Prevalence of Anaemia During Pregnancy and its Impact on Maternal and Foetal Outcome

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ABSTRACT:
Anaemia in pregnancy is a big concern for mothers and babies. This research looks into how common anaemia in expectant mothers and how it affects both mother and the baby. Anaemia can lead to problems like a mother feeling exhausted and having a feebler immune system. It can also cause premature delivery or low birth weight. Observing anaemia as a serious public health problem during pregnancy, this research stresses the need for specific actions to reduce frequency of episodes and make sure both mother and baby stay healthy.

This study focuses on prevalence of anaemia during pregnancy through a survey and corelation with maternal and foetal outcomes.

Introduction

Blood is another important thing in the human body as like other organs, blood is an important part of the human body. As per the Opinion of Glenn and Armstrong, (2019), it is identified that there are four ingredients in blood: plasma, red blood cell (RBC), white blood cell (WBC) and platelets. In those ingredients RBC plays a crucial role by supplying oxygen to body tissues (Mohanto *et al.* 2023). In some conditions when blood don't have healthy RBC, this unnatural situation is called Anaemia. According to Wicinski *et al.* (2020) Anaemia has different patterns: Anaemia due to less vitamin B12, less folic acid, iron deficiency, due to chronic disease. Beside that there are other patterns of anaemia such as Haemolytic anaemia, idiopathic aplastic anaemia, Megaloblastic anaemia, pernicious anaemia, sickle cell anaemia, thalassemia (Gallagher, 2022). In India it is found that women suffer from the deficiency of protein, vitamin c and iron which is the main reason for anaemia. It is also observed that anaemia is mostly seen among the poor women and among those women who are not health conscious. Sometimes anaemia is not only the cause of deficiency of nutrition but also sometimes its generic factor, such as hemoglobinopathies. As per the survey of WHO it is observed that in India the anaemia is due to iron deficiency.
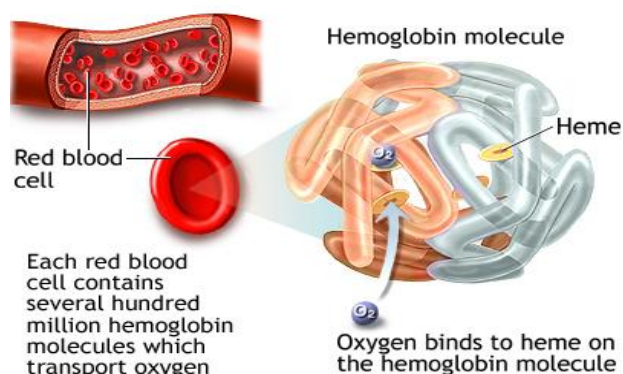
Figure 1: Oxygen supply in Blood
(Source: Gersten, 2022)

Literature Review

In this research it is identified that anaemia during pregnancy is an independent variable of this topic and its impact on maternal and foetal outcome is dependent variable. According to Minakshi *et al*. (2023), as per the survey of National Family health Survey 5 (NFHS-5) in 2019-2021 it is identified that 25% men between the age group of 1-49 years and 57% women between the age group of 15-49 years are affected due to anaemia in India. In the eyes of Cappellini *et al*. (2020), most women are affected due to iron deficiency. It is found that 40% children are affected by anaemia in the age group of 6 to 59 months. At the time of pregnancy 37% of women are suffering from anaemia and 30% of women are suffering from anaemia in the age group of

