitted from the forest plot to simplify presentation.

REFERENCES

1 Sehn, L.H and Salles, G. *Diffuse Large B-Cell Lymphoma.* N Engl J Med, 2021;384(9):842-858

2 Kanate, A.S. et al. *Indications for Hematopoietic Cell Transplantation and Immune Effector Cell Therapy: Guidelines from the American Society for Transplantation and Cellular Therapy.* Biol Blood Marrow Transplant, 2020; 26(7):1247-1256

3 Henson, K.E. et al. *Data Resource Profile: National Cancer Registration Dataset in England.* Int J Epidemiol, 2020;49(1):16-16h.