Section: Community Medicine

Original Research Article

ANEMIA IN REPRODUCTIVE-AGED RURAL WOMEN: PREVALENCE AND ASSOCIATIONS WITH SOCIOECONOMIC STATUS AND DIETARY FACTORS

Received : 20/02/2023
Received in revised form : 24/03/2023
Accepted : 07/04/2023

Keywords:
Anemia, Reproductive age group, Rural women.

Corresponding Author:
Dr. Vivek Kumar Jain
Email: vsjain14nov@gmail.com

DOI: 10.47009/jamp.2023.5.3.106

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (3); 499-504

Prajapati Kshatrapal[1], Shaily Sengar[2], Vivek Kumar Jain[3], Joshi Abhishek[4], Bhagwat Prajapati[5]

[1]Assistant Professor, Department of Community Medicine, SRVS Govt Medical College, Shivpuri, Madhya Pradesh, India.
[2]Assistant Professor, Department of Obstetrics & Gynaecology, SRVS Govt Medical College, Shivpuri, Madhya Pradesh, India.
[3]Assistant Professor, Department of Biochemistry, SRVS Govt Medical College, Shivpuri, Madhya Pradesh, India.
[4]Associate Professor, Department of Community Medicine, J N Medical College, Datta Meghe Institute of Medical Sciences, Deemed to be University, Sawangi, Meghe, Maharashtra, India.
[5]Medical Officer, J N Medical College, Datta Meghe Institute of Medical Sciences, Deemed to be University, Sawangi (Meghe), Maharashtra, India.

Abstract

Background: Anaemia is a global public health problem that affects a significant proportion of women of reproductive age, with pregnant women being the most vulnerable. In India, anaemia is primarily caused by iron deficiency and is a major contributor to disability in the country. Despite recent economic growth and prevention efforts, anaemia remains highly prevalent in India, especially in rural areas. To investigate the prevalence and potential risk factors for anaemia among rural women in the reproductive age group, a study was conducted using a convenient sampling method. A total of 100 women between the ages of 15-49 years were enrolled in the study, and data was collected through a pre-designed and structured questionnaire that included socio-demographic profiles, dietary habits, medication history, and blood examination for haemoglobin levels. The study found that 44% of the participants were anaemic, with 28% having moderate anaemia and 6% having severe anaemia. The majority of the participants consumed a mixed diet (57%) and did not consume iron-rich foods (76%). Only 24% of the participants reported a history of consuming iron-rich diets, and 32% consumed iron-folic acid tablets. Additionally, 18% of the participants were pregnant during the study. The study revealed that education levels, socio-economic class, and type of diet consumed were significantly associated with haemoglobin levels, while no statistically significant association was found between anaemia and age, consumption of iron-rich foods, present pregnancy status, or number of past pregnancies. Overall, the findings of the study highlight the high prevalence of anaemia among rural women in the reproductive age group in India and the need for effective interventions to address this public health issue. Efforts should focus on improving access to education, promoting the consumption of iron-rich foods, and increasing awareness about the importance of proper nutrition during pregnancy.

INTRODUCTION

According to the WHO Global Database on Anaemia for 1993–2005, which covers almost half of the world's population, the prevalence of anaemia worldwide is estimated at 25%. Although the prevalence of anaemia is lower in countries with high development, at 9%, in countries with low development, it is much higher at 43%. [1]

Women of reproductive age are most vulnerable, with global anaemia prevalence estimates of 42% in pregnant women and 30% in non-pregnant women aged 15–49 years.[1] Anaemia is defined by the WHO as a condition in which the number of red blood cells or their oxygen-carrying capacity is insufficient to meet physiological needs, which vary by age, sex, altitude, smoking, and pregnancy status. Iron deficiency anaemia is thought to be the most common cause, although other conditions such as

folate, vitamin B12 and vitamin A deficiencies, chronic inflammation, parasitic infections, and inherited disorders can also cause anaemia.[2]

In India, anaemia is a significant public health problem, primarily caused by iron deficiency. National Family Health Survey-IV data shows that more than half of women (53%) in the reproductive age group (15-49 years) are anaemic, and its prevalence in Maharashtra is 48%.[2] Anaemia affects all age groups, but it is a particular problem in developing countries among women of reproductive age, children aged 6-59 months, pregnant women, and lactating mothers. Anaemia adversely affects women's productive and reproductive capabilities, with severe anaemia affecting normal intra-uterine growth and resulting in intrauterine growth retardation, stillbirth, low birth weight, and neonatal deaths. [1,2]

