Sattva Knowledge Institute SKI perspective

# DOES AN INCREASE IN WOMEN'S AGENCY IMPROVE MATERNAL AND INFANT HEALTH OUTCOMES?

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# Acknowledgements


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# Executive Summary

Women's agency is a function of factors such as their level of literacy and education, employment status, ownership of assets such as land, and inclusion in the formal banking system. This is supplemented by their access to information through media such as phones. It can be hypothesised that women thus equipped would also be in a position to access better healthcare for themselves and their families.

This perspective juxtaposes indicators of women's agency with data on maternal and child health outcomes, as obtained from the fifth National Family Health Survey (NFHS 2019-20) and other sources. Maternal and child health outcomes are measured by indicators such as access to antenatal and postnatal care, vaccination status of children, iron and folic acid consumption, and breastfeeding.

Correlating eight indicators of women's agency with ten indicators of women and children's health indicates that the relationship between the two is not always consistent. Factors such as bank account ownership, mobile phone usage are strongly correlated with greater awareness about birth control measures, and a tendency to seek institutional antenatal and postnatal care. This could be attributed to access to information and the success of financial support mechanisms as provided by government schemes like the Pradhan Mantri Matru Vandana Yojana. However, literacy, education and employment do not necessarily translate to women's ability to ensure adequate and balanced nutrition for their children, especially those aged under two years. A similarly weak correlation is seen in the case of land ownership and infant health outcomes. This suggests the influence of factors other than women's agency, indicating that an elevated socio-economic and legal status also needs to be supplemented by an enabling environment and structural changes that enable women to ensure good health for themselves and their children.

# Background and Context

There is a widely held belief that greater agency will enable women to make better decisions regarding personal and family health. However, it is critical to unpack if this is really the case and identify what specific aspects of women's agency have a direct correlation to improved maternal and infant health outcomes. The recent National Family Health Survey (NFHS-5) data along with information from the All India Debt and Investment Survey and the Periodic Labour Force Survey 2019-20 provides us with an opportunity to correlate factors that define women's agency to health outcomes.

Women's agency can be considered on two levels. The first level comprises education rates, literacy levels, employment, and land ownerships, which form the foundation of women's agency. These provide them with decision-making power and the means to act on these decisions. Other indicators such as mobile phone and bank account ownership comprise the second level, which improves women's agency by increasing their interconnectedness and access to information. The relationship between women's agency and larger health outcomes can be understood by juxtaposing these two levels of indicators against factors pertaining to maternal and infant health. Maternal and infant health outcomes are measured by parameters such as iron-folic acid (IFA) consumption, the number of antenatal and postnatal care visits, child immunisation, breastfeeding, and nutrition levels.

The analysis reveals that while the elements that constitute the foundational levels of women's agency are critical, they are not sufficient. The elements of agency that improve connectedness, and are in context to the general well-being of women and children, have a far more significant impact on health outcomes.

# Methodology

To understand the relationship between women's empowerment and various maternal and infant health outcomes, the following indicators were analysed.

| Women Empowerment Indicators | Health Outcome Indicators |
|---|---|
| • Women (aged 15+) having a bank account (in percentages, AIDIS)<br>• Women (aged 15+) owning land (in percentages, PLFS 2019-20)<br>• Women (aged 15-59) in paid work (in percentages, NFHS-5)<br>• Married women who usually participate in three household decisions (%)<br>• Women aged 15-24 years who use hygienic methods of protection during their menstrual period (%)<br>• Women having a mobile phone that they themselves use (%)<br>• Women who are literate (%)<br>• Women with ten or more years of schooling (%) | • Any modern method of contraception (%)<br>• Breastfeeding infants aged 6-23 months receiving an adequate diet (%)<br>• Total infants aged 6-23 months receiving an adequate diet (%)<br>• Infants aged 12-23 months being fully vaccinated based on information from vaccination card only (%)<br>• Infants under age 3 years being breastfed within one hour of birth (%)<br>• Infants who received postnatal care from a doctor/nurse/LHV/ANM/ midwife/other health personnel within two days of delivery (%)<br>• Mothers who consumed IFA for 180 days<br>• Mothers who had an antenatal check-up in the first trimester (%) or more when they were pregnant (%)<br>• Mothers who had at least four antenatal care visits (%)<br>• Mothers who received postnatal care from a doctor/nurse/Lady Health Visitor (LHV)/Auxiliary Nurse Midwife (ANM)/ midwife/other health personnel within two days of delivery (%) |

The state-level aggregated values of the above indicators were collated and then normalised across all states. Normalisation also reversed any indicators where lower values represented better outcomes. Thus for every indicator, the data was normalised such that the states with worst outcomes scored 0 and those with the best outcomes scored 100, with the other states being scored proportionately between 0 and 100.

To understand whether empowerment among women leads to better health outcomes, a Spearman's rank correlation analysis was carried out between all the indicator

pairs. This generated a correlation coefficient, indicating the direction and strength of the correlation, and associated p-value, indicating the statistical significance of the correlation, for all 96 indicator pairs that were possible for the chosen set of indicators. For the purpose of this analysis, a confidence interval of 95% i.e. p-value of less than 0.05, was considered as a statistically significant correlation. Indicators with correlations higher than 0.6 were considered strong and correlations below 0.3 were considered weak, so insights were derived only from those relationships that also contained appropriate p-values to ensure statistical significance. A strong correlation between two indicators indicates that greater agency for women results in better health outcomes for themselves and their infants. On the other hand, a weak correlation implies that factors beyond women's socio-economic and educational status influence health outcomes.

