

Prevalence of Anemia and its Main Determinants among Primigravidae in Antenatal Population of a Tertiary Care Hospital of Lahore

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ABSTRACT

Aim: To determine prevalence & main determinants of anemia among primigravidae in antenatal population of a tertiary care hospital in Lahore; Pakistan.

Study design: Cross sectional observational.

Place & duration of study: OPD of Lady Aitcheson Hospital/King Edward Medical University, Lahore; from March 2013 to September 2013.

Methodology: 462 primigravidae were included in the study, only those primigravidae were included who fulfilled the inclusion criteria. Histories including relevant questions were recorded in a preformatted questionnaire. Hemoglobin was checked by Sahli's Haemoglobinometer followed by complete blood count by automated haemalyzer. Results were recorded and analyzed.

Results: A total of 462 patients were examined in this study. Prevalence of anemia was 78.1% (361/462), 270/462 (74.79%) had mild anemia, 85(23.54%) moderately anemic, and 6(1.66%) severely anemic. 97.6% were 18-30 years of age and 87% were <37 weeks of gestation. Main determinants of anemia enquired in this study were: residence, education, working status (social factors), no. of meals per day, meat consumption /week, pica, vegetarian / non vegetarian status(dietary factors), menorrhagia, bleeding gums, duration of pregnancy, these were checked and analyzed by Chi-Square test. Urban residence, non working status and low no. of meals/day were found significant statistically (p -value <0.05) for anemia in primigravidae in this study.

Conclusion: High prevalence of anemia in primigravidae was mainly linked with social and dietary factors.

Keywords: Anemia, Determinants, Prevalence, Primigravidae, Pakistan, Tertiary Care Hospital.

INTRODUCTION

Anemia is the comprehensive health dilemma affecting 1.62 billion people in both developed and developing countries¹, of them 56 million are pregnant women particularly affected by anemia². Anemia is a multifactorial concern; though iron deficiency is the commonest reason for anemia and therefore commonest dietary disorder, affecting more than two billion citizens globally. Even in developed countries 30-40% pregnant women and preschool children have iron deficiency³. Women are more susceptible due to loss of iron during menstruation, augmented demand throughout pregnancy, gender bias, poverty, these facts are replicated in WHO report on Anemia that anemia has moderate to

severe extent of dilemma for pregnant women in all of WHO member states¹. Deprived nourishment, detrimental eating lifestyle, Pica and parasitic infestations particularly malaria, rural residence are other reasons^{4,5,6}.

Multi parity has been repeatedly related with anemia though in a number of studies primigravidae have been found anemic mainly teen age girls⁷. In Pakistan the condition is more crucial on account of comparatively younger population (35% under 15 years of age), adolescent fertility rate of 16/1000 women, antenatal coverage of 27% (World Health Statistics 2012). Obstetrical inferences of anemia in pregnancy in terms of high maternal and perinatal morbidity & mortality are anticipated and documented. Like increased vulnerability to infectivity's, abruption placentae, threat of preterm birth, increased peripartum blood loss, low birth weight. Women between 15-29 years age group transmit elevated threat of anemia related mortality³. Hemoglobin level of 8.9 grams/ deciliter doubles the risk of maternal mortality⁸.

Primigravidae comprise a high hazard cluster for anemia, pre eclampsia, low birth weight and fetal

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growth restriction⁹. In primigravidae, teenage girls are twice as likely to die of pregnancy associated complications¹⁰. *Preventing anemia in primigravida of today is in fact preventing anemia in multigravida of tomorrow.*

MATERIAL AND METHODS

This cross sectional observational study was carried out in Out Patient Department Lady Aitcheson Hospital /King Edward Medical University Lahore, Pakistan. Total patients in this study were 462 calculated according to statistical formula with 95% confidence interval. Sample was selected by convenient sampling method. This study carried out from March 2013 to September 2013. All primigravidae were included in the study except those with known haemoglobinopathies, and those unwilling to participate in study. It was collected by using pre tested and pre designed then formatted questionnaire; including histories relevant questions, hemoglobin status tested by using Sahli's Haemoglobinometer followed by complete blood count by automated haemalyzer were recorded. All data were analyzed through using descriptive statistics and Chi Square test. Results were generated and documented.

