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ISSUE BRIEF

Eliminating Female Anaemia in India: Prevalence, Challenges and Way Forward

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Eliminating Female Anaemia in India: Prevalence, Challenges and Way Forward

Akshita Sharma

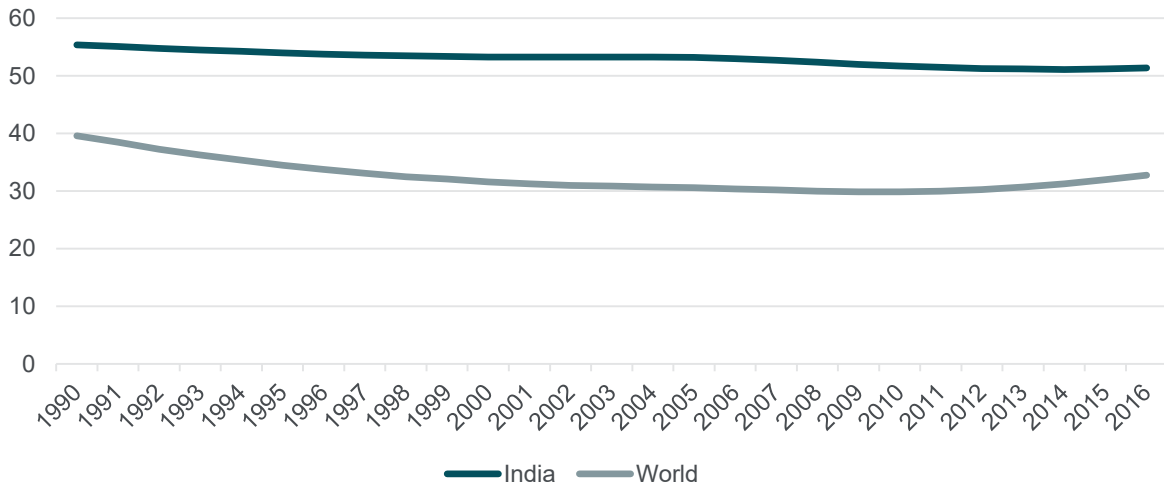
In the last two decades, anaemia's prevalence among Indian women of reproductive age, on average, has been 20% more than the world average. While one in three women in the world is anaemic, one in two women is anaemic in India.

INTRODUCTION

India's 94th rank in the 2020 Global Hunger Index (2021) out of 107 reflects the rampant undernourishment in the country. While the economy has witnessed rapid growth in the past decades, improvements in nutrition status have been relatively steady, and hence, the need for substantial breakthroughs remains. A critical aspect of this public health challenge is the anaemia burden on women in India, recording one of the world's highest.

Although there are several causes of anaemia, foremost is iron deficiency, followed by deficiencies in folate, vitamin B12, and vitamin A (World Health Organisation n.d.). In the last two decades, anaemia's prevalence among Indian women of reproductive age, on average, has been 20% more than the world average. While one in three women in the world is anaemic, one in two women is anaemic in India.

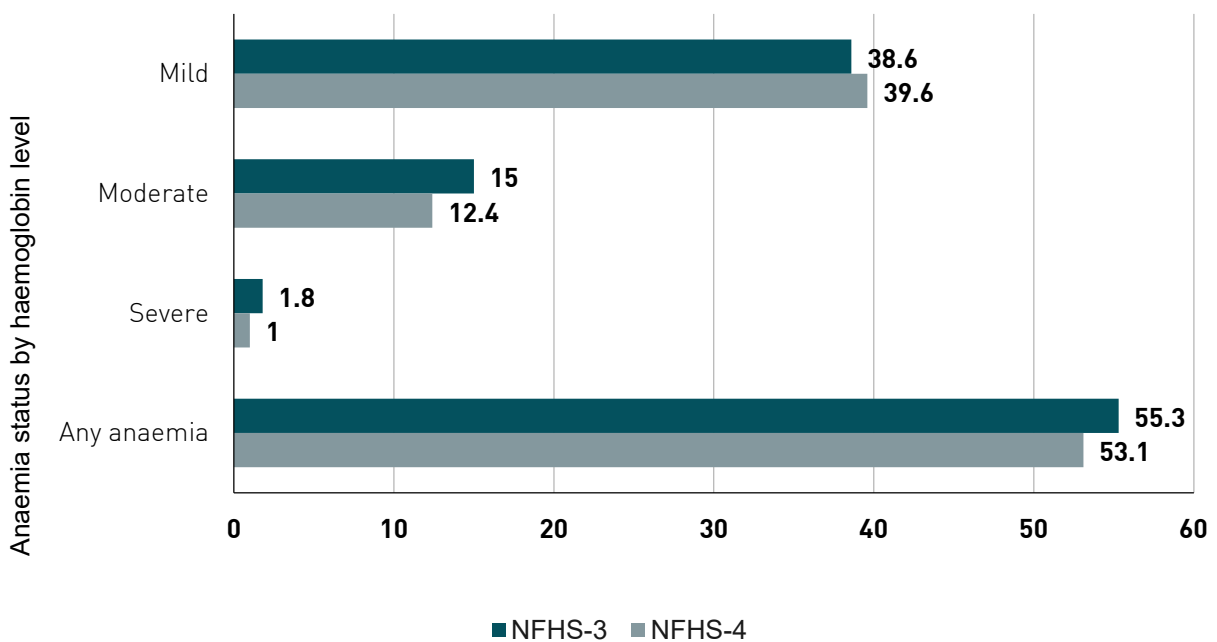
Figure 1: Prevalence of anaemia among women of reproductive age (% of women ages 15-49)



Source: The World Bank Data 2016

According to the National Family Health Survey 2015-2016 [NFHS-4] data, approximately half of total women in India suffer from anaemia of some kind (mild, moderate, or severe), which is not a significant improvement from the NFHS-3 [2005-6] findings (Ministry of Health and Family Welfare [MoHFW] 2017). While severe and moderate anaemia have seen a fall, cases in mild anaemia have increased. Such a condition can have serious physical, social, and economic consequences as it leads to fatigue, stress, and diminished productivity. Chronic anaemia can also lead to cardiac failure and death (Bharati et al., 2008: 348).

Figure 2: Percentage of women age 15-49 with anaemia - NFHS-4 vs NFHS-3



Source: Ministry of Health and Family Welfare [MoHFW] 2017: 335

During pregnancy, a woman needs an extra intake of 15mg of iron per day to support herself and the baby, the lack of which increases the risk of maternal mortality (Ministry of Women and Child Development 2018). India does not perform well in maternal health and birth weight of newborns as well. While half of all global maternal deaths due to anaemia occur in Southeast Asia, 80% of them happen in India (National Health Portal n.d.). A study by Gnanasekaran et al. (2019) found that maternal anaemia is positively correlated with low birth weight babies as 85% of low birth weight babies were born to anaemic mothers.

India has had a multitude of national-level schemes working towards nutrition and anaemia elimination for several years. These include the Integrated Child Development Services (ICDS) scheme, National Nutritional Anaemia Prophylaxis Programme (NNAPP), Pradhan Mantri Surakshit Matritva Abhiyan and Pradhan Mantri Matri Vandana Yojana, and the Anaemia Mukh Bharat (AMB) strategy.