Patterns in these results for all 80 indicator pairs were then used to generate insights.

| | Any modern method of contraception (%) | Breastfeeding children age 6-23 months receiving an adequate diet (%) | Children age 12-23 months being fully vaccinated based on information from vaccination card only (%) | Children under age 3 years being breastfed within one hour of birth (%) | Children who received postnatal care from a doctor/nurse/ LHV/ANM/ midwife/ other health personnel within 2 days of delivery (%) | Mothers who consumed iron folic acid for 180 days or more when they were pregnant (%) | Mothers who had an antenatal check-up in the first trimester (%) | Mothers who had at least 4 antenatal care visits (%) | Mothers who received postnatal care from a doctor/nurse/ LHV/ANM/ midwife/ other health personnel within 2 days of delivery (%) | Total children age 6-23 months receiving an adequate diet (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| % Women (15+age) having a bank account | 0.67* | 0.08 | 0.71* | 0.06 | 0.73* | 0.55* | 0.46* | 0.54* | 0.70* | 0.11 |
| % Women (15+age) owning land | 0.35* | 0.25 | 0.37* | 0.30* | 0.41* | 0.38* | 0.20 | 0.35* | 0.34* | 0.30* |
| %Women (15-59) in Paid Work | 0.39* | -0.12 | 0.28 | 0.04 | 0.08 | 0.05 | 0.21 | 0.11 | 0.09 | -0.07 |
| Currently married women who usually participate in three household decisions (%) | -0.27* | 0.36* | -0.07 | 0.41* | 0.07 | 0.31* | 0.05 | 0.28 | 0.12 | 0.37* |
| Women age 15-24 years who use hygienic methods of protection during their menstrual period (%) | 0.38* | 0.28 | 0.34* | 0.40* | 0.65* | 0.61* | 0.50* | 0.59* | 0.65* | 0.29 |
| Women having a mobile phone that they themselves use (%) | -0.14 | 0.61* | 0.21 | 0.49* | 0.06 | 0.26 | 0.08 | 0.34* | 0.13 | 0.69* |
| Women who are literate (%) | -0.11 | 0.55* | 0.15 | 0.52* | 0.14 | 0.37* | 0.12 | 0.41* | 0.21 | 0.61* |
| Women with 10 or more years of schooling (%) | 0.28 | 0.33* | 0.42* | 0.43* | 0.53* | 0.64* | 0.43* | 0.64* | 0.61* | 0.39* |

-0.20-0.0 0-0.20 0.20-0.40 0.40-0.60 0.60-0.80

* Any p-value of 0.1 or lower has been considered as a significant correlation.

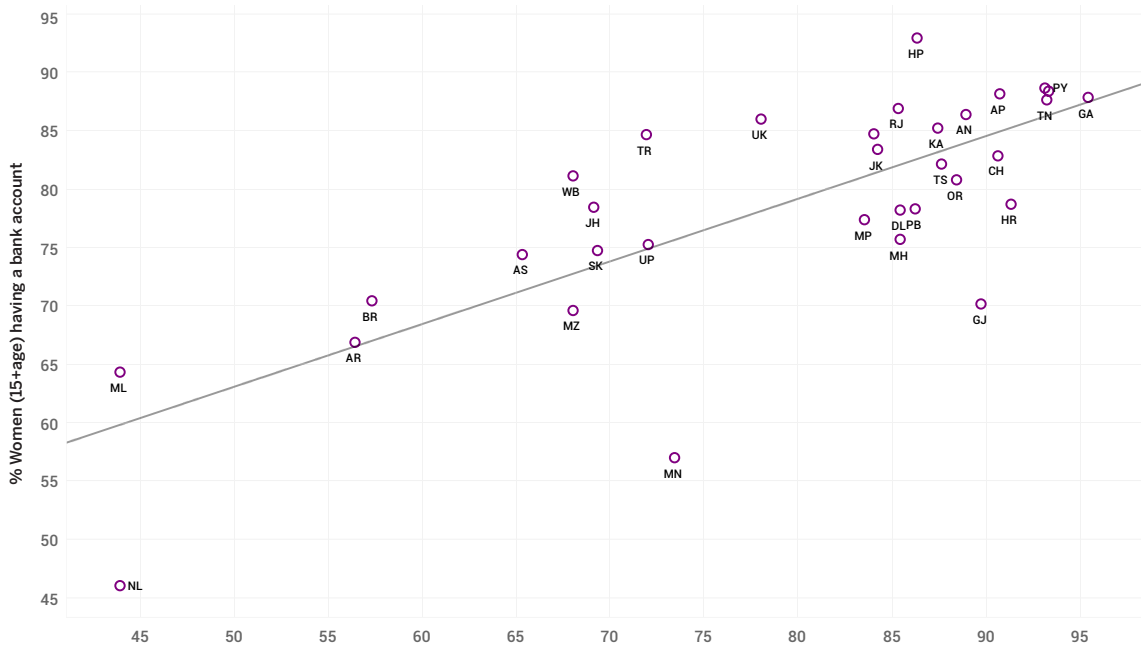
**The proportion of women aged 15-24 years who use hygienic methods of protection during their menstrual period had some high correlations, which can be explained by it being a health indicator itself.**

