BioGecko Vol 12 Issue 03 2023

ISSN NO: 2230-5807

Anemia During Pregnancy and Associated Risk Factors in Karbala

Alaa Hameed sachit, Estabraq Allawi Zaboon, Ayat Emad Aziz, Dr. Wasan Ghazi Al safi and Dr. Hameeda Hadi
Department of Family and Community Medicine, College of Medicine, University of Karbala

Abstracts:
Background: Anemia is common and serious health problems, affecting a lot of people in numerous countries. anemia is a condition in which hemoglobin (Hb) concentration falls below 11 g/dl. During pregnancy, Iron deficiency is regarded to be the most prevalent reason of anemia which is caused by a reduce of nourishment and iron stores**.**
Aim of study: evaluate some demographic characteristics and obstetric factors that might interfere with increased incidence of anemia in pregnant women.
Patients and methods: cross section study involved 100 pregnant women who had visit gynecological clinics and Women's obstetrics and gynecology hospital in Karbala province. Some questions were asked about risk factors and obstetric factors.
Results: This study involved 100 pregnant females in 11% were below 20 years, 40% were between 20 and 29 years, 49% were older than 30 years. 78% were lived in urban area with significant difference. The data classified according to severity of anemia into; 20% of women had mild anemia, 77% had moderate anemia and 3% severe anemia. Iron deficiency anemia was significant association with financial status, residency, educational level, previous history of antepartum hemorrhage and previous history of anemia.
Conclusions: Iron deficiency anemia is an important and common subject especially in pregnant women. Recurrent anemia may be occur in women with previous history of anemia . Incidence of iron deficiency anemia is affected by many factors like the financial state, residence and educational level so should increase awareness and reduce percentage of poverty to minimized prevalence of disease.

Keywords: Iron deficiency anemia, Pregnancy, Anemia.

Introduction:
Anemia is one of the most serious health problems, affecting a lot of people in numerous countries and having a significant impact on human well-being and socio-economic development. The disease can occur at any age, although it is more common in infants and pregnant women, resulting in harmful consequences[1-3]. According to the World Health Organization (WHO), anemia is a condition in which hemoglobin (Hb) concentration falls below 11 g/dl, and it is classified as mild (when Hb ranged 10.0-11 g/dl), moderate (when Hb ranged 7.0–9.9) and severe(when the level of Hb below 7.0 g/dL) [4]. Physically, hemodilution in pregnancy due to increased plasma volume might be mismatched with RBC mass, resulting in a further decrease in hemoglobin level[5]. Anemia was predicted to affect 38% of pregnant women and 29% of non-pregnant women globally [6]. Anemia is suspected in 33% to 75% of females in developed countries [7,8]. In the United Kingdom, 24.4% of pregnant women and around one-third of postpartum women were anemic [9].
During pregnancy, Iron deficiency is regarded to be the most prevalent reason of anemia which is caused by a reduce of nourishment and iron stores as a result of recent gestation or previous heavy menstrual blood loss. It was shown that the physiological demand for Iron during pregnancy can be three-fold higher than that of non-pregnant women and that the demand for Iron increases as gestation progresses [10]. Poor nutrition, multiparty, abortion, parasite infection, and excessive drinking of coffee or tea immediately after meals have all been associated with anemia in pregnancy [11,12].

Other nutritional deficiency, such as vitamins and B12, folic acidand copper, may contribute to anemia risk [13].

During pregnancy, Anemia appears to have an adverse medical effect on mothers and babies increasing the risk of both maternal and perinatal mortality. This significantly impacted the well-being of mothers by causing stress, impaired functioning ability, and impaired immunological processes, which increased the chances of cardiovascular disease and death. Anemia in children might increase the chances of having a low-birth-weight baby. Anemia can also be associated with an increased risk of intrauterine growth restriction (IUGR), low APGAR score, and intrauterine death (IUFD) [14]. Maternal education, mother's age [15], parity [16], location of residence [17], maternal job [18], history of abortions [17], iron consumption during pregnancy [19], and unimproved source of water [20] were identified as risk factors for anaemia during pregnancy. According to the anemia database from 2008 to 2012, Iraq is affected by anemia through various ages, with around 36% of Iraqi pregnant women suspected to have become anemic due to significant nutritional insufficiency [21]. However, health professionals need more details on the severity of the problem, and stakeholders need to prioritize resources to control it.

This study aimed to evaluate some demographic characteristics and obstetric factors that might interfere with increased incidence of anemia in pregnancy.

