INDIAN DEVELOPMENT POLICY REVIEW
*Vol. 1, No. 1, 2020, 43-66*

*URL : www.esijournals.com*

# Factors Associated with Anemia among Women and Children Belonging to the Scheduled Castes and Scheduled Tribes in Degraded Districts of India

**Manikandan A.D**

*Post-Doctoral Fellow, Department of Mathematical Demography and Statistics, International Institute for Population Sciences, Mumbai, India, E-mail: alungal80@gmail.com*

**Article History**

Received : 10 April 2020
Revised : 17 May 2020
Accepted : 20 May 2020
Published : 22 June 2020

**Keywords**

Land degradation, Anemia, Women, Children, Rural

**Abstract:** Land continues to be a major source of income and survival nutrition for the rural people in India. However, the land degradation which reduces productivity and the quality of the soils poses a major threat to income and nutrition status of rural people who depend largely on agriculture. We studied the association of land degradation and the prevalence of anemia among women aged between 15–49 years and children aged between 6–59 months belonging to the scheduled castes and scheduled tribes in India. District-wise land degradation status map at 1:50,000 scale and anemia data were gathered from the Desertification and Land degradation Atlas of Selected Districts (2018) and the National Family Health Survey 2015–16 (NFHS), respectively. Multi linear regression was performed to study how factors independently associated with anemia among women and children. The weighted prevalence of anemia among women and children belonging to the scheduled castes and scheduled tribes were 58.3% and 59.6%, respectively. The results of the regression clearly showed that, among all explanatory variables, consumption pattern (food intake) and maternal anemia have made the biggest contribution to anemia among women and children in degraded districts of India. Land degradation induced anemia is one of the major causes of social marginalisation in India. The problems, such as income inequality and loss of ecocentric culture are the main contributing factors to land degradation induced anemia. The results of the study suggested that the land degradation status should be taken into the consideration for anti-anemia programmes in dryland and non-dryland areas of rural India.

## INTRODUCTION

Anemia is one of the biggest public health challenges in the world. Even though, the prevalence of anemia in global level declined by 7% point from 40% in 1990 to

33% in 2010 Kassebaum *et al.* (2014), the reduction of anemia was relatively low in women compared with men. In addition to that, WHO (2015) noted that prevalence of anemia in pregnant and non-pregnant women had only a marginal decrease from 43% to 38% and 33% to 29% between 1995 and 2011, showing that anemia is still high and lingering problem among women. Stevens *et al.* (2013) noted that anemia in children dropped from 47% to 43% during 1995 - 2011. Recognizing the seriousness of the problem, in 2012, the World Health Assembly Resolution 65.6 endorsed a comprehensive plan to implement on maternal, infant and young child nutrition issues which brought a set of six global nutrition targets. One of the targets is to achieve a 50% reduction of anemia in women of reproductive age by 2025. Besides, the Sustainable Development Goals (SDGs) which came into effect in 2016 proposed one of its goal targets (no. 2.2) as to end all forms of malnutrition by 2030 (FAO 2015). Despite the fact that international agencies have taken initiatives to reduce anemia, its prevalence not only remain a huge menace to the wellbeing of women and children, but also increases since 2012. In this paper, we uphold the view that land degradation is one of the major challenges in the reduction of anemia in women and children. It is argued that land degradation increases anemia through i) nutritional deficiency from reduced quantity and quality of food and water supplies; ii) water and food-borne diseases from poor hygiene and a lack of clean water; iii) respiratory diseases that resulted from atmospheric dust from wind erosion and other air pollutants and iv) the spread of other infectious diseases. Lack of adequate health services is also a major problem in degraded and desertified regions.

Among 80 countries substantially affected by land degradation, 36 are situated in Africa which have a high prevalence of anemia among women and children. Particularly, the countries which are located in drylands (arid, semiarid and dry sub-humid): Eretria, Gambia, Senegal, Somalia, Tanzania, Malawai, Mozambique, Chad, Mauritania, Sudan, Mali and Niger have desertification and also high prevalence of anemia among women and children (WHO 2015).

