

Research Article

Frequency of Anemia and Obstetric Outcome in Young Primigravida

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Abstract | Pregnancy and childbirth is an event celebrated worldwide. During pregnancy physiological changes and increasing demand causes fall in hemoglobin level leading to anemia and adverse pregnancy outcome especially in young girls. Anemia is a major public health problem. Around 58.27 million women worldwide are anemic during pregnancy 95% of whom live in countries that are developing. To know the frequency of anemia, and obstetric outcome in terms of preterm delivery, low birth weight and rate of caesarean section in young Primigravida. It was a cross sectional study, conducted in the department of Gynae & Obstetric unit 5 King Edward Medical University Lahore during a period of one year from May 2013 April 2014. All primigravida young 15-24 years with anemia enrolled for the study. Anemia is defined as hemoglobin <10.5g/dl (WHO Criteria), Iron deficiency Anemia is defined as serum ferritin level less than 12 micro gram per ml and on Red Blood Cell indices, i.e. decrease in MCV, MCH and MCHC, and Microcytic Hypochromic cells in Peripheral Smear. Megaloblastic anemia was labeled when Macrocytic Hypochromic cells seen. Obstetric outcome in terms of Preterm delivery defined as delivery at <37 weeks of gestation (36 +6 weeks) and birth weight <2500g mand a need for operative delivery. Patients fulfilling the selection criteria as per operational definition were included in the study after taking informed consent using non probability consecutive sampling technique. Data was collected on a pre-designed questionnaire. A total of 3855 deliveries during study period in which 1318 were primigravida. Mean age in study group was 15 to 24 years. We observed mild anemia in 46% of woman, moderate anemia in 41% and severe anemia in 13% in young primigravida. Preterm delivery was noted in 25% of the females and low birth weight babies were noted by 33% in teenage and young primigravida. Statistically significant relationship was found between maternal age, education and socio economic status. Anemia in pregnancy nowadays is still a common problem in adolescent and young primigravida and associated with adverse pregnancy outcome. Prompt measure should be taken by the stake holders at local and national level to prevent and treat this problem in order to reduce morbidity and mortality associated with it.

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Introduction

Pregnancy and childbirth is considered a glad tid-
ing all over the world. Pregnancy is a physiological

state of stress on the body and by itself makes women
prone to many disorders and diseases. This coupled
with the complications of pregnancy can have dele-
terious effects on the health of mother and fetus es-

pecially in young primigravida ⁽¹⁾. Anemia is a major public health problem and can cause high maternal and perinatal morbidity. On estimate 58.27 million women worldwide are anemic during pregnancy, 95% of them live in developing countries⁽²⁾.

In Asia the percentage of anemia in pregnancy has been estimated 35-75%. Iron deficiency is the most common category of anemia. Risk factors are dietary lack of iron, poor absorption, poor hygiene, hook worm infestation, chronic blood loss from upper or lower gastrointestinal tract and inadequate use of iron supplements⁽³⁾. It causes cognitive and behavioral disorder in fetus along with fetal growth restriction, low birth weight and stillbirth ⁽⁴⁾.

Though the legal age of marriage for females is 18 years, the pregnancy at younger age is of serious concern as age plays a significant role in negative outcome and complications of pregnancy. The combination of poor nutrition and early pregnancy exposes young women to serious health risks during pregnancy and childbirth. These are anemia, pregnancy induced hypertension, preterm labor, low birth weight, cephalopelvic disproportion and operative delivery and postpartum hemorrhage. These in turn lead to increase maternal and perinatal morbidity and mortality in young primigravida as compared to the adult counterpart. In Pakistan, the percentage of iron deficiency anemia is 70 to 80% among the pregnant population. ^{(2), (3)}

During pregnancy anemia is mainly due to deficiency of iron in diet, but folic acid deficiency may also lead to anemia in the teenage pregnant females. Iron deficiency anemia is due to less availability of nutrients essential for synthesis of hemoglobin. ^{(3), (4), (5)} There is worldwide concern that women of child bearing age cannot suffice increased iron requirements during pregnancy. Iron is essential for normal fetal development including development of brain. Iron is not synthesized in the body, it has to be supplemented. Iron is prescribed as routine in pregnancy by general practitioners and Obstetricians. But poor compliance and lack of adequate antenatal services may lead to anemia. ^{(7), (9)}

Iron deficiency, especially when severe, may have adverse effects on intelligence and behavioral development. ^{(2), (10)} It is important to prevent these effects by preventing iron deficiency in a mother. Risk of premature labor and low birth weight babies also increases

by severity of anemia. Studies are available regarding negative obstetric and perinatal outcome associated with anemia. ^{(10), (11)} Controversial results were found while reviewing literature so this study was carried out to see the different obstetric characteristics of young primigravida.