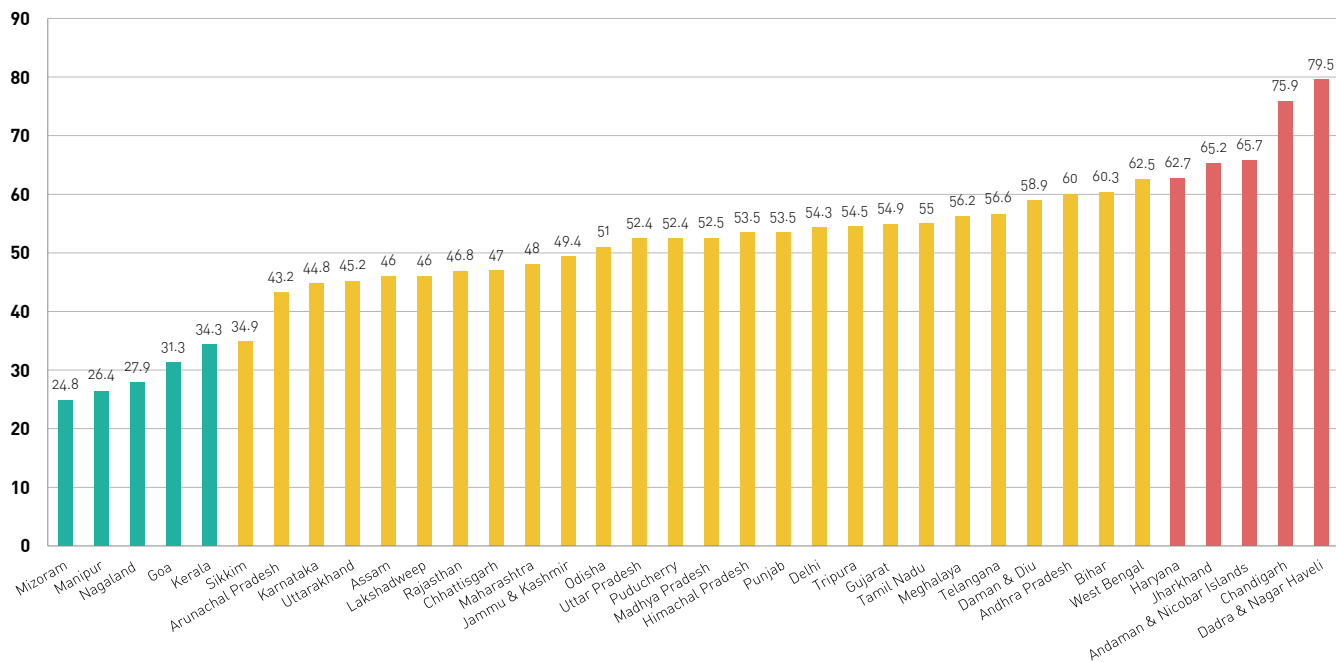
Despite these, the recently released partial NFHS-5 (2018-19) data showed that more than half of women in 13 out of 22 states are anaemic, and anaemia among pregnant women has increased in half of the States/UTs compared to NFHS-4 (MoHFW 2020). According to the Global Nutrition Report (2020), India is also not on track to achieve any of the global nutrition targets.

In this context, the paper dives deeper into the dimensions of anaemia prevalence among women of reproductive age. It will also draw findings from studies across India to outline the key drivers of anaemia among women, including socio-demographic, behavioural factors as well as implementation bottlenecks in nutrition programmes. Towards the end, the paper discusses policy recommendations to boost India's effort towards an Anaemia Mukh Bharat .

PREVALENCE AND DRIVERS OF ANAEMIA IN INDIA

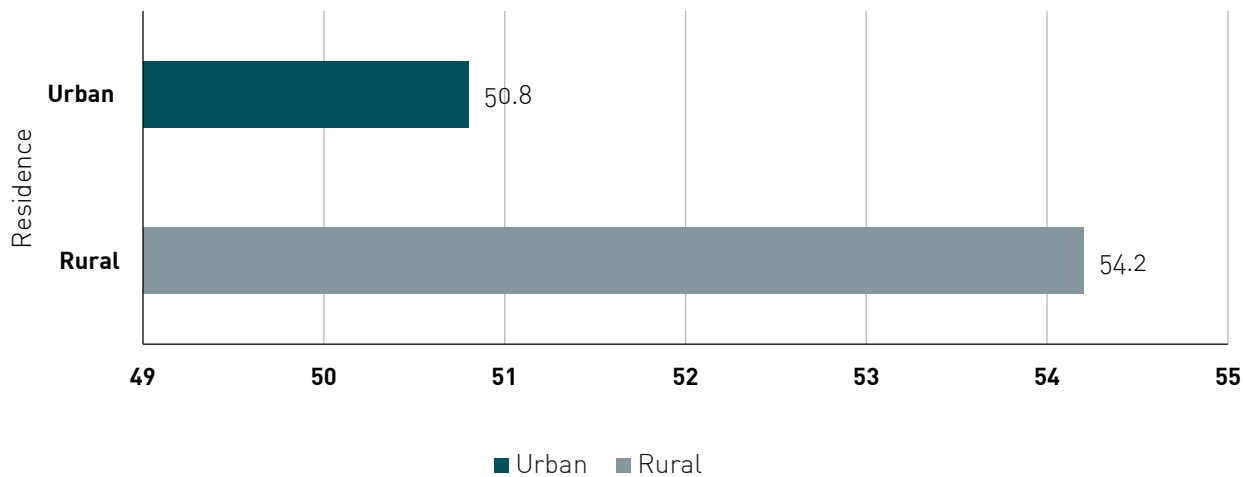
Within India, there are wide disparities in the prevalence of anaemia among women across states. North-eastern states like Mizoram, Manipur, Nagaland and Sikkim, and smaller states/UTs like Goa and Kerala, are the best performing regions. Eastern and Northern states/UTs like Jharkhand, West Bengal, Bihar, Haryana, Andaman and Nicobar Islands, and Dadra and Nagar Haveli are some of the worst-performing states (Figure 3). The better performance of north-eastern states can be attributed to greater gender equality in terms of “work participation, literacy, infant mortality and sex ratio,” making women in these states healthier and less anaemic (Mahanta 2013: 1). Rural areas have a higher percentage of anaemic women than urban areas (Figure 4), resulting from poorer access to healthcare and sanitation combined with lower family incomes.

