



Dietary Habits and other Predictors of Nutritional Anemia among Pregnant Women

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INTRODUCTION

- According to World Health Organization, anemia affects 1.62 billion people worldwide, corresponding to 24.8% of global population¹ with approximately 32.4 million women, equivalent to 38.2% are pregnant.
- Prevalence of anemia is particularly high in South East Asia, where it affects 48.7% of pregnant women.² Alarminglly, about 20% of maternal deaths can be attributed to anemia, with the majority of these deaths occurring in developing countries.³
- Severe anemia is a leading cause of morbidity and mortality among pregnant women in such regions.⁴

OBJECTIVES

- To analyze types, and severity of anemia across trimesters among pregnant women.
- To identify dietary habits of pregnant women and its association with anemia, including its types and severity grades.

METHODS

Study Design and Setting:

A cross-sectional comparative study was conducted at the Combined Military Hospital in Kharian, from December 2023 to November 2024 in the Obstetrics and Gynecology Outpatient Department.

Inclusion and Exclusion criteria:

Pregnant women visiting the antenatal clinic, singleton intrauterine pregnancy, gestational age of >8 weeks and ≤40 weeks were included. Pregnant women with chronic medical conditions i.e. chronic kidney disease, autoimmune disorders, bleeding disorders, immunocompromising conditions, gastrointestinal tract malabsorption disorders, chronic liver disease, heart diseases, known hemoglobinopathies, malignancies, recent hospitalization or surgery, or blood donation in the past three months were excluded.

Statistical Analysis:

Data was analyzed using SPSS version 25.

Descriptive statistics: Median IQR, Frequencies and Percentages.

Inferential statistics. Chisquare, Mann whitney U test, and Binary logistic regression.

RESULTS: There were 664 participants of this study. Among the participants, 3% were aged ≤20 years, 67.8% were between 21-30 years, 28% were aged 31-40 years, and 1.2% were over 40. In terms of BMI, 43.7% were overweight, 38.3% had a normal weight, 13.6% were obese, 3% were morbidly obese, and 1.5% were underweight. Regarding parity, 23% were nulliparous, 13.1% were para one, and 63.9% were multiparous. Additionally, 21.1% were primigravida, while 78.9% were multigravid.