15 to 49 years. During pregnancy the Red blood cell (RBC) not only supplies the oxygen to tissues but also it supplies oxygen to the baby. During pregnancy an anaemic woman suffers from fatigue, weakness, Dizziness and light headedness, headache, pale and yellowish skin, and shortness of breath. Also Cold hands and feet and rapid heartbeat are observed in this disease. Premature birth is one of the vast effects of anaemia in mothers. Due to the iron deficiency anaemia the weight of the new born baby is very poor than the normal weight. Thalassemia is one of the patterns of anaemia. In this case if the mother is suffering from this anaemia then there is a 90% chance that the baby will carry the pattern as minor thalassemia. It fully follows the genetic chain in the future.
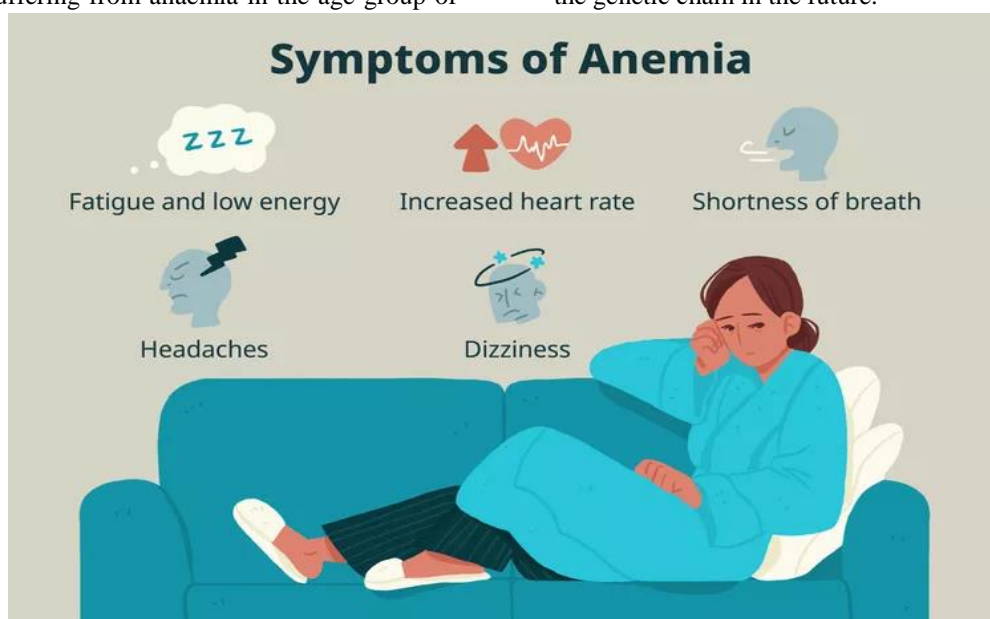

Figure 2: Symptoms of Anaemia
(Source: Moawad, 2023)

Methodology

Research philosophy

Positivism research philosophy highlights visible and measurable data and information to uncover the matter and connections. It utilises tools such as checking haemoglobin levels for identifying and diagnostic anaemia and it evaluates pregnancy factors through parameters like birth weight and gestational age. This philosophy breaks down the complicated issues of anaemia and its effects into smaller easier to control facts such as lack of iron and certain patterns of pregnancy problems.

Research approach

This research is based on communicating with pregnant women who have been diagnosed with anaemia, asking them about their experiences with symptoms, diagnosis, treatment and its effects during, journey and pregnancy outcomes.

Research design

Sampling

This research utilises the primary quantitative analysis pattern which contains 51 participants. The participants belong from the major state of Maharashtra. Samples are based on different age groups of women who are suffering from this iron deficiency anaemia.

Result

This research is a collaboration of 51 women from different age groups and from different educational qualifications who are diagnosed with anaemia. It is found that within 51 participants 45.10% patients are suffering from iron deficiency. 15.69% patients are suffering from vitamin B12 deficiency anaemia and 11.76% of patients are suffering from Sickle Cell anaemia. Also it is found that 15.69% participants had thalassemia and 11.76% are suffering from Haemolytic Anaemia. This proves that the majority of the reported cases are Iron deficiency anaemia.
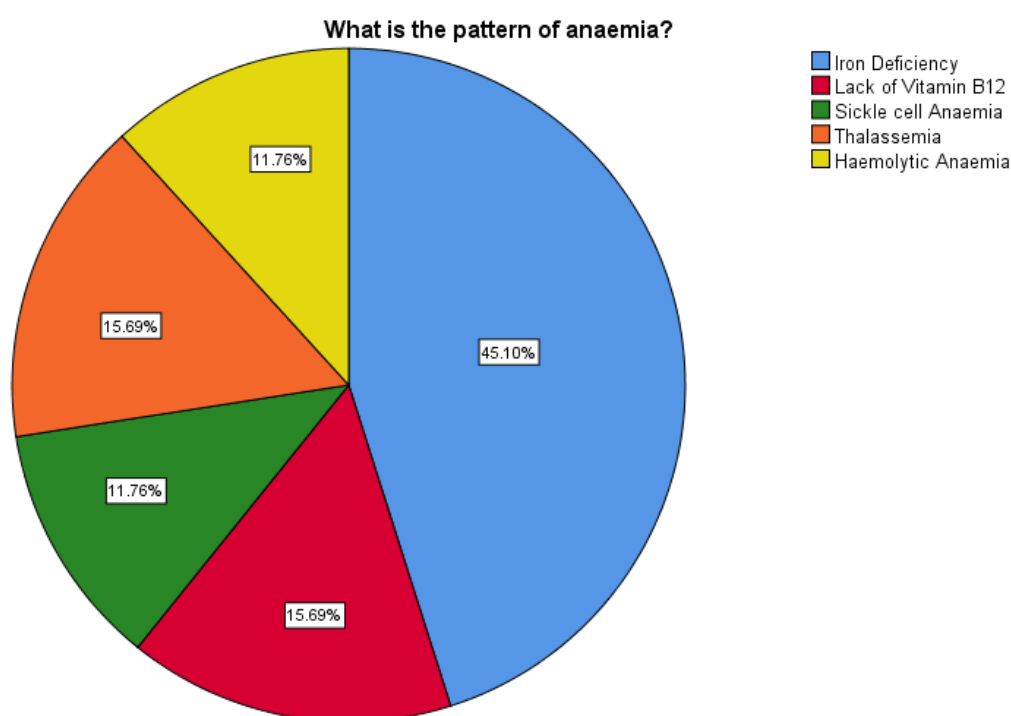