Materials and methods:

Study design: cross-section study

sampling technique : The study involved 100 pregnant women who had visit gynecological clinics and Women's obstetrics and gynecology hospital in Karbala province between January 2023 and April 2023. Pregnant women who diagnosed with anemia by gynecologist and had heamoglobin level below 11 mg/dL. This study aimed to evaluate some demographic characteristics and obstetric factors that might interfere with increased incidence of anemia in pregnant women. The women are categorized to two groups according level of serum ferritin; first group who had iron deficiency anemia (serum ferritin < 24 ng/mL) another group who did not have iron deficiency anemia (serum ferritin > 24 ng/mL)[22].

Exclusion criteria: there are no exclusion criteria .

Data collection: Composed of a socio-demographic questionnaire and some questions conditions that associated with pregnancy. furthermore, measure serum ferritin and hemoglobin.

Ethical approval: Patients agreements received before starting the research. In addition, special codes were assigned instead of the name of the participants.

Statistical analysis: data were analyzed by using Microsoft Excel 2010 and SPSS statistics Version (26) Descriptive (frequency / chi square) and compare means by ANOVA . the minimum significant level will be 0.05 .

Results:

This study involved 100 pregnant females in Karbala health care centers and gynecological clinics (11% were below 20 years, 40% were between 20 and 29 years, 23% were between 30 and 34 years and 26% was older than 35 years). 22% of women were lived in rural area and 78% were lived in urban area. The data classified according Financial status to three groups; 13% were low class, 61% were middle class and about 26% were high class. 73% of females were housewives and remnant percentage were employee. The result also showed percentage of educational level of data (As shown in table 1).

Table1: Demographic data of sample (n=100)

Variables	N	%
Age group		
Less than 20 Y	11	11.0
20-29	40	40.0
30-34	23	23.0
35-39	26	26.0
Address		
Rural	22	22.0
Urban	78	78.0
Financial status		
Poor	13	13.0
Middle	61	61.0
Good	26	26.0
Job		
Employee	27	27.0
House wife	73	73.0
Educational level		
Primary	18	18.0
Secondary	24	24.0
preparatory	33	33.0
College	25	25.0

Figure 1 showed distribution of sample according to severity of anemia; the result calcified to: 20% of women had mild anemia, 77% of them had moderate anemia and 3% of them had severe anemia.

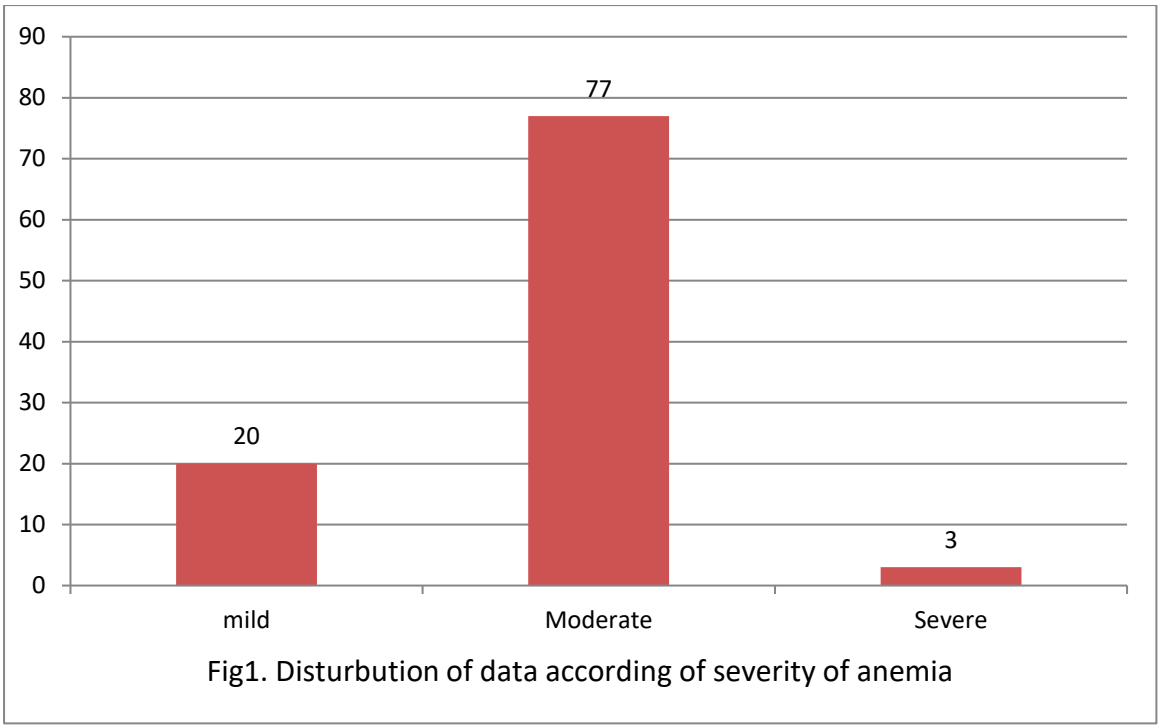


Fig1. Disturbution of data according of severity of anemia

Figure 2 showed prevalence of IDA in this study. 81% of sample had low serum ferritin and 19% of them had normal serum ferritin.