The Latin American countries are also undergoing severe land degradation and desertification. Around, 16 % of the total degraded land in the world is reported in Latin American countries. In Brazil, 55% of the Northeast region is affected by land degradation Milesi *et al.* (2015), where the prevalence of iron deficiency anemia (IDA) among children is high Carvalho *et al.* (2010). In Bolivia, where 77% of the population (6 million) live in degraded land, the percentage of anaemic children, non-pregnant women and pregnant women are 56%, 32%, & 38%, respectively (WHO 2015). Land degradation and anemia are serious problems in many other

Latin American countries namely, Argentina, Mexico, Chile, Paraguay, Ecuador and Peru as well. In Central Asia, land degradation raises serious problem in the Aral Sea region where the prevalence of anemia found to be highest among women and children (Orlovsky et al 2001; Whish-Wilson 2002).

In a global scale, Land degradation and anemia affect millions of poor people – approximately 420 million poor across the world. Specifically, the anemia induced by Land degradation in drylands and non-drylands undermines the well-being of around 3.5 billion people in the world – more than half of them are women and children. So, land degradation inflicted anemia is one of the gravest global and shared environmental health challenges in the world today. Low income countries appear to be the first hand victims of the land degradation induced anemia. Thus, India being one among the developing nations needs to spearhead the strategic attempts to remove land degradation induced anemia mainly for the following reasons: i) land degradation inflicted anemia intensifies the misery of women and children and destroys the future of school going child girls; ii) it undermines the growth and development; iii) it increases migration of rural people through reduced agricultural productivity and income; iv) it keeps food supply, safe drinking water, sustainable development, conservation of nature and mitigating and adapting to climate change under risks; v) it escalates community & gender violences; and vi) it increases the risks of morbidity, maternal mortality, child mortality, disability, cognitive problems and pregnancy related problems like still birth and abortion among people depending on degraded lands. Therefore, the theoretical and empirical studies relating to land degradation induced anemia among poor people belonging to the scheduled castes and scheduled tribes assume the great significance in India.

Land continues to be a major source of livelihood and nutrition in rural areas of India. Scheduled tribes (ST), Scheduled Castes (SC) and other backward communities are relying most on land for livelihood and survival nutrition. But, land use changes induced by deforestation, mining and quarrying, population growth, urbanization, changes in cropping pattern, commercialisation of agriculture and climate change have been rapidly degrading quality of the land for decades. It in fact, has put a majority of underprivileged people, SC and SC communities, under the risk of chronic diseases and malnutrition through degradation of farming, livestock, food supply and environment (e.g. soil, water, vegetation, air and biodiversity) (Lal 2009; Desai and Subramanian 1994). Moreover, researches suggests that people depending on degraded land in rural areas are more likely to be affected by malnutrition. Since land is the most important natural capital and also productive asset of SC/ST in India, land degradation impacts are detrimental to the livelihood, health and nutrition of the poor sections in society.

Furthermore, the prevalence of infection which is impacted by low vegetation due to degraded land leads to anemia among malnourished people (Barrow 1991. Women and children belonging to poor SC/ST are at first to suffer from the risks of land degradation induced anemia. According to the National Family Health Survey (2015–16), the prevalence of anemia among women aged between 15–49 years belonging to SC/ST in rural India are 55.36% and 60.2%, respectively. The prevalence of anemia among children aged between 6–59 months belonging to SCs/STs in rural areas are 59.9% and 66%, respectively. Besides, high prevalence of maternal anemia is one of the potential risk factors for anemia among children. It is thus logical to say that land degradation affects the health and nutrition conditions of women and children in rural areas adversely. However, it also relies on many factors such as degree of dependency of the households on degraded land, other sources of income, coverage of the public services, access to private health care, access to market, awareness and education, climatic conditions, vegetation degradation, etc. The present study investigates the association of land degradation and anemia among women and children belonging to SC/ST in rural areas of India.