RESULTS

The mean age of all cases was 22.59 ± 3.17 years and mean gestational age was 28.88±7.41 weeks. The mean hemoglobin level of all females was 9.98±1.10. In this study the prevalence of anemia (Hb<11) was 78.1% (361 out of 462 pregnant females). Among anemic females, 270(74.79%) had mild anemia (10.9-8.9), 85(23.54%) females had moderate (9-7) and 6(1.66%) cases had severe anemia (<7). Most of the cases (97.6%) were 18-30 years of age and <37 weeks of gestation was more prevalent i.e. 87%. No meat consumption per week was reported by 34.2% of the case and 48.9% cases had 1-2 number of meals per day.

We found significant association of anemia with urban residence (70.36%) as compared to rural (29.64%) residents. Non working status (97.78%) was also associated with anemia as compared to working women (2.22%), p-value ≤0.05. Anemia was also statistically and significantly higher in non vegetarian (79.22%) and lower (1-2) number of meals per day (51.52%) was also associated, p-value ≤0.05. There was no statistical association of anemia with different age groups (years), gestational age (weeks), smoking status, education, Pica, meat

consumption during pregnancy, menorrhagia, bleeding from gums p-value >0.05.

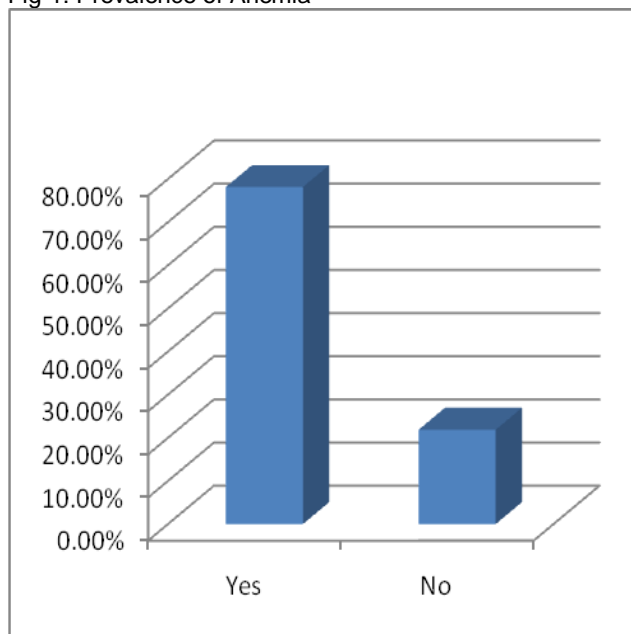
Table 1: Descriptive Statistics of age, gestational age and Hb. Level (n=460)

	Age (years)	Hb. Level	Gestational age (weeks)
Mean±S.D	22.59±3.17	9.98±1.104	28.88 ±7.41
Range	18.00	9.20	36
Minimum	16.00	4.80	6
Maximum	34.00	14.00	42

Table-2: Comparisons of Different Factors in Anemic and Non-Anemic Females

	Anaemia		P value
	Yes	No	
Age in years			
< 18	2(0.55%)	2(1.98%)	0.351*
18-30	553(53.19%)	98(97.03%)	
> 30	6(1.6%)	1(0.99%)	
Gestation age (weeks)			
< 37	316(87.53%)	86(85.15%)	0.528*
≥ 37	45(12.47%)	15(14.85%)	
Booking status			
Yes	260(72.02%)	78(77.23%)	0.297*
No	101(27.98%)	23(22.77%)	
Residence			
Urban	254(70.36%)	81(80.20%)	0.050*
Rural	107(29.29.64%)	20(19.80%)	
Working status			
Yes	8(2.22%)	7(6.93%)	0.018*
No	353(97.78%)	94(93.07%)	
Smoking status			
Passive	109(30.19%)	26(25.74%)	0.385*
No	252(69.81%)	75(74.26%)	
Dietary habits			
Vegetarian	75(20.78%)	12(11.88%)	0.043*
Non vegetarian	286(79.22%)	89(88.12%)	
Usage of meat during pregnancy/week			
No	132(36.57%)	26(25.74%)	0.094
1-3 times	203(56.23%)	64(63.37%)	
> 3 times	26(7.20%)	11(10.89%)	
Number of meals			
1-2	186(51.52%)	40(39.60%)	0.034*
3-4	175(48.48%)	61(60.40%)	
Menorrhagia			
Yes	9(2.49%)	3(2.97%)	0.790
No	352(97.51%)	98(97.03%)	
Bleeding from gums			
Yes	19(5.26%)	9(8.91%)	0.174
No	342(94.74%)	92(91.09%)	
Obstetric cause			
APH	0	1(0.99%)	0.058
No APH	361(100%)	100(99.01%)	