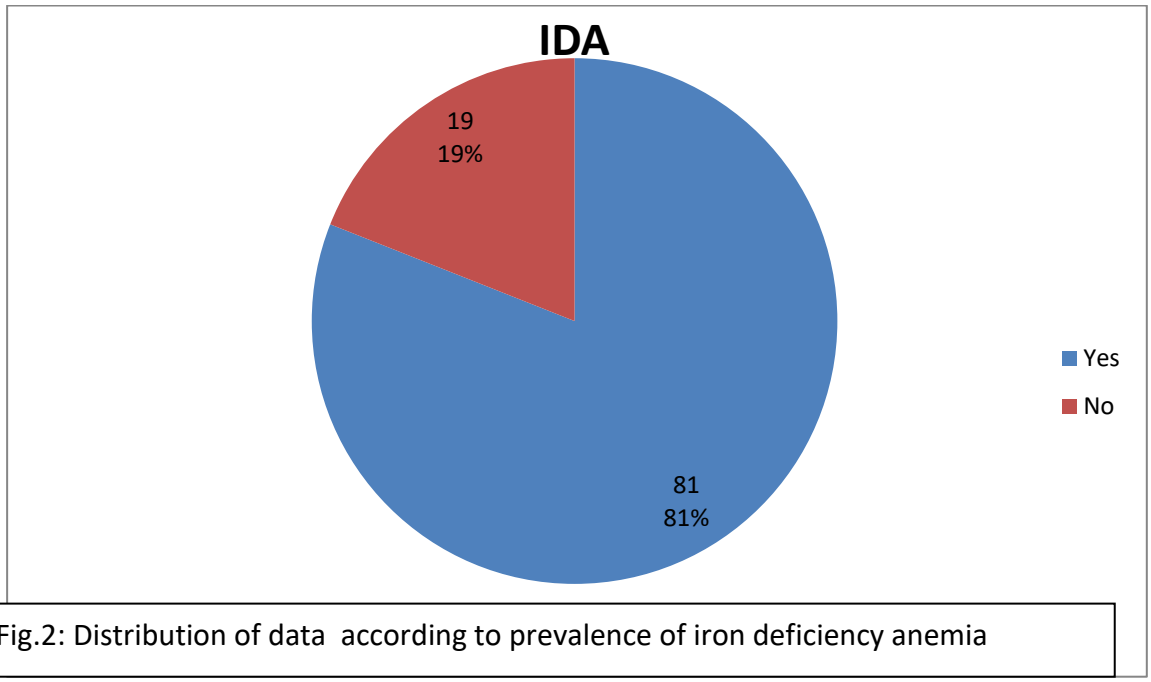


Fig.2: Distribution of data according to prevalence of iron deficiency anemia

Table2: Association between socio-demographic characteristic and IDA			
Variables	Iron deficiency		p-value
	Yes	No	
Age group			
Less than 20 Y	9	2	**0.839**
	11.1%	10.5%	
20-29	32	8	
	39.5%	42.1%	
30-34	20	3	
	24.7%	15.8%	
35-39	20	6	
	24.7%	31.6%	
Residency			
Rural	21	1	**0.040**
	25.9%	5.3%	
Urban	60	18	
	74.1%	94.7%	
Financial status			
Poor	13	0	**0.048**
	16.0%	0.0%	
Middle	45	16	
	55.6%	84.2%	
Good	23	3	
	28.4%	15.8%	
Job			
House wife	61	12	**0.213**
	75.3%	63.2%	
Employee	20	7	
	24.7%	36.8%	
Educational level			
Primary	17	1	**0.037**
	21.0%	5.3%	
Secondary	15	9	
	18.5%	47.4%	
preparatory	29	4	
	35.8%	21.1%	
College	20	5	
	24.7%	26.3%	

Table (2) showed association between socio-demographic characteristic and IDA. There are no statistical association between age groups and IDA (p=0. 839). Residency had significant association with iron deficiency anemia (p=0.040), pregnant who lived in rural city had higher risk for develop iron deficiency anemia than pregnant who lived in urban city.
Financial status had significant difference with iron deficiency anemia (p=0.048) females who had low income was higher to develop anemia than females with good income. Job of pregnant women had no role on increase or decrease incidence of iron deficiency anemia (p=0.213).
Educational level had a significant difference with iron deficiency anemia (p=0.037). Females who had primary school degree were higher risk to develop anemia than others educational levels.
Table (3) showed the association between numbers of pregnancies in iron deficiency anemia. There was no statistical difference numbers of pregnancies in IDA (P=0.674) mean numbers of parity for women with IDA was 1.67 ± 1.32 while mean numbers of parity for women with normal level of serum ferritin was 1.53 ± 1.22 .