## CONCEPTUAL FRAMEWORK

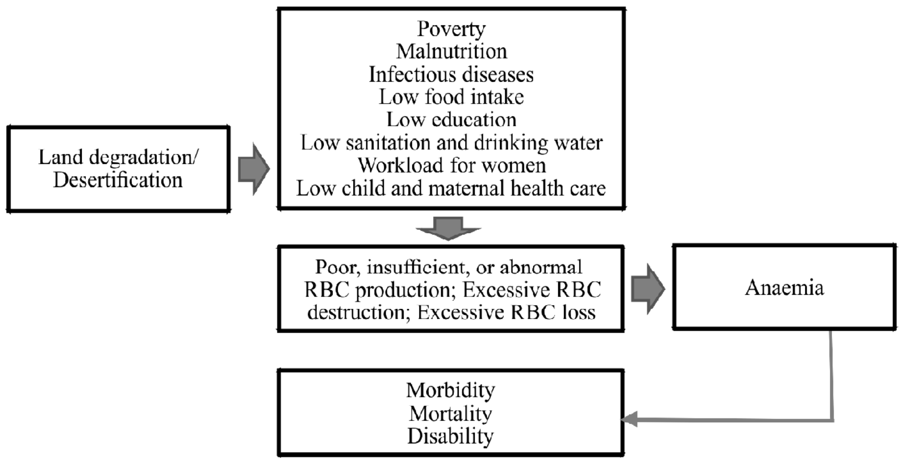
Land degradation induced anemia is an outcome of a set of complex processes. Figure 1 shows that land degradation can generate potential risk factors for anemia such as poverty, malnutrition, infection and other diseases due to low vegetation cover, low availability of clean drinking water and impoverished sanitation facility, low education through drop out of school-going children and increased workload for women through fetching water and collection of firewood, and community and gender violence. A combined effect of all or some of these can contribute to anemia. In its severe form, anemia leads to mortality, morbidity and disability among women and children.

## METHODS

### Ethics statement

No ethics statement is required for the study as this work is based on an anonymous publicly available dataset with no identifiable information on the survey participants.

**Figure 1: Association of land degradation and anaemia and its human health effects among women and children in rural areas**




*Source:* Adapted from the United Nations Convention to Combat Desertification (2014); The United States Agency for International Development (2013); and Balarajan *et al.* (2012).

## Data Sources

Districtwise data of the desertification and land degradation were taken from the *Desertification and Land Degradation Atlas of Selected Districts of India (Based on IRS LISS III data of 2011-13 and 2003-05),* Volume-2 prepared by the Space Applications Centre (SAC) (2018), Indian Space Research Organisation, Ahmedabad under the Department of Space (DoC), Government of India (GoI). Districtwise data of socioeconomic, demographic and health variables were taken from the *National Family Health Survey 2015-16* (NFHS 4), a nationwide survey, conducted by International Institute for Population Sciences, India, under the stewardship of the Ministry of Health and Family Welfare, Government of India. Districtwise data of agroclimatic conditions were taken from the *District Database of Agricultural Statistics: A Database Management System* published by the Central Research Institute for Dryland Agriculture (2014), a premier research institute under Indian Council of Agricultural Research (ICAR), Government of India.

## Measurement of land degradation

In order to calculate districtwise desertification and land degradation data, the SAC (2018) used the following methodology. Geocoded Linear Imaging Self–Scanning Sensor III (LISS III), a medium–resolution multispectral camera, digital data were analysed using onscreen visual interpretation techniques along with ancillary information to interpret desertification and land degradation classes. Districtwise preliminary desertification status maps (DSM) at 1:50,000 scale were prepared using Geographical Information System (GIS). Geo–database was created in GIS using ArcGIS software package based on National Spatial Framework on 1:50K with Lambert Conformal Conic (LCC) projection and World Geodetic System (WGS) 84 datum. Base layers of administrative boundaries, settlements, water bodies were used as reference from National Resources Database (NRDB) and road and rail networks were used as reference from SAC National Wetland Inventory and Assessment (NWIA) project. Forest boundaries were taken from Forest Survey of India (FSI) and used as reference layer to delineate polygons, particularly within forest areas. Ground truth data and field checks were carried out to finalize the maps. Quality Checking (QC) was carried out considering accuracy of georeferencing (Image co-registration < 2 pixels error), Uniformity in Projection and Datum (WGS 1984 Lambert Conformal Conical), process and severity identification and GIS database design and standards (MMU > 2.25 ha, topology checking, seamless mosaic, codification, cartographic elements, etc). Necessary corrections were incorporated (SAC 2007a; 2007b; 2016; Ajai *et al.* 2009).

