

The Invisible Threat: The Problem of Anemia among Punjabi Women

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"Anemia is a condition in which the number and size of red blood cells, or the hemoglobin concentration, falls below an established cut-off value, consequently impairing the capacity of the blood to transport oxygen around the body" (WHO, 2011). Anemia is one of the main health concerns in India; however, it is often overlooked by people. There are numerous factors accountable for anemia; however, dietary inadequacy is regarded as one of the main determinants of anemia. However, in the socio-cultural milieu like India there is a strong association between anemia and socio-cultural and socio-economic factors. The paper examines the prevalence of anemia among girls and women in the state of Punjab as anemia burden in Punjab is alarmingly high. The paper also analyses the impact of anemia on well-being of the respondents. Lastly, it provides recommendations to the state government for anemia management.

Keywords: anemia, impact, hemoglobin, women, Punjab.

"Khoon di kami hundi hi hai us layi dawai kyu khani?"

(Low hemoglobin levels are normal. Why to take medicines for the same?)

(41 year-old woman, Fazilka).

*"Eh ta aam gal hai, ladies wich ta menses karke eh normal hai. 8 g/dl gm/...
tak ta normal hai"*

(Anemia is common, why to take medicine for this? This is normal among women due to menstruation. 8 g/dl/gm of blood is normal.)

(18 year-old girl, Taran Taran).

The above narratives reflect a lack of awareness and importance among women regarding anemia. Although in India, anemia is one of the main health concerns however, it is often overlooked by people. Anemia is not considered significant until an emergency arises. There are copious factors accountable for anemia. However, dietary

deficiency, particularly of food lack in folic acid, is a major reason for anemia. Anemia has an overwhelming effect on a person's health. Yet, many are not aware, and those who are aware do not consider anemia to be serious or a matter of concern. Symptoms of anemia may not show up in an otherwise healthy person until the hemoglobin drops below ten g/dl.

Anemia also increases perinatal risks for both mothers and neonatal health. According to the Indian Council of Medical Research, a normal Indian vegetarian diet is low in iron; it merely contains 18-22 mg. of iron (ICMR, 1989). Therefore, people need to pay attention to their dietary patterns, which people, especially women in India, often overlook. "WHO estimates that worldwide thirty-seven per cent of pregnant women, thirty per cent of non-pregnant women and 269 million children in 6-59 months of age, are anemic worldwide" (WHO, 2023). Severe pervasiveness of anemia can be observed in India, Pakistan, Nepal, Bangladesh, Malawi, Nigeria etc. Therefore, it is vital to understand the causes and pervasiveness of anemia. The available data also reflect the most significant burden of anemia had been borne by women especially from the low- and lower-middle class, impacting the access and availability of resources. The paper examines the prevalence of anemia among girls and women in the state of Punjab as anemia burden in Punjab is alarmingly high.

Prevalence of Anemia in India

The data reflects that within India, there is wide prevalence of anemia among women across states. The data reflects that states, including Mizoram, Manipur, Nagaland, Sikkim, Goa and Kerala, are the best-performing regions. On the other hand, data reflects that the eastern and northern states, such as Jharkhand, Bihar, Haryana, and Punjab, are some of the worst-performing states. The National Family Health Surveyⁱ 5 (2019-21), data reflects anemia among men is 25 per cent in the age group 15-49 years. It almost doubled when it comes to women i.e., 57 per cent in the age group 15-49 years. 31.1 per cent of adolescent boys and 59.1 per cent of adolescent girls are anemic. (NFHS 5, as cited in Times of India).

Table 1
Anemia among Children and Adults over the Years (India)

Anemia among Children and Adults	Urban	Rural	NFHS 5	NFHS 4	NFHS 3	NFHS 2
Children who are anemic aged 6-59 months (< 11.0 g/d)	64.2	68.3	67.1	58.6	78.9	74.3
Pregnant women aged 15-49 years who are anemic (< 11.0 g/d)	45.7	54.3	52.2	50.4	57.9	49.7
Women aged 15-49 years who are anemic	53.8	58.5	57.0	53.1	-	-
Women aged 15-19 years who are anemic	56.5	60.2	59.1	54.1	-	-
Men aged 15-49 years who are anemic (<13.0 g/d)	20.4	27.4	25.0	22.7	-	-

Source: NFHS over the years.

The NFHS data over the years on anemia reflect that it has been high among children in the age group 6-59 months and adolescent girls. Before NFHS—4, the age-wise detailed data on anemia among males was not collated. However, the data reflect that even among males, anemia persists. Furthermore, data reflects rural and urban differences when it comes to anemia. It is evident from the data that the percentage of anemia in rural areas is relatively higher than in urban areas. It is evident from the table 1 that 54.3 per cent of pregnant women from rural areas are found to be anemic in the age group 15-49. Indeed, anemia among pregnant women has improved; however, some states need attention due to its geographical and socio-cultural setting. Among females, there was a five per cent increase from 54.1 per cent to 59.1 per cent. Many factors contribute to the increased number of anemia cases, such as poverty, insufficient diet, certain diseases, pregnancy/lactation, and poor evaluation of health services.