Table 3: Role of number of pregnancies in iron deficiency anemia

Variable	Iron deficiency	N	Mean	Std. deviation	p-value
Mean number of pregnancies	Yes	81	1.67	1.323	.674
	No	19	1.53	1.219	

Table (4) showed association between some characters of pregnancy and IDA. Gestational age had no significant difference (p=0.214) .this results showed high vegetables diet not effect on prevalence of iron deficiency anemia (p=0.144). Patient who had previous antepartum hemorrhage had higher risk to develop iron deficiency anemia. There was statistical association with iron deficiency anemia(p=0.032). Patient who had previous anemia had higher risk to develop iron deficiency anemia. There was statistical association with iron deficiency anemia(p=0.010).

Table 4: Association between some characters of pregnancy and IDA

Variables	Iron deficiency		p-value
	Yes	No	
Gestational age			
First trimester	20	2	**0.214**
	24.7%	10.5%	
Second trimester	24	10	
	29.6%	52.6%	
Third trimester	26	4	
	32.1%	21.1%	
More than 36 weeks	11	3	
	13.6%	15.8%	
Vegetarian food			
Yes	20	2	**0.144**
	25.0%	10.5%	

No	60	17	
	75.0%	89.5%	
Chronic disease			
Renal disease	3	0	**0.680**
	3.7%	0.0%	
Celiac disease	7	2	
	8.6%	10.5%	
No	71	17	
	87.7%	89.5%	
Previous antepartum hemorrhage			
Yes	15	0	**0.032**
	18.5%	0.0%	
No	66	19	
	81.5%	100.0%	
Previous gestational anemia			
Yes	40	3	**0.010**
	49.4%	16.7%	
No	41	15	
	50.6%	83.3%	

Discussion:

The demand for iron in pregnant women is much higher than in non-pregnant women. [23,24] This difference may be due to increased iron demands of both mother and fetus because an increase in RBC mass during pregnancy and an increase in growth of baby and the bleeding at delivery [25]. The global prevalence of anemia in pregnant women has been found to be 41.8%. [26].

Presents study showed 20% of anemic women had mild anemia, 77% of them had moderate anemia and 3% of them had severe anemia. The result is higher than studies performed by the WHO[27] Desalegn,[28] that showed moderate anaemia account for 68% and 74% respectively.

This study shows no statistical association between age groups and IDA ($p>0.05$) with higher incidence with age group 20-29 years, which was similar to results of other studies [29-31]. This may be explained by a fact that reproductive-age woman is higher exposed to anemia due to multiple pregnancies and insufficient spaces between pregnancies.

Residency had significant association with iron deficiency anemia ($p=0.040$), pregnant who lived in rural city had higher risk for develop iron deficiency anemia than pregnant who lived in urban city. About 74,1% of anemic women lived rural population while 25.9% lived in the urban cities that is slightly agree with Mihiretie et al. [32] (62%) and Weldemariam[33] (66%). The cause for high risk of iron deficiency anaemia in the rural cities may be associated with inadequately of health-care centers and low educational level.

Financial status had significant difference with iron deficiency anemia ($p=0.048$) females who had low income was higher to develop anemia than females with good income. This might be because the low economic class is more likely to be uneducated and has limited financial resources. It is further reinforced by the evidence that low-income populations tend to eat meals inadequate in essential nutrients, proteins, and vitamins.[34] It is consistent with research by Okube et al.,[35] Singh et

al.,[36] and Javed et al.,[37] which found that women from poor socioeconomic classes had a greater prevalence of anemia.

Educational level had a significant difference with iron deficiency anemia (p=0.037). Females who had primary school degree were higher risk to develop anemia than others educational levels. This agree with Areej Sabah et al. who showed Anemia was more prevalent in women with a primary or secondary school education, followed by those with a bachelor's degree.[38] This suggest higher level of knowledge and awareness of iron deficiency anemia That might lead to an increase in iron-rich foods or the intake of iron supplementation.