### Selection of the Districts

As stated earlier, the Space Applications Centre, Ahmedabad has prepared the desertification and land degradation atlas of 76 districts and two sub-basins (Nubra and Shyok) in India. These districts and two sub-basins were selected from all states based on the lists of districts identified as drought prone districts under the Drought Prone Areas Programme (1973-74) by the Department of Land Resources (DoLR), the Ministry of Rural Development (MoRD), Government of India (GoI) and the concerned state departments/ institutions. From this Atlas, we omitted Pathankot district and two sub-basins due to lack of data in the NFHS 4 (2015-2016). The Union Territories (UTs) were also removed from the study due to lack of land degradation data in the SAC's report (2018). Therefore, a total of 75 districts from 29 states were included in the study (Map 1 and Table A1 in Appendix).

### Sample Size

After omitting missing values, "don't know" and urban women samples, a total of 57,011 samples of women were included in the study. The total numbers of women samples from SC/ST and non-SC/ST groups were 27,499 and 29,512, respectively. Similarly, the total numbers of child samples from SC/ST and non-SC/ST groups were 9,228 and 8,753, respectively.

## Statistical Tools

Multiple linear regression (MLR) was applied to study how factors independently associated with anemia among women aged 15-49 years and children aged 6-59 months belonging to scheduled castes and scheduled tribes in India. The weighted prevalence of any anemia at the district level was taken as a dependent variable. Land degradation, socioeconomic, demographic and health variables at the district level were taken as independent variables in the regression model. A total of four multi linear regressions were performed for women and children separately. Regression coefficients and statistical significance ($P<0.05$) were tabulated to present findings of the study.

## Results

The weighted prevalence of anemia among women belonging to scheduled castes and scheduled tribes in degraded districts was 58.3%. As per the extent of land degradation (low, medium and high), the prevalence of anemia among SC/ST women was 55.7%, 57.6% & 62.0%, respectively (Table A2 in Appendix). It was found that the prevalence of anemia among women has increased as the extent of land degradation increased. Multiple linear regression (MLR) was performed to study how factors independently associated with anemia among women aged between 15-49 years in the desertified and degraded districts. An analysis of Table 1 made it clear that the four independent variables in the standard model are significantly predictive of the dependent variable Anemia to the ANOVA statistics [$F(12, 56) = 5.027$, $p<.05$]. In the standard regression analysis, the model's degree of predicting the dependent variable was found to be $R = .720$. The model's degree of explaining the variance in the independent variable was $R^2 = .519$. Looking at these coefficients, it may be said that the model predicts the dependent variable (any anemia) very well. The absolute value of β (Beta) in Table 1 indicates the order of importance of the independent variables. The variable with the highest β value is relatively the most important independent variable. The standardized coefficients â showed that the prevalence of anemia among SC/ST women aged between 15-49 years was found to be significantly explained by land degradation ($\beta = .298$, $p<.05$), improved sources of drinking water ($\beta = .338$, $p<.05$), women eat dark green leafy vegetables weekly (β = .257, p<.05), and women eat meat or chicken occasionally (β = .225, p<.05). On examining the contributions made by the independent variables in the model to the model, it was found that improved sources of drinking water (β = .338), followed by inadequate consumption vegetables and meat or chicken have made the biggest contribution. Inadequate food intake seems to be one of the important causes of nutrition deficiency/anemia among women belonging to the scheduled castes and scheduled tribes in degraded districts of India. Thus, women should eat food which contains haem and non haem iron, such as meat, egg, fish, cereals, beans, dark green leafy vegetables and lentils.