Despite recent economic growth and prevention efforts, anaemia remains particularly pervasive in India and is the largest cause of countrywide disability. Potential causes of anaemia in the Indian context include low iron and vitamin C intake, lower gastric acidity, repeated childbearing, lactation, poor access to nutritional supplements, and parasitic infections, such as hookworm and malaria. The etiology of anaemia in India is multifactorial and population-specific, influenced by sociocultural issues such as poverty, micronutrient deficiencies, cultural and religious practices, access to health services, and poor awareness of the condition and preventive measures.[2]

Iron deficiency is the primary contributor to anaemia, and other micronutrient deficiencies including folate and vitamin B12 also contribute to anaemia. Recent evidence indicates a greater role for anaemia of inflammation caused by parasitic infections, including malaria. Inherited disorders such as haemoglobinopathies also contribute to anaemia.[3] The World Health Assembly Resolution 65.6 in 2012 approved a comprehensive implementation plan on maternal, infant, and young child nutrition (CIP), with six global nutrition targets for 2025. Among the six targets, the second target is to reduce anaemia in women of reproductive age group by 50%. Although several programmes have been implemented globally, as well as in India, anaemia still remains a significant burden in all parts of the country. Thus, this study was planned to determine the exact prevalence of anaemia among females in the reproductive age group attending an urban healthcare center.[4]

Severe anaemia in non-pregnant women of reproductive age group is defined as hemoglobin concentration lower than 8.0 g/dl, moderate when hemoglobin falls between 8.0 - 10.9 g/dl, and mild when hemoglobin level is 11.0-11.9 g/dl. Hemoglobin value less than 12 g/dl in non-pregnant women is considered as anaemia.[5]

Anaemia is a medical condition marked by a low level of hemoglobin in the blood, which impairs the ability of the body to transport oxygen to tissues and organs. This condition can lead to reduced work capacity, increased susceptibility to infections, and a higher risk of mortality associated with pregnancy and childbirth. Anaemia imposes a significant economic burden on individuals and countries.[6] Iron is a crucial nutrient for the human body, with 3-4 grams of iron present in the body, 60-70% of which is circulating iron in the blood, and the rest stored as iron reserves.[7-10] In light of these facts, a study was designed to assess the prevalence of anaemia in women of reproductive age attending the Outpatient Department of a rural health training centre

Aim

To determine prevalence of anaemia and its associated correlates in Women from Reproductive age group attending Outpatient Department of rural health training Centre.

Objectives

The objectives of the study were to

1. To Study Socio-demographic profile of study participants
2. To estimate prevalence of Anemia in study participants.
3. To suggest recommendation based on study findings

MATERIALS AND METHODS

Study Setting

Wardha is one of the five districts in Nagpur administrative division of Maharashtra. Study was carried out in the field practice area of institute in Wardha at Rural health centre.

Study Design

Cross-Sectional study

Sampling Method and sample size

Convenient sampling method was utilised for convenience and rural health training centre was selected as a location for study. First 100 Females from age group of 15-49 years enrolled in study

Study Duration: 3 months

Study Participants

Females from the age group 15-49 years included in the study

Study Tool

A pre-designed and semi-structured questionnaire was prepared and implemented for data collection comprising of following components • Socio-demographic profile of the participants included age, education, address, total family Income, etc.

- Dietary habits, Medication history
- Blood Examination CBC (haemoglobin)

Inclusion Criteria

Females from the age group 15-49 years who consent to take part in Study.

Ethics Committee Approval

The study protocol was submitted to the Institutional Ethics Committee of DMIMS (DU) for approval. Permission was taken from the In-charge of Rural

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Health centres & HOD, Community Medicine for carrying out the study.

Informed Consent Form

Written informed consent was obtained from all the participants of the study and information obtained was kept confidential.

Data Analysis

Data collected was entered into a pre-structured data entry form on Microsoft excel sheet and data were analyzed by using SPSS statistical software.

Operational definitions

Reproductive age group

Women of reproductive age refers to all women aged 15–49 years.