Other factors contribute to anemia, such as nutritional deficiency and infections. It is further exacerbated due to poor dietary status, particularly due to deficiencies in vitamin C, folic acid, and B12. However, one of the important factors that contribute to anemia among

women in our society is socio-cultural norms, as women are discriminated thus, receive insufficient nutrition since childhood. The data also reflect that there are a high percentage of women in the age group 15-19 who are anemic. The table reflects that 59.1 per cent of girls are anemic. However, the percentage of severe anemia is high among the 40-49 years of age group. Undoubtedly, in the adolescent stage, girls lose blood; consequently, the requirement for iron intake increases. However, the requirement for iron is not met due to lack of awareness and discrimination against the girl children.

The Invisible Threat: Impact of Anemia on Physical and Mental Well-Being

Anemia is one of the main public health challenges that have a continuing impact on children and women's health. A secondary data analysis was conducted using DHS data from ten eastern African countries. The findings revealed a 34.85 per cent prevalence of anemia in eastern Africa, ranging from 19.23 per cent in Rwanda to 53.98 per cent in Mozambique (Teshale et al., 2020).

The study conducted by Harding (2017) examined individual and household-level reasons for anemia among children and women in Nepal and Pakistan. It was found that the pervasiveness of anemia was significantly higher among women from impoverished households in Pakistan. Another study was conducted by Chakrabarty et al. (2023) to capture the change in the incidences of anemia among adolescent girls in India. Analysis reflected an increasing trend from 54.2 per cent to 58.9 per cent in anemia. Among the twenty-eight Indian states, twenty-one reported an increase in the pervasiveness of anemia. On the other hand, a marginal increase in the incidences of anemia was found among the states of Karnataka, Punjab, Bihar, Telangana, and Madhya Pradesh. A study conducted by the Rai. et al. (2023) indicated that most of the women considered anemia as a lack of importance or severity as compared to other illnesses that women experience. The majority of the women did report "*weakness*" to be a common problem but were unable to associate this with the anemia of pregnant and lactating females and children (Zhou, 2024).

Objectives of the Study

1. To elicit the impact of anemia on women and girl children in the state of Punjab.
2. To put forth suggestions to the state government for anemia management.

Research Methodology

Three districts, i.e., Jalandhar, Fazilka and TaranTaran, with the highest prevalence of anemia among women aged 15-49 from the three divisions, have been selected for the present study (see Table 2).

Table 2
District Wise Distribution of All Women Aged 15-49 Years
who are Anemic (%)

District	All women age 15-49 years who are anemic (%)	Region
Amritsar	52.1	Majha
Barnala	55.2	Malwa
Bathinda	59.7	Malwa
Faridkot	63.2	Malwa
Fatehgarh Sahib	65.1	Malwa
Fazilka	66.9	Malwa
Ferozepur	61.5	Malwa
Gurdaspur	55.2	Majha
Hoshiarpur	54.1	Doaba
Jalandhar	57.0	Doaba
Kapurthala	54.5	Doaba
Ludhiana	64.3	Malwa
Mansa	60.4	Malwa
Moga	54.4	Malwa
Muktsar	61.0	Malwa
Pathankot	55.0	Majha
Patiala	65.3	Malwa
Rupnagar	64.5	Malwa
Sahibzada Ajit Singh Nagar	59.5	Malwa
Sangrur	52.6	Malwa
SBS Nagar	49.8	Doaba
Tarn Taran	61.7	Majha

Source: DLHS -5.

Initially, two villages with a high sex ratio were selected from the three districts. However, the pilot study findings reflected difficulties in getting a sufficient sample due to a low number of anemic women in the initially selected villages. Therefore, a few ANMs (Auxiliary Nursing Midwifery) in each district were approached, and they provided names of villages that have a high number of anemic women and girls. Therefore, via using purposive sampling, which enables the researcher to focus on villages with a higher likelihood of finding, women, adolescent girls, and girl children were selected to understand the impact of anemia on their health and daily lives.

The tools for data collection are as follows:

- Semi-structured schedules for respondents and functionaries, including staff members and government officials.
- In-depth interviews and FGDs with mothers, males, and elderly women.

Table 3
Sample Size

S.no.	Respondents	Tools of data collection	Number of Interviews	Total No. of Respondents
1	Anemic pregnant and women who delivered a child in the last few years	Semi- structured Schedule/ In-depth interview	60	60
2	Adolescent girls	Semi-structured Schedule/ In-depth interview	60	60
3	Girl child (School going girls (aged 8-11))	Semi- structured Schedule/in-depth interview	60	60
3	ASHA/ ANMs	Semi-structured Schedule/ In-depth interview	Each selected village	Each selected village

Unveiling the Impact of Anemia on Women's Life in Punjab

In the Indian setup, religion and caste of individuals play a significant role in determining the life of the people. Table 4 indicates that most of the respondents, i.e., 60.7 per cent, were Sikhs, followed by 33.8 per cent of Hindu respondents. Along with religion, caste also plays an inimitable position in the Indian social structure. Indian society is hierarchically divided based on caste. The present analysis broadly classified castes into four categories: general castes, scheduled castes, other backward castes, and scheduled tribes. Thirty-five per cent of the respondents were from the general caste, while fifty-six per cent belonged to scheduled castes and merely nine per cent to other backward castes.