**Table 1: Multiple regression result of anemia among rural SC/ST women aged 15–49 years and its explanatory variables (β-coefficients) in the degraded districts**

| *Model* | *Unstandardized Coefficients* | | *Standardized Coefficients* | *T* | *Sig.* | *95.0% Confidence Interval for B* | |
|---|---|---|---|---|---|---|---|
| | *B* | *Std. Error* | *Beta* | | | *Lower Bound* | *Upper Bound* |
| (Constant) | 6.971 | 18.728 | | .372 | .711 | -30.546 | 44.487 |
| Land degradation | .219 | .076 | .298 | 2.870 | .006 | .066 | .372 |
| Improved sources of drinking water | .367 | .114 | .338 | 3.209 | .002 | .138 | .596 |
| Household size ≤4 | .124 | .159 | .113 | .777 | .441 | -.195 | .443 |
| Households having children | .259 | .225 | .175 | 1.152 | .254 | -.191 | .708 |
| Schooling 0-4 years | -.050 | .125 | -.056 | -.399 | .691 | -.301 | .201 |
| Poverty | .114 | .089 | .209 | 1.275 | .207 | -.065 | .292 |
| Women eat milk or curd weekly | -.364 | .152 | -.235 | -2.398 | .020 | -.668 | -.060 |
| Women eat pulses or beans eat occasionally | -.372 | .122 | -.344 | -3.049 | .004 | -.617 | -.128 |
| Women eat dark green leafy vegetables weekly | .272 | .109 | .257 | 2.500 | .015 | .054 | .491 |
| Women eat fruits daily | -.485 | .282 | -.216 | -1.717 | .092 | -1.050 | .081 |
| Women eat egg weekly | -.241 | .084 | -.339 | -2.866 | .006 | -.410 | -.073 |
| Women eat meat/ chicken occasionally | .179 | .084 | .225 | 2.129 | .038 | .011 | .348 |

a. Dependent Variable: any anemia

$R = .720$ $R^2 = .519$ $F(12, 56) = 5.027$, $p = 0.00$

The prevalence of anemia among children belonging to the scheduled castes and scheduled tribes in degraded districts was 59.6%. As per the extent of land degradation (low, medium and high), the prevalence of anemia among children was 54.8%, 63.0%, and 59.6%, respectively (Table A2 in Appendix). Multiple linear regression was performed to study how factors independently associated with anemia among SC/ST children aged 6-59 months in degraded districts of India. An analysis of Table 2 made it clear that the four independent variables in the standard model are significantly predictive of the dependent variable Anemia to the ANOVA statistics [F(5, 66) = 13.462, p<.05]. In the standard regression analysis, the model's degree of predicting the dependent variable was found to be R = .711. The model's degree of explaining the variance in the independent variable was $R^2$ = .505. Looking at these coefficients, it may be said that the model predicts the dependent variable (any anemia) very well. The absolute value of â (Beta) in Table 2 indicates the order of importance of the independent variables. The variable with the highest â value is relatively the most important independent variable. The standardized coefficients â showed that the prevalence of anemia among children aged between 6-59 months was found to be significantly explained by land degradation (β = .215, p<.05), schooling of mother 0-4 years (β = .265, p<.05), maternal anemia (β = .485, p<.05), and improved sources of drinking water (β = .288, p<.05). On examining the contributions made by the independent variables in the model to the model, it was found that maternal anemia (β = .485) has made the biggest contribution.