Objectives

To determine the frequency of anemia, obstetric outcome in terms of preterm labor, low birth weight, small for gestation, rate of caesarean section in young primigravida.

Material and Methods

It was a cross sectional study and conducted in the department of Gynae and Obstetric unit -5 Lady Aitcheson Hospital KEMU Lahore in period of one year from May 2013 to April 2014. Adolescent Primigravida women aged 15-24 years \pm 4.5years (n = 164) was enrolled for the study. Anemia was defined as hemoglobin of < 10.5gm% and hematocrit of <33% according to World Health Organization (WHO) criteria. Anemia is classified as Mild which has hemoglobin of 10-10.9g/dl, Moderate which has hemoglobin of 7-10g/dl and then Severe which has hemoglobin of less than 7g / dl.

Iron deficiency anemia was defined as S. ferritin level < 12microgram per ml. Normal range of Serum ferritin is 15-240 microgram per ml. On Red Blood Cell Indices decreased MCV (mean corpuscular volume), decreased MCH (mean corpuscular haemoglobin) and decreased MCHC (mean corpuscular haemoglobin concentration). Hypochromic Microcytic cell in peripheral smear. If Hypochromic Macrocytic cell present in the peripheral smear it was called as Megaloblastic anemia. Obstetric outcome in terms of Preterm delivery was defined as delivery at <37weeks (36+6weeks). Low birth weight was defined as weight <2500gms and operative delivery means where instrumental delivery or lower segment caesarean section is indicated. Ladies fulfilling the selection criteria were included in the study after taking informed consent using non probability consecutive sampling technique. Data was collected on a pre-designed proforma. Young primigravida with singleton pregnancy of 28 –completed weeks or beyond with anemia were enrolled for the study. On the other hand pregnant primigravida receiving therapy for the anemia, with multiple gestations, recent blood transfusion and chronic re-

nal disease and chronic inflammatory diseases like rheumatoid arthritis were excluded from the study.

Women with suspicion of anemia were advised hemoglobin, Red Blood Cells Indices, Peripheral smear and serum ferritin level estimation from the Lady Aitcheson and Mayo Hospital Laboratory and reports were obtained from the patients. Data was examined in statistical package for social sciences (SPSS) version 16. Simple frequency tables and graph were prepared and relationship between different variables was studied.

Table 1: Frequency distribution of female's characteristics and pregnancy outcome (n=164).

		Frequency	%age
Education status	Uneducated	82	50%
	Primary Level Education	51	31%
	Secondary Level Education	31	19%
Booking Status	Booked	44	32%
	Un-booked	120	68%
Severity of anemia	Mild	76	46%
	Moderate	68	41%
	Severe	20	13%
Obstetrical Outcome	Preterm Delivery (< 37 weeks)	41	25%
	Low birth weight (less than 2.5KG)	54	33%
	Instrumental delivery	18	11%
	LSCS	51	31%

Results and Discussion

During the period under review, a total of 3855 deliveries were conducted. Out of which 1318 were Primigravida and 308 were young primigravida, aged 15 to 24 years. A total of 164 (53.25%) women were anemic and enrolled for the study. Different characteristics were studied and results shown as frequency tables and percentages. Severity of anemia was shown in Table 1, mild anemia was observed in 46% (76) of young females, moderate anemia in 41% (68) and only 13% (20) of patients had severe anemia. Booking Criteria was agreed as women having at least two visits in the antenatal period, only 26% (44) were booked and remaining 74% (120) were un-booked. As far as educational status of the adolescent and young primigravida was concerned, majority of the study popu-

lation was uneducated (52%), highest level of education achieved by the ladies were primary school level followed by secondary level 17% (33). Frequency of preterm labor was 25% (42), Low birth weight babies were 33% (54), instrumental delivery occurred in 11% (18) and 51 (33%) were delivered by LSCS (Figure 1).