Figure 3: Percentage of women age 15-49 with any anaemia by state/union territory



Source: : MoHFW 2017: 337

Figure 4: Percentage of women age 15-49 with anaemia in urban and rural areas

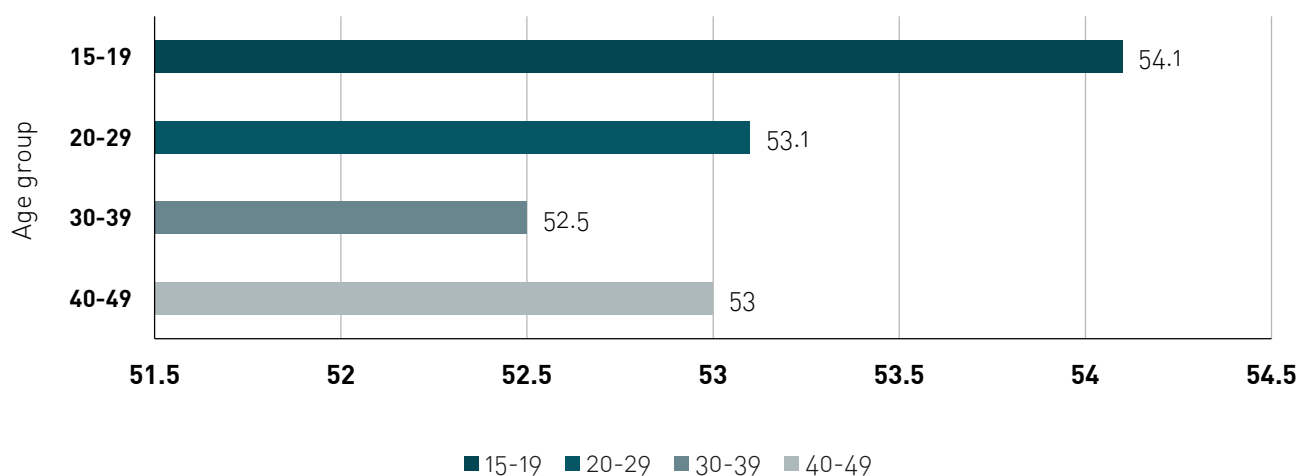


Source: : MoHFW 2017: 334

Socio-demographic trends

Observing data across age-groups, it is interesting to note that adolescent girls aged 15 to 19 years are more anaemic compared to ages 20 to 49.

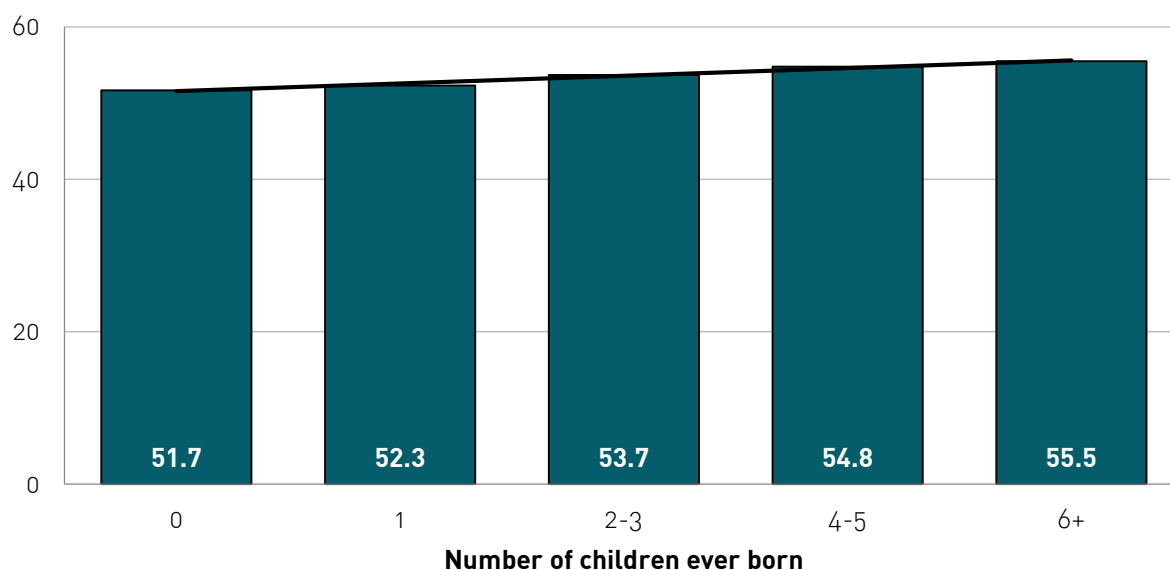
Figure 5: Percentage of women with anaemia across age groups



Source: : MoHFW 2017: 334

Additionally, women who have given birth several times are more anaemic as their repeated and frequent pregnancies don't leave time for rebuilding iron stores in the body.

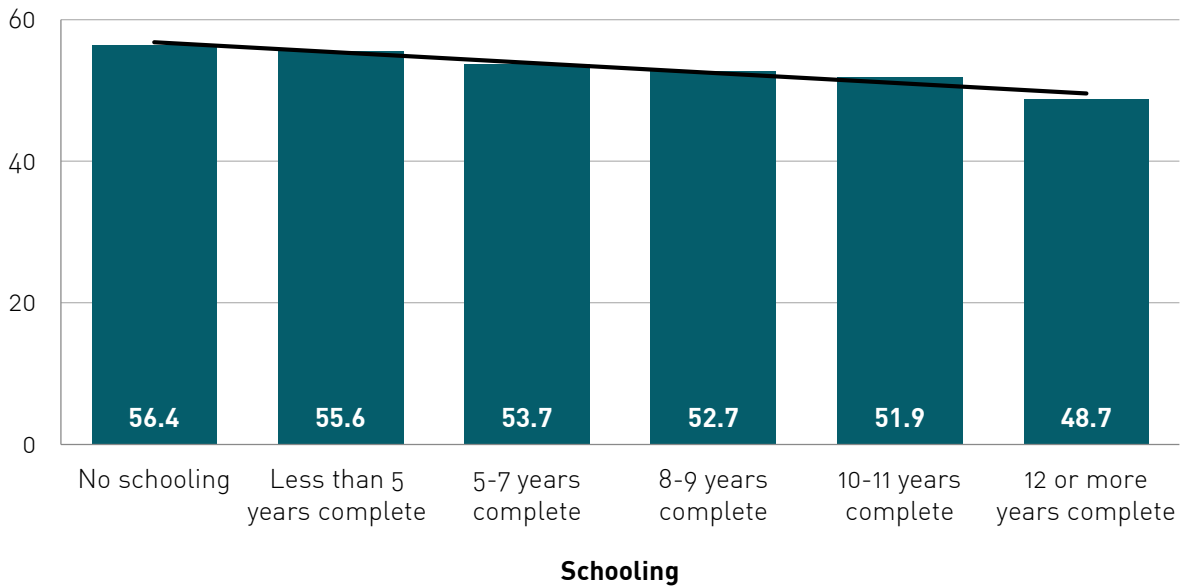
Figure 6: Percentage of women with anaemia by number of children ever born



Source: : MoHFW 2017: 334

This prevalence can also be linked to women's education level. Figure 5 demonstrates that as years of schooling increases, the percentage of women with anaemia steadily falls. While 48.7% of women with more than 12 years of schooling were anaemic, the number became 56.4% in women with no education, marking a 16% jump. Studies show that the prevalence of anaemia also falls with the husband's better education levels as with higher education levels, parents are better placed on comprehending the consequences of anaemia and the importance of medication prescribed by the health staff (Lokare et al., 2012: 33). They are also more likely to be positively impacted by public health campaigns around nutrition.