Table 4
Socio-Economic Status of Respondents

Religion of the surveyed households	Percentage distribution of the households
Hindu	33.8%
Muslim	5%
Sikh	60.7%
Christian	0.5%
Social group of the surveyed households	
General	35%
OBC	9%
SC	56%
Type of Family	
Joint	35%
Nuclear	63%
Extended	2%
Education of the head of the household	
No formal education	8%
Up to primary	10%
Middle	50%
Secondary	14%
Senior secondary	8%
Graduation	9%
Post-graduation	1%

Source: IDC Field survey, 2024.

The table indicates that eight per cent had no formal education, while fifty per cent of the respondents have completed a middle level of education. Merely one per cent of respondents have completed their post-graduation.

Impact of Anemia on the Health of Women and Children

Anemia among women of reproductive age is a global public health challenge and affects women and girls in many ways. Multifarious reasons have been associated with anemia, such as pregnancy-related complications, reduction of iron stores, and blood loss (due to monthly bleeding) (Safiri et al., 2021).

Table 5
Hemoglobin of the Respondents

Adolescent and Girl Child		Below (7 g/dl)	(7-10 g / dl)	10g/dl-11g/dl	Total
	Jalandhar	1	26	3	30
	Fazilka	12	19	3	34
	Taranraran	7	30	11	48
Total		20	75	17	112
Women					
	Jalandhar	0	10	6	16
	Taranraran	0	20	2	22
	Fazilka	1	25	4	30
Total		1	55	12	68

Source: IDC Fieldwork, 2024.

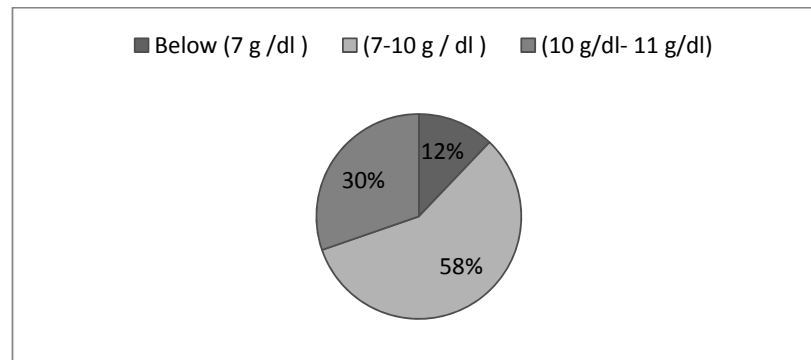
It is evident from the table that adolescent and girl children are at risk of developing anemia. Data reflects that nearly twenty girls are anemic with hemoglobin below seven g/dl, which is a profound concern. Seventy-five of the girls have anemia with 7-10 g/dl. Fifty-five of the women were found to be anemic with 7-10 g/dl hemoglobin. Merely one of the respondents was severely anemic among women. Pregnant women were also interviewed, and it was found that most of the anemic women were tracked by the health workers. They were given folic acid tablets and advised to take a good diet. Therefore, they might

understand the relevance of anemia and take care of their diet. During focused group discussions, it was observed that only when the symptoms are severe, medical help is sought by the respondents.

Anemia in Women and Adolescent Girls of Reproductive Age

To understand the impact of anemia, adolescent girls and women of reproductive age have been taken, and questions related to menstruation and pregnancy were asked from the respondents. Literature reflects that heavy menstrual bleeding can have a wrenching physical impact on women's bodies. It has been defined as "a total blood loss per menstrual cycle that regularly exceeds 80 mL" (Sriprasert et al., 2017 as cited in Mansour et al. 2021). Mild-to-moderate deficiency of iron can be asymptomatic. However, when the symptoms increase, it can lead to severe fatigue, weakness, shortness of breath and unconsciousness.

Figure 1
Hemoglobin of the Respondents



Source: IDC Fieldwork, 2024.

Twelve per cent of the respondents had hemoglobin less than seven g/dl, which is a matter of concern. Figure 1, reflects that 58 per cent of the respondents had hemoglobin ranging from 7-10 g/dl. Iron deficiency during pregnancy leads to various complications such as preterm birth, low birth weight, increased incidence of postpartum hemorrhage (PPH), etc. Along with that question related to menstruation was asked from women and adolescent girls. It was found that heavy bleeding during menstruation is considered problematic by the respondents. However,

they prefer home remedies and ayurvedic medicines rather than seeking medical intervention.