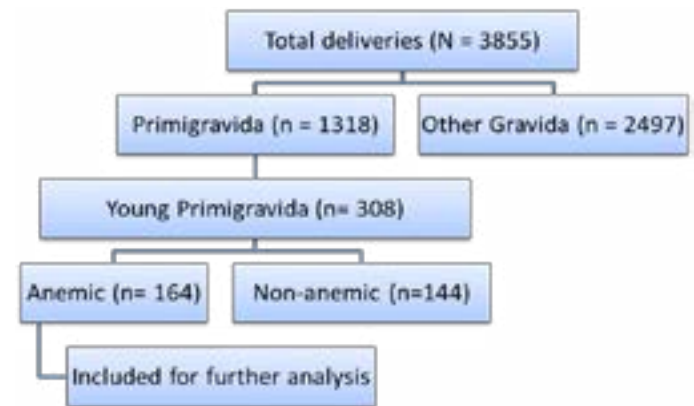


Figure 1: Schematic presentation of cases.

Anemia in pregnancy contains a real concern all over the world more so in developing countries. The prevalence of anemia in the study was 53.25%, majority of women in the study population were anemic (Hemoglobin < 10.5g/dl). However the frequency of anemia was significantly higher in the young adolescents, mild anemia was observed in 46% of young and adolescent primigravida, moderate in 41% and severe anemia in 13% ss of cases that can be explained by the fact that teenage and young mothers were still growing and compete with growing fetus for the nutrients.⁽¹⁰⁾ This is also similar to Pikee Saxena and S.Salhan study in Lady Hardinge Medical College in New Delhi (2010)^{(5), (6)}. The most common type of anemia is iron deficiency i-e 84%. These results matched with studies carried out in Nigeria, Nepal, Sri Lanka and Bangladesh^{(7), (8)} but another study carried by Harris et al observed little difference between younger and older females.^{(3), (11), (16)} The highest level of education attained by the majority (31%) of young Primigravida was primary school, some received education till secondary school or even higher level because of maturity in age and hence more awareness about antenatal care. Mean age at marriage was 17.3±1.2 year. The study revealed that 74% of mothers were un-booked, poor and least opportunity for antenatal care. Social problems like lack of education, poor hygiene and poverty aggravate the situation and contributed for adverse obstetric outcome and anemia. Other workers found variable observation (UNICEF Innocent

research Centre). The reason given to this apathy towards antenatal care services include ignorance of the importance of antenatal care, lack of family and social support, non-availability of antenatal care services and poverty ^{(7),(8)}. The caesarean section rate was low in the young and teenage primigravida because of preterm birth (25%) and low birth weight (33%) babies. While section rate (33%) but results were not statistical significant, attributed to the fact that most of them were un-booked and arrived in situations where operative intervention was obligatory. The main indication for caesarean section was fetal distress followed by cephalopelvic disproportion similar to the finding in Skoto Nigeria ^{(5),(9),(15)}. The low birth weight may be associated with anemia while anemia has been attributed to inadequate nutrition in young and teenage primigravida (WHO Adolescent Pregnancy 2004) ^{(1),(9),(10),(15)}. Children are born to children who themselves had to attain their growth potential. Anemia may contributed to high perinatal morbidity and mortality rate in the babies of young mothers as observed in this study low birth weight was 33%, small for gestation was 11% and 13% were still born. This is comparable to Ibadan study South Africa and a local study in Islamabad Pakistan ^{(2),(11),(14),(16)}. There is sufficient evidence that adequate antenatal care, nutritional education guideline and supplements (iron & diet) increases hemoglobin and serum ferritin levels during childbearing and improves obstetrical outcome ^{(11),(13),(15),(20)}. The situation in our country is quite unsatisfactory and stresses upon the necessity of nationwide large scale study and intervention by nutritional education guideline to diagnose and manage the burden of this problem. This further indicates the requirement for enhancing family welfare measures to delay the age at first pregnancy and reduces the complications.

Conclusion

Anemia in pregnancy nowadays is still a common problem in adolescent and young primigravida and associated with adverse pregnancy outcome. Prompt measure should be taken by the stake holders at local and national level to prevent and treat this problem in order to reduce morbidity and mortality associated with it.

