Demographic Profile, anemia status and fetal outcome of the pregnant women attending at tertiary care hospital, Bikaner

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Abstract: *This study was aimed to find out the maternal factors, anemia status and fetal outcomes in pregnancy. A hospital based cross sectional , descriptive type of observational study was carried out in 15 to 49 years who had undergone delivery at SP Medical College Bikaner. Information about the demographic profile, ANC factors, anemia status in different trimester and its management , foetal outcome data were collected. To find out associating factors appropriate test of significances were used. The magnitude of anemia 87.46% (confidence interval 85.6% to 89.29%) was found high in pregnancy. Anemia cases of moderate type were higher in all trimesters. Iron and folic acid supplementation were observed adequate according to timely consumption was (74.6%). Blood transfusion were needed in 10.24% caes, out of them, maximum proportion were needed in 3rd trimester (61.24%) followed by 29.46% cases in after delivery followed by 4.65% in 1st and 2nd trimester .There was no significant effect of blood transfusion in first and second trimester on anemia in pregnancy.(P = 0.966NS) .According to foetal outcome ,intra-uterine growth retardation was seen in 4.6% cases, Premature birth was 17.86% and Fetal death including still birth was 5.71%, low-birth weight babies were born to 32.94%*
Anemia (a silent destroyer) was very much significant observation in pregnant women despite the availability and easy access to medical care, indicates the level of ignorance and in difference to health needs so special emphasis should be given on   IEC for their prevention and importance of ANC services.
Keywords: *Pregnancy Related Anemia , Maternal Factors , Fetal Outcome.*

I. Introduction

Anemia in pregnancy is responsible for one fifth of the maternal death and is most important factor for adverse pregnancy outcome, higher incidence of preterm and low birth weight deliveries.[1]

The high prevalence of anemia among women in India is a serious health hazards for them, for their families, and for the economic development and productivity of the country [3]

World- wide an estimated 51% of pregnant women suffer from anemia almost twice as many as non pregnant women. In India, 50% of the population affect[4] and 16% maternal deaths are due to anemia.

Indian Council of Medical Research (ICMR) and other research agencies have observed that prevalence of anemia is highest among pregnant women estimated prevalence range between 50-90% [5]

In view of the low dietary intake of iron and folate, high prevalence of anemia and its adverse health consequences, India became the first developing country to take up a National Nutritional Anemia Prophylaxis Program (NNAPP) to prevent anemia among pregnant women. The Government of India recommends a minimum dose of total 100 iron and folic acid tablets to be prescribed during pregnancy. Under this programme.6

Public health program of distribution of the iron tablets to the pregnant women (during last trimester) and preschool children is in operation in India as part of Maternal and Child Health (MCH) services. [7]

Irrespective of the availability of this effective, low-cost intervention for prevention and treatment, high magnitude of anemia among pregnant women persists [8]

As most frequent maternal complication of pregnancy, antenatal care should therefore be concerned with its early detection and management. Therefore, the objective of this study was to determine the prevalence

of anemia, its management along with fetal outcome among pregnant women in at P.B.M.Hospital ,bikaner District.

II. Methodology

This hospital based, descriptive observational study was conducted at maternity ward of PBM hospital, SP medical college, Bikaner from august to October 2013. The women aged 15 to 49 years who had undergone delivery and admitted were included. Women who had not ANC record were excluded from the study. Sample size was calculated 1257 pregnant women at 5% allowable error and 95% confidence interval assuming the 56% prevalence of anemia among pregnant women of 15 to 49 years (NFHS 05-06) total 1260 pregnant women were studied.

Direct interviewing and record analysis methods were used for data collection. Pre structured and pretested protocol and antenatal and delivery record was used for collection. To find association between maternal factors and anemia, only anemic women at third trimester was considered. Updated B.G Prasad classification 2013 was used to determine the socioeconomic status of mother.

Statistical Analysis: Data were presented as proportion and percentage and differemce in prortion were analyzed by using chi square test . The test of significance should be kept P<0.05.

III. Result

This cross-sectional study was conducted at maternity ward of P.B.M. Hospital, Bikaner District to assess prevalence of anemia in pregnancy, to assess fetal outcome in form of low birth weight, premature birth, still birth,

Twelve hundred and sixty women who were delivered during study period of two months were studied. Haemoglobin value in first, second and third trimester was taken from ante-natal record of women.