Figure 3: pattern of anaemia of patients
(Source: developed by SPSS)

Statistics

		What is the age group of women?	What is the education qualification of women?	What is the pattern of anaemia?	Anaemia during pregnancy is crucial health concern. Agree or Disagree?	Lack of nutrition and lack of health d knowledge are the main reason of Anaemia. Agree or Disagree?	Government and health organisation should take initiatives to reduce Anaemia. Agree or Disagree?	Anaemia is the only reason of premature birth and low weight of new born. Agree Or Disagree?	Anaemia left a large impact on maternal and fetal outcome Agree or Disagree?
N	Valid	51	51	51	51	51	51	51	51
	Missing	0	0	0	0	0	0	0	0
Mean		2.98	3.20	2.33	2.84	2.80	2.53	3.31	2.41
Std. Error of Mean		.193	.184	.207	.225	.208	.214	.191	.210
Median		3.00	3.00	2.00	3.00	2.00	2.00	4.00	2.00
Mode		2	4	1	1	2	1	4	1
Std. Deviation		1.378	1.312	1.479	1.605	1.484	1.528	1.364	1.499
Variance		1.900	1.721	2.187	2.575	2.201	2.334	1.860	2.247
Skewness		.036	-.267	.629	.145	.313	.537	-.452	.585
Std. Error of Skewness		.333	.333	.333	.333	.333	.333	.333	.333
Kurtosis		-1.244	-1.035	-1.118	-1.607	-1.321	-1.253	-.973	-1.182
Std. Error of Kurtosis		.656	.656	.656	.656	.656	.656	.656	.656
Range		4	4	4	4	4	4	4	4
Minimum		1	1	1	1	1	1	1	1
Maximum		5	5	5	5	5	5	5	5
Sum		152	163	119	145	143	129	169	123

Figure 4: Frequency statistics
(Source: developed by SPSS)

In the first survey statement it is found that overall 49.02% of patients agree that Anaemia is a crucial factor during pregnancy. In the same case 9.80% participants voted for neutral and 41.18% participated disagree with the statement. In the second survey statement it is observed that 50.98% agree that lack of nutrition and health consciousness is the main reason for anaemia. Besides that it is found that on the same survey statement 15.69% participants go for a neutral response and 33.33% participants disagree in this statement.
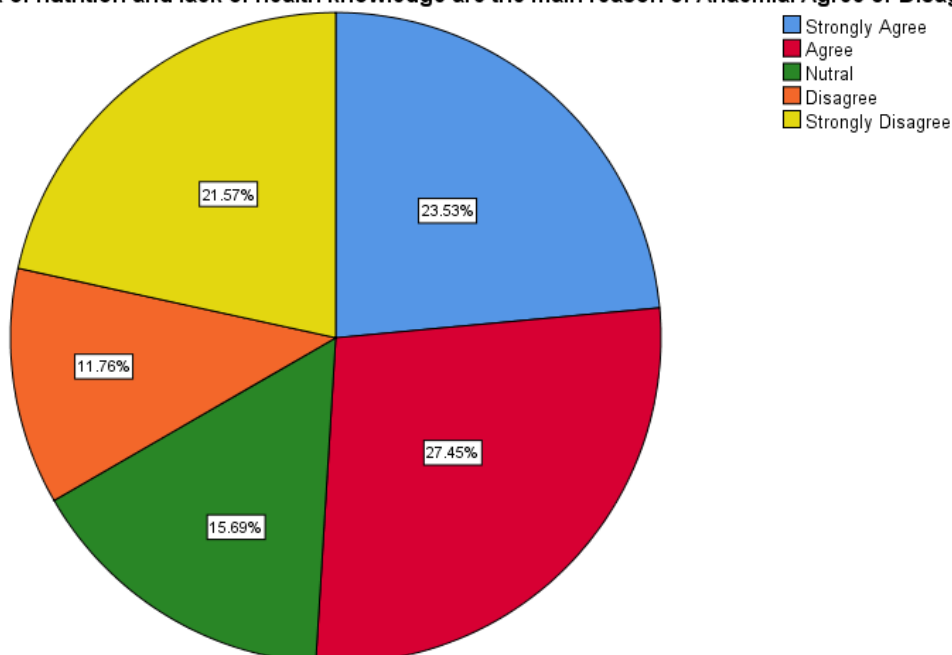