Present study showed no statistical difference numbers of pregnancies in iron deficiency anemia (p>0.05). This result agree with Ezugwu et al. who showed that no significant difference between the numbers of parity and prevalence of anemia[39]. but disagrees with Alflah et al. who showed the risk of iron deficiency anemia higher with high gravidity[40] and also disagrees with Dexiong et al. who showed women with equal or more than two babies were at higher risk to develop iron deficiency anemia than low gravidity [41].

previous history of anemia might lead to increased risk of anemia during pregnancy (p=0.01) The result is agree with a another study performed in Saudi Arabia by Enrera et al. that showed about (25%) have a previous history of anemia [42] .

Gestational age had no significant difference (p>0.05) with little increase in prevalence at third trimester . this similar to some studies performed by ALShawi[43] in Baghdad and those studies performed in Southern Ethiopia [44] and India [45]. This might be due to the increased requirement for energy and nutrients during pregnancy to sustain the rise of maternal metabolism, blood volume, and nutritional delivery to babies, especially in the third trimester.

Patient who had previous antepartum hemorrhage had higher risk to develop iron deficiency anemia. There was statistical association with iron deficiency anemia(p=0.032). this result agree with another previous study performed by Jung J et al. [46]

This study had some limitations; our data were collected from a single province with relatively small sample size, duration of data collection was limited furthermore low educational level of some participants.

Conclusion:

Iron deficiency anemia is an important and common subject especially in pregnant women due to many important and critical maternal and fetal outcomes so studying some risk factors that interfere with the increased incidence of IDA is so important to prevent these outcomes. Recurrent anemia may be occur in women with previous history of anemia . Incidence of iron deficiency anemia is affected by many factors like the financial state, residence and educational level so should increase awareness and reduce percentage of poverty to minimized prevalence of disease.

Referances:

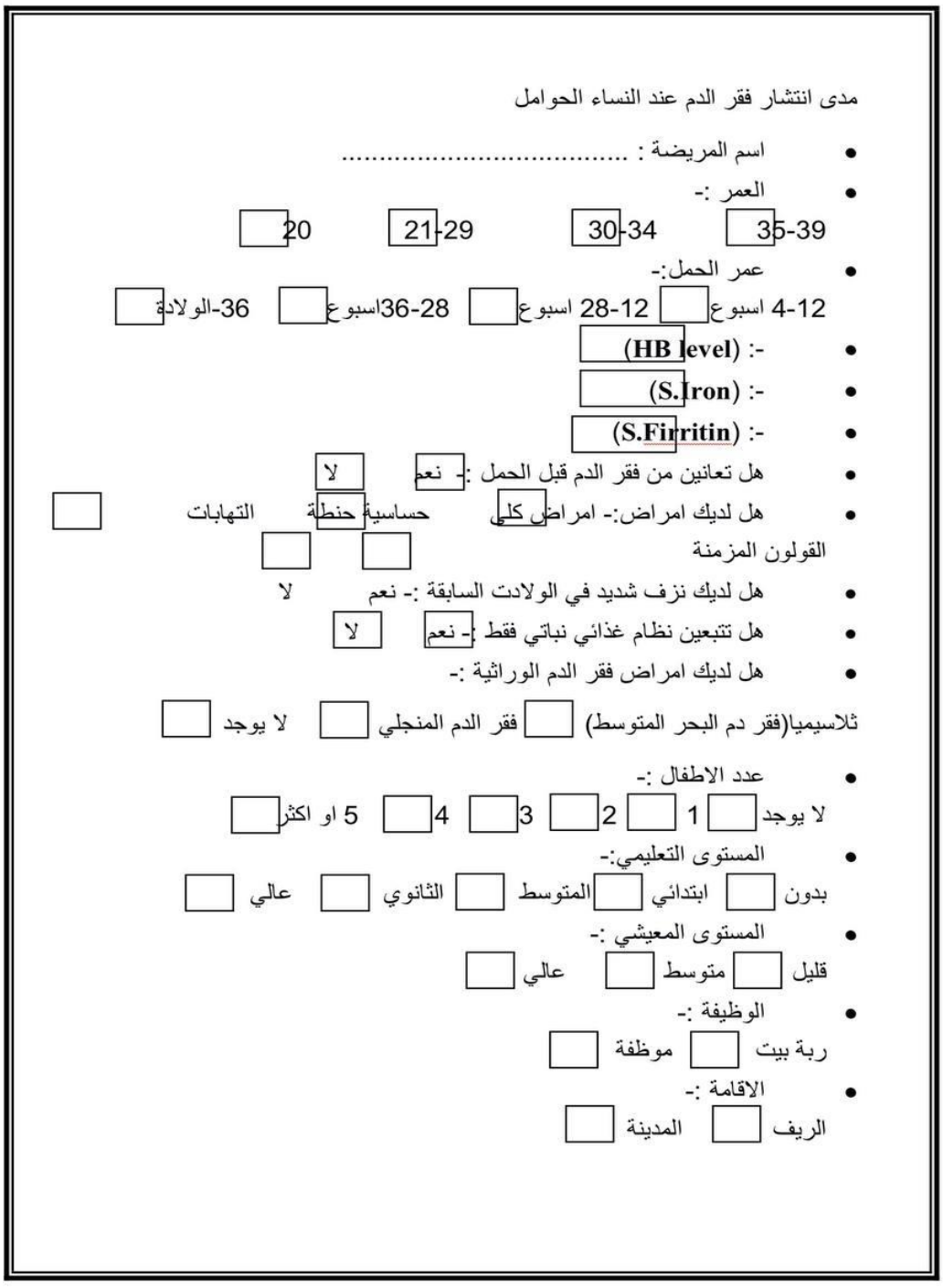
1. Assefa, S., Mossie, A., and Hamza, L. (2014). Prevalence and severity of anemia among school children in Jimma Town, Southwest Ethiopia. BMC hematology, 14(1), 1-9.
2. Siteti, M. C., Namasaka, S. D., Ariya, O. P., Injete, S. D., and Wanyonyi, W. A. (2014). Anaemia in pregnancy: Prevalence and possible risk factors in Kakamega County, Kenya. Science journal of public health, 2(3), 216-22.
3. Stephen, G., Mgongo, M., Hussein Hashim, T., Katanga, J., Stray-Pedersen, B., and Msuya, S. E. (2018). Anaemia in pregnancy: prevalence, risk factors, and adverse perinatal outcomes in Northern Tanzania. Anemia, 2018.
4. Abdul-Fatah, B. N., Murshid, R. M., and Ahmed, T. E. (2018). Assessment of Iron Deficiency Anemia (IDA) and Dietary Pattern among pregnant women in Baghdad City, Iraq. Journal of Pharmaceutical Sciences and Research, 10(9), 2279-2284.
5. Barroso, F., Allard, S., Kahan, B. C., Connolly, C., Smethurst, H., Choo, L., and Stanworth, S. (2011). Prevalence of maternal anaemia and its predictors: a multi-centre study. European Journal of Obstetrics and Gynecology and Reproductive Biology, 159(1), 99-105.