Figure 2
Present Pregnancy Status of Women

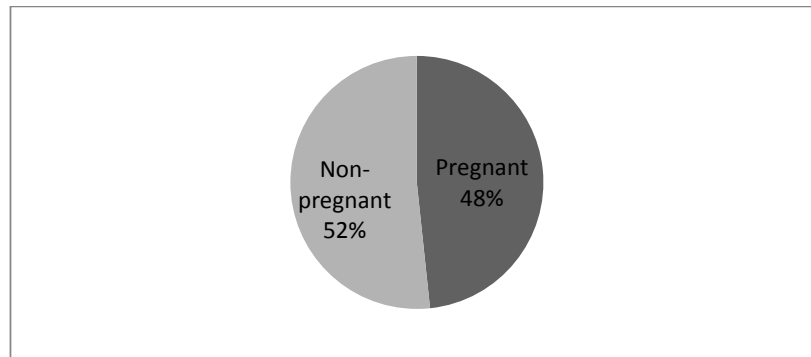
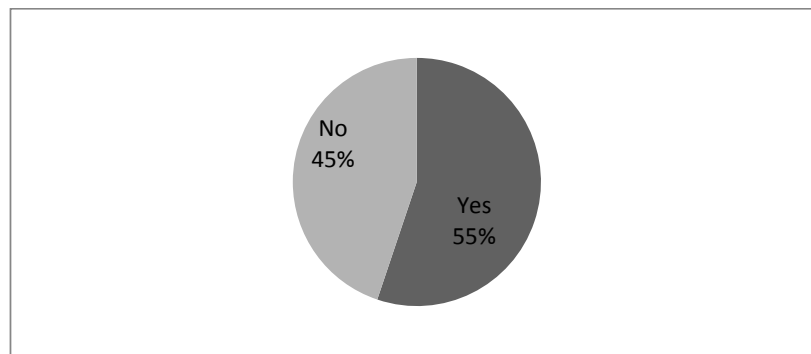


Figure 3
Anemic at the Time of Pregnancy



Source: IDC Fieldwork, 2024.

The figure shows that forty-eight per cent of the women were pregnant, and fifty-two per cent were non-pregnant (the majority of them delivered babies in the last few years). As discussed above, pregnant women are prone to anemia; it was found that fifty-five per cent of women were anemic during pregnancy. However, ANMsⁱⁱ (Auxiliary Nurses and Midwife) and ASHAⁱⁱⁱ (Accredited Social Health

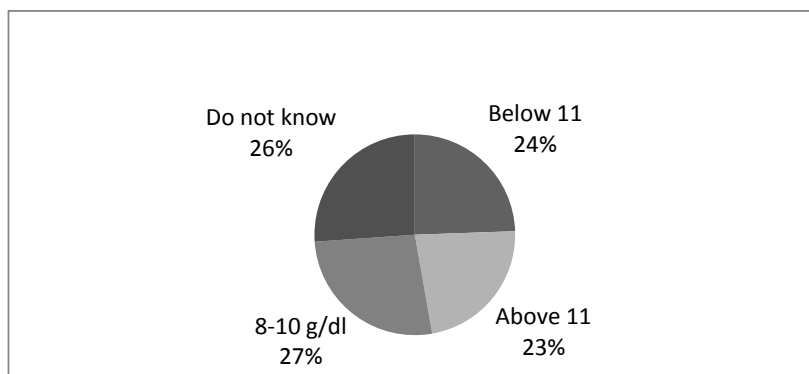
Activist) workers revealed that the majority of pregnant women come for ANC (Antenatal care) visits and take iron folic acid tablets; by 2nd visit, they would recover from anemia if they were taking pills on time. They also said we ensure they take tablets daily by motivating them and giving reminders. However, ANM (Auxiliary Nurse and Midwife) reported that a few migrant women do not take iron tablets as they do not understand the impact of anemia on maternal and child health. One of the health workers noted that in *one case, low anemia among one of the pregnant women led to preterm birth; thus, the baby had to be kept in the NICU incubator for about a month.*

Mothers and girls reported as, "*Chakar aaunde ne, kamzoor hai*" (we feel dizzy and weak), which the villagers considered normal. Medical help is sought by the villagers only when the symptoms are severe. Pregnant women, especially those who delivered babies in the last few years, said that things have changed now. Women understand the relevance of low hemoglobin levels, especially during pregnancy. One of the respondents said, "*Khoon di goli vare ta sab hi jande ne*" (everyone knows about folic acid tablets).

Awareness on the Causes of Anemia

Women don't know the medical term "anemia"; however, they realize it through symptoms like weakness and paleness. The respondents were asked questions related to normal hemoglobin levels, the main sources of iron, and the causes and impact of iron deficiency. The data reflects that twenty-six per cent of the respondents did not know appropriate hemoglobin levels. Fifty-one per cent of the respondents cited that below 11 g/dl as a normal hemoglobin level. However, twenty-three per cent of the respondents had the right knowledge about the average hemoglobin levels required among women.

Figure 4
Knowledge of the Average HB Level in Healthy Women/Girls



Source: IDC Field work, 2024.