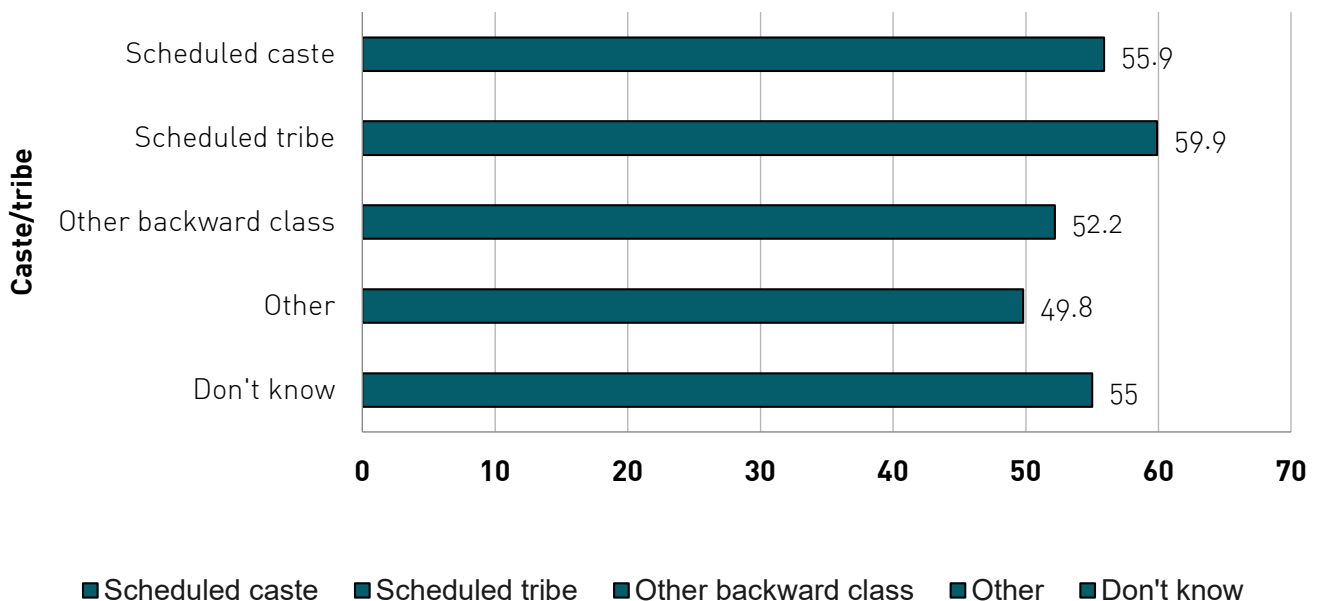
Figure 7: Percentage of women with anaemia by years of schooling



Source: : MoHFW 2017: 334

The prevalence of anaemia is high among women from marginalised communities. More women from SC, ST, and OBC communities are anaemic when compared to other groups. A substantial 60% of ST women are anaemic. The reasons for this disparity lay in the socio-economic inequalities that persist in India (Bharti 2019), due to which marginalised communities lie on the bottom of the income and education ladders, leading to inadequate food intakes and poor health. This, coupled with social exclusion and systemic discrimination (Khanday 2012: 68), leads to inaccessibility to quality healthcare and lack of awareness about anaemia. Its consequences are apparent as studies show that belonging to SC and ST groups pose a significant risk factor for maternal mortality (Horwood 2020: 1).

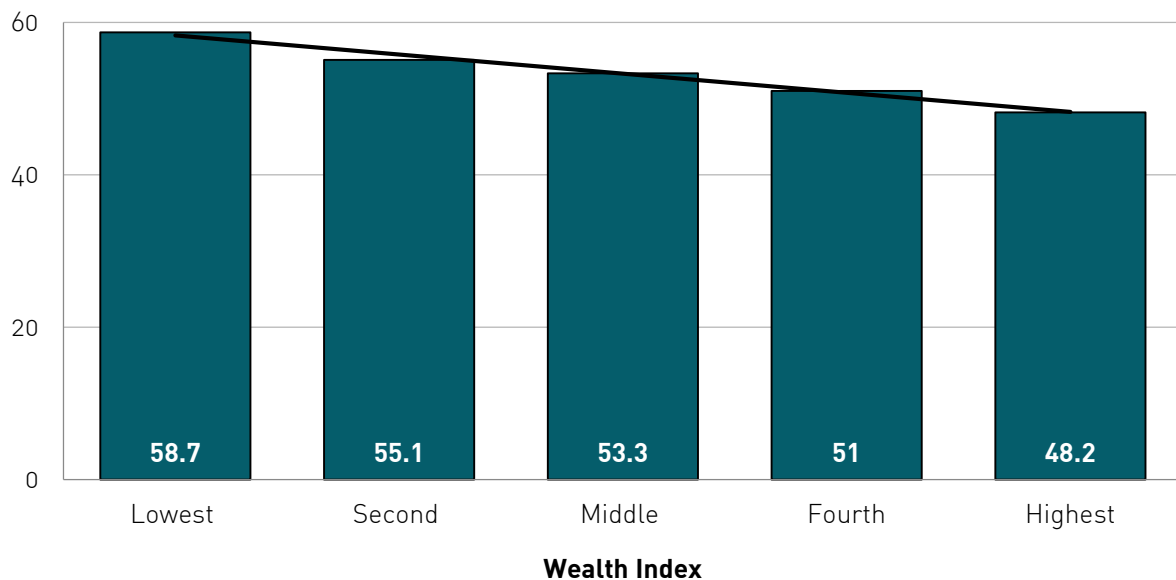
Figure 8: Percentage of women with anaemia by caste/tribe



Source: : MoHFW 2017: 334

The following figure also reiterates how wealth inequalities define anaemia outcomes among women. It's more probable that marginalised women belong to lower wealth indices. Those belonging to the lowest wealth index have the highest percentage of women with anaemia, and this steeply falls by almost 10% as we move to the highest wealth index.

Figure 9: Percentage of women with anaemia by Wealth Index



Source: : MoHFW 2017: 334

Behavioural Factors

It is common for a girl child to be discriminated against right from birth in a patriarchal society. Due to son-bias fertility preferences, girls are breastfed for less time than boys and receive lower food supplements (Jayachandran 2011: 1486). This makes them weaker as they grow up (Kaur 2014: 33). Women also don't make all decisions about their own food intake and health, and in fact, eat the last and the least at home, only after serving and catering to the other members of the family. Due to this, the leftovers that they consume at last might not have enough iron and protein required for their body, especially when menstruation leads to regular blood loss. Because of the lack of Vitamin B12 and hookworm infestations in the stomach, most of the little iron that they consume is also not absorbed in their body (Ministry of Women & Child Development 2018).

What also lies at the heart of these behavioural issues is the perception of anaemia. Since the lack of awareness about this is common, women and communities don't know its severity. While women don't know the clinical term "anaemia", they do recognise it through its symptoms like weakness and paleness. Bentley and Parekh (1998) discuss the terminologies used in different parts of India in the chart below. Chatterjee and Fernandes (2014) also found that women used "less blood in the body" to describe anaemia in a study conducted in Mumbai.

