

Prevalence of Anaemia among pregnant women in Western Province

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Introduction

Nearly half of the pregnant women in the world are estimated to be anaemic, 52% in non-industrialised countries as compared with 23% in industrialised countries. However, most pregnant women are thought to suffer from some degrees of iron deficiency.

Anaemia during pregnancy is a major health concern; it has been associated with increased maternal morbidity, maternal mortality and poor birth outcomes including stillbirth, prematurity, low birth weight and perinatal and neonatal mortality. It is estimated that favourable pregnancy outcomes are compromised by 30 to 45 percent when women have anaemia. Because the consequence of anaemia increase as haemoglobin falls, the prevalence of severe anaemia ($Hb < 7g/dl$) should be of concern of overall anaemia in most countries, a public health problem exists when even 2% of pregnant women have severe anaemia because of the poor birth and delivery outcomes associated with very low haemoglobin.

By considering these facts all the pregnant women in the country is given iron/folate supplementation from the second trimester of pregnancy whether they are anaemic or not.

Objectives

1. To determine the magnitude, severity and distribution of anaemia among pregnant women in Western Province.

Method

DETERMINATION OF SAMPLE SIZE AND SAMPLING

Sample size to detect the hepatitis B prevalence was calculated by taking the following factors into consideration:

- a) Estimates of Hepatitis prevalence were made on pregnant women.
- b) Estimates were required at provincial level.
- c) The prevalence of Hepatitis B (p) in each province was 0.01
- d) $q = 1 - p$

- e) The error (d) was willing to make was ± 0.0065 (65% of the prevalence was taken as error due to very low prevalence)
- f) The α error was 0.05 ($z_{1-\alpha/2} = 1.96$)

The required sample size for each province was calculated using the following formula,

$$N = \frac{z^2 * p * q}{d^2}$$

Based on the above, the minimum sample required from each province was 900. As a cluster sampling design was to be used, a design effect was estimated to be 2. Therefore, the sample size for each province,

$$\begin{aligned} N &= 900 * 2 \\ &= 1800 \end{aligned}$$

The required sample size for each province was 1800 pregnant women.

Method of selection of sample:

It is a multi-stage stratified population proportion cluster sampling design. Field antenatal clinics were the clusters. First proportionate stratification was done at district level and second proportionate stratification was done at MOH level. Using the 2002 population data of MOH of Western province, all the MOH areas within each district were cumulated separately. Systematic random sampling technique was used to study 20 pregnant women from each selected clinic.

1. The cumulated population was divided by 20 to select the number of Antenatal clinics, i.e., 90 clinics.
2. The clinics were divided among 3 districts according to the population proportion of the districts to represent the number of pregnant women in the district.
3. MOH areas by districts with the cumulated population was listed out.
4. It was divided by number of clinics per district to obtain a sampling site interval.
5. Number of clinics per MOH area was selected according to the population proportion.
6. Antenatal clinics by MOH areas were listed out.
7. Random numbers were generated in the computer.
8. The clinics including these numbers were identified as selected clinic.

9. On the clinic day 20 mothers were randomly selected for the study.
10. The mothers who were present in the clinic but not from the particular MOH area was not included in the study.

Results

A total of 1151 pregnant women were included in the study. Of the subjects included, 425 were from Colombo district while 444 and 282 were from Gampaha and Kalutara district respectively. The prevalence of anaemia ranged from 17.9%, 11.9% and 17.4% in Colombo, Gampaha and Kalutara districts as shown in the Table 1.

Table 1
Anaemia prevalence of pregnant women by district

Area	No.	Prevalence*(%)
Colombo district	425	17.9
Gampaha District	444	11.9
Kalutara district	282	17.4
Western Province	1151	15.5

*Hb<11g/dl was taken as anaemia

Pregnant women from the Gampaha district indicated the significantly lower prevalence of anaemia than other districts (P=0.000).

Table 2
Severity of anaemia of pregnant women by district

Area	No.	Mild anaemia (10.9-9.0 g/dL)	Moderate anaemia (7.1-8.9 g/dL)	Severe anaemia (<7 g/dL)
Colombo	425	15.3	2.4	0.2
Gampaha	444	11.9	0.0	0.0
Kalutara	282	16.7	0.3	0.4
Western Province	1151	14.4	0.9	0.2

Table 2 show the severity of anaemia among them. Severe anaemia (haemoglobin level <7.0g/dL) was only 0.2% and the moderate anaemia (haemoglobin 7.1 - 8.9g /dL) was 0.9%. It indicates 92.9% of the subjects had mild degree of anaemia (haemoglobin 10.9 - 9.0g/dL). The pregnant women from Gampaha district had only mild degree of anaemia.

Table 3

Anaemia prevalence of pregnant women by Medical officer of Health (MOH) areas

District	MOH area	No.	Anaemic %	
Colombo	Homagama	34	29.4	
	Kolonnawa	65	27.7	
	Moratuwa	43	23.3	
	Kaduwela	40	17.5	
	Nugegoda	40	17.5	
	Piliyandala	58	15.5	
	Dehiwala	59	13.6	
	Padukka	41	9.8	
	Kotte	23	8.7	
	Maharagama	22	4.5	
	Gampaha	Biyagama	21	23.8
		Negambo	40	20.0
		Kelaniya	38	15.8
Gampaha		58	12.1	
Meerigama		57	10.5	
Dompe		20	10.0	
Minuwangoda		40	10.0	
Wattala		20	10.0	
Ragama		21	9.5	
Ja-Ela		33	9.1	
Kalutara	Katana	55	9.1	
	Mahara	41	7.3	
	Agalawaththa	25	24.0	

	Matugama	13	23.1
	Panadura	64	20.3
	Kalutara	61	19.7
	Beruwala	38	15.8
	Bandaragama	20	15.0
	Bulathsinghala	21	14.3
	Horana	40	7.5

Table 4

Relationship of anaemia among pregnant women with selected characteristics

Selected characteristics	Anaemic (%)	Non-anaemia (%)	Total	Significance test
Mothers Age (years)				
<20	11 (16.7)	55 (83.3)	66 (5.8)	$\chi^2=3.69$ df=5 P=0.6
20-24	43 (16.1)	224 (83.9)	267 (23.4)	
25-29	47 (12.7)	323 (87.3)	370 (32.4)	
30-34	52 (17.4)	247 (82.6)	299 (26.6)	
35-39	20 (16.4)	102 (83.6)	122 (10.7)	
≥ 40	4 (21.1)	15 (78.9)	19 (1.7)	

Figure 1

Frequency distribution of Haemoglobin