6. . Reveiz, L., Gyte, G. M., Cuervo, L. G., and Casasbuenas, A. (2011). Treatments for iron-deficiency anaemia in pregnancy. Cochrane Database of Systematic Reviews, (10), 1-127.
7. Stevens, G. A., Finucane, M. M., De-Regil, L. M., Paciorek, C. J., Flaxman, S. R., Branca, F., and Nutrition Impact Model Study Group. (2013). Global, regional, and national trends in haemoglobin concentration and prevalence of total and severe anaemia in children and pregnant and non-pregnant women for 1995–2011: a systematic analysis of populationrepresentative data. The Lancet Global Health, 1(1), e16-e25.
8. Prasanth, R. (2017). Prevalence of anemia in both developing and developed countries around the world. World J Anemia, 1(2), 40-43.
9. Rukuni, R., Bhattacharya, S., Murphy, M. F., Roberts, D., Stanworth, S. J., and Knight, M. (2016). Maternal and neonatal outcomes of antenatal anemia in a Scottish population: a retrospective cohort study. Acta obstetricia et gynecologica Scandinavica, 95(5), 555-564.
10. Breymann, C. (2015). Iron deficiency anemia in pregnancy. In Seminars in hematology. WB Saunders, 52 (4), 339-347.
11. AL-Any, B. N. (2017). Estimation of the Prevalence of Anemia and Dietary Pattern. AlAnbar Medical Journal, 14(1), 75-84.
12. Yesuf, N. N., and Agegniche, Z. (2021). Prevalence and associated factors of anemia among pregnant women attending antenatal care at Felegehiwot Referral Hospital, Bahirdar City: Institutional based cross-sectional study. International Journal of Africa Nursing Sciences, 15, 100345.
13. Wegmüller, R., Bentil, H., Wirth, J. P., Petry, N., Tanumihardjo, S. A., Allen, L., and Rohner, F. (2020). Anemia, micronutrient deficiencies, malaria, hemoglobinopathies and malnutrition in young children and non-pregnant women in Ghana: findings from a national survey. PloS one, 15(1), e0228258.
14. Addis Alene, K., and Mohamed Dohe, A. (2014). Prevalence of anemia and associated factors among pregnant women in an urban area of Eastern Ethiopia. Anemia, 2014.
15. Lokare, P. O., Karanjekar, V. D., Gattani, P. L., and Kulkarni, A. P. (2012). A study of prevalence of anemia and sociodemographic factors associated with anemia among pregnant women in Aurangabad city, India. Annals of Nigerian Medicine, 6(1), 30.
16. Ali, M. M., Ngowi, A. F., and Gibore, N. S. (2019). Prevalence and obstetric factors associated with anaemia among pregnant women, attending antenatal care in Unguja island, Tanzania.
17. Berhe, B., Mardu, F., Legese, H., Gebrewahd, A., Gebremariam, G., Tesfay, K., and Adhanom, G. (2019). Prevalence of anemia and associated factors among pregnant women in Adigrat General Hospital, Tigrai, northern Ethiopia, 2018. BMC research notes, 12(1), 1-6.
18. Hailu, T., Kassa, S., Abera, B., Mulu, W., and Genanew, A. (2019). Determinant factors of anaemia among pregnant women attending antenatal care clinic in Northwest Ethiopia. Tropical diseases, travel medicine and vaccines, 5(1), 1-7.
19. Hasswane, N., Bouziane, A., Mrabet, M., Laamiri, F. Z., Aguenaou, H., and Barkat, A. (2015). Prevalence and factors associated with anemia pregnancy in a group of Moroccan pregnant women. Journal of Biosciences and Medicines, 3(10), 88.
20. Nankinga, O., and Aguta, D. (2019). Determinants of Anemia among women in Uganda: further analysis of the Uganda demographic and health surveys. BMC Public Health, 19(1), 1-9
21. Hussien, A. S. L., and Ali, S. H. (2018). The Prevalence of Anemia among Internally Displaced Families residing in well-defined camps in Baghdad City. Nutrition Research Institute, 1-10.
22. Koperdanova, Marianna, and Jonathan O. Cullis. "Interpreting raised serum ferritin levels." *bmj* 351 (2015)