**The proportion of married women who usually participate in three household decisions was not analysed in depth as the correlations did not fall within our threshold for analysis.**

# Bank Account Ownership vis-à-vis Maternal and Infant Health

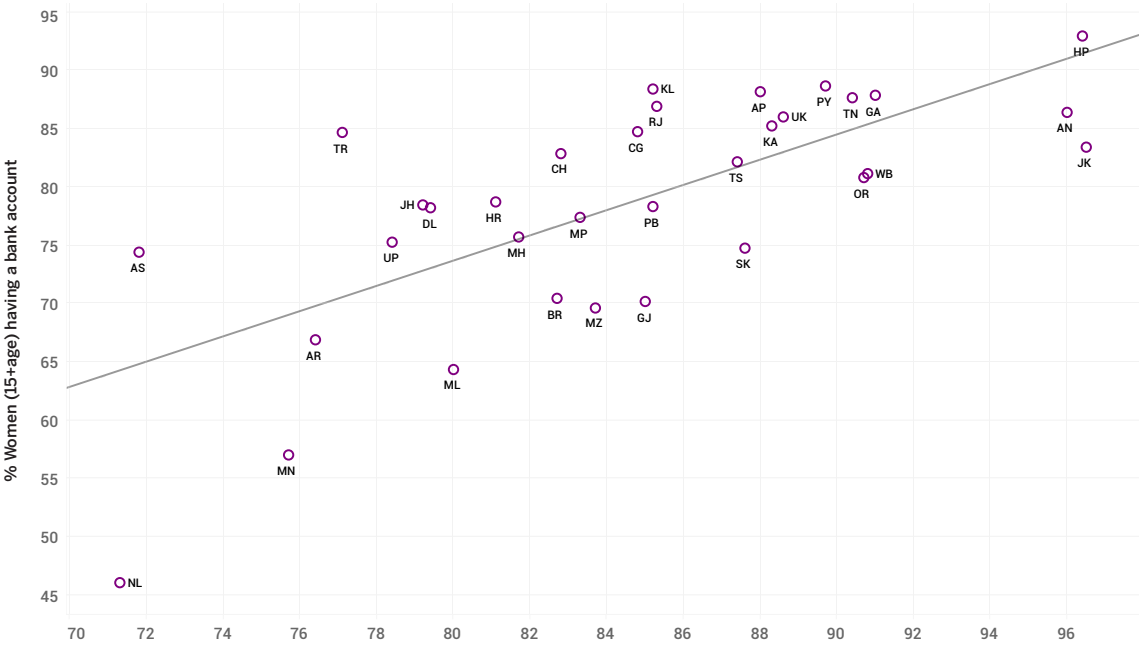
**Bank account ownership among women strongly correlates with postnatal care for them and their infants, as well as their infants' vaccination status.**

## Figure 1: Women having a bank account vs Women who received postnatal care




Mothers who received postnatal care from a doctor/nurse/LHV/ANM/midwife/other health personnel within 2 days of delivery (%)

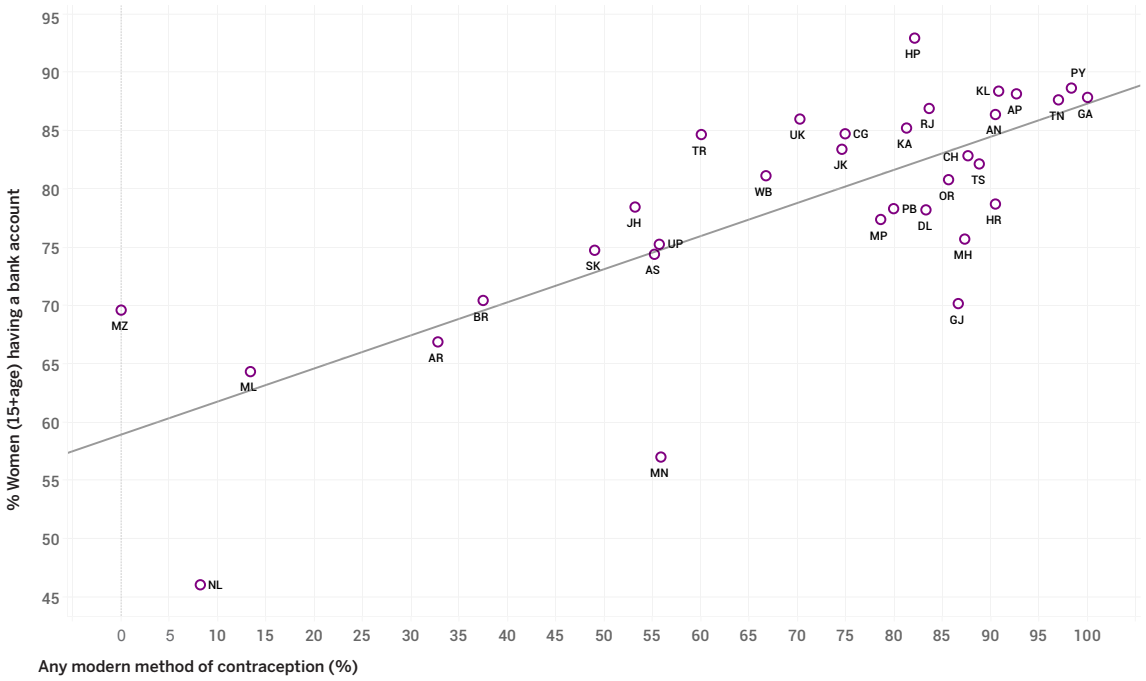
## Figure 2: Women having a bank account vs Children aged 12-23 months being fully vaccinated