In this study, majority of women were in the age group 20-24 yrs.(58.5%) whereas women in age group 15-19 yrs. wereminimum(5%).

Mostly women were 84.4%were Hindus and 15.2% women were Muslim. Majority of women were illiterate (40.3%) followed by middle (19.4%) and primary educated (18.8%) Post-graduate women were minimum (2.9%). Proportion of women with joint family was maximum (80.3%) than women with nuclear family (19.7%). In present study there were 73.9% women who were vegetarian and 26.1% women were non-vegetarian Majority of women were having <l children (54.4%) whereas 45.6% women were having 2 children. In this study 21.3% women were having medical illness associated with pregnancy while majority of women (78.7%) were not having any medical illness.

Maximum women were housewives (66.4%) followed by cultivator (23.3%).Minimum women were doing business (.6%). In this study maximum women were belonging to socio-economic status IV (31 .3%).Proportion showed an increase with decrease in socio-economic status, minimum(4.9%) were found in upper socio-economic status .

According to no children 54.44% were children having less than equal to one ,parous women was 88.89% out of them the inter-pregnancy interval >23 month interval cases were maximum 78.91%, more than three antenatal visits were made 60.79% , 39.21% were made < 3 ANC visit. Women with any medical illness associated with pregnancy were observed in21.35%

Overall anemia was present 87.46% cases , out of them (1102) case moderate anemia was present in 74.05% cases followed by 20.96% mild and rest (5%) were of severe type. Anemia was 28.36% in first trimester, out of them maximum proportion was moderate anemia (68.42%) followed by mild 26.32% and least were severe (5.26%). In 2nd trimester, anemia was (85.44%), out of them maximum proportion was moderate anemia (72.73%) followed by mild 22.73% and least were severe (4.55%). In 3rd trimester, anemia was (78.97%), out of them maximum proportion was moderate anemia (74.27%) followed by mild 20.70% and least were severe (5.03%). Anemia cases of moderate type were higher in all trimesters.

According to Management of anemia cases, Iron and folic acid supplementation were observed adequate according to timely consumption was (74.6%) out of them 52.14% cases were adequately taken and 22.46% were inadequate and rest 25.40% cases not took any treatment.

Iron and folic acid were consumed more in tablet form (90.85%) and capsule (4.68%) and syrup (4.47%) were almost equal in used. Blood transfusion were needed in 10.24% cases, out of them, maximum proportion were needed in 3rd trimester (61.24%) followed by 29.46% cases in after delivery followed by 4.65% in 1st and 2nd trimester .There was no significant effect of blood transfusion in first and second trimester on anemia in third trimester of pregnancy.(P = 0.966NS)

According to foetal outcome ,intra-uterine growth retardation was seen in 4.6% cases, Premature birth was 17.86% and Fetal death including still birth was 5.71%, low-birth weight babies were born to 32.94% According to mode of delivery, 22.3% cases have LSCS and 0.79% cases have forceps delivery.

IV.   Discussion

In our study, majority of women were in the age group 20-24 years (58.5%) whereas women in age group 15-19 yrs. were minimum(5%).Similar observation was found in study conducted by **Judith A.(2008)[9]** in which 40.1 per cent of the pregnant women were between 26 and 30 years of age this may be due to poor obstetric history and were aware of health facilities .[10]

According to residence, 57.5% women were belonging to rural area whereas 42.5% were belonging to urban area. **Singh R (2012)[10]** 61.8% were belong to rural area.

Majority of women were illiterate (40.3%) followed by middle (19.4%) and primary educated (18.8%) .Similar observation was observed in **Judith A.(2008) [9]** where 81.3 per cent of pregnant women had education below 10th standard to below graduation and post-graduation was only 1.4 per cent. The educational status plays an important role in maintenance of good health and nutrition .The better educational status have been shown to have improved health and nutritional status compare to less educated persons. .

Proportion of women with joint family was maximum (80.3%) than women with nuclear family (19.7%). Similar observation was observed in a study conducted by **Pushpa Lokare et al**(2006-08)[11] and **Judith A.(2008)[9]** . Family has its effect on maternal health due to family environment, income, knowledge, attitude and practice of family members regarding anemia in pregnancy.