Table 1: Terminologies related to Anaemia

Site	Terms	Translation
North Haryana	Kamzori	Weakness
	Khoon ki kami	Less blood in body
	Dholi ho gai hai	Colour becomes white
Urban Gujarat	Kamjori/ashakti	Weakness
	Occhu lohi	Less blood
	Phikkash	Paleness
	Bhook nahi lagti	Loss of appetite/anorexia
	Lohi nu paani thai jay chhe	Blood turns into water
Rural Karnataka	Susthu	Weakness/fatigue
	Thalaisuthu	Giddiness
	Raktha heenathe	Less blood
Rural Tamil Nadu	Iratham kuraivaga ullathu	Low blood
	Udambil iratham illai	No blood in the body
	Iratham sundipochuthu	Less blood
	Udampu veluppu	Paleness in the body
	Vellai kaamalai	Whiteness/paleness
	Varattu kaamalai	Dryness on the body
	Kaikaal veluppu	Paleness in the hands/legs

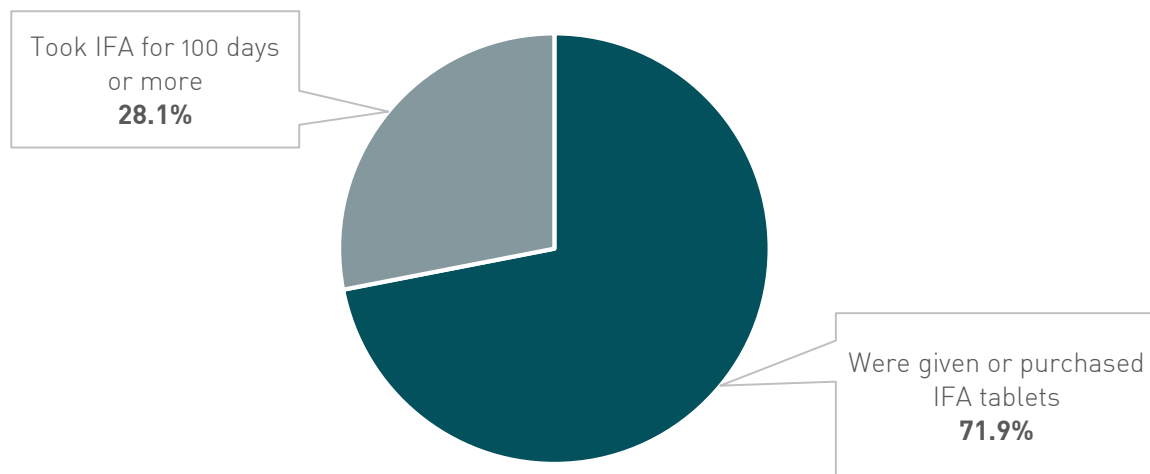
Source: Bentley and Parekh 1998: 6

Both the studies mentioned above found that most women have also normalised the occurrence of weakness as something common, especially during pregnancies. They believed that weakness was a product of physiological changes in the body and did not think that was serious enough to demand proper medical attention. They sought medical care only when the situation got worse after long periods of ignoring the symptoms. The study in Mumbai also found that women were not aware of the risk of maternal death and believed their roles to be only that of a child-bearer who must prioritise the child's health. While seeking treatment, financial constraint was the primary reason for delays.

Despite health programmes like ICDS that have been providing Iron Folic Acid (IFA) tablets to pregnant women for decades, and the Anaemia Mukta Bharat Score Card (2019) revealing that 84.8% of pregnant women in India are within the IFA coverage in 2018-2019 Q4, the NFHS-5 (2018-19) shows a rise in anaemia among women. This indicates a problem with the uptake of IFA tablets. The NFHS-4 India report shows a consistent mismatch between the purchase/provision of IFA tablets and their consumption. Only a little more than one-third of those who were given or purchased IFA tablets took them for 100 days or more — what we are looking at is a low compliance rate issue.

Apart from the lack of awareness of the severity of anaemia, there is also an information gap about IFA tablets as a remedy, forgetfulness of patients and hence, the inability to take medicines for a minimum of the prescribed 100 days. Women's experience of side effects of IFA tablets like nausea, heartburn and abdominal pain, or fear of possible effects can deter women from seeking or continuing their treatment (Mithra et al. 2014: 882). Some women also believed that too many iron tablets could "cause too much blood or a large baby, making labor more challenging" (Sedlander et al., 2018: 4) There is also a possibility that women don't attach any value to those tablets and are suspicious of their benefits and quality since they are free.

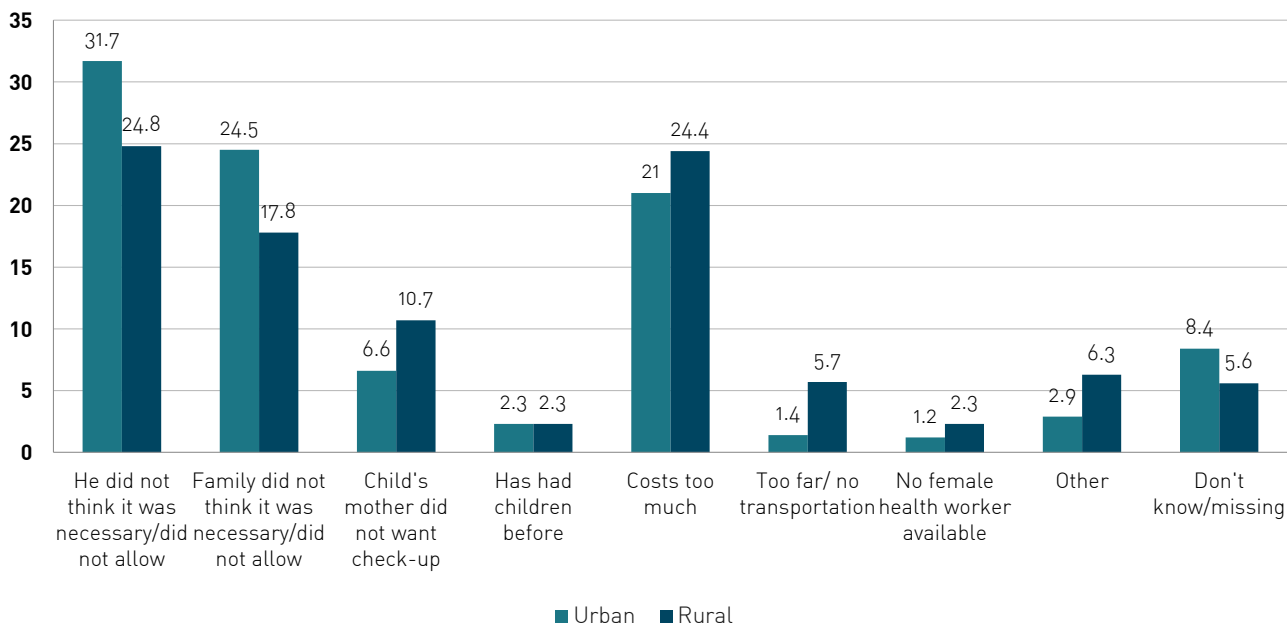
Figure 9: Among women with a live birth in the past five years, the percentage who during the pregnancy of their last birth were given or purchased IFA tablets and took it for 100 days or more



Source: MoHFW 2017: 219

In some cases, mothers did not even receive antenatal care, which includes the provision of IFA tablets and awareness about the consumption of iron-rich foods, because their family members did not think it was necessary. It is evident from the figure below that in both urban and rural areas, the husband's or family's choice for not taking antenatal care is dominant. Another important reason that emerges is the cost of care. Data also shows that for 22.6% of female respondents, the decision about their own health is taken mainly by their spouse (MoHFW 2017: 529). The women respondents in the study by Bentley and Parekh (1998) mentioned that their husbands don't pay much heed to their problems, as long as they actively participate in household chores despite their health condition. Only when women are bed-ridden do they take them to the doctor. This indicates that even with the presence of programmes that stand to mitigate anaemia in the country, such behavioural factors obstruct an anaemia-free India.

