

Language-Based Disparities in Obstetric Blood Transfusion: a retrospective cohort study

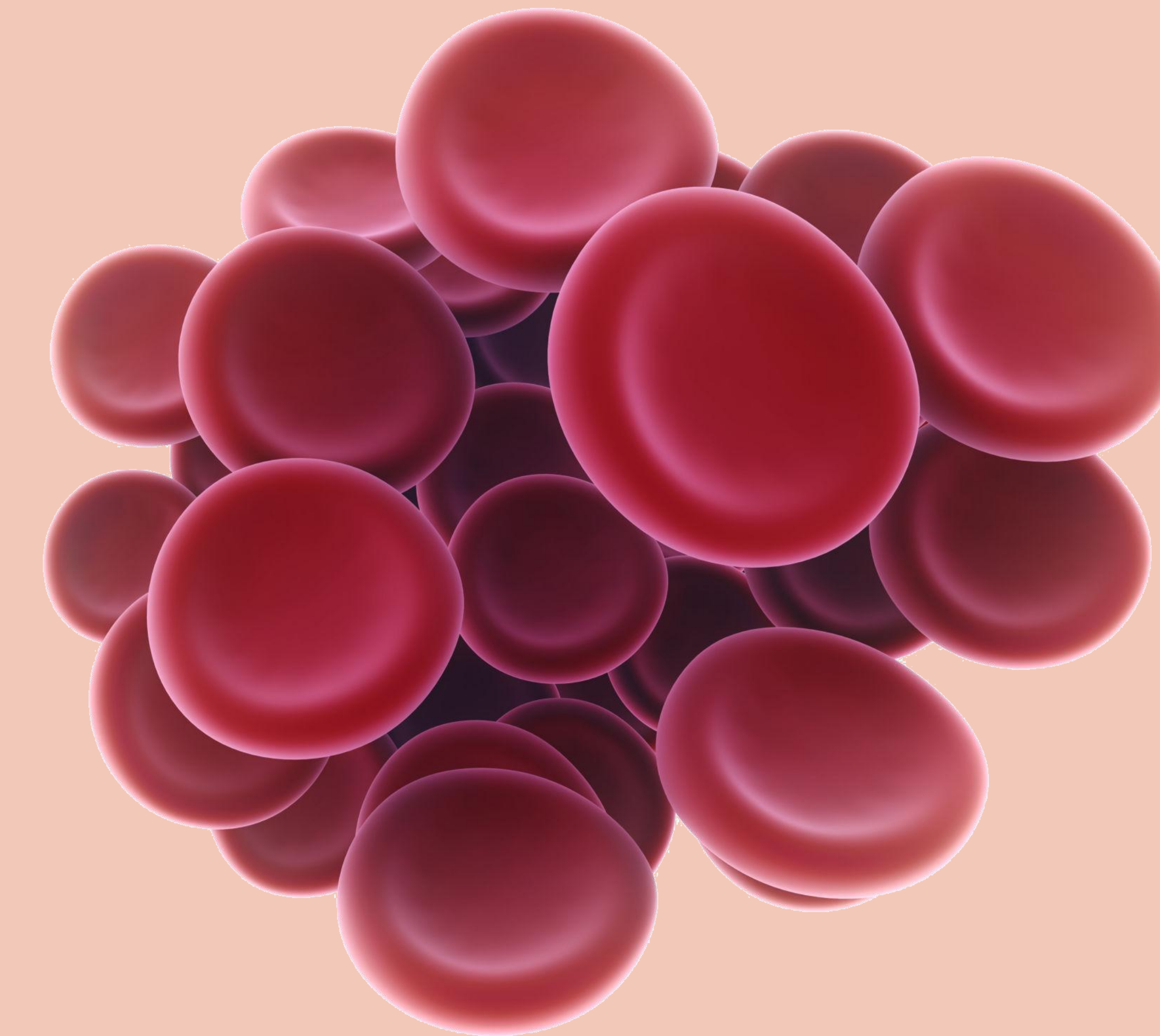
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Background

- Postpartum hemorrhage (PPH) remains the leading cause of preventable maternal morbidity and mortality worldwide
- **Blood product transfusion** is the mainstay treatment for anemia secondary to PPH
- Disparities in race and ethnicity in maternal blood transfusions are well documented, while the **impact of language** is **underexplored**

Hypothesis/Aim

Non-English primary language is associated with increased risk of maternal red blood cell (pRBC) transfusion



