

INTRODUCTION

Preeclampsia (PE) and fetal growth restriction (FGR) are major causes of maternal and neonatal morbidity and mortality, worsened by hypoxia at high altitudes. This study evaluated maternal and neonatal outcomes of PE, with and without FGR, in Bogotá, Colombia (2,640 m.a.s.l.).

METHODS

This retrospective, cross-sectional study analyzed 437 patients diagnosed with PE between 2020 and 2023.

Participants were stratified into groups with and without FGR based on established diagnostic criteria. Data were collected from electronic medical records.

Variables included maternal clinical features, neonatal outcomes, and severity of PE manifestations.

RESULTS

Among patients, 18.76% had PE with FGR. This subgroup exhibited earlier onset of PE (median 33.1 vs. 36.6 weeks), higher cesarean delivery rates (87.8% vs. 75%), and lower neonatal birth weights (median 1,655 g vs. 2,700 g).

RESULTS

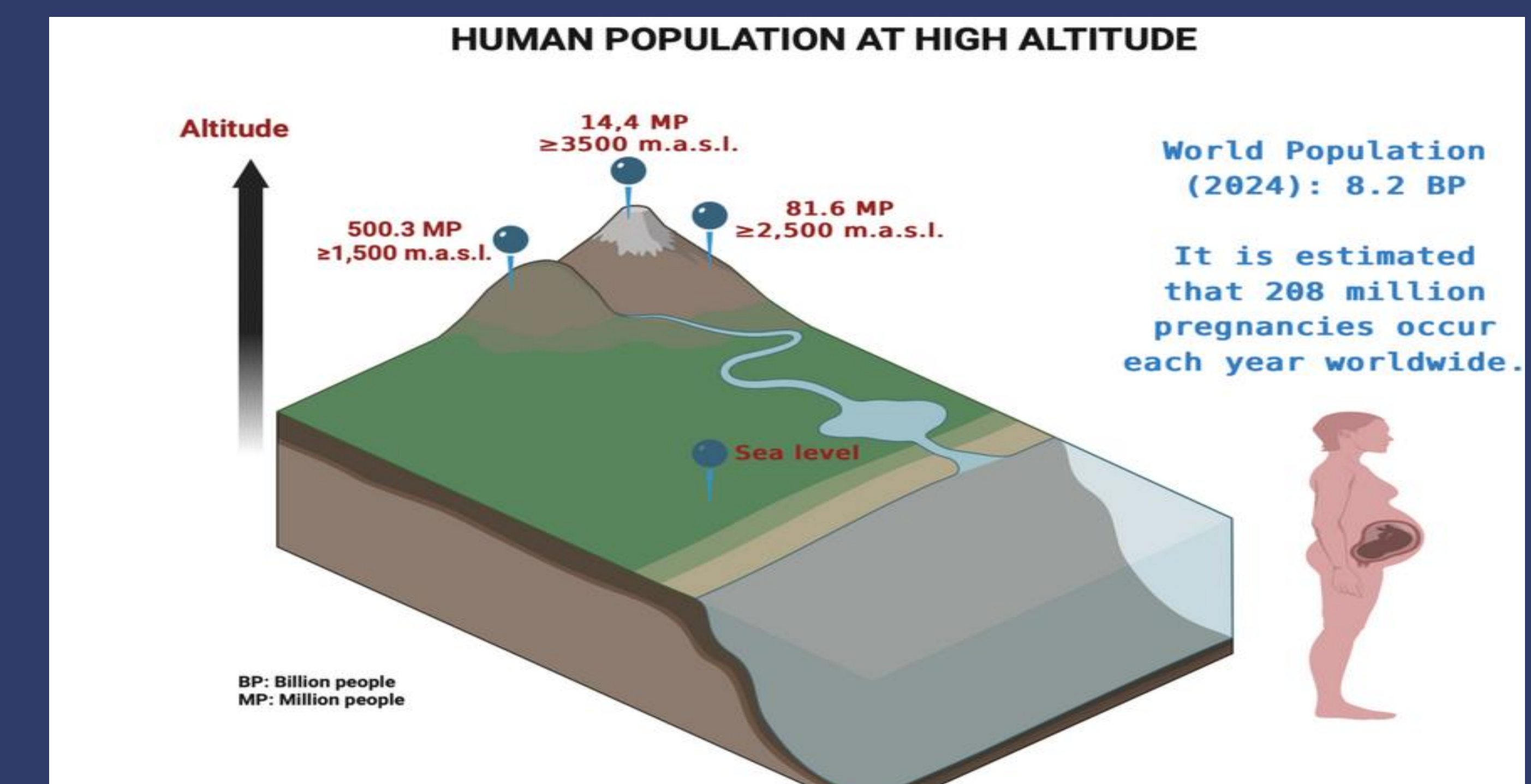
	PE without FGR n=355	PE with FGR n=82
Age	Median 28 IQR (33-24)	Median 28.5 IQR (33-24)
Gestational age	Median 36.6 IQR (38.4 - 34.4)	Median 33.1 IQR (36.2 -30.2)
Parity		
Nulliparous	169 (47.6%)	34 (41.5%)
Multiparous	186 (52.4%)	48 (58.5%)
Pregestational BMI	Median 27.7 IQR (31.6-24.4)	Median 25.95 IQR (29.3-23)
Mode of delivery		
Natural Delivery	80 (22.7%)	6 (7.3%)
Instrumental Delivery	2 (6.0%)	1 (1.2%)
Cesarean	266 (75.4%)	72 (87.8%)
No information	0 (0%)	3 (3.7%)

	No FGR	FGR
Hepatic Involvement		
Yes	57 (20,7%)	22 (28.2%)
No	217 (78,9%)	56 (71,8%)
No inf	1 (0,4%)	
Renal Involvement		
Yes	19 (6,9%)	5 (6,4%)
No	253 (92,0%)	73 (93,6%)
No inf	3 (1,1%)	
Hematologic Complications		
Yes	16 (5,8%)	7 (8,9%)
No	259 (94,2%)	71 (91,0%)
Neurological Involvement		
Yes	3 (1,1%)	0 (0%)
No	268 (97,5%)	76 (97,4%)
No inf	4 (1,4%)	2 (2,6%)
Pulmonary Involvement		
Yes	1 (0,4%)	0 (0%)
No	265 (96,4%)	74 (94,9%)
No inf	9 (3,3%)	4 (5,1%)
Severe Systolic		
Yes	126 (45,8%)	33 (42,3%)
No	149 (54,2%)	45 (57,7%)
Severe Diastolic		
Yes	28 (10,2%)	11(14,1%)
No	247 (89,8%)	67 (85,95%)
HELLP syndrome		
Yes	4 (1,5%)	3 (3,8%)
No	271 (98,5%)	75 (96,2%)

Keywords: Preeclampsia, Fetal Growth Restriction, High Altitude, Outcomes.

RESULTS

Severe maternal complications, such as hepatic and renal involvement, were more frequent in the PE+ FGR group. Neonates from this group had higher rates of NICU admission (87% vs. 65.6%) and neonatal mortality (7.32% vs. 1.13%).



CONCLUSIONS

High altitude exacerbates the severity of PE and FGR, with significant implications for maternal and neonatal outcomes. These findings highlight the need for tailored clinical protocols in HA populations. Future studies should explore longitudinal outcomes and biomarkers to refine risk stratification and management strategies for HA residents.