Classification of Anaemia: Patients were categorized into mild, moderate and severe anaemia according to World Health Organization classification, i.e. mild anaemia (haemoglobin 9.0–10.9 g/dL), moderate anaemia (haemoglobin 7.0–8.9 g/dL), and severe anaemia (haemoglobin less than 7.0 g/dL).

RESULTS

Table 1: Distribution of study participants according to socio- demographic variables

Variables	Frequency
Age group (in years)	
15-25	34
26-35	39
36-49	27
Religion	
Hindu	67
Muslim	23
Others	10
Marital status	
Married	61
Unmarried	32
Divorced	04
Widow	03
Education	
Illiterate	11
Primary	12
Secondary	42
Higher secondary	23
Graduate	12
Socio-economic classes	
Class I	12
Class II	35
Class III	47
Class IV	04
Class V	02

Table 2: Distribution of women according dietary pattern, menstrual and obstetric information

Variables	Frequency
Type of diet	
Vegetarian	43
Mixed	57
Consumption of iron rich food	
Yes	24
No	76
Iron folic acid tablet consumed.	
Yes	32
No	68
Pregnancy status	
Non pregnant	82
Pregnant	18
No. of pregnancies in the past excluding single, adolescent and primigravida women)	
1	11
2	22
≥3	07
Interval between two pregnancy in years (excluding primigravida and adolescent girls) (N=40)	
≤1	01
2	28
≥3	11

Table 3: Distribution of women according to their haemoglobin grade (WHO classification)

Haemoglobin grade	Frequency	Percent (%)
Mild	07	(07)
Moderate	28	(28)

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Severe	06	(06)
No anaemia	56	(56)

Table 4: Association between various factors and haemoglobin grade

Variables	Anaemia number (%)	Non anaemic number (%)	Total number (%)
Age group in years (N=100)			
15-25	20 (45.45%)	12 (21.4%)	32 (32%)
26-35	08 (18.18%)	17 (30.3%)	25 (25%)
36-49	16 (36.36%)	27 (48.21%)	43 (43%)
Chi-square= 6.71 p value= 0.35			
Education (N=100)			
Illiterate and primary	12 (27.27%)	11 (19.64%)	23 (23%)
Secondary and Higher secondary	22 (50%)	43 (76.78%)	65 (65%)
Graduate	10 (22.72%)	02 (3.5%)	12 (12%)
Chi-square= 10.88 p value= 0.0043			
Socioeconomic class (N=100)			
I and II	15 (34.09%)	32 (57.14%)	47 (47%)
III	27 (61.36%)	20 (35.71%)	47 (47%)
IV and V	02 (4.5%)	04 (7.1%)	06 (06%)
Chi-square= 6.51 p value= 0.038			
Type of Diet (N=100)			
Mixed	12 (27.27%)	31 (55.35%)	43 (43%)
Vegetarian	32 (72.72%)	25 (44.64%)	57 (57%)
Fisher's Exact test applied, p-value = 0.0089			
Consumption of iron rich food (N=100)			
Yes	07 (15.9%)	18 (32.1%)	25 (25%)
No	37 (84.09%)	38 (67.85%)	75 (75%)
Fisher's Exact test applied, p-value = 0.103			
Pregnancy status (N=100)			
Non pregnant women	37 (84.09%)	45 (80.3%)	82 (82%)
Pregnant women	07 (15.09%)	11 (19.6%)	18 (18%)
Fisher's Exact test applied, p-value = 0.825			
Interval of pregnancies in years (excluding primigravida and adolescent girls) (N=40)			
≤1	01 (4.1%)	0 (00)	02 (5%)
2	16 (66.66%)	12 (75%)	27 (67.5%)
≥3	07 (29.1%)	04 (25%)	11 (27.5%)
Chi-square= Could not be calculated as one cell has zero entries			
No. of pregnancies in the past (excluding single, adolescent and primigravida women) (N=40)			
1	04 (19.04%)	07 (36.84%)	11 (27.5%)
2	12 (57.1%)	10 (52.63%)	22 (55%)
Chi-square= 2.19 p value= 0.33			