Table 6
Causes of Anemia Perceived by Respondents

Causes of Anemia			
Causes	Women	AGs and Girls	Total percentage
Dietary deficiency	21	57	43 %
Infection	9	0	5%
Menstruation and pregnancy	23	35	32%
Don't know	7	28	20%
Total	60	120	100%

Source: IDC Field work, 2024

The most commonly reported causes of anemia cited by respondents were dietary deficiency and pregnancy, i.e., forty-three per cent and thirty-two per cent, respectively. Pregnant women were found to be more aware of the reasons for anemia than girls and non-pregnant women. When prompted, further women said they knew about the causes and symptoms of anemia as the ANMs (Auxiliary Nurse and Midwife) had explained it at the time of pregnancy. However, they were not able to give an exhaustive explanation of what diet is required or

how pregnancy could lead to anemia. One of them said, "*Pregnancy wich zayada khana hunda hai kyuki bache te maa nu lod hundi hai (During pregnancy, the needs of the body increase)*"; when asked what one should eat; she could not answer and further said ASHA (Accredited Social Health Activist) workers *Goli dende neh kami pura karan lai (ASHA workers give tablets to fulfill the bodily requirements)*.

The respondents identified poor diet as the leading cause of anemia in women (see Table 6), accounting for forty-three per cent (i.e. unbalanced diet), followed by menstruation and pregnancy, i.e., thirty-two per cent. It is also worth noting that more girls were oblivious to the causes of anemia than women, indicating a potential gap in knowledge that needs to be addressed.

The respondents gave varied responses regarding associated symptoms, although many women and girls did not know the a etiology of anemia. Forty-three per cent of the respondents said the main symptoms were tiredness and poor appetite. Thirty-eight per cent of respondents said they had no ideas about the symptoms of anemia. Women were more aware of the symptoms of anemia as compared to adolescent girls and girl children. On conducting a focused group discussion on knowledge regarding anemia, most of the respondents replied that a shortage of blood is anemia. However, few of the respondents, especially women, could describe anemia symptoms elaborately. On the contrary, girls could not cite the symptoms of anemia. Women were aware of taking IFA (Iron and folic acid) tablets for pregnant ladies and IFA (Iron and folic acid) syrup given to children in the community by ASHA (Accredited Social Health Activist) workers. Regarding signs and symptoms, respondents were aware that tiredness, pale eyelids, tongue, nails, and skin are symptoms of anemia.

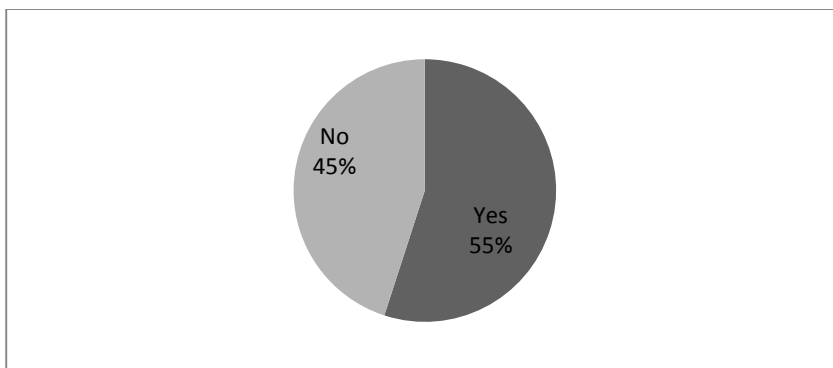
"Kamzoori rehndi hai, Kade kade chakkar vi aunde ne, Doctor nu dikhaya si kehde ha khoon di kami hai, goli khai me kuch time laye theek si fer khoon khat gaya. Goli da ki fayada hoya dasso? Doctor kol ta koi permanent ilaj nahi". (I feel weak, and my head keeps spinning. I consulted a doctor, and he told me it was due to low levels of blood, so she gave me medicine. I took it for a few months. Once I left the medicine, it reoccurred again. Tell me then what is the use of medicine?)

Impact of Anemia on Physical and Mental Well-Being

Anemia enormously affects our physical functioning and can impair work performance and productivity. Therefore, various questions were

posed to understand the impact of anemia on respondents. It was found that fifty-five per cent of the respondents were facing issues due to anemia however, forty-five per cent of the respondents said anemia put no impact on their physical well-being.

Figure 5
Impact of Anemia on Physical Well-Being



Source: IDC Fieldwork, 2024.