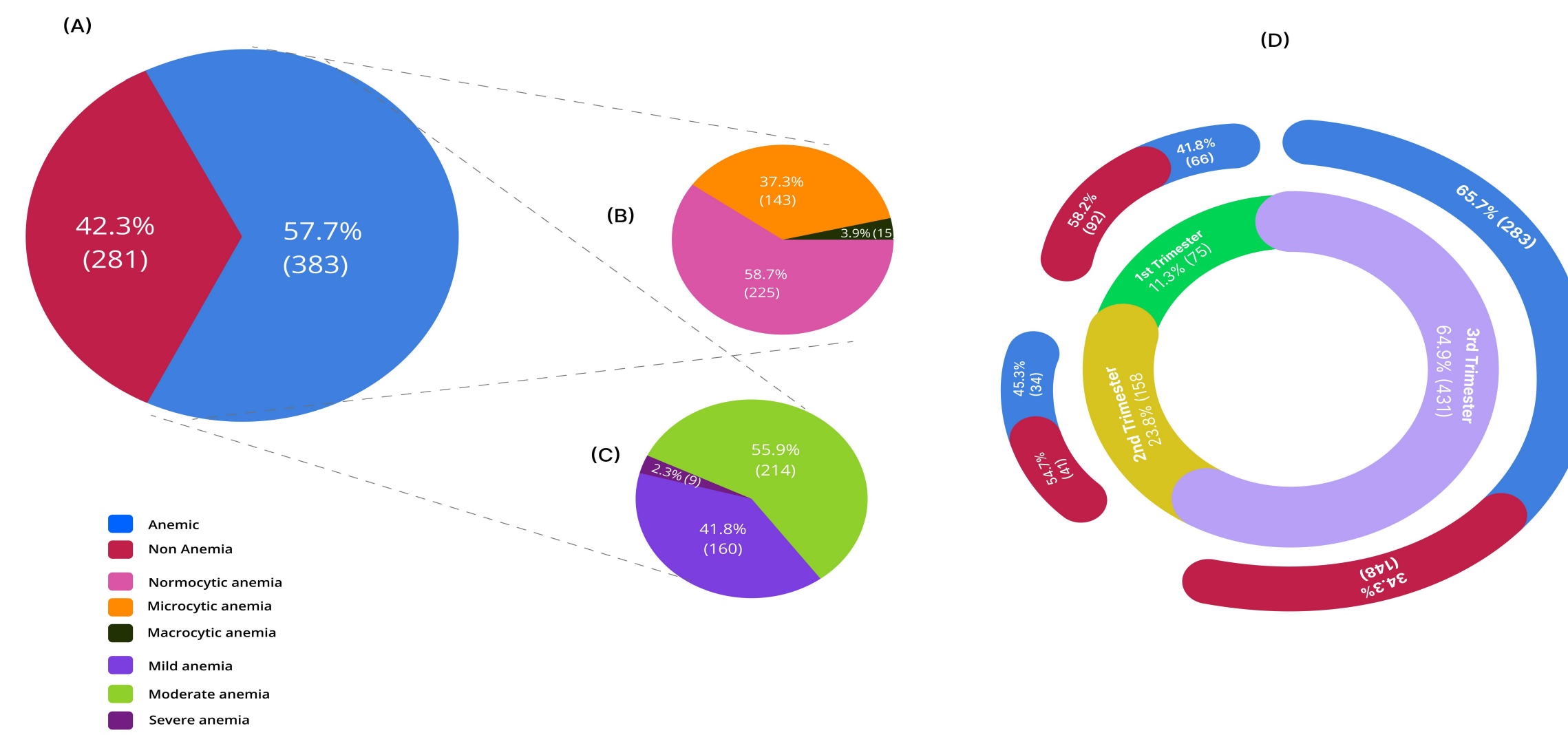


Fig 1: Anemia, its types, severity grades, and distribution across trimesters.

(A) Frequency of anemia in the study population, (B) Proportion of types of anemia, (C) Proportion of severity of anemia, (D) Distribution of anemia across different trimesters