Table 1 shows Socio-demographic profile of study participants. Maximum participants (39%) were from age group 26-35 years, while 27% participants were from age group 36-49 years. 67% participants were Hindu while 23% participants were from Muslim Community. 61% were Married while 32% were unmarried and 4% were divorced.42% participants studied till Secondary school and 23% studied till Higher secondary school and 12% each were studied up to primary school and graduate each. Table 2 denotes distribution of study participants according to their dietary pattern, menstrual and Obstetric Information. 57% participants consumed Mixed diet and 43% were consuming Vegetarian diet. 76% participants did not consume iron rich food while only 24% had history of consuming Iron rich Diet. 32% females consumed Iron Folic acid tablets and 18 % participants were Pregnant during Study. 55% of Married women had 2 prior children while 7 (15.9%) had 3 or more than 3 children. 28 (70%) of these participants had interval of 2 years between two pregnancy while only 1 participant had less than 1-year gap between two pregnancies. Table 3 shows Classification of study participants as per Blood reports. 44% participants were found to be anaemic while 56% were non anaemic. 7 % were Mild anaemic 28% had Moderate anaemic while 6% had severe Anaemia. 47% participants belonged to Class III socio-economic class and 35% were from Class II category while only 2% belonged to Class 5 of socio-economic class. Table 4 shows association between various factors & Haemoglobin level. Age group had no significant association with Anaemia status. While significant association was found between Education levels, Socio-economic class, Consumption of type of diet and haemoglobin levels as shown in the table. There was no statistically significant association found between Consumption of Iron rich food, Present pregnancy status and Number of pregnancies in past.

DISCUSSION

This community based cross sectional study inferred that the prevalence of anaemia among reproductive age women (15 to 49 years) was 44% with 7%, 28% and 6% women had mild, moderate and severe anaemia respectively.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

In a study conducted by DEY et al to determine the prevalence of anaemia in women of reproductive age in Meghalaya had shown that prevalence of anaemia among women of reproductive age was 49.6%.[11] Similar findings were observed by a study conducted by Patavegar et al in rural areas of Maharashtra (51.92%).[12] This was lower than study conducted by Pande et al in an urban slum of Indore city where prevalence was 61%,.[13] Pattanshetty et al found that, out of 55.8% anaemic women in a tribal area, 3.5% were severely anaemic, 19.4% were moderately anaemic 32.9% were mildly anemic.[14] This is in concordance with the study by Pande et al where 33.25%, 24.75% and 3% women in reproductive age groups had mild, moderate and severe anaemia respectively. So, it can be said that depending upon the study area and study population the prevalence of anaemia varies.

Anaemia was more common in younger age group (15-25 years) as compare to other age group and the association between anaemia and age group was not statistically significant (p=0.103). Similar findings were observed by Ahmad N et al among pregnant women where anaemia is more common in <20 years (88.7%) and 20-24 years. (66.7%) age group as compared to 25-29 years (58.5%) and >30 years (57.1%) age group.[15] Similar findings were observed by Patavegar et al where the association between age group and gender was not statistically significant.[12]

Anaemia was more common in women who studied up to Secondary & higher secondary school (50%) as compared to graduate mothers (22.72%) and the difference was statistically significant (p=0.0043). Similar finding was observed by Panigrahi et al where illiterate women (74.6%) were more anaemic as compared to those studied HSC and above (41.2%).[16]

In our study, the association between lower socioeconomic status and anaemia was statistically significant (p=0.03). Studies conducted by Panigrahi et al and Bentley et al came up with similar inferences.[16,17] Lower socio-economic conditions are associated with less financial resources, lesser access to a wide variety of food and nutrients limited education and higher rate of getting infections etc.

In our study, women taking mixed diet were less anaemic as compared to those who were vegetarian and the difference was statistically significant (p-value = 0.0089). Similar findings were observed by Viveki et al among pregnant women found that the prevalence of anaemia was 87.2% in those consuming vegetarian diet as compare to non-vegetarian or mix diet 12.8% but their association was not statistically significant.[18] Similar results were found in a study conducted by Ahmad et al.[15] There was no significant association of intake of iron rich food and with that of anaemia indicating its direct role in reducing the prevalence of anaemia. While findings observed by Patavegar et al and Panigrahi et al where the association between inadequacies of green leafy vegetables with anaemia was found to be statistically significant.[12,16] may be because of lack of quantity and understanding of the study participants regarding iron rich food.