Children aged 12-23 months being fully vaccinated based on information from vaccination card only (%)

The analysis shows a strong correlation between women having a bank account, and the likelihood of infants aged 12-23 months being fully vaccinated, infants receiving postnatal care within two days of delivery; and mothers receiving postnatal care from a doctor. Even after accounting for income and wealth differences, women with bank accounts are found more likely to have institutional births, which also increases the chances of them and their infants receiving postnatal care (Singh et al. 2012). This could, in part, be attributed to government initiatives such as the Pradhan Mantri Matru Vandana Yojana (PMMVY) enacted in 2017, which provides a ₹5,000 cash incentive to pregnant and lactating mothers to fulfil specific conditions for their first infant. These include completing antenatal check-ups, receiving postnatal care, and finishing the full first-cycle immunisation for the infant. Women must have a bank account to enrol in this programme (Ministry of Women and Child Development [MWCD] 2019). Between 2020 and 2021, over ₹8,800 crore transferred to bank accounts of pregnant and lactating women under PMMVY, meaning over 1.67 crore women have availed the scheme, indicating its wide impact (Ministry of Women and Child Development, GoI, 2021). Financial inclusion, therefore, appears to be complementary to institutional healthcare for women and newborn infants.

**Figure 3: Women having a bank account vs Usage of any modern method of contraception**




**Owning a bank account can increase contraception usage by enabling women to be financially independent and improving their participation in networks such as Self Help Groups (SHGs), which in turn increases awareness and access to information.**

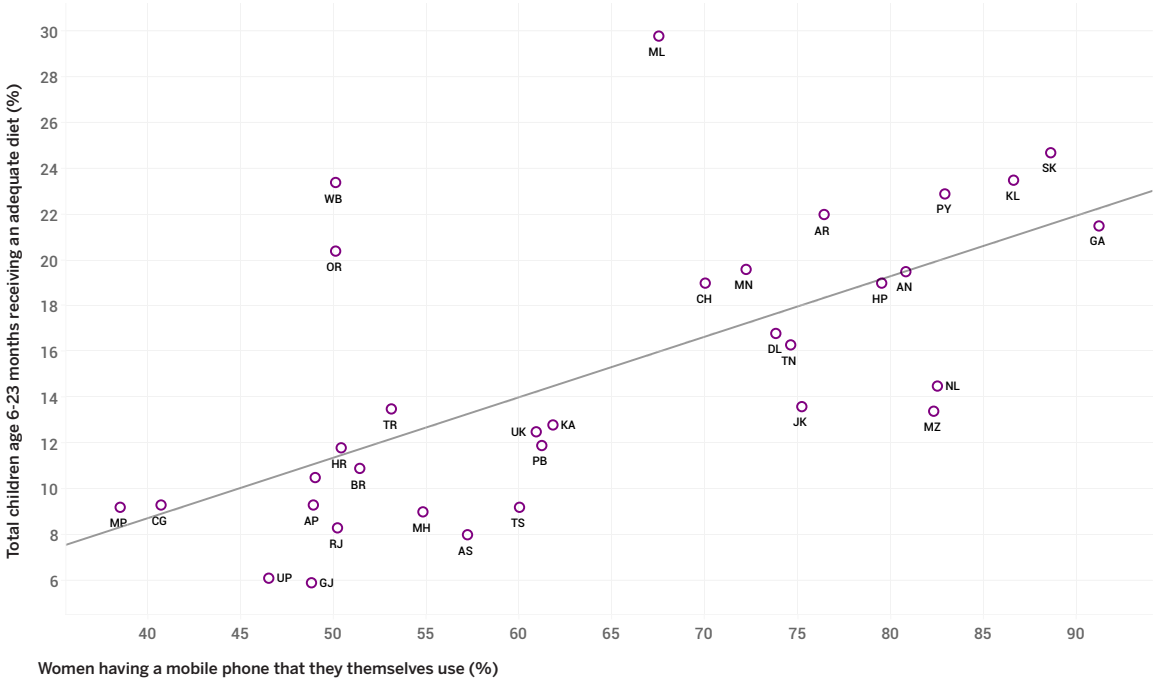
The analysis reveals a strong correlation between women's bank account ownership and the use of contraception methods. Both the number of women who use contraception and those who own bank accounts have increased between 2017 and 2021. Other studies have also found that owning a bank account led to a 3% increase in using contraception (Singh

2019). This can be attributed to the financial independence and decision-making ability that owning a bank account can provide. Bank accounts also enable women to participate in microfinance schemes and SHGs. Membership in both these programmes increases knowledge about, and usage of contraceptives (Dehingia 2019; Saha 2013). Not only do these groups provide women with the means to procure contraceptives, but they also serve as support systems and information networks to do so.