Authors Contribution

Abida Sajid and Aqsam Sajid: Contributed in study design, data collection, analysis, data intrepetation, Oct-Dec 2017 | Volume 23 | Issue 4 | Page 534

manuscript writing and approval.

References

1. WHO Adolescent pregnancy(Issues in Adolescent Health and Development).Geneva: WHO; 2004
2. Fadupin GT, Pikuda YC. Maternal weight gain and pregnancy outcome in adolescent girls in Ibadan, Nigeria. *Afr J Med Sci* 2011; 40:197-205.
3. Verma S, Gupta R, Kudesia M, Mathur A, Krishan G, Singh S. Coexisting Iron Deficiency Anemia and Beta Thalassemia Trait: Effect of Iron Therapy on Red Cell Parameters and Hemoglobin Subtypes. *ISRN hematology*. 2014; 2014:1-9. <https://doi.org/10.1155/2014/293216>
4. Uzma Naz, Comparison of Obstetric Outcome in Terms of the Risk of Low Birth Weight, Preterm Delivery, Cesarean Section Rate and Anemia in Primigravida Adolescents and Older Primigravida, *JCPSP*, 24(2): 131-134; 2014
5. Qazi G. Obstetric characteristics and complications of teenage pregnancy. *JPMI* 2011; 25:134-8.
6. Singh S. Coexisting Iron Deficiency Anemia and Beta Thalassemia Trait: Effect of Iron Therapy on Red Cell Parameters and Hemoglobin Subtypes. *ISRN hematology*.2014;1-9.
7. Kazmi S, Ayyub M, Ikram N, Iqbal S. Red Cell Folate, Serum Vitamin B12 and Ferritin Levels During Pregnancy and their Correlation with Red Cell Indices. *JRMC*. 2013;17(1):91-4.
8. Pasricha, S. Caruan, Casey, G. Jolley, D&S Kingsland (2008):2001.Anemia, iron deficiency, meat consumption, and hookworm infection in women of reproduction age in northwest Vietnam.
9. Baig Ansari, N. Badruddin, S.H., Karmaliani, R. Harris, Jehan ,I. & Pasha O.,(2008):Anemia prevalence and risk factors in pregnant women in an urban area of Pakistan *Food Nutrition Bulletin*:29(2):132-9.
10. Killbriede, J. Baker,T. Parapia, L. and Jerwood,D. (2009):Anemiaduring pregnancy as a risk factor for iron-deficiency anemia in infancy:A case-control study. *Jordan Int. J Epid.*:28:461-468. <https://doi.org/10.1093/ije/28.3.461>
11. Iqbal F, Azad S, Tayyab R. Obstetrical and fetal outcome in teenage primigravida. *Annals King Edward Med Coll* 2004; 14:470-2.
12. UNICEF. Early marriage: a harmful traditional practice. New York: United Nations; 2005.

13. Nwobodo EI, Adoke KU. Obstetrics Outcome of teenage pregnancies at a tertiary care hospital in Sokoto, Nigeria. *Trop J Obstet Gynaecol* 2005; 22:168-70.
14. Pikee Saxena, S.Salhan, B.Chattopadhyay ET al.Obstetric And Perinatal Outcome of Teenage and Older Primigravida-A Retrospective Analysis.+ *Health and Population: Perspectives and Issues*.vol.33(1),16-22, 2010
15. Malhotra, M. SharmaJ., Batra,S., Arora, R.,(2009):Maternal and perinatal outcome in Varying degree of anemia international J, of Gynaec /Obstetric :7(79):93-100.
16. Marahatta, R(2009)Study of anemia in pregnancy and its outcome in Nepal Medical College Teaching Hospital, Kathmandu, Nepal. *Nepal Med Coll J*:9:270-4.
17. Adamson P, Brown, Micklewright J, Wright A. A league table of teenage births in rich nation, Florence: UNICEF Innocenti research centre Report Card p32
18. *American Journal of Tropical Medicine* 12-2008
19. Nilli F, Rahmat MR,Sharifi SM. Maternal and Neonatal outcome in teenage pregnancy in Tehran Valisar Hospital. *Acta Medica Iranica* 2002; 40:55-9.
20. Geelhood, D. (2009) Severe anemia in pregnancy in rural Ghana: Case control study of causes and management: *Acta Obstetric and Gynecology*;85(10)1165-1771. <https://doi.org/10.1080/00016340600672812>