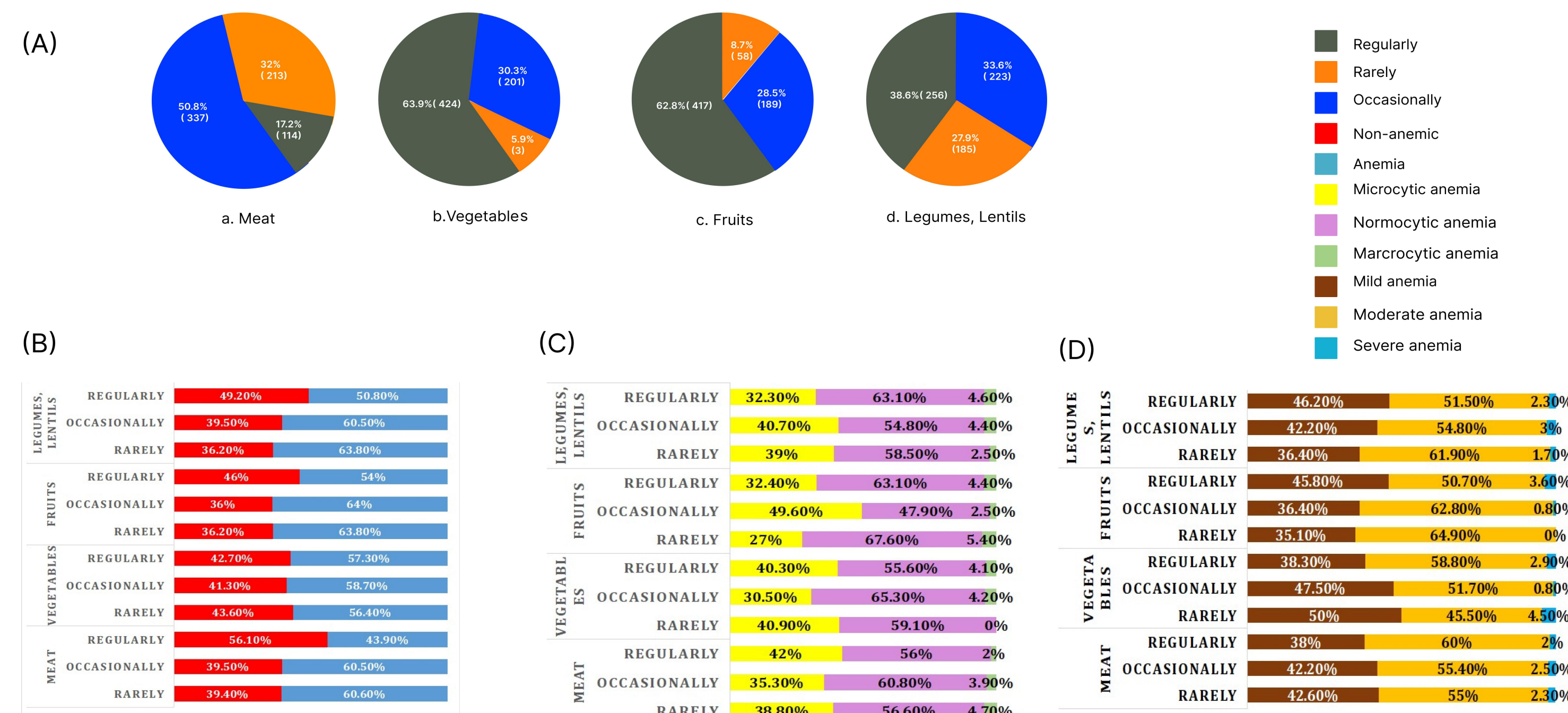


Fig. 2: Dietary patterns of pregnant women and their association with anemia, types and severity.

(A)Dietary habits of pregnant women, (B) Prevalence of anemia in relation to dietary habits, (C) Association of types of anemia with dietary habits, (D) Association of severity of anemia with dietary habits.

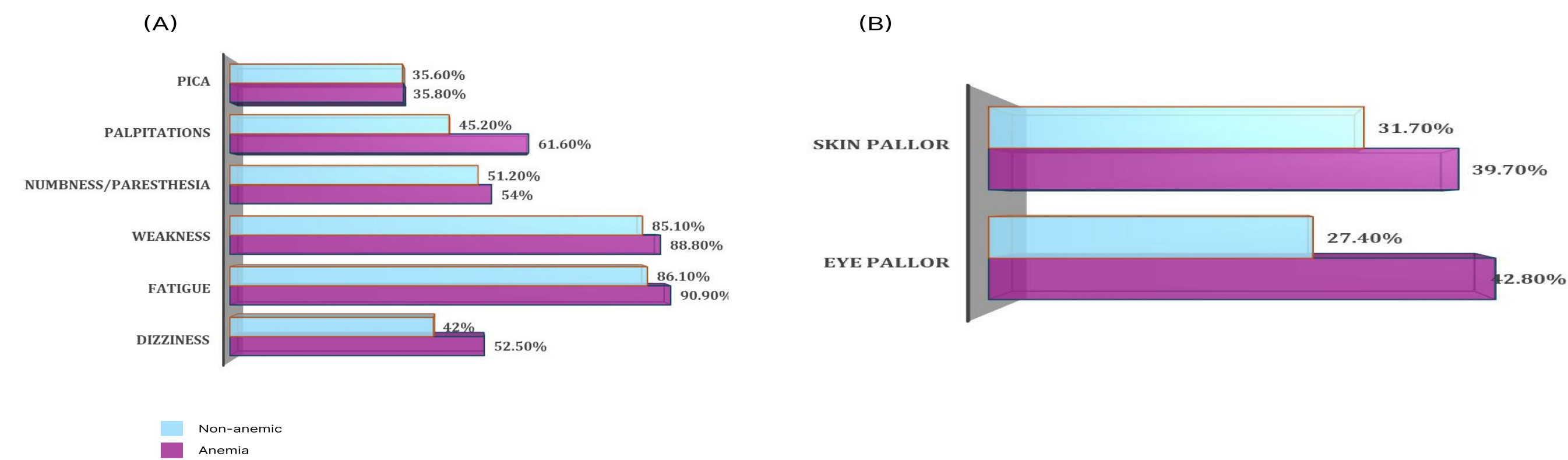


Fig. 3: Symptoms and examination findings specific to anemia among pregnant women

(A) Frequency of anemia symptoms, (B) Frequency of anemia examination findings between anemic and non-anemic pregnant women.

Table 1: Biochemical profile of pregnant women

Biochemical parameters	Anemic Median (IQR)	Non Anemic Median (IQR)	p-value
Hemoglobin	9.8 (1.3)	11.6 (1.1)	<0.001
Red blood cell	3.7 (0.6)	4.1 (0.5)	<0.001
MCH	26.3 (4.3)	28.0 (2.8)	<0.001
MCV	79.3 (11.4)	82 (7.3)	<0.001
PCV	0.31 (0.03)	0.36 (0.03)	<0.001
MCHC	32.3 (2.2)	33.6 (1.6)	<0.001
White blood cell count	8.7 (0.9)	9 (2.2)	<0.001
Neutrophils	68 (1)	65 (4)	<0.001
Lymphocytes	25 (10)	25 (10.5)	0.002
Platelets	258 (104)	265 (77.5)	0.94

CONCLUSION:

57.7% of pregnant women were anemic, with the majority having normocytic anemia of moderate grade. Pregnant women who had regular intake habits showed a higher proportion of non-anemic individuals. The severity grade and type of anemia did not significantly differ based on eating habits.

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