Figure 5: Reason for anaemia
(Source: developed by SPSS)

On the third statement "Government and health organisations should take initiatives to reduce anaemia" it is observed that 60.78% agree with this factor and 7.84% participate neutral in this case. Besides that it also identified that 31.38% participate disagree with this government initiatives. In this survey on the 4th statement "Anaemia is the only reason for premature birth and low weight of new-born" it is found that 27.45% participants agree with this statement which is very normal and 19.61% respond as neutral and the majority 52.94% disagree in this matter.
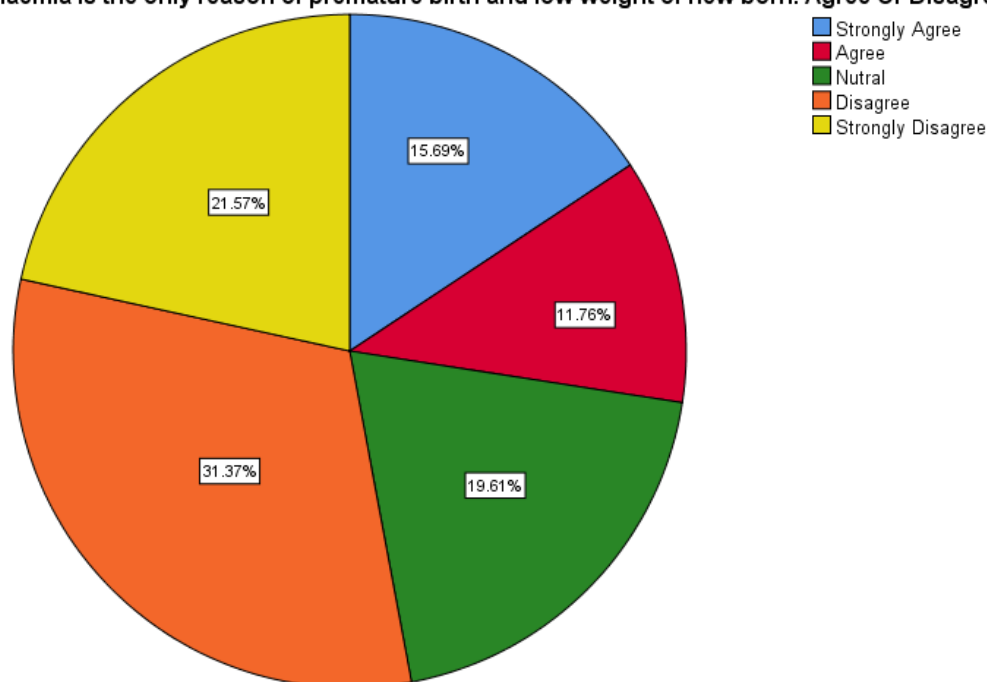

Figure 6: Reason for premature birth and low weight of new born
(Source: developed by SPSS)

In the last statement it is identified that 60.79% participants agree with the factor that anaemia left a large impact on maternal and foetal outcome. Also on the same factor 9.80% voted for a neutral response and 29.42% participants did not agree with this factor. In this survey it is found that the maximum mean value is 3, 31 and the minimum mean value is 2.33.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.979ᵃ	.959	.955	.318	.959	265.737	4	46	.000

a. Predictors: (Constant), Anaemia is the only reason of premature birth and low weight of new born. Agree Or Disagree?, Government and health organisation should take initiatives to reduce Anaemia. Agree or Disagree?, Anaemia during pregnancy is crucial health concern. Agree or Disagree?, Lack of nutrition and lack of health d knowledge are the main reason of Anaemia. Agree or Disagree?

Figure 7: Model Summary
(Source: developed by SPSS)

In this model summary the value of R Square is .959 and the value of R is .979a. Also the value of R Square change is .959 and the value of df1 is 4, df2 is 46.