**Table 2: Multiple regression result of anemia among rural SC/ST children aged 6–59 months and its explanatory variables (β-coefficients) in the degraded districts**

| *Model* | *Unstandardized Coefficients* | | *Standardized Coefficients* | *t* | *Sig.* | *95.0% Confidence Interval for B* | |
|---|---|---|---|---|---|---|---|
| | *B* | *Std. Error* | *Beta* | | | *Lower Bound* | *Upper Bound* |
| (Constant) | -12.599 | 11.623 | | -1.084 | .282 | -35.805 | 10.607 |
| Land degradation | .186 | .078 | .215 | 2.397 | .019 | .031 | .341 |
| Schooling 0-4 years | .197 | .070 | .265 | 2.829 | .006 | .058 | .336 |
| Maternal anemia | .481 | .092 | .485 | 5.200 | .000 | .296 | .666 |
| Diarrhea over last 15 days | -.298 | .285 | -.093 | -1.045 | .300 | -.867 | .271 |
| Improved sources of drinking water | .358 | .114 | .288 | 3.138 | .003 | .130 | .585 |

a. Dependent Variable: anemic

R = .711 $R^2$ = .505 F (5, 66) = 13.462, p = 0.00

The weighted prevalence of anemia among women belonging to the 'Other' (non-SC/ST) groups in rural areas of degraded districts was 53.0%. As per the extent of land degradation (low, medium and high), the prevalence of anemia among women belonging to the 'Other' groups was 51.9%, 53.3% and 54.3%, respectively (Table A3 in Appendix). Multiple linear regression was performed to study how factors independently associated with anemia among non-SC/ST women aged between 15-49 years. An analysis of Table 3 made it clear that the three independent variables in the standard model are significantly predictive of the dependent variable Anemia to the ANOVA statistics [F(12, 50) = 4.476, p<.05]. In the standard regression analysis, the model's degree of predicting the dependent variable was found to be R = .720. The model's degree of explaining the variance in the independent variable was $R^2$ = .518. Looking at these coefficients, it may be said that the model predicts

**Table 3: Multiple regression result of anemia among rural non–SC/ST women aged 15–49 years and its explanatory variables (β-coefficients) in the degraded districts**

| *Model* | *Unstandardized Coefficients* | | *Standardized Coefficients* | *T* | *Sig.* | *95.0% Confidence Interval for B* | |
|---|---|---|---|---|---|---|---|
| | *B* | *Std. Error* | *Beta* | | | *Lower Bound* | *Upper Bound* |
| (Constant) | 3.970 | 19.031 | | .209 | .836 | -34.255 | 42.195 |
| Land degradation | .305 | .082 | .408 | 3.714 | .001 | .140 | .471 |
| Improved water | .440 | .130 | .419 | 3.385 | .001 | .179 | .700 |
| Households having children | .008 | .201 | .006 | .040 | .968 | -.395 | .411 |
| Household size ≤4 | -.039 | .199 | -.037 | -.196 | .846 | -.438 | .360 |
| Schooling 0-4 years | .235 | .174 | .204 | 1.353 | .182 | -.114 | .584 |
| Poverty | .063 | .095 | .105 | .665 | .509 | -.128 | .255 |
| Women eat pulses or beans eat occasionally | -.279 | .183 | -.175 | -1.522 | .134 | -.647 | .089 |
| Women eat fruits daily | -.448 | .260 | -.237 | -1.723 | .091 | -.969 | .074 |
| Women eat egg weekly | -.159 | .105 | -.234 | -1.520 | .135 | -.369 | .051 |
| Women eat meat/ chicken occasionally | .246 | .089 | .356 | 2.771 | .008 | .068 | .424 |
| Women eat dark green leafy vegetables weekly | .148 | .105 | .154 | 1.404 | .167 | -.064 | .360 |
| Women eat milk or curd weekly | -.499 | .175 | -.319 | -2.854 | .006 | -.849 | -.148 |

a. Dependent Variable: Any anaemia

R = .720 $R^2$ = .518 F (12, 50) = 4.476, p = 0.00

the dependent variable (any anemia) very well. The absolute value of β (Beta) in Table 3 indicates the order of importance of the independent variables. The variable with the highest β value is relatively the most important independent variable. The standardized coefficients β showed that the prevalence of anemia among women aged between 15-49 years was found to be significantly explained by land degradation ($\beta = .408, p<.05$), improved sources of drinking water ($\beta = .419, p<.05$) and women eat meat / chicken occasionally ($\beta = .356, p<.05$). On examining the contributions made by the independent variables in the model to the model, it was found that improved sources of drinking water ($\beta = .419$) has made the biggest contribution.