23. World Health Organization, Food and Agricultural Organization of the United Nations. Vitamin and mineral requirements in human nutrition. 2 ed. Geneva: World Health Organization; 2004.
24. Parisi F, Berti C, Mandò C, Martinelli A, Mazzali C, Cetin I. Effects of different regimens of iron prophylaxis on maternal iron status and pregnancy outcome: a randomized control trial. J Matern Fetal Neonatal Med 2017 Aug;30(15):1787-1792.
25. Scholl TO. Maternal iron status: relation to fetal growth, length of gestation, and iron endowment of the neonate. Nutr Rev 2011;69(Suppl 1):S23–9. doi:1111/j.1753-4887.2011.00429.x
26. Goonewardene M, Shehata M, Hamad A. Anaemia in pregnancy. Best Pract Res Clin Obstet Gynaecol 2012 Feb;26(1):3-24.
27. World Health Organization. The Prevalence of Anaemia in Women: A Tabulation of Available Information. Geneva: World Health Organization; 1992. p. 2.
28. Desalegn S. Prevalence of anaemia in pregnancy in Jima town Southwestern Ethiopia. Ethiop Med J 1993;31:251-58.
29. Obai, G., Odongo, P., and Wanyama, R. (2016). Prevalence of anaemia and associated risk factors among pregnant women attending antenatal care in Gulu and Hoima Regional Hospitals in Uganda: A cross sectional study. BMC pregnancy and childbirth, 16(1), 1-7.
30. Ayano, B., and Amentie, B. (2018). Assessment of prevalence and risk factors for anemia among pregnant mothers attending ANC clinic at Adama Hospital Medical Collage, Adama, Ethiopia, 2017. Journal of Gynecology and Obstetrics, 6(3), 31-39
31. Bansal, R., Bedi, M., Kaur, J., Kaur, K., Shergill, H. K., Khaira, H. K., and Suri, V. (2020). Prevalence and factors associated with anemia among pregnant women attending antenatal clinic. Adesh University Journal of Medical Sciences and Research, 2(1), 42-48.
32. Mihiretie H, Fufa M, Mitiku A, Bacha C, Getahun D. Magnitude of anaemia and associated factors among pregnant women attending antenatal care in Nekemte health centre, Nekemte, Ethiopia. J Med Microbiol Diagn 2015;4:3.
33. Weldemariam TB. Prevalence and factors associated with anemia among pregnant women attending antenatal care in Shallaworeda, Warsi zone, Oromia region. Int J Green Pharm 2018;12:253.
34. Vander Jagt DJ, Brock HS, Melah GS, EI-Nafaty AU, Crossey MJ, Glew RH. Nutrtional factors associated with anaemia in pregnant women in Northern Nigeria. J Health Popul Nutr 2007;25:75-81.
35. Okube OT, Mirie W, Odhiambo E, Sabina W, Habtu M. Prevalence and factors associated with anaemia among pregnant women attending antenatal clinic in the second and third trimesters at Pumwani maternity hospital, Kenya. J Obstet Gynecol 2016;6:16-27.
36. Singh K, Fong Y, Arulkumaran S. Anaemia in pregnancy a cross-sectional study in Singapore. Eur J Clin Nutr 1998;52:65.
37. Javed MT, Abbas N, Hussain R, Zahoor T. A study on iron deficiency anaemia and hematological differences around delivery in women of different socio-economic and age groups. Med J Islam Acad Sci 2001;14:151-60
38. Abdulridha, Areej Sabah. "Prevalence and Risk Factors of Anemia in Pregnant Women in Wasit Province, Iraq." Annals of the Romanian Society for Cell Biology 25.6 (2021): 20298-20307
39. . Ezugwu, E. C., Mbah, B. O., Chigbu, C. O., and Onah, H. E. (2013). Anaemia in pregnancy: A public health problem in Enugu, South-east Nigeria. Journal of Obstetrics and Gynaecology, 33(5), 451-454.
40. Alflah,Y.M., Wahdan,I,H., Hasab,A.A.& Taye,D.I., Prevalence and Determinants of Anemia in Pregnancy, Sana'a, Yemen, International Journal of Public Health Science, 2017; 6 (3): 213-220.