In present study, 73.9% women who were vegetarian and 26.1% women were non-vegetarian. Findings were similar with a study conducted by **Ahmad et al (2010)[12].**Pregnant women are at a fragile stage of their lives. Any nutritional imbalances that occur during pregnancy can lead to difficulties with health. If the mother gets a healthy diet and enough nutrients pregnancy can be a pleasant and enjoyable times in their lives.

Majority of women were having <l children (54.4%) whereas 45.6% women were having 2 children .60.8% women made 3 ANC visit whereas only 39.2% women made <3 ANC visit. Almost similar finding found in **NFHS-III(2005-06)[13]** as 50.7% pregnant women were made 3 ANC visit.

Maximum women were housewives (66.4%) followed by cultivator (23.3%).Minimum women were doing business (.6%).Role of occupation is explained that women with better occupation have higher socioeconomic status and better knowledge about use of ante-natal services and nutrition. Labourer women usually have lower socio-economic status, poor literacy level and they have to do hard work during pregnancy and attendance at ante-natal clinic means loss of daily wages for them.

In this study, maximum women were belonging to socio-economic status IV (31.3%).Proportion of pregnant were increase with decrease in socio-economic status **.**This observation is in accordance with a study conducted by **Pushpa Lokare et al(2006-08)[11], Viveki et al(20 10) [14]** it may be due to mothers belonging to lower socio-economic status are having poor nourishment, and birth spacing is short. They get inadequate ante-natal care, their literacy level is also low and they have to do hard and prolonged physical work during pregnancy.

In our study 60.8% women made 3 ANC visit and 39.2% women made <3 ANC visit. **Singh R (2012)[10]** also reported the same finding that most of the visit were done in third trimester.

Overall anemia was present 87.46% cases in this study, out of them (1102) case, moderate anemia was present in 74.05% cases followed by 20.96% mild and rest (5%) were of severe grade of anemia similar observation was observed in

Priyali Pathak (1999)[15] 85.4% pregnant women had hemoglobin levels below 11.0 g/dl. The prevalence of mild, moderate and 'severe anemia was 30.4%,53.5% and 1.5%, respectively.**,** The prevalence of anemia (87.4%) was found by **Srivastava et al (2005)[16]** and (84%) in **Babita Bansal (2013) [17]** 81.95% anemia reported by **Singh R (2012) [10]**. While in contrast prevalence of anemia was reported (56.2%)in **NFHS-3 survey[13]**and 50.1 % by **Judith A.(2008),[9]** out of 540, (63.5%) had mild anemia, (35.0%) had moderate anemia and (1.5%) had severe anemia and in . In our study such a higher prevalence may be due to that study was conducted in a Government Hospital which is a district Hospital and the fact that maximum hemodilution starts around 6 to 10 weeks of gestation, continues in second trimester and becomes platue after 32 weeks of gestation which is a reason for high prevalence of anemia in third trimester.

In this study , severity of anemia increases with increases with trimester .This was also observed in **Erli Amel Ivan (2013)[18] WHO** also recorded that anaemia was significantly high in the third trimester of pregnancy than in other two trimesters[19]

According to Management of anemia cases, Iron and folic acid supplementation were observed adequate according to timely consumption was (74.6%) out of them 52.14% cases were adequately taken and 22.46% were inadequate and rest 25.40% cases not took any treatment .

NNMB surveys (2002)[20] showed that the proportion of pregnant women who receive IFA tablets is not high even among well-performing States like Tamil Nadu, Kerala and Maharashtra. According to **NFHS-III(2005-06)**[13] data showing that 91.1% were given IFA tablets and only 43.2% took IFA tablets for at least 90 days. **DLHS-3** [21]**(2007-2008)** showed that the percentage of mothers who consumed 100 IFA tablets was 54.7% . **P Mithra (2013)**[22] reported the overall compliance towards IFA tablets was 64.7%. The reasons for non-compliance may be due to the experience of side-effects ,misunderstanding that they needed to continue taking the tablets throughout pregnancy and forgetfulness, inadequate counseling and distribution of iron tablets, difficult access and poor utilization of prenatal health care services, beliefs against consuming medications during pregnancy, and in most countries, fears that taking too much iron may cause too much blood or a big baby, making delivery more difficult[23]