In this study the prevalence of anaemia was higher among non-pregnant women as compare to pregnant women but the number of non-pregnant participants were more and were on Iron folic acid supplements as compared to non-pregnant women. Whereas Pattanshetty et al found that anaemia was more prevalent in pregnant women (71.4%) as compare to lactating mothers (57.1%) and non-pregnant mothers (54.7%).[14] In contrary to the above study, Mishra et al found that prevalence of anaemia among non-pregnant women (96.8%) and pregnant women were almost equal.[19]

Anaemia was more in women where the interval between two successive pregnancies was less than two year (66 %) as compared to women where spacing is more than three years (29%) but was not statistically significant. Findings as reported by Raghuram et al and Cheema et al for association of anaemia and interval of pregnancy where they found significant association.[20,21] We found that prevalence of anaemia was more in women had parity 2 (57%) as compared to women who all had parity 1 (19%) and the difference was not statistically significant. On contrary, Viveki et al where women who had having parity 2 or more (92.3) had significantly higher prevalence of anaemia as compared to those having parity one (74.4%) or zero (35.9%) (18). Similar findings were observed by Mirzaie et al and Kavak et al. It can be said that the prevalence of anaemia increases as the no of pregnancies increases. [22,23]

CONCLUSION

The study findings revealed a high prevalence of anaemia among women from rural areas in the reproductive age group, with no significant association found between anaemia and age, iron-rich food consumption, present pregnancy status, or number of past pregnancies. However, significant statistical associations were observed between anaemia and education levels, socio-economic class, and type of diet consumed.

Limitations: It is important to note that the external validity of the study findings may be limited, as the study was conducted only in rural health centres of the institute. Furthermore, due to feasibility constraints, only blood haemoglobin level estimation was conducted, and other potential etiologies of anaemia, such as vitamin B12 levels, serum ferritin, and bone marrow examination, could not be investigated to provide further insights into the causation of anaemia. Additionally, the study's power was limited as only 100 participants could be interviewed and tested.

Recommendations: Based on these findings, it is recommended to include routine blood examination

ISSN (O): 2687-5365; ISSN (P): 2753-6556

during opportunistic screening for women in the reproductive age group. Moreover, sensitization programs should be developed to promote iron-rich diets, and special consideration should be given to providing iron-folic acid-vitamin B12 supplements to women consuming strict vegetarian diets. Pregnant women should be counselled on the importance of complying with iron-folic acid tablet consumption.