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Study Design and Methods

- Single-center retrospective cohort study
- Adult women who experienced childbirth between 2016-2025
 - English vs. non-English as primary language
- Primary outcome → **pRBC transfusion**
- Multivariable Poisson regression models were used to estimate adjusted relative risks for transfusion

Patient demographic, obstetric, and hemorrhage variables

	English N= 31, 657	Non-English N= 9, 362	P-value
Demographic variables			
Age	33.3±5.2	30.4±6.3	<0.001
BMI, kg/m ²	29.9±5.7	31.0±5.6	<0.001
Obstetric Service			
– Private	14556 (46.0%)	488 (5.2%)	
– County	4057 (12.8%)	6625 (70.8%)	
– Academic	10720 (33.9%)	1570 (16.8%)	
Race/ethnicity			
– Non-Hispanic White	8949 (28.3%)	563 (6.0%)	
– Non-Hispanic Black	723 (2.3%)	11 (0.1%)	
– Hispanic	5768 (18.2%)	7325 (78.2%)	
– Asian	10039 (31.7%)	795 (8.5%)	
– Other	6178 (19.5%)	668 (7.1%)	
Obstetric variables			
Gestational age	38.2±2.6	38.2±2.5	0.5
Parity			
– Primipara	14879 (47.0%)	6445 (68.8%)	
– Multiparous	12050 (38.1%)	2896 (30.9%)	
Mode of delivery			
– Vaginal	21379 (67.5%)	2987 (31.9%)	
– Cesarean section	10231 (32.3%)	5588 (59.7%)	
Pre-delivery hemoglobin, g/dL	12.2±1.2	12.1±1.2	0.01
Hemorrhage variables			
Quantitative blood loss (mL)	350 [200-700]	300 [200-635]	<0.001
QBL ≥ 1000 mL	3460 (10.9%)	877 (9.4%)	<0.001
Red blood cell transfusion	997 (3.2%)	293 (3.1%)	0.924

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Results

- **Unadjusted transfusion rates** between English and non-English speaking parturients were **similar** (3.2% vs 3.1%)
- After adjustment for imbalances in obstetric and demographic characteristics, **non-English** primary language was independently associated with **increased transfusion risk**
 - aRR 1.50, 95% CI 1.12–2.01
- Other independent single variable predictors of transfusion:
 - Academic provider service
 - Asian and other race/ethnicity
 - Primiparity
 - Lower pre-delivery hemoglobin
 - PPH during delivery

Unadjusted and adjusted models for risk of red blood cell transfusion

	Unadjusted model		Adjusted model	
	OR (95% CI)	p	OR (95% CI)	p
Demographic variables				
Language				
English	Ref		Ref	
Non-English	0.99 (0.87, 1.13)	0.924	1.50 (1.12, 2.01)	0.007
Age	1.02 (1.01, 1.03)	0.001	1.01 (0.99, 1.03)	0.449
Obstetric Service				
Private	Ref		Ref	
County	1.18 (1.01, 1.39)	0.038	1.07 (0.75, 1.54)	0.694
Academic	1.94 (1.71, 2.23)	<0.001	1.39 (1.09, 1.77)	0.009
Race/ethnicity				
Non-Hispanic White	Ref		Ref	
Non-Hispanic Black	2.46 (1.75, 3.45)	<0.001	1.47 (0.68, 3.21)	0.329
Hispanic	1.55 (1.32, 1.84)	<0.001	1.29 (0.90, 1.84)	0.165
Asian	1.69 (1.43, 2.01)	<0.001	1.82 (1.32, 2.51)	<0.001
Other	1.65 (1.37, 1.99)	<0.001	1.47 (1.03, 2.08)	0.032
Obstetric variables				
Primipara	1.60 (1.41, 1.82)	<0.001	1.87 (1.38, 2.55)	<0.001
Pre-delivery hemoglobin (g/dL)	0.57 (0.55, 0.60)	<0.001	0.58 (0.54, 0.63)	<0.001
Hemorrhage variables				
PPH	18.74 (16.75, 20.98)	<0.001	29.21 (22.79, 37.43)	<0.001

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Discussion/Conclusion

- In adjusted multivariable analysis, **non-English primary language** was associated with a **50% increased risk of pRBC transfusion**
- Potential bias → **communication barriers** leading to a **lower transfusion threshold** in non-English speaking parturients with borderline postpartum anemia
- Primary language is a key equity factor in obstetric hemorrhage management