According to Management of anemia cases, Blood transfusion were needed in 10.24% cases, out of them, maximum proportion were needed in 3rd trimester (61.24%) followed by 29.46% cases followed by 4.65% in 1st and 2nd trimester .There was no significant effect of blood transfusion in first and second trimester on anemia in third trimester of pregnancy. (P = 0.966NS). According to **Sharma JB. (1999)** [24]blood transfusion is required in patients with severe anemia beyond 36 weeks, associated infection, to replenish blood loss due to antepartum or post-partum hemorrhage and in patients not responding to oral or parenteral iron therapy. Packed cells are preferred for transfusion. Blood: transfusion can cause transfusion reaction, precipitated preterm labour and, rarely, overloading of the heart   Blood transfusion improves haemoglobin- status specially among pregnant women with continued bleeding or further bleeding, imminent cardiac compromise or significant symptoms requiring urgent correction.

According to foetal outcome,intra-uterine growth retardation was in 4.6% cases, mode of delivery 22.3% cases have LSCS and 0.79% cases have forceps delivery, Premature birth was 17.86% and Fetal death including still birth was 5.71%, low-birth weight babies were born to 32.94% Study was in accordance with a study conducted by **Singh R et al (2012)** wherein 8.73% were treated for IUGR , post term, twins pre term birth Anemia is one of the factor responsible for intra uterine growth retardation during pregnancy, this may be explained by the fact that rapid growth of fetus occurs in the third trimester, iron and other micronutrient accretion rates are the highest in the same trimester as well which contribute to growth retardation of fetus.

V.   Conclusion

Anemia (a silent destroyer) was very much significant observation in pregnant women despite the availability and easy access to medical care, indicates the level of ignorance and in difference to health needs so special emphasis should be given on IEC for their prevention and importance of antenatal care .

Table No 1 Demographic Characteristics of the study

	Variables	Frequency 1260	Percentage (100)
Age groups	15-19	63	5
	20-24	738	58.57
	25-29	325	25.79
	30-34	134	10.63
	35-39 Plus	18	1.43
Residence	Urban	536	42.54
	Rural	724	57.46
Caste	OBC	434	34.44
	SC/ST	336	26.67
	Other	490	38.89
Religion	Hindu	1063	84.37
	Muslim	191	15.16
	Other	6	0.48
Education	Illiterate	508	40.32
	Primary	236	18.73
	Middle	245	19.44
	Secondary	108	8.57
	Higher-Secondary	65	5.16
	Under-Graduate	60	4.76
	Post-Graduate	36	2.86
Type of Family	Nuclear	248	19.68
	Joint	1012	80.32
Occupation	Service	24	1.90
	Skilled – worker	72	5.71
	Business	8	0.63
	Cultivator	293	23.25
	Laborer	26	2.06
	House-wife	837	66.43
Socio-economic	I	62	4.92

status	II	221	17.54
	III	341	27.06
	IV	395	31.35
	V	241	19.13
Dietary - Habit	Vegetarian	931	73.89
	Non-Vegetarian	329	26.11

Table No2 Distribution of the cases according to obstetric and medical history

		No	%
Number of Children	One or less than one	686	54.44
	≥2	574	45.56
Parity	Nulli Parous women	634	50.32
	Parous women	626	49.68
Inter-Pregnancy Interval (Months)	< 18	40	6.39
	18 – 23	92	14.70
	> 23	494	78.91
	Total	626	100.00
ANC Visit	<3	494	39.21
	□ 3	766	60.79
Medical Illness	Diseased	269	21.35
	Not-diseased	991	78.65

Table No3 Anemia status according to trimester of pregnancy

Anemia-status		No	% per trimester	% out of 1260
Ist Trimester	No-anemia	48	71.64	3.81
	Anemia	19	100.00	1.51
	A. Mild	5	26.32	0.40
	B. Moderate	13	68.42	1.03
	C. Severe	1	5.26	0.08
	Total	67	100.00	5.32
IInd Trimester	No-anemia	15	14.56	1.19
	Anemia	88	85.44	6.98
	A. Mild	20	22.73	1.59
	B. Moderate	64	72.73	5.08
	C. Severe	4	4.55	0.32
	Total	103	100.00	8.17
IIIrd Trimester	No-anemia	95	7.54	7.54
	Anemia	995	78.97	78.97
	A. Mild	206	20.70	16.35
	B. Moderate	739	74.27	58.65
	C. Severe	50	5.03	3.97
	Total	1090	86.51	86.51
Total		1260		100.00