REFERENCES

1. Verma R, Kharb M, Deswal S, Arora V, Kamboj R. Prevalence of anaemia among women of reproductive age group in a rural block of Northern India. Indian J Community Health. 2014 Dec 31;26;Suppl 2:359-64.
2. Lilare RR, Sahoo DP. Prevalence of anaemia and its epidemiological correlates among women of reproductive age group in an urban slum of Mumbai. Int J Community Med Public Health. 2017 Aug;4(8):2841-6. doi: 10.18203/2394-6040.ijcmph20173333.
3. Little M, Zivot C, Humphries S, Dodd W, Patel K, Dewey C. Burden and determinants of anemia in a rural population in south India: A Cross-Sectional Study. Anemia. 2018 Jul 15;2018:7123976. doi: 10.1155/2018/7123976, PMID 30112198.
4. Aljin V, Umadevi R, Hariharan S. A study on prevalence of anaemia among reproductive age group females attending urban health center of Anakaputhur area of Kancheepuram district. Int J Community Med Public Health. 2018 Jul;5(7):2973. doi: 10.18203/2394-6040.ijcmph20182632.
5. Thoufiq AAA, Johnpaul A, Umadevi R. Prevalence of anaemia among females in reproductive age group attending a health center in the urban area of Kancheepuram district: a cross sectional study. Int J Community Med Public Health. 2020 Mar;7(3):914. doi: 10.18203/2394-6040.ijcmph20200940.
6. Dasgupta A, Sarkar K, Chowdhury R, Ray A, Shahbabu B. Anemia and its determinants among women of reproductive age of a slum in Kolkata: A focus group discussion among health workers in a slum of Kolkata. J Family Med Prim Care. 2016 Apr;5(2):276-80. doi: 10.4103/2249-4863.192372, PMID 27843827.
7. Gedefaw L, Ayele A, Asres Y, Mossie A. Anemia and Associated Factors Among Pregnant Women Attending Antenatal Care Clinic in Wolayita Sodo Town, Southern Ethiopia. Ethiop J Health Sci. 2015;25(2):155-62. doi: 10.4314/ejhs.v25i2.8, PMID 26124623.
8. Panyang R, Teli AB, Saikia SP. Prevalence of anemia among the women of childbearing age belonging to the tea garden community of Assam, India: A community-based study. J Family Med Prim Care. 2018 Jul;7(4):734-8. doi: 10.4103/jfmpc.jfmpc_274_17, PMID 30234046.
9. Ahmad S, Gupta P, Khatoon R, Zaidi ZH, Sahai R. Prevalence of anaemia amongst adolescents attending OPD at rural health and training centre, Era's Lucknow Medical College and Hospital. Int J Community Med Public Health. 2018 Sep;5(9):4124. doi: 10.18203/2394-6040.ijcmph20183606.
10. RAHMAN KM, ALI KM, VIJAYALAKSHMI S, RAMKUMAR S, HASHMI G. Prevalence of iron deficiency anaemia and its associated factors among reproductive age women in a rural area of Karaikal, Puducherry, India. J Clin Diagn Res. 2019 Mar 1;13(3). doi: 10.7860/JCDR/2019/36623.12706.
11. Dey S, Goswami S, Goswami M. Prevalence of anaemia in women of reproductive age in Meghalaya: a logistic regression analysis. Turkish Journal of Medical Sciences. 2010;40(5):783-9. doi: 10.3906/sag-0811-44.
12. Pande D, Saroshe S, Pandey D, Dixit S, Shukla H. Estimation of prevalence of anemia using WHO hemoglobin color scale among nonpregnant females of urban slum. Glob J Med Public Health. 2014;3(3):1-7.
13. Kamath R, Majeed JA, Chandrasekaran V, Pattanshetty SM. Prevalence of Anemia among Tribal Women of Reproductive Age in Udupi Taluk, Karnataka. J Family Med Prim Care. 2013;2(4):345-8. doi: 10.4103/2249-4863.123881. PMID 26664839'
14. Ahmad N, Kalakoti P, Bano R, Aarif SMM. The prevalence of anaemia and associated factors in pregnant women in a rural Indian community. Australas Med J. 2010;1(5):276-80.
15. Patavegar BN, Kamble MS, Patil SL. Prevalence of anemia and its epidemiological correlates among women of reproductive age in a rural setting. 2014;4(2):155-9.
16. Panigrahi A, Sahoo PB. Nutritional anemia and its epidemiological correlates among women of reproductive age in an urban slum of Bhubaneswar, Orissa. Indian J Public Health. 2011;55(4):317-20. doi: 10.4103/0019-557X.92415, PMID 22298143.
17. Bentley ME, Griffiths PL. The burden of anemia among women in India. Eur J Clin Nutr. 2003;57(1):52-60. doi: 10.1038/sj.ejcn.1601504, PMID 12548297.
18. Viveki RG, Halappanavar AB, Viveki PR, Halki SB, Maled VS, Deshpande PS. Prevalence of anaemia and its epidemiological determinants in pregnant women. Al Ameen J Med Sci. 2012;5(3):216-23.
19. Mishra P, Ahluwalia SK. The Prevalence of Anaemia among Reproductive Age Group (15-45 Yrs) Women in A PHC of Rural Field Practice Area of MM Medical College, Ambala, India. J Women's Health Care. 2012;01(3). doi: 10.4172/2167-0420.1000113'
20. Raghuram V, Anil M, Jayaram S. Prevalence of anaemia amongst women in the reproductive age group in a rural area in south india. Int J Biol Med Res. 2012;3(2):1482-4.
21. Cheema HK, Bajwa BS, Kaur K, Joshi H. Prevalence and possible risk factors of anaemia in different trimesters of pregnancy. Int J Contemp Res. 2016;3(4):1194-7.
22. Mirzaie F, Eftekhari N, Goldozeian S, Mahdavinia J. Prevalence of anemia risk factors in pregnant women in Kerman, Iran. Iran J Reprod Med. 2010;8(2):66-9.
23. Çelik Kavak E, Kavak SB. The association between anemia prevalence, maternal age and parity in term pregnancies in our city. Perinatal J;25(1):6-10. doi: 10.2399/prn.17.0251002.

ISSN (O): 2687-5365; ISSN (P): 2753-6556