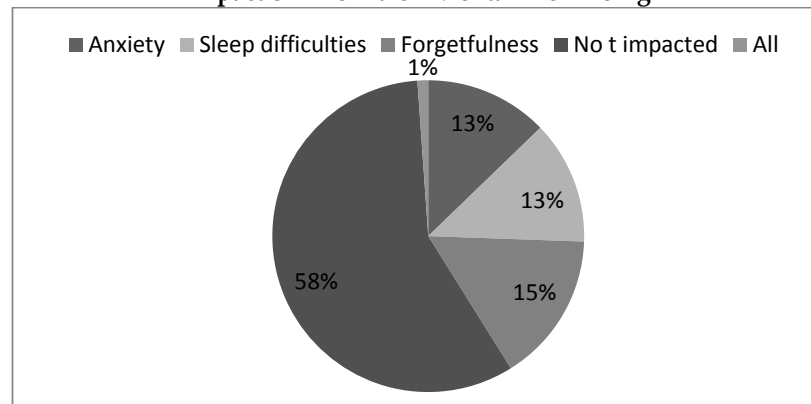
The impacts caused by anemia are both physical and psychological. Physical impact included decreased physical work, fatigue, increased morbidity and mortality. Among girl child and adolescent girls, it can cause decreased learning achievement and decreased endurance so they are susceptible to infectious diseases. Thus, an effort was made to understand how anemia impacted their physical well-being. The majority of the respondents mentioned that *they felt weak and prone to fatigue*. A few of them mentioned that *blurred vision, palpitation and fatigue* were other effects caused due to anemia. Only if the impact is severe they consider it as serious for instance, in case of fainting the person is taken to hospital.

Case 1: Amanjot, a twenty-year-old female from Jalandhar from the scheduled caste, elaborated on how anemia has impacted her life. Her hemoglobin is 7.5g/dl. She said, *"I am always exhausted, and my head keeps whirling. What should I do?"* She repeatedly experiences fatigue and lightheadedness. She said it made it difficult for her to engage in day-to-day activities. The symptoms of anemia strongly impacted her

physiological and social being. Unfortunately, accessing appropriate healthcare is not easy for her. However, she was taking medicines from the local quack whenever symptoms worsened. Proper medical treatment was not possible for her due to financial constraints. She said money is a problem. She further said I told my mother about my situation; she took me to the doctor. The doctor gave me a tonic. The tonic did not suit me, so I stopped taking it. Somebody told my mother about the red tablets given by ANM workers. I took these tablets for some time; however, I got constipation, and I left in the middle of the course. I am confused what to do?

Previous research studies reflect an association between anemia and psychological issues, mainly anxiety. Therefore, it is significant to understand the impact of anemia on women's and girls' psychological well-being. The data highlights that fifty-eight per cent of anemic respondents do not have any negative effect on their mental well-being. However, a handful of them said that anemia impacted their well-being in terms of forgetfulness and sleep difficulties. It is noteworthy to mention that during the focused group discussion, many of the female respondents said, "*Madam mental problem ware loki kuch nahi dasnge*" (Madam, people won't know anything about psychological issues). When probed further, they said a psychological issue in rural settings is regarded as madness. Therefore, they are reluctant to talk about the same as there is a shame coupled with mental illness.

Figure 6
Impact of Anemia on Mental Well-Being



Source: IDC Fieldwork, 2024.

Case 2: Reena was born and raised in Bihar, but her family migrated to Punjab when she was five years old. She is from a scheduled caste and attends a government school. Her hemoglobin level was found to be below seven g/dl. She said, "I feel very weak and tired." She said that once I got unconscious and was brought to the hospital. They gave me iron tonic, which I was supposed to take for a few weeks. I took it for a few weeks and left in between. During the interview, she was observed to have vague knowledge about anemia. She said: "*Ha mene suna hai ye khoon ki kami hota hai. yeh kyu hota hai kis liye ye nahi pata*" (I have heard about anemia, but what exactly it is and how it impacts our body. I do not about it). Reena's dietary habits reflect a strong preference for fast food. She also admits that she often opts for burgers outside of school and lacks an appetite for meals at home. When probed she said, "*Me school me nahi khati, school ke bahar burger khati hu, sham ko bhi khana khana aacha nahi lagta.*" (I do not eat at school; I eat burgers outside school. Even at home, I do not like to eat food). One can see how food choices and lack of access to healthcare impacted her health outcomes.

Out of 180 girls and women, merely thirty-five per cent had sought treatment for anemia. Most respondents took iron supplements and visited a health facility for treatment. Merely five of them said they are taking home remedies for anemia. During group discussion, it was observed that women were aware of IFA (Iron and folic acid) tablets and IFA (Iron and folic acid) syrup given to children in the community by ASHA (Accredited Social Health Activist) workers. However, they did not know much about anemia and the importance of IFA (Iron and folic acid) tablets/ syrups. This incomplete information can act as an impediment to anemia control strategies in the community.

It was found that anemia is considered a lack of importance as compared to other illness. However, a majority of women reported weakness as a common problem. Some women would be able to correlate weakness with anemia. A few of the women reported that anemia could become severe in some cases. Still, in general, women considered it quite "normal" to feel weak, mostly during pregnancy. Moreover, women assume that weakness is caused by physiological changes in their bodies during pregnancy.

Diet and Anemia

Participants were asked questions related to their diets and the frequency of food items such as cereals, green leafy vegetables, fruits, and non-vegetarian food.