Table No:4 Management of anemia cases

Management of anemia cases			
		No	**%**
Iron and folic acid supplementation	Not taken	320	25.4
	Consumption	940	74.60
	A. Adequate	657	52.14
	B. Inadequate	283	22.46
Form of Iron and folic acid	Consumption	940	
	Tablet	854	90.85
	Capsule	44	4.68
	Syrup	42	4.47
Blood-transfusion	not needed	1131	89.76
	Needed	129	10.24
	in Ist trimester	6	4.65
	in IInd trimester	6	4.65
	in IIIrd trimester	79	61.24
	after delivery	38	29.46

Figure No 1 Foetal Out come of the pregnant women
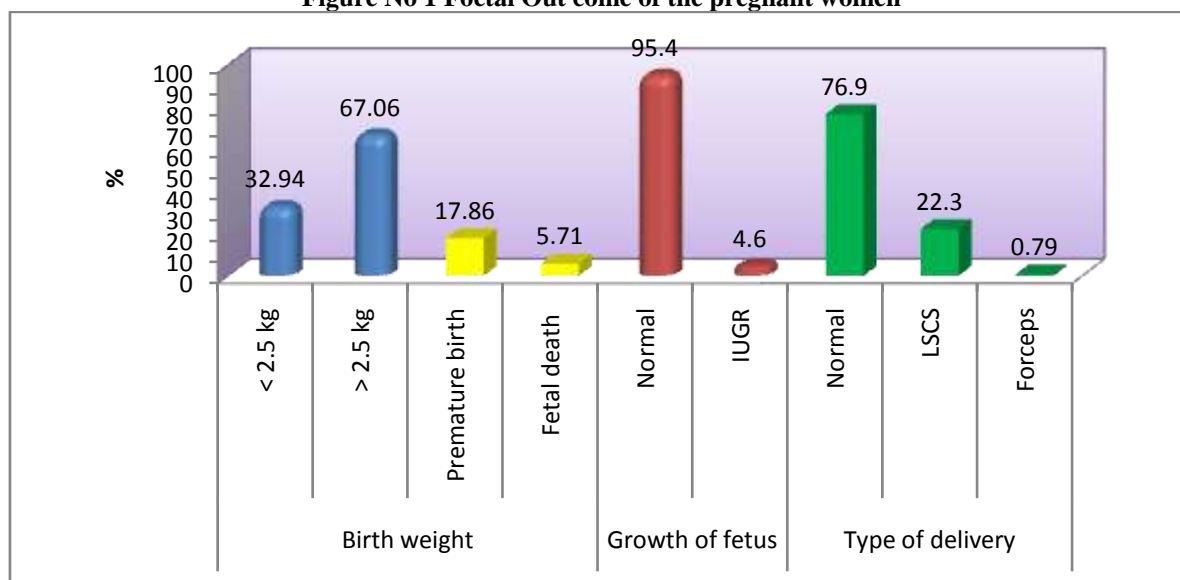
Bibliography