Fig-1: Prevalence of Anemia



DISCUSSION

There has been small decrease (5%) in prevalence of anemia among pregnant women since 1995, MDG-5 appear relatively hard to accomplish by various developing countries¹¹. More than half of pregnant women in African & Asian countries are anemic versus 15% anemia in pregnant women in developed countries¹². Prevalence of anemia in primigravidae in this study was 78.1%, another study from Abbottabad showed mild anemia in 55.9%, moderately severe anemia in 31.1%, severe anemia in 13% primigravidae⁹. Its Prevalence in various regions of India varies between 33-100%¹³ in a Sudanese study 62.2%⁶ and 26.2% in a study from Bahrain¹⁴. In this study 74.79% had mild anemia, 23.54 % moderate anemia and 1.6% severe anemia. Yet mild form of anemia may be erratic in its itinerary throughout pregnancy consequently increasing maternal and fetal menace if it gets inferior. Maternal, perinatal and infant mortality increase 500 fold in pregnant women with severe anemia¹⁶. Factors associated with anemia measured in this study were 14 containing nutritional aspects: (no. of meals/day, meat servings/week, vegetarian/ non vegetarian, Pica); social factors: (residence area, urban/rural, education, working/ non working, smoking); medical/obstetric factors: (menorrhagia, duration of pregnancy, bleeding gums, worm infestation) Anemia has momentous relationship with adolescence^{11,17,18,19}. In this study 97.6% primigravidae belonged to age group 18-30 years. 14% were teenagers. However; No significant association was found between age and anemia.

Anemia was more common in primigravidae in some studies¹⁹. Urban residence was significantly associated with anemia in this study; Non working status, intake of 1-2 meals /day and non vegetarian status were other factors significantly associated with anemia in primigravidae in this study. While in other studies, Nutritional deficit, unhealthful intake behaviors, pica (19.8%), nonworking status, multiparty, poor education, rural residence, malaria, hook worm parasitemia were associated with anemia in different studies from developing countries^{4,5,6,19}. Meat consumption <1/week, post meal tea intake, and pica were associated with anemia in one study²⁰. Although study from Bahrain indicates poor education and close birth spacing as risk factors for anemia in spite of flour fortification and complimentary complete health care support by Government¹⁴. Other factors like pica, meat consumption, education, smoking, menorrhagia, bleeding gums, worm infestation, as has been shown in tables were not significantly associated with anemia in this study. Etiological factors also vary with ethnicity, race, and ecological place^{2,16,21}.

CONCLUSION

High prevalence of anemia in primigravidae is likely to have implications for quality of life and risk of mortality in these patients.

RECOMMENDATIONS

1. Imperative therapies like upgrading in antenatal care predominantly counseling; intake of 3 meals/day.
2. Iron supplements.
3. Flour enrichment with iron.
4. On long term basis empowerment of women and reducing gender favoritism to save this populace ill health.

REFERENCES

1. Worldwide prevalence of anemia 1993-2005 WHO Global database on anemia edited by Bruno de Banoist, Erin Mclean, Ines Egli, Mary Cogswell.
2. Kefyalew Addis Alenz, Abdulla Mohammad Dohe: Prevalence of anemia and associated factors among pregnant women in an urban area of Eastern Ethiopia, vol. 2014(2014), Article Anemia ID 561567.
3. S. Pavord, B Myers, S Allard, S Robinson, J Strong, C Oppenheimer: UK Guidelines on the Management of Iron Deficiency Anemia in Pregnancy, BCHS, 2011.
4. Razia M Abbasi, Shoaib Ansari, Bikha Ram, Devrajani, Sumera Abbasi: The Prevalence and Risk factors of Anemia in pregnant women, Medical Channel July-Sept. 2009.