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	107.692	4	26.923	265.737	.000^b
	Residual	4.660	46	.101		
	Total	112.353	50			

a. Dependent Variable: Anaemia left a large impact on maternal and fetal outcome Agree or Disagree?

b. Predictors: (Constant), Anaemia is the only reason of premature birth and low weight of new born. Agree Or Disagree?, Government and health organisation should take initiatives to reduce Anaemia. Agree or Disagree?, Anaemia during pregnancy is crucial health concern. Agree or Disagree?, Lack of nutrition and lack of health knowledge are the main reason of Anaemia. Agree or Disagree?

Figure 8: ANOVA
(Source: developed by SPSS)

In this Anova model it is found that on the research topic there are two variables one is dependent variable and another is independent variable. The dependent variable is maternal and fetal health and independent variable is anaemia. Because the health of pregnant women and the fetal is fully depend on the pattern and situation of anaemia. The sum squares value regression is 107.692 and the value of residual 4.660 and the value of F is 265.737.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.990	.990	8

Figure 9: Value of Cronbach Alpha
(Source: developed by SPSS)

The value of Cronbach alpha is .990 which state that the research is correct and the data are also justified. The research is authentic and it is proof that anaemia left a vast effect in women life especially for pregnant and fetal.

Discussion

Anaemia is a physical problem which has no connection with caste and religion. It is true that the women living below the poverty line are suffering from anaemia mostly. By this survey it is identified that people are concerned about anaemia and they agree that this is the crucial factor during pregnancy and lack of nutrition and lack of health and knowledge are the main reasons for Anaemia. Besides that, it is also observed that people want the government and health organisations to take initiatives to reduce the risk from Anaemia. At the end it is found that anaemia left a large impact on maternal and fetal outcomes.

Conclusion

Anaemia during pregnancy is a big worry because it can cause problems for both the mother and the baby. It goes beyond just the mother feeling tired which can

affect how the baby grows and stays healthy. When a mother does not have enough red blood cells or haemoglobin it can lead to issues during pregnancy. The mother might feel really tired, get sick more easily and have trouble during childbirth. Also the baby might not get enough oxygen which can make bit grow poorly and weight less when born, causing other health problems.

Reference List

1. Cappellini, M.D., Musallam, K.M. and Taher, A.T., 2020. Iron deficiency anaemia revisited. *Journal of internal medicine*, *287*(2), pp.153-170. https://onlinelibrary.wiley.com/doi/abs/10.1111/joim.13004

2. Gallagher, P.G., 2022. Anemia in the pediatric patient. *Blood, The Journal of the American Society of Hematology*, *140*(6), pp.571-593. https://ashpublications.org/blood/article-abstract/140/6/571/484178

3. Gersten, T. (2022). Anemia - Symptoms and Causes. [online] www.pennmedicine.org. Available at: https://www.pennmedicine.org/for-patients-and-visitors/patient-information/conditions-treated-a-to-z/anemia.

4. Glenn, A. and Armstrong, C.E., 2019. Physiology of red and white blood cells. *Anaesthesia & Intensive Care Medicine*, *20*(3), pp.170-174. https://www.sciencedirect.com/science/article/pii/S1472029919300013

5. Kulkarni, B., Augustine, L.F., Pullakhandam, R., Pradhan, A.S., Dasi, T., Palika, R., Banjara, S.K. and Sachdev, H.S., 2021. 'Screen and Treat for Anaemia Reduction (STAR)'strategy: study protocol of a cluster randomised trial in rural Telangana, India. *BMJ Open*, *11*(12), p.e052238. https://bmjopen.bmj.com/content/11/12/e052238.abstract

6. Minakshi, A.K., Mohan, C., Kumar, K., Dakua, S., Kumar, S. and Rani, D., 2023. Prevalence Of Anaemia In India: A Review. *Korean Journal of Physiology and Pharmacology*, *27*(3), pp.481-486. http://kjppor.com/index.php/kjpp/article/view/315

7. Moawad, H. (2023). What to Know About Anemia Symptoms. [online] Verywell Health. Available at: https://www.verywellhealth.com/anemia-7495917.

8. Mohanto, N., Park, Y.J. and Jee, J.P., 2023. Current perspectives of artificial oxygen carriers as red blood cell substitutes: a review of old to cutting-edge technologies using in vitro and in vivo assessments. *Journal of Pharmaceutical Investigation*, *53*(1), pp.153-190. https://link.springer.com/article/10.1007/s40005-022-00590-y

9. Wiciński, M., Liczner, G., Cadelski, K., Kołnierzak, T., Nowaczewska, M. and Malinowski, B., 2020. Anemia of chronic diseases: wider diagnostics—better treatment?. *Nutrients*, *12*(6), p.1784. https://www.mdpi.com/2072-6643/12/6/1784