[1].   Government of India (sample registration system). Maternal mortality in India: 1997-2003, Trends, causes and risk factors. Register General India, New Delhi in collaboration with Centre for Global Health Research University of Toranto, Canada.
[2].   International J. of Gynecology &Obstetrics 1997;5 8(1):129 -36.
[3].   Trinh LT and Dibley M. Anaemia in pregnant, postpartum, and non pregnant women in Lak district, Daklak province of Vietnam. Asia Pac J Clin Nutr 2007;16(2):310-315.
[4].   National Family Health Survey (NFHS3) Report, India 2005-2006; International Institute for Population Sciences, Mumbai, India
[5].   Ezzati M, Lopus AD, Dogers A, Vander HS, Murray C. Selected major risk factors and global and regional burden of disease. Lancet Vol.3 60, Page 1347-60, 2002.
[6].   Agarwal KN, Agarwal DN and Sharma A. Anemia In PregnancyInter state differences. Nutrition Foundation of India Scientific Report 2005
[7].   Nutritional anaemia. National Family Health Survey (NFHS-3) 2005-2006. Volume1.Ministry of Healthy and Family Welfare ,Government of India, New Delhi; 2007. p. 308-9.
[8].   Agarwal DK, Agarwal KN, Roychaudhary S. Targets in national anemia prophylaxis programme for pregnant women. Indian Pediatrics 1988;25:319-22.
[9].   Judith A.(2008) 20.Judith a. noronha, aparna bhaduri and h. vinod bhat, prevalence of anaemia among pregnant women: a community-based study in udupi district Perspectives and IssuesVol 31(1), 2008,Page 3 1-40.
[10].   Singh R et al.Morbidity profile of women during pregnancy ,A hospital record based study in western up. Indian Journal of community medicine; 2012
[11].   Puspa Lokare , Vinod Karanjakar, Prakash Guttani, Ashok P kulkarni. Study of the prevalence of anaemia and sociodemographic factors associated with anaemia in Pregnant women in Aurangabad city, India. Annuals of Nigerian Medicine, ,Jan.-june2Ol2, Page 630-4
[12].   Ahmad N, Kalakoti P, Bano R, Syed MMA. The prevalence of anaemia and associated factors in pregnant women in a rural Indian community. AMJ 2010, Vol. 3,5, Page 276-280.
[13].   International Institute for Population Sciences (IIPS) and Macro International 2007. National Family Health Survey (NFHS-3), 2005-06: India. Fact sheet Tamil Nadu. Available at: http://www.nfhsindia.org/pdf/Tamil%20Nadu.pdf
[14].   R.G. Viveki, A.B. Halappanavar,P.R. Viveki,S.B. Halki, V.5. Maled and P.S. Deshpande Prevalence of Anaemia and Its Epidemiological Determinants in Pregnant Women Al. Ameen J Med Sci 2012; 5, 3, Page 2 16-233.
[15].   Priyali Pathak Monica Tandon Umesh Kapil,Charan Singh. Prevalence of Iron Deficinecy Anemia Amongst Pregnant Women in Urban Slum Communities of Delhi. Indian Pediatrics 1999; 36:322-323
[16].   Srivastava A, Prabha T, Quershi S and Das Vinita Anaemia in Pregnancy- A Novel Regime of Intramuscular Iron Therapy.Journal of Obstetrics and Gynaecology of India 2005;55(3), 237-240.
[17].   Babita Bansal Jaspreet Takkar2, N.D.Soni3, Deepak Kumar Agrawal4, Sonika Agarwal 5Comparative study of prevalence of anemia in muslim and non-muslim pregnant women of western rajasthanInternational Journal of Research in Health Sciences. (Supplement) July –Sept 2013; 1, Issue-2 s
[18].   Erli Amel Ivan and Mangaiarkkarasi A.Evaluation of Anaemia in Booked Antenatal Mothers During the Last Trimester. J Clin Diagn Res. 2013 Nov; 7(11): 2487–2490
[19].   World Health Organization. 2nd ed. Geneva: WHO; 1992. The prevalence of anaemia in women: A tabulation of available information
[20].   National Nutrition Monitoring Bureau (NNMB). 2002. NNMB Micronutrient survey. Hyderabad: National Institute of Nutrition.
[21].   International Institute for Population Sciences (IIPS), 2010. District Level Household and Facility Survey (DLHS-3), 2007-08: India. Mumbai: IIPS.
[22].   P Mithra, B Unnikrishnan, T Rekha, K Nithin, K Mohan, V Kulkarni, V Kulkarni, and D Agarwal. Compliance with iron-folic acid (IFA) therapy among pregnant women in an urban area of south India. Afr Health Sci. 2013 Dec; 13(4): 880–885.
[23].   Galloway R, Dusch E, Elder L, Achadi E, Grajeda R, Hurtado E, et al. Women's perceptions of iron deficiency and anaemia prevention and control in eight developing countries. Social science & medicine (1982) 2002 Aug;55(4):529–544.
[24].   Sharma JB. Iron deficiency anaemia in pregnancy-still a major cause of material mortality and morbidity in India. Obs & Gynae Today 1999: IV: 693-701)