41. 11. Dexiong Zhao , Cuicui Zhang, et al. Risk factors for ID and IDA in pregnant women from plateau region and their impact on pregnancy outcome. Am J Transl Res 2022;14(6):4146-4153 .
42. 13. Enrera, J.A., AlHassan, A.E.& Al-Shammary, A.R., Iron Deficiency Anemia among Pregnant Women in Hail Kingdom of Saudi Arabia, IOSR Journal of Nursing and Health Science , 2015; 4 (2): PP 74-80
43. Al-Shawi, A. R. J. (2019). The incidence and types of anemia in pregnant women in Diyala province Iraq. AL-yarmouk Journall, 11(1), 13-19.
44. Lebso, M., Anato, A., and Loha, E. (2017). Prevalence of anemia and associated factors among pregnant women in Southern Ethiopia: A community based cross-sectional study. PloS one, 12(12), e0188783.
45. Viveki, R. G., Halappanavar, A. B., Viveki, P. R., Halki, S. B., Maled, V. S., and Deshpande, P. S. (2012). Prevalence of anaemia and its epidemiological determinants in pregnant women. Al Ameen J Med Sci, 5(3), 216-23.
46. Viveki, R. G., Halappanavar, A. B., Viveki, P. R., Halki, S. B., Maled, V. S., and Deshpande, P. S. (2012). Prevalence of anaemia and its epidemiological determinants in pregnant women. Al Ameen J Med Sci, 5(3), 216-23.

Appendix



مدى انتشار فقر الدم عند النساء الحوامل

- اسم المريضة : .....
- العمر :-

20 ☐ 21-29 ☐ 30-34 ☐ 35-39 ☐

- عمر الحمل:-

4-12 اسبوع ☐ 12-28 اسبوع ☐ 28-36اسبوع ☐ 36-الولادة ☐

- (HB level) :- ☐
- (S.Iron) :- ☐
- (S.Firritin) :- ☐
- هل تعانين من فقر الدم قبل الحمل :- نعم ☐ لا ☐
- هل لديك امراض:- امراض كلى ☐ حساسية ☐ حنطة ☐ التهابات ☐ القولون المزمنة ☐
- هل لديك نزف شديد في الولادت السابقة :- نعم ☐ لا ☐
- هل تتبعين نظام غذائي نباتي فقط :- نعم ☐ لا ☐
- هل لديك امراض فقر الدم الوراثية :-

ثلاسيميا(فقر دم البحر المتوسط) ☐ فقر الدم المنجلي ☐ لا يوجد ☐

- عدد الاطفال :-

لا يوجد ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 او اكثر ☐

- المستوى التعليمي:-

بدون ☐ ابتدائي ☐ المتوسط ☐ الثانوي ☐ عالي ☐

- المستوى المعيشي :-

قليل ☐ متوسط ☐ عالي ☐

- الوظيفة :-

ربة بيت ☐ موظفة ☐

- الاقامة :-

الريف ☐ المدينة ☐