Table 7
Dietary Consumption by the Respondents

Non- vegetarian Food	Never	Daily	Once in a week	Once in a month
Yes	108	-	52	20
Legumes				
Yes	-	171	9	-
Green Leafy Vegetables				
Yes	-	144	36	-
Citrus Fruits (Lime, Orange, Amla, Guava)				
Yes	-	154	26	-
Whole grains/Ragi/Jowar/Nuts/				
Yes	-	53	-	127
Tea				
Yes	-	168	-	12

Source: IDC Fieldwork, 2024.

The respondents reported eighty per cent (144) consumed green leafy vegetables but not daily. It is interesting to note that respondents who rarely have taken green leafy vegetables in their diet are found to be severely anemic. The same pattern was observed for rare or never consumption of fruits. Interestingly, the population under study showed a strong preference for tea, with it being the most consumed beverage compared to other options like coffee and fruit juice. The consumption pattern of whole grains was almost the same in all the age groups. Very few of the respondents said that they take non-vegetarians on a daily basis.

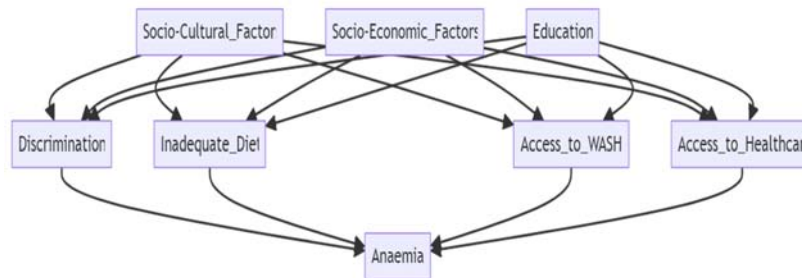
One of the most significant findings of the research is the role of caffeine in iron absorption. The polyphenols^{iv} found in tea and coffee, a major source of caffeine, were identified as significant inhibitors of iron

absorption. This finding is particularly concerning as most of the respondents who consumed tea or coffee 2-3 times a day with meals, potentially affecting their iron levels.

There are a lot of programs working towards eliminating anemia in India. The National Nutritional Anemia Prophylaxis Program, launched in 1970, to reduce incidences of anemia by providing iron and folate supplements to children under the age of five, pregnant women, and nursing mothers. In 2018, the Anemia Mukht Bharat (AMB) under the POSHAN Abhiyan was launched to reduce anemia prevalence among all age groups. Therefore, to see the effectiveness of these programs a few group discussions were held with the respondents and Anganwadi and ASHA workers. The Anganwadi Workers (AWWs) are crucial stakeholders who can effectively reduce cases of anemia. They have on-ground connectivity with the villagers. However, they are paid a very little honorarium for their work. Furthermore, a few of them face caste discrimination and untouchability, which can prevent them from working for the welfare of community members.

The government has started many programs to improve child health. For instance, a mid-day meal is given in school to children in government and government-aided schools in India as a part of the *PM-POSHAN* initiative, formerly known as the Mid-Day Meal Scheme, to enhance their nutritional levels and support their education. Conversely, the main sources of information among school-going girls were teachers and RBSK teams. It was reported that few adolescent girls and mothers had heard about anemia from television. However, many women, especially the migrated population, are still reluctant to take these services. Still, some women go for home delivery, although the number is low. The ASHA (Accredited Social Health Activist) worker said, "*Didi, ye jo Jharkhand se aati hai ye theeno antenatal checkup nahi lete, or na hi iron ki goli ka mahataav samjti hai, zayada padhe likhe nahi hoti hai tou samjte nahi hai goliyo ka mahataav*" (The one who comes from Jharkhand neither comes for antenatal checkups nor understand the relevance of antenatal check ups) The practice of institutional deliveries especially among illiterate and migrated population must be taken seriously.

Chart 1
Anemia: A Complicated Phenomenon



Anemia occurs due to number of reasons; however, in Indian setting, it doubled due to socio-cultural, factors. Socio-cultural norms often lead to bias against the girl child, which many a times make a remarkably impact on access to healthcare ultimately leading to anemia. Furthermore, limited access to education acts as a hurdle in understanding the repercussion of nutrition and health, aggravating the risk of anemia.

Recommendations and Suggestions

The study reflected that the preponderance of anemia is high among women in the state of Punjab. It was particularly concerning that adolescent girls were oblivious to the significance of taking iron supplements or the association between anemia and iron deficiency. The study also reflected gastric problems, stomach pain, and nausea as a deterrent for not taking iron tablets. The patient usually takes the pills for a few days; however, when discomfort arises, they stop taking the medication. Thus, they do not complete the course and leave medication before the HB improves. Therefore, merely distributing iron supplements is not enough. Right awareness of what, how and when to consume the tablets is also essential.