Figure 10: Reasons why the child’s mother did not receive antenatal care according to men



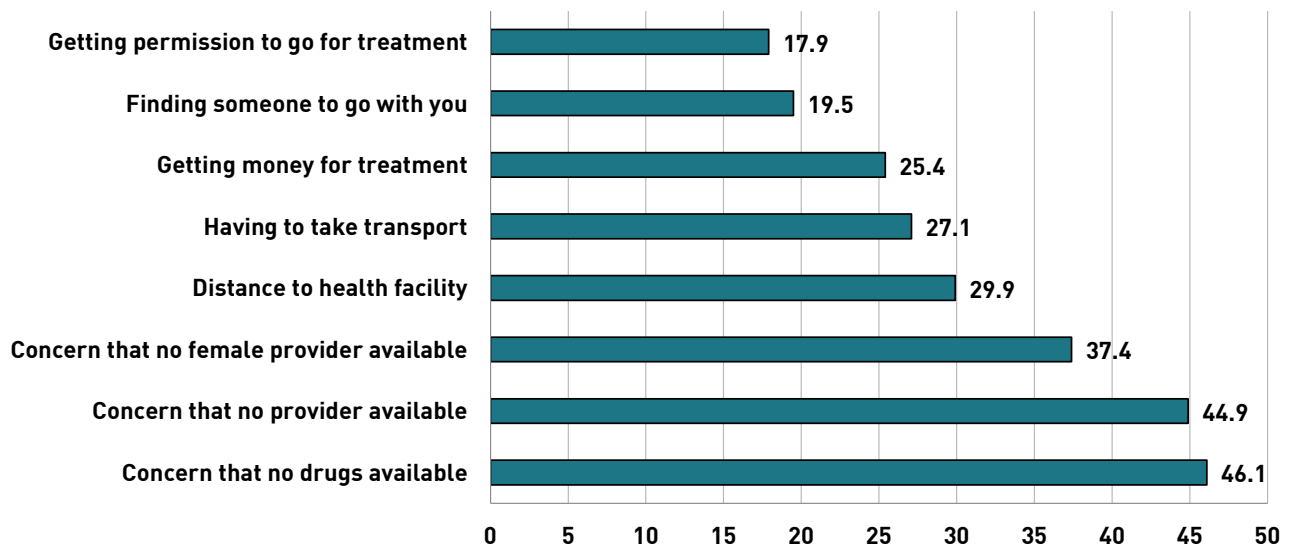
Source: MoHFW 2017: 224

Implementation setbacks

There have been several programmes working towards eliminating anaemia in India in action for decades. The National Nutritional Anaemia Prophylaxis Program, launched in 1970, provided iron and folate supplements to children under the age of five, pregnant women, and nursing mothers. However, it was ineffectively implemented, and the consumption of IFA tablets was much lower than the distribution (Kurian et al., 2017), a problem that still exists. Weekly Iron Folic acid Supplementation (WIFS), launched in 2013 under the Rashtriya Kishor Swasthya Karyakram (RKSK), aims to mitigate anaemia in the adolescent population (National Health Mission n.d.). This programme has been initiated in all States/UTs and covers 11.2 crore beneficiaries across India and has performed better due to the inclusion of counselling as a critical intervention to improve compliance amongst adolescents. However, some implementational gaps remain.

Among women who had at least one contact with a health worker in the three months preceding the NFHS-4 survey, only 18.2% of ever-married pregnant women and women with children under age six years discussed antenatal care with the worker (MoHFW 2017: 380). Women’s expectations regarding the adequacy of services created the biggest hindrances in access to care. For 37.4% of women, concern that no female provider will be available was an obstruction in accessing treatment or medical advice. Forty-five per cent of women were concerned that no provider will be available, while 46.1% were concerned that no drugs would be available.

Figure 11: Percentage of women who reported that specific issues are big problems for them in accessing medical advice or treatment for themselves when they are sick



Source: MoHFW 2017: 382

The Anganwadi Workers (AWWs), with their last-mile on-ground connectivity with local communities, are the most crucial stakeholders of government programmes to eliminate anaemia. However, their work is considered voluntary, and they are paid a meagre honorarium which doesn't compare to the contribution they make (Ministry of Women and Child Development n.d.). In some cases, they have also faced caste discrimination and untouchability, which can discourage them from working for their communities. Besides this, the decision-making in the anganwadi centres (AWCs) follows a top-down method, which can be rigid and inefficient (Gragnolati et al., 2006: 1199). AWWs become only order-followers, despite the immense contributions they make through their on-field learnings. For an anaemia elimination programme to make a far-reaching impact, the AWWs must feel accountable to their communities, and the community itself must be involved. Evidence shows a positive association between the performance of AWCs and community support (ibid.).

Evidence from across India suggests that poor infrastructure and shortage of supplies is a challenge as well. A study from West Bengal found that 39.1% AWCs had inadequate ventilation, 65.2% had no separate kitchen, and more than 40% had no toilet facility (Paul et al. 2017: 64). Figure 10 points at how the shortage of drugs and personnel can deter anaemic women from accessing medical care. A study in Bihar showed that the process of IFA forecasting, procurement, and storage are not efficient, which is a barrier to medicine distribution and leads to shortages. The study identified an overall lack of personnel as well (Wendt et al., 2018: 8). Despite this, in the recent Union Budget 2021, the allocations for Saksham Anganwadi and Poshan 2.0 has seen an 18.7% fall (Sharma 2021).

Some of the current government programmes are trying to address these socio-demographic, behavioural and implementation issues. To reduce the financial stress of healthcare and incentivise health-seeking behaviour, the Pradhan

Mantri Matru Vandana Yojana provides direct cash transfers in three instalments to pregnant women and lactating mothers during the birth of the first surviving child (Govt. of NCT Delhi n.d.). Another programme, Pradhan Mantri Surakshit Matritva Abhiyan, aims to “provide assured, comprehensive and quality antenatal care, free of cost, universally to all pregnant women on the 9th of every month” (MoHFW n.d.).

In 2018, the ambitious Anaemia Mukh Bharat (AMB) strategy under the POSHAN Abhiyan was launched, which aims to accelerate the decline in the prevalence of anaemia among all age groups using a multi-pronged strategy. It targets reducing the prevalence of anaemia by three percentage points per year among children, adolescents and women in the reproductive age group (15–49 years) between 2018 and 2022. This strategy includes digital methods to improve compliance to medicine dosage, iron-fortified food provisions, as well as addressing other contributors to anaemia such as malaria and fluorosis (National Health Mission n.d.).