## Mobile Phone Ownership vis-à-vis Child Nutrition

**Infants are more likely to receive an adequate diet when their mothers own a mobile phone.**

**Figure 4: Women having mobile phones vs Children who received adequate diet**

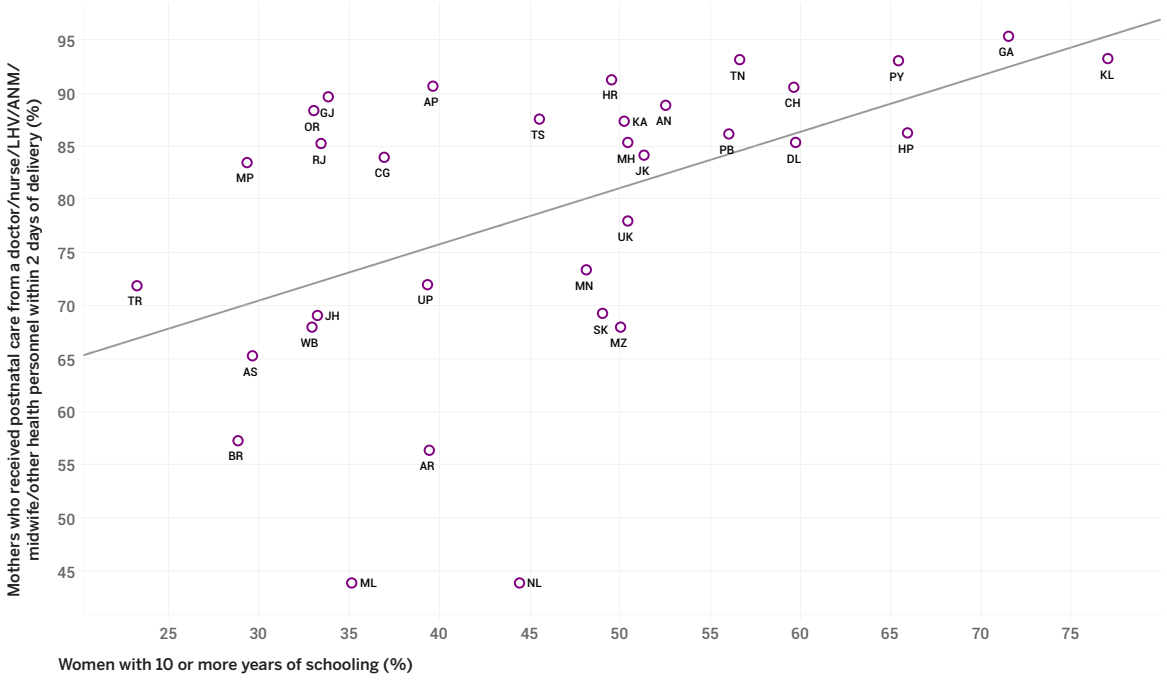



There is a strong correlation between mobile phone ownership among women and adequate nutrition for their infants aged 6-23 months. A number of Reproductive, Maternal, Newborn Child and Adolescent Health-focused initiatives use phones to convey information about proper nutrition to mothers to better equip them to understand what diet to provide. The success of these programmes is particularly evident in rural areas with limited internet and smartphone availability. Programmes like Kilkari and Mobile Alliance for Maternal Action (MAMA), which use IVR and messaging technology to deliver time-sensitive and stage-specific information regarding pregnancy and maternal health, could have helped ensure higher nutrition rates for infants and proper maternal care in underserved communities (Khan et al. 2020).

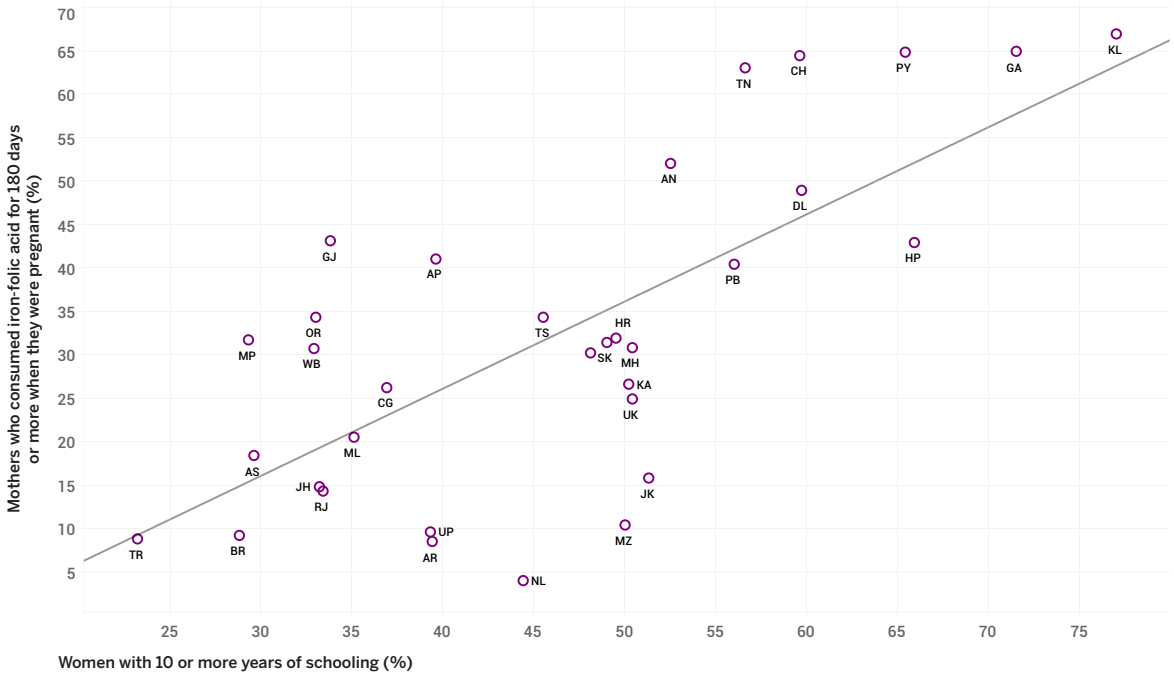
# Educational Levels vis-à-vis Maternal and Infant Health