The specific areas that need immediate attention of the state government are stated below:

- a) **Special Focus on Women:** Women are at a higher risk of anemia as compared to males. Biological reasons increase the iron needs of women, particularly during the reproductive years. In the Indian

context, especially in rural areas, high numbers of pregnancies and small gap between pregnancies leads to an augmented risk of anemia. Respondents stated that IFA supplements are free and easily accessible from health workers for pregnant and lactating women and girls. However, some of the respondents reported that ASHAs (Accredited Social Health Activists) distribute IFA (Iron folic acid) tablets but do not provide enough information on why, when, and for how long they must take these tablets.

- b) **Need to Address Gender Bias:** Social-cultural norms and dietary restrictions on women, especially adolescent girls, also give a boost to anemia. It was found that girls were restricted to consume eggs, non-vegetarian and sometimes milk due to discrimination. Many mothers replied, "*Eh sab khaan naal kudiya chayti jawan ho jandia ne is lie una nu nahi dinde*" (Girls attain puberty early if she eat non vegetarian food). Therefore, increasing the value of daughters is essential to create more equitable access to food and health services, including intra-household food distribution and prenatal and pregnancy care services. Programmes must be developed to by engaging men and boys. Furthermore, '*nukkad natak*^{vi}' sensitization programmes increase gender equality must be organized to reduce gender bias, norms and practices surrounding menstruation, pregnancy and the postpartum period. It was observed that many food taboos are prevalent in rural settings; thus, programmes must be developed to exterminate these taboos.
- c) **Dietary Diversification:** Promoting the consumption of micro-nutrient-rich foods is essential to decrease the pervasiveness of anemia in Punjab. These foods are widely available, particularly in rural settings; nonetheless, they are not consumed by people due to a paucity of knowledge regarding the same. Henceforth, it is essential to incorporate it in campaigns where health workers must boost year-round production and consumption of such foods.
- d) **Awareness Regarding Deterrents in Iron Absorption:** Awareness regarding deterrents in iron absorption: Short cooking times and steaming rather than boiling will maintain various minerals and vitamins. Interestingly, the respondents had a strong preference for tea and consumed it more frequently compared to other options like fruit juice. The polyphenols found in tea and coffee acts as an inhibitor of iron absorption. Thus, it is important to make the people aware about the inhibitors of iron absorption.

- e) **Food Fortification:** Food fortification is another effective measure taken at the national and international levels to deal with the problem of anemia. For instance, mixing bajra and jowar^{vii} in wheat flour and using jaggery, raisins, and gram flour ladoos in mid-day meals/Anganwadi centers can help in reducing anemia.
- f) **Parasitic Infections and Anemia:** Malaria soil-transmitted infections are a few immediate causes of anemia. Owing to reduced immunity, pregnant women and children are notably vulnerable to malaria. The relationship between malaria and iron is complex, and interventions to manage iron deficiency anemia must also be considered. Therefore, measures must be taken to control the parasitic infections.
- g) **Situational Analysis:** NFHS and HMIS data on the pervasiveness of anemia are available; however, a more exhaustive understanding of causes, impact, awareness level, combined iron and folate deficiency, infections, etc. is necessary. Further, secondary data reflected that even among males, anemia persists. Therefore, it is suggested that unique programs must be designed and anemic male' components must be incorporated in the existing programs.
- h) **Encouraging (WASH) Water, Sanitation and Hygiene:** Water, sanitation and hygiene are associated with developing anemia in numerous ways. Hookworms are related to poor water, sanitation, and hygiene, contributing to anemia among poor and underprivileged populations. Encouraging (WASH) Water, Sanitation and Hygiene safe water, sanitation and hygiene is also essential for anemia prevention. Promoting improvements in key hygiene behaviors that are important for the prevention of anemia.
- i) **Approaches for Preventing Anemia as per the Type:** There are various reasons for anemia, as discussed in the article. Therefore, gathering data on the other forms of anemia is pertinent. After generating the data, developing different strategies for the type of anemia is relevant.
- j) **Monitoring and Evaluating** programs are inadequate in India and need more systematic consideration. It is important to assess and address gaps in programs. A deliberate and efficient evaluation of anemia is required.

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NOTES

ⁱ National Family Health Survey: This large-scale, multi-round survey provides essential data on population, health, and nutrition for India and its states and union territories.

ⁱⁱ ANMs are frontline health workers trained in midwifery and primary healthcare services, primarily serving in rural health sub-centres across India.

ⁱⁱⁱ Under the National Rural Health Mission, an ASHA is a trained female community health activist selected from the village to act as a bridge between the community and the public health system.

^{iv} Polyphenols are naturally occurring compounds found in plant-based foods. In the Indian diet, they are abundant in items like tea, spices, fruits, and whole grains, and are linked to various health benefits.

^v Anganwadi centres are government-run facilities providing basic healthcare, nutrition, and preschool education services to children under six and pregnant/lactating mothers under the ICDS scheme.

^{vi} *Nukkad natak* is a form of street theatre in India, often used as a medium for social messaging and public health education in rural and urban settings.

^{vii} Bajra (pearl millet) and jowar (sorghum) are traditional, climate-resilient millets grown widely in India, rich in fiber and micronutrients, and important for nutrition security.