The prevalence of anemia among children belonging to 'Other' groups in degraded districts was 57.9 %. As per the spatial extent (low, medium and high) of land degradation, the prevalence of anemia was 56.2%, 59.9% and 57.8%, respectively (Table A3 in Appendix). Multiple linear regression was performed to study how factors independently associated with anemia among non-SC/ ST children aged 6-59 months in degraded districts of India. An analysis of Table 4 made it clear that the only one independent variable in the standard model are significantly predictive of the dependent variable Anemia to the ANOVA statistics [$F(5, 66) = 19.199$, $p<.05$]. In the standard regression analysis, the model's degree of predicting the dependent variable was found to be $R = .770$. The model's degree of explaining the variance in the independent variable was $R^2 = .593$. Looking at these coefficients, it may be said that the model predicts the dependent variable (any anemia) very well.

**Table 4: Multiple regression result of anemia among rural non–SC/ST children aged 6–59 months and its explanatory variables (β-coefficients) in the degraded districts**

| *Model* | *Unstandardized Coefficients* | | *Standardized Coefficients* | *t* | *Sig.* | *95.0% Confidence Interval for B* | |
|---|---|---|---|---|---|---|---|
| | *B* | *Std. Error* | *Beta* | | | *Lower Bound* | *Upper Bound* |
| (Constant) | -5.811 | 14.464 | | -.402 | .689 | -34.689 | 23.066 |
| Land degradation | .031 | .092 | .030 | .340 | .735 | -.152 | .214 |
| Schooling 0-4 years | .032 | .078 | .034 | .405 | .687 | -.124 | .187 |
| Maternal anemia | .885 | .095 | .765 | 9.359 | .000 | .696 | 1.074 |
| Diarrhea over last 15 days | -.378 | .313 | -.096 | -1.206 | .232 | -1.003 | .248 |
| Improved sources of drinking water | .161 | .118 | .127 | 1.364 | .177 | -.075 | .398 |

a. Dependent Variable: any anaemia

$R = .770$ $R^2 = .593$ $F(5, 66) = 19.199$, $p = 0.00$

The absolute value of β (Beta) in Table 4 shows the order of importance of the independent variables. The variable with the highest β value is the most important independent variable. The standardized coefficients β showed that the prevalence of anemia among children aged between 6-59 months was found to be significantly explained by maternal anemia ($\beta = .765$, $p<.05$). This result is consistent with the results of other studies. On examining the contributions made by the independent variables in the model to the model, it was found that maternal anemia ($\beta = .765$) has made the biggest contribution.

## CONCLUSION

Land degradation induced anemia is one of the major causes of social marginalisation in India. The problems, such as income inequality and loss of ecocentric culture are the main contributing factors to land degradation induced anemia. The result of the study suggests the following measures for arresting the vicious connection of land degradation and anemia: i) the traditional rights of indigenous communities to own, govern and conserve the land, forests and other common property resources must be safeguarded; ii) there is the need of changes in patriarchal mind set and governmental attitudes towards land ownership rights, land distribution and land use related decision–making process; iii) access to social security schemes and other rural development programmes including health care facilities and programmes like iron and folic acid (IFA) supplementation programme need to be enhanced; iv) timely access to agricultural credits for SC/ST needs to be increased; v) mining and quarrying must be prohibited in the ethnic and ecosensitive areas; and vi) promote the scientific and operational knowledge of land degradation induced human anemia. A study of the association between land degradation and child mortality is scope for a future research.