**While education and literacy levels improve maternal health indicators for women, they do not have this effect on infant nutrition indicators.**

### Figure 5: Women with 10 or more years of schooling vs Women who received postnatal care

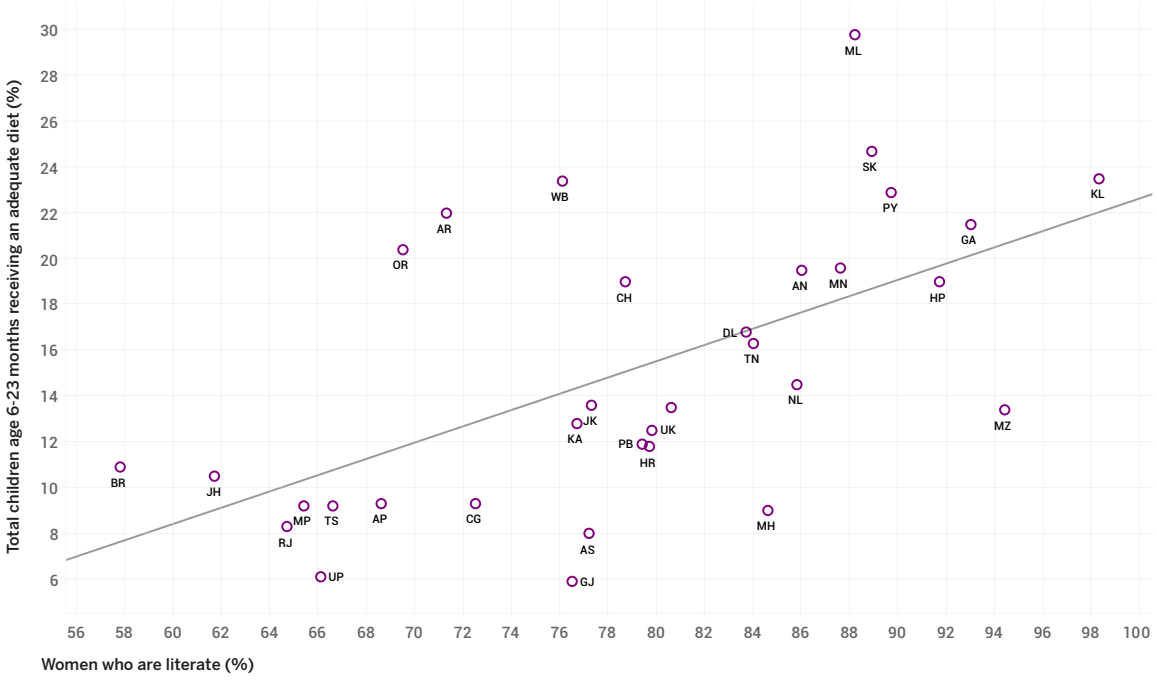



### Figure 6: Women with 10 or more years of schooling vs Mothers who consumed iron-folic acid



There is a strong correlation between women receiving more than ten years of schooling and high rates of IFA consumption and pre and postnatal care. Other studies corroborate this by highlighting that better-educated women are four times more likely to take the necessary dose of iron supplements and education helps prevent nutritional deficiencies (Chourasia 2017; Hisam 2014). The percentage of women who seek external medical support from health professionals as opposed to opting for at-home care also increases with education status (Gupta 2012).