AMB also aims at improving institutional mechanisms to build a more efficient supply chain and logistics and improve coordination across Ministries working on the mission. While the strategy also includes intensive behaviour change communication, it seems to be limited to far-reaching awareness about anaemia, drug adherence and dietary diversification (Anaemia Mukh Bharat n.d.). Behaviour change to alter household practices that contribute to women’s malnourishment and constricts their agency seems missing.

POLICY RECOMMENDATIONS

The following are three recommendations that can help build a more complete approach towards eliminating anaemia and boost the government’s efforts.

Address nutrition needs at every phase of a woman’s life

Malnourishment as an infant can lead to anaemia in adolescence, which can get aggravated during pregnancy. Hence, while trying to address anaemia among women and adolescents, programmes should also integrate solutions for less breastfeeding time and food supplements for girl infants. Strong preferences for sons and biases against a girl-child are a behavioural problem deeply rooted in the patriarchal society. Hence, smart behaviour change communication is required to nudge parents towards gender equal mindset.

Conduct social norms-based interventions

Interventions must recognise that women eating last and least in the household, husbands or families dictating the need for antenatal care, women’s need to take permission before visiting a healthcare facility, all constrict women’s agency and contribute to their malnourishment. While behaviour change communication for drug adherence and knowledge of anaemia as a serious disease is needed, challenging detrimental social norms must accompany such measures.

Need for WASH interventions to control non-nutritional causes of anaemia

Diseases that can also cause anaemia like malaria, diarrhoea, and fluorosis, thrive in unsanitary environments. In fact, inadequate Water, Sanitation and Hygiene (WASH) facilities disproportionately burden women as well (Sharma 2020: 2). Hence, it is crucial to ensure that WASH facilities are accessible and adequate to minimise the spread of disease.

BIBLIOGRAPHY

Anaemia Mukht Bharat. (n.d.). "6 Interventions". Accessed 24 March 2021, <https://anemiamukhtbharat.info/home/interventions/#3rd>.

Anaemia Mukht Bharat. (2019). "AMB Score Card (India) 2018-19 : Q4". Accessed 22 March 2021, <https://anemiamukhtbharat.info/amb-ranking/>

Bentley, Peggy and Anjon Parekh. (1998). "Perceptions of anemia and health seeking behavior among women in four Indian states." Technical Working Paper 9, *Mothercare/john snow, inc.*

Bharati, Premananda, Suparna Som, Suman Chakrabarty, Susmita Bharati, and Manoranjan Pal. (2008). "Prevalence of anemia and its determinants among nonpregnant and pregnant women in India." *Asia Pacific Journal of public health* 20(4): 347-359.

Bharti, Nitin Kumar. (2019). "Wealth inequality, class, and caste in India: 1961-2012". *Ideas for India*, 28 June 2019. Accessed 23 March 2021, <https://www.ideasforindia.in/topics/poverty-inequality/wealth-inequality-class-and-caste-in-india-1961-2012.html>.

Chatterjee, Nilesh and Genevieve Fernandes. (2014). "This is normal during pregnancy': a qualitative study of anaemia-related perceptions and practices among pregnant women in Mumbai, India." *Midwifery* 30(3): e56-e63.

Govt. of NCT Delhi. (n.d.) "Pradhan Mantri Matru Vandana Yojana". Accessed 24 March 2021, <http://www.wcd Delhi.in/PMMVY.html#:~:text=Under%20PMMVY%2C%20a%20cash%20incentive,to%20Maternal%20and%20Child%20Health>.

Global Hunger Index. (2021). "2020 GLOBAL HUNGER INDEX BY SEVERITY". Accessed 22 March 2021, <https://www.globalhungerindex.org/ranking.html>.

Global Nutrition Report. (2020). *Global Nutrition Report: Action on equity to end malnutrition*. Bristol, UK: Development Initiatives. Accessed 23 March 2021, https://globalnutritionreport.org/documents/566/2020_Global_Nutrition_Report_2hrssKo.pdf

Gnanasekaran, Sruthy, Jakanattane V., Rajendran R. R. (2019). "Study on the effect of maternal anemia on birth weight of term neonates among rural population India." *International Journal of Contemporary Pediatrics* 6(3):1255-1258.

Gragnotati, Michele, Caryn Bredenkamp, Monica Das Gupta, Yi-Kyoung Lee, and Meera Shekar. (2006). "ICDS and Persistent Undernutrition: Strategies to Enhance the Impact." *Economic and Political Weekly* 41(12) : 1193-201. Accessed 24 March 2021, <http://www.jstor.org/stable/4418004>.

Horwood, Geneviève, Charles Opondo, Saswati Sanyal Choudhury, Anjali Rani, and Manisha Nair. (2020). "Risk factors for maternal mortality among 1.9 million

women in nine empowered action group states in India: secondary analysis of Annual Health Survey data.” *BMJ open* 10, (8): 1-10.

Jayachandran, Seema and Ilyana Kuziemko. (2011). “Why do mothers breastfeed girls less than boys? Evidence and implications for child health in India.” *The Quarterly journal of economics* 126(3): 1485-1538.

Kaur, Kawaljit. (2014). “Anaemia ‘a silent killer among women in India: Present scenario.” *European Journal of Zoological Research* 3(1): 32-36.

Khanday, Zulufkar Ahmad and Mohammad Akram. (2012). “Health status of marginalized groups in India.” *International Journal of Applied Sociology* 2(6): 60-70.

Kurian, Oommen C., Malancha Chakrabarty, Priyanka Shah, Tanoubi Ngangom. (2017). “Investing in human capital: Towards an anaemia free India”. *ORF*, 8 September 2017. Accessed 23 March 2021, <https://www.orfonline.org/research/investing-human-capital-towards-anaemia-free-india/>.

Lokare, Pushpa O., Vinod D. Karanjekar, Prakash L. Gattani, and Ashok P. Kulkarni. (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): 30-34

Mahanta, Bidisha, and Purusottam Nayak. (2013). “Gender inequality in north east india.” *PCC Journal of Economics and Commerce* 7: 1-13.

Ministry of Health and Family Welfare [MoHFW]. (2017). *National Family Health Survey (NFHS-4)*. Mumbai, India: MoHFW. Accessed 22 March 2021, <http://rchiips.org/nfhs/nfhs-4Reports/India.pdf>.

MoHFW. (2020). “National Family Health Survey-5”. Accessed 23 March 2021, <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1680702>.

MoHFW. (n.d.). “PRADHAN MANTRI SURAKSHIT MATRITVA ABHIYAN”. Accessed 24 March 2021, <https://pmsma.nhp.gov.in/>.

Ministry of Women and Child Development. (2018). “Preventing anemia in women. India: Ministry of Women & Child Development.” Accessed 22 March 2021, https://icds-wcd.nic.in/nnm/NNM-Web-Contents/LEFT-MENU/ILA/Modules/NNM-ILAModule-07-Preventing_Anemia.pdf.

Ministry of Women and Child Development. (n.d.). “Integrated Child Development services (ICDS) Scheme”. Accessed 23 March 2021, <https://icds-wcd.nic.in/icdsteam.aspx>.

Mithra, Prasanna, Bhaskar Unnikrishnan, T. Rekha, K. Nithin, K. Mohan, Vinuta Kulkarni, Ramesh Holla, and D. Agarwal. (2014). “Compliance with iron-folic acid (IFA) therapy among pregnant women in an urban area of south India.” *African health sciences* 14(1): 255-260.