5. Meseret Alem, Bamlaku Enawgaw, Aschalew Gelaw, Tigist Kenaw, Mohamed Seid, Yadesa Olkeba : Prevalence of Anemia and Associated Risk factors among pregnant women attending Antenatal Care in Azezo Health Centre Gondar , *Interdiscipl Histopathol* . 2013 ; 1(3): 137-144.
6. Ishag Adam, Amar H. Khamis, Mustafa I Elbashir: Prevalence and Risk factors for anemia in pregnant women of Eastern Sudan, *Trans R Soc Trop Med Hyg* (2005) (10): 739-743.
7. Oladeinda BH, Omoregie R, Odia I, Oladeinda OB: prevalence of Malaria and anemia among pregnant women attending a traditional birth home in Benin City, Nigeria, *Oman Med J*, 2012 May; 27(3): 232-236.
8. Bernard J Barbain, Mohammad Hakimi, David Pelletier: An analysis of anemia and pregnancy related maternal mortality, *Journal of Nutrition*, 2001 vol. 131 no.2 604s-615s
9. Nargis Danish, Aneesa Fawad, Nasreen Abbassi: assessment of pregnancy outcome in primigravida-comparison between booked and unbooked patients, *J Ayub Med Coll Abbotabad* 2010;22(2) pp 23-25
10. Pike Saxena, S Salhan, B Chattopadhyay, MPS Kohli, D nandan, S.V.Adhish: obstetric and perinatal outcome of teenage and older primigravida, a retrospective analysis, *Health and Population Perspectives and Issues*: 2010, vol. 33(1), 16-22.
11. S New, M Wirth: Anemia, pregnancy and maternal mortality: the problem with globally standardized haemoglobin cut offs. *BJOG* 2015; 122: 166-169.
12. Cyril C. Dim, Hyacinth Eonah: the prevalence of anemia among pregnant women at booking in Enugu South Eastern Nigeria. Available at Medscape Multispecialty www.medscape.com/viewarticle/558358_2
13. Virender P Gantan, Yogesh Bansal, D K Taneja, Renaka Saha: prevalence of anemia among pregnant women and its socio-demographic associates in a rural area of Delhi, *Indian Journal of Community Medicine* vol. XXVII, No. 4, Oct-Dec 2002, pp. 57.
14. Rehab Merza, Ruqaya Alekri, Shayma Alekri, Azhar Alsaleh, Faisal Alnasari: the prevalence and factors associated with IDA in anemic pregnant women. *Bahrain Medical Bulletin* vol. 36, No. 3, Sept. 2014
15. John Studd, Seang Lin Tan, Frank A Chervenak: Treatment of Iron deficiency anemia in pregnancy and postpartum by C Breymann: in *Current Progress in Obstetrics & Gynecology /vol I* published by Suketu P.Kothari, Treelife Media 2012.
16. Nwizu E N, Iliyasu Z, Ibrahim S A, Galadanci H S: sociodemographic and maternal factors in anemia in pregnancy at booking in Kano, Northern Nigeria, *Afr. J Reprod Health Dec.* 2011; 15(4): 33-41.
17. Siriel, Nanzia Massawe: Anemia in women of reproductive age in Tanzania, a study in Dar us Salam, *Acta Universitalis Upsaliensis Uppsala* 2002, comprehensive summaries of Uppsala Dissertations from faculty of Medicine 1154, pp 64, Uppsala. ISBN 91-554-530p-2.
18. Albert Chao Chiet Tan, Eugene Wang Kong Leong, Aichenchua, Foong Ming Moy: Racial variations in booking haemoglobin of Primigravidae in Malaysia : a prospective study in : *BMC Research Notes* 2013, 6: 173 available on <http://creativecommons.org/licenses/by/2.0>.
19. A Idowu, C F Mafiana, Dapo Sotiloye,; Anemia in Pregnancy : A survey of pregnant women in Abeokuta, Nigeria in: *Afr Health Sci*, Dec 2005; 5(4): 295-299.
20. Nigire Obse, Andualem Mossie, Terhome Gobena : magnitude of anemia and associated risk factors among pregnant women attending antenatal care in Shalla Warda, West Ari Zone , Oromia region Ethiopia , in *Ethiopia Health Sci* v. 23(2); 2013 Jul: 165-173.
21. S Anjum, N. Kafil, Salahuddin : Anemia maternal mortality in the developing world in : *Pakistan Journal of Pharmacology* vol. 20, No 1, Jan. 2003, pp 49-56