**Figure 7: Women who are literate vs Children aged 6-23 months receiving an adequate diet**



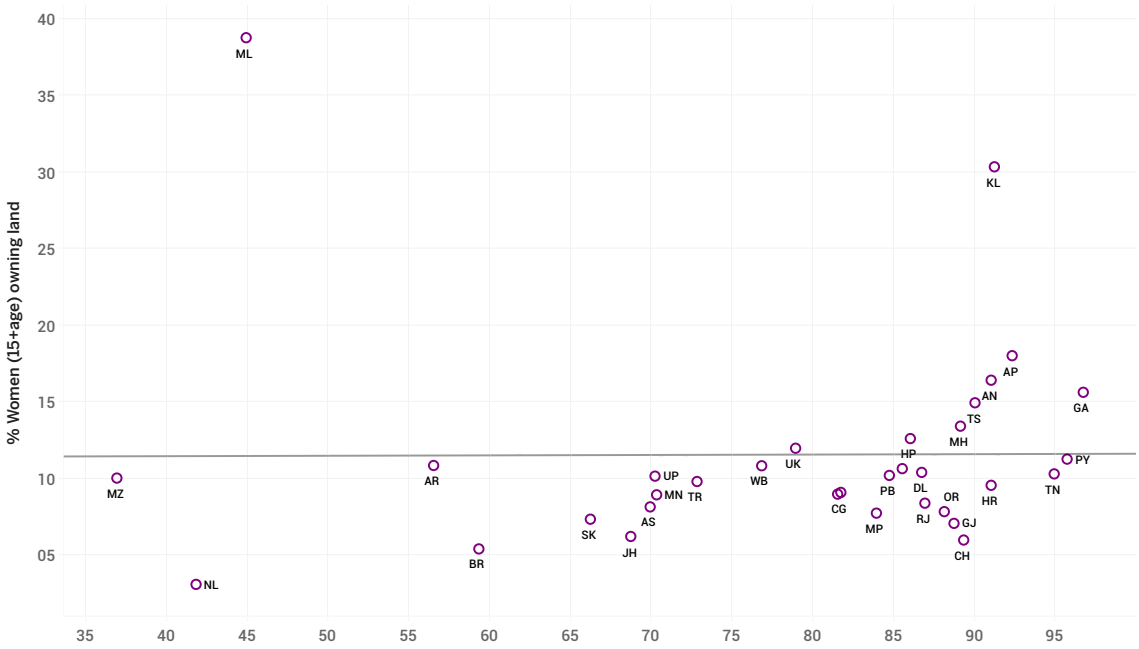

While we may generally assume that women with higher literacy and more education have better infant health outcomes, NFHS-5 results show that this is not always the case. Among new mothers, education and literacy are only moderately correlated with adequate breastfeeding and nutrition for their infant. This means that even though education and literacy can help improve the likelihood that infants will be breastfed and receive adequate and diverse diets; it does not always have this effect and other factors must be accounted for.

Infants of illiterate mothers and mothers with postgraduate degrees both have the same minimum dietary diversity rates of about 25%. This shows that education does not really influence whether infants receive appropriate and well-rounded diets (World Bank 2019). The percentage of infants exclusively breastfed is also consistent across education levels, indicating no correlation between the degree of education a woman received and infants being breastfed. For infants aged under twenty-three months, there is a general lack of accessible information on specific and detailed best nutrition practices. Even if mothers of infants in this age group are literate and educated, they might not have the necessary resources to guide them.

# Land Ownership vis-à-vis Child Nutrition

**Although women are starting to own more land which can increase their agency, this does not translate to improvements in maternal and infant health–particularly in terms of child nutrition.**

**Figure 8: Women owning land vs Children who received postnatal care**




The legal status of women's land inheritance has improved in India, which increases their power to make decisions. Controlled studies have even found that such legal changes lower the chances of a child being underweight or malnourished (Center for Women's Land Rights 2012; Singh 2021). However, the NFHS-5 analysis shows that land ownership has a weak relationship with maternal and infant health indicators across the board. In fact, the lowest of these correlations is actually between land ownership and infants receiving an adequate diet. This tells us that while ownership of land may help, women also require an enabling environment that supports maternal and infant health outcomes.

# Employment Status vis-à-vis Child Nutrition

**Employment does not automatically result in better maternal and infant health outcomes.**

The data also reveals that just because a woman is employed, it does not lead to better healthcare for herself or her infant. Despite some of them not being statistically significant, none of the indicators yield high correlations. This could be attributed to the fact that 91% of employed women work in the informal sector, with no paid maternity leave

or support (International Labour Organisation 2018). As a result, full-time employment can undermine the practice of exclusive breastfeeding, as employed women cannot afford to take any time off to nurse their infant, or take them to receive medical care when needed. Even most formal workplaces lack supportive resources, such as breastfeeding rooms or designated breaks (World Bank 2019). Due to the unregulated nature of their workplaces and work insecurity, women in the informal sector go back to work as soon as three weeks after childbirth (Bhan 2020). Not only does this limit the amount they can breastfeed, which harms their infant's nutritional intake, but it also creates health risks for them and delays care-seeking behaviour.

# Conclusion

This analysis reveals impact across two levels of women's agency. The foundational level, and the level involving improved connectedness and mobility. These factors allow them to access information and receive benefits, creating space and time to nurse infants at the workplace and provide them with health and nutrition flexibly. Positive changes at these levels will have a far more significant impact on maternal and infant health outcomes, moving forward.

**Financial and digital inclusion is essential for sustained positive health outcomes for mothers and infants.** Factors like owning a bank account or a mobile phone correlate strongly with better health outcomes. These levers improve access to information and affordability of the solutions, enabling them to have a strong impact on maternal and infant health. Increasing access to bank accounts can improve the number of women receiving PMMVY maternal health benefits and participating in SHGs which provide a support system for accessing information regarding contraception and other aspects of personal health and well-being. Improving ICT penetration can allow women to obtain critical information about the steps to take during each stage of their pregnancy for their well-being, and that of their newborns'.