National Health Mission. (n.d.). "An introduction to Anemia Mukh Bharat: National Health Mission." Accessed 24 March 2021, <https://anemiamukhbharat.info/wp-content/uploads/2019/09/INFO-sheet-3-About-Anemia-Mukh-Bharat.pdf>.

National Health Mission. (n.d.). "WEEKLY IRON FOLIC ACID SUPPLEMENTATION (WIFS)". Accessed 23 March 2021, <https://nhm.gov.in/index1.php?lang=1&level=3&sublinkid=1024&lid=388>.

National Health Portal. (n.d.). "Anaemia during pregnancy (Maternal anemia)". Accessed 22 March 2021, <https://www.nhp.gov.in/disease/gynaecology-and-obstetrics/anaemia-during-pregnancy-maternal-anemia>.

Paul, Bobby, Bijit Biswas, and Ayon Ghosh. (2017). "Quality of Infrastructure of Anganwadi Centres in a Rural Area of West Bengal: An Evaluation Study." *Indian Journal of Applied Research* 7(6): 64-66. Accessed March 24 2021, https://www.researchgate.net/profile/Bijit-Biswas-2/publication/322055441_Quality_of_Infrastructure_of_Anganwadi_Centres_in_a_Rural_Area_of_West_Bengal_An_Evaluation_Study/links/5a4119f4458515f6b04ce47c/Quality-of-Infrastructure-of-Anganwadi-Centres-in-a-Rural-Area-of-West-Bengal-An-Evaluation-Study.pdf.

Sedlander, Erica, Rajiv N. Rimal, Sameera A. Talegawkar, Hagere Yilma, and Wolfgang Munar. (2018). "The RANI project: a socio-normative intervention to reduce anemia in Odisha, India: a formative research protocol." *Gates open research* 2. Accessed 24 March 2021, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5906750/>

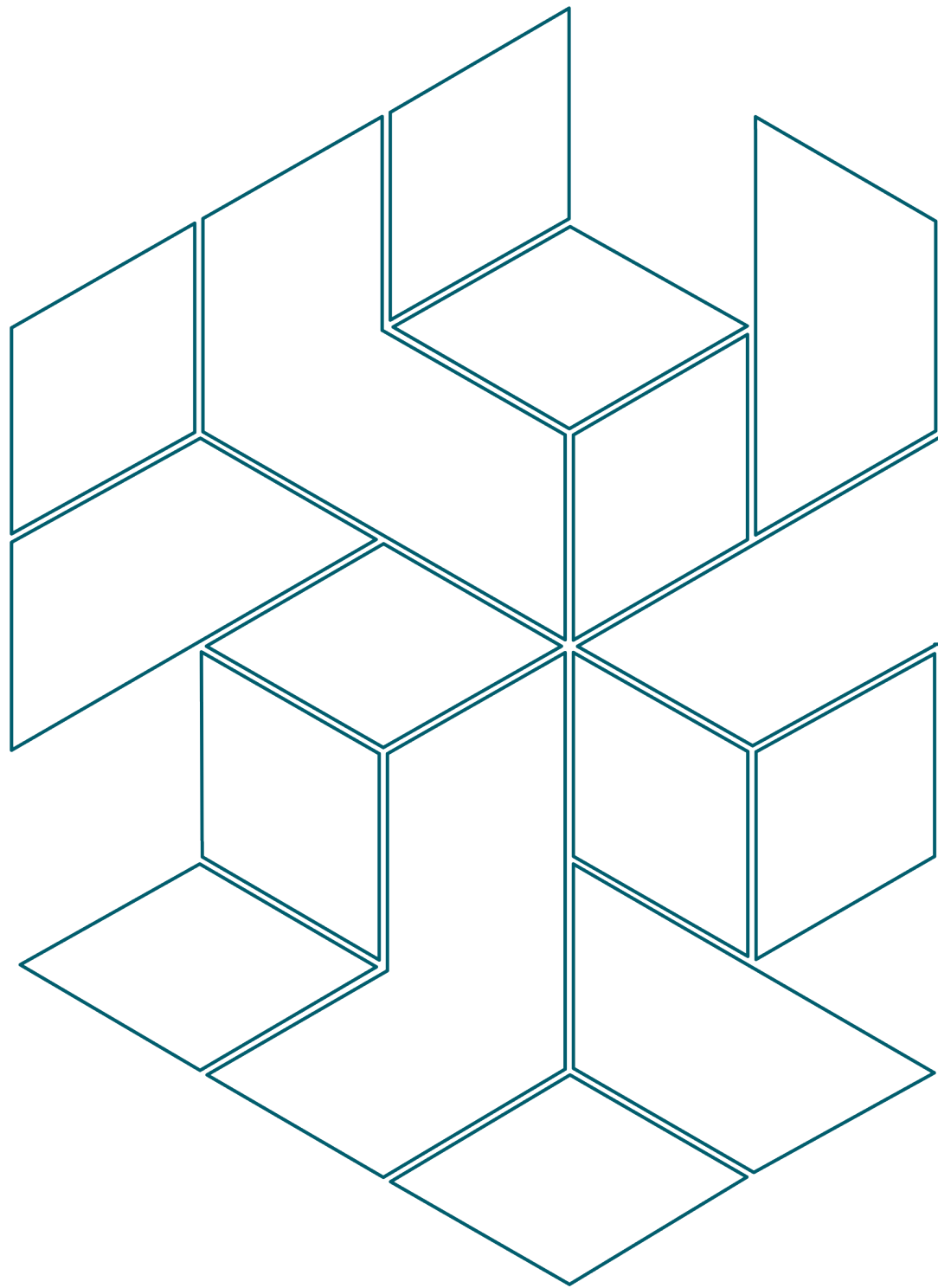
Sharma, Akshita. (2020). "How Gender-Responsive are India's WASH Policies?" *Social and Political Research Foundation*. Accessed 24 March 2021, <https://sprf.in/how-gender-responsive-are-indias-wash-policies/>.

Sharma, Akshita. (2021). "India Needs Gender-Responsive Budgeting, Not Just a Gender Budget." *Social and Political Research Foundation*. Accessed 24 March 2021, <https://sprf.in/india-needs-gender-responsive-budgeting-not-just-a-gender-budget/>.

The World Bank Data. (2016). "Prevalence of anemia among women of reproductive age (% of women ages 15-49)". Accessed 22 March 2021, <https://data.worldbank.org/indicator/SH.ANM.ALLW.ZS>.

Wendt, Amanda S., Rob Stephenson, Melissa F. Young, Pankaj Verma, Sridhar Srikantiah, Amy Webb-Girard, Carol J. Hogue, Usha Ramakrishnan, and Reynaldo Martorell. (2018). "Identifying bottlenecks in the iron and folic acid supply chain in Bihar, India: a mixed-methods study." *BMC health services research* 18, (1): 1-12.

World Health Organisation. (n.d.). "Anaemia". Accessed 22 March 2021, https://www.who.int/health-topics/anaemia#tab=tab_1.
data.worldbank.org/india/india?locations=IN
[dbank.org/opendata/how-does-informality-aggravate-impact-covid-19](https://data.worldbank.org/india/india?locations=IN)



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