While education is important for a woman's agency and can improve her own health to some extent, **targeted interventions need to be taken to raise awareness and drive appropriate nutrition-related practices during pregnancy, and in the first 1,000 days after childbirth.** Interventions should be designed to present women with a safety net to ensure the well-being of both mother and infant. For example, access to iron-folic acid supplements for pregnant women and affordable nutritional products can be facilitated through government schemes. Information about the numerous benefits of breastfeeding and recommended nutritional intake for infants can be disseminated through various points of care delivery, or by integrating it with scheme-related announcements. Interventions like community radio and targeted voice messages to pregnant women can also be looked at in partnership with nonprofits and SHGs.

Given that being employed does not appear to have a positive correlation with any health outcomes, **structures to support women's maternal health needs should be established in formal and informal workplaces.** The formal sector is required to offer six months of paid maternity leave, but the burden of financing this rests with employers, which can discourage them from hiring women. Government incentives for companies to hire women can help curb this effect and ensure that women still receive the required maternity benefits. The problem is worse in the informal sector, where more than 90% of women are employed. They are generally required to return to work much sooner to avoid losing out on their daily wages, thus increasing the opportunity cost of nursing their newborns.

Though the PMMVY assistance of ₹5,000 is not enough to cover the loss in wages after childbirth, steps should be taken to increase its penetration. Governments could also examine state-wise provisions to increase assistance to compensate for the wage gap, along with a more robust system in place to ensure that the benefits of the scheme actually reach all women who need it. A case in point is the Dr Muthulakshmi Maternity Benefit Scheme in Tamil Nadu which provides a total cash benefit of ₹18,000.

Employers should also grant leaves prior to childbirth for antenatal check-ups, particularly in cases of high-risk pregnancies, to ensure the safety of the mother's health. Access to childcare and breastfeeding spaces also needs to be improved in formal and informal workplaces. Government legislation that requires workplaces to provide appropriate pumping equipment, designated pumping spaces, and nursing breaks would allow women to continue the essential practice of breastfeeding even after they return to work. For informal workers, creches and breastfeeding spaces can be provided outside the workplace through SHG networks or the existing Anganwadi infrastructure. More funding should be allocated to programmes like the National Creche Scheme, and the government can partner with nonprofits already offering these services to scale their reach.

## References


- Bhan, G, Surie, A, Horwood, C, Dobson, R, Alfers, L, Portela, A, & Rollins, N 2020, 'Informal Work and Mmaternal and Child Health: A Blind Spot in Public Health and Research.' *Bull World Health Organ*, vol. 98.
- Center for Women's Land Rights 2012, 'Land Rights and Food Security', Landesa.
- Chourasia, A, Pandey, C, Awasthi, A 2017, 'Factors influencing the consumption of iron and folic acid supplementations in high focus states of India', *Clinical Epidemiology and Global Health*, vol. 10.
- Dehingia, N, Dixit, A, Averbach, S 2019, 'Family Planning Counseling and its Associations with Modern Contraceptive Use, Initiation, and Continuation in Rural Uttar Pradesh, India', *Reproductive Health*, vol. 16.
- Gupta, D 2012, 'Effects of Female's Literacy on Maternal Health: An Empirical Study of Jammu and Kashmir State', *International Journal of Social Science & Interdisciplinary Research*, vol. 1 no. 12.
- Hisam, A, Rahman, M, Mashhadi, S 2014, 'Knowledge, Attitude and Practice Regarding Folic Acid Deficiency; A Hidden Hunger', *Pakistan Journal of Medical Sciences*, vol. 30.Khan, S, Patel, A, & Puranik, A 2020, 'Use of Mobile Health in Infant and Young Infant Nutrition: A Formative Study in Rural Maharashtra', *Qualitative Report*, vol. 25.
- International Labour Organization 2018, 'Women and Men in the Informal Economy: A Statistical Picture', ILO.
- Ministry of Women and Child Development, *POSHAAN Abhiyaan*, MWCD, New Delhi, viewed on 9th July, 2022.
- Ministry of Women and Child Development 2019, *Pradhan Mantri Matru Vandana Yojana FAQ*, MWCD, New Delhi.
- Ministry of Women and Child Development, GoI, 2021, Press Information Bureau *'Women's issues now a social issue, part of mainstream'*, 6 September 2021, viewed September 2022.
- Singh, A, Padmadas, S, Mishra, U, Pallikadavat, S, Johnson, F, Matthews, Z , 2012, 'Socio-economic Inequalities in the Use of Postnatal Care in India.' *PloS one* vol. 7.
- Singh, N, & Adefu, J 2021, 'Women's Inheritance Rights and infant Health Outcomes in India', *Journal of Development Studies*, vol. 58, no. 4.Singh, A, Kumar, K, & Mcdougal, L 2019, 'Does owning a bank account improve reproductive and maternal health services utilization and behavior in India? Evidence from the National Family Health Survey 2015-16', *SSM Population Health*, vol. 7.
- World Bank 2019, 'Addressing Critical Failures of Infant and Young infant Nutrition (IYCN) in South Asia: IYCN Challenges Faced by Working Women in Urban Areas in India and Sri Lanka', WB.