## *Acknowledgements*

This paper is derived from my Post-Doctoral Research work on "Exploring the association of land degradation and health outcomes in India" at the Department of Mathematical Demography and Statistics, International Institute for Population Sciences, Mumbai, India.

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# *Appendix*

**Table A1: Districtwise spatial extent of the land degradation in India, 2011–2013**

| *S.No.* | *State* | *Extent of land degradation (as a % of the mapping unit affected)** | | | *No of Districts* |
|---|---|---|---|---|---|
| | | *Low (0–25%)* | *Medium (25–50%)* | *High (50–100%)* | |
| 1 | Andhra Pradesh | | | Anantapur (64.41) | 1 |
| 2 | Arunachal Pradesh | Tirap (14.97) | Tawang (45.49) | | 2 |
| 3 | Assam | Kokrajhar (10.60), Golaghat, (15.80), Hailakandi (17.74) | | | 3 |
| 4 | Bihar | Sitamarhi (2.01), Samastipur (3.16) | Bhabua (31.70) | | 3 |
| 5 | Chhattisgarh | Durg (8.01), Rajnandgaon (10.73), Raipur (16.70) | | | 3 |
| 6 | Goa | | | North Goa (50.25) | 1 |
| 7 | Gujarat | | Bhavnagar (35.64), Sabar Kantha (31.63) | Panch Mahals (52.07), Surendranagar (51.47) | 4 |
| 8 | Haryana | Sirsa (10.34), Bhiwani (15.85) | | | 2 |
| 9 | Himachal Pradesh | Kangra (19.62) | | Kinnaur (72.33) Lahul and Spiti (80.54) | 3 |
| 10 | Jammu and Kashmir | | Badgam (37.16) Kathua (48.69) | Kargil (78.23) | 3 |
| 11 | Jharkhand | | Paschim Singhbum (46.49) | Giridh (73.79) Bokaro (67.25) | 3 |
| 12 | Karnataka | | Chamarajanagar (47.10), Bellary (41.88) | | 2 |
| 13 | Kerala | Palakkad (7.50), Kasaragod (11.57) | | | 2 |

*contd. Table A1*

| | | *Low (0–25%)* | *Medium (25–50%)* | *High (50–100%)* | |
|---|---|---|---|---|---|
| 14 | Madhya Pradesh | Ratlam (21.09) | Morena (35.73), Neemuch (34.63) Dhar (25.56) | | 4 |
| 15 | Maharashtra | | Sangli (45.81) | Dhule (64.20), Ahmednagar (56.50) | 3 |
| 16 | Manipur | | Churachandpur (49.10), Chandel (33.98) | | 2 |
| 17 | Meghalaya | Jaintia Hills (23.16) | | West Khasi Hills (53.01) | 2 |
| 18 | Mizoram | | Lunglei (32.32) | Aizawal (52.83) | 2 |
| 19 | Nagaland | | Wokha (36.59) | Kohima (62.43) | 2 |
| 20 | Odisha | | Mayurbhanj (43.22) | Bargarh (61.36), Koraput (55.35), Kendujhar (52.97) | 4 |
| 21 | Punjab | Hoshiarpur (3.32) | | | 1 |
| 22 | Rajasthan | Dausa (23.93) | Pali (37.51), Ajmer (31.70) | Jailsalmer (92.96) | 4 |
| 23 | Sikkim | North Sikkim (15.95), West Sikkim (15.95), South Sikkim (15.95), East Sikkim (15.95) | | | 4 |
| 24 | Tamil Nadu | Virudhunagar (10.07), Thirunelveli (18.29) | Krishnagiri (48.05), Dharmapuri (44.00) | Theni (51.06) | 5 |
| 25 | Telangana | | Mahabubnagar (25.79) | | 1 |
| 26 | Tripura | | West Tripura (47.34), South Tripura (31.88) | | 2 |
| 27 | Uttar Pradesh | | Etawah (42.06), Chitrakoot (27.67), Kanpur (25.78) | | 3 |
| 28 | Uttarakhand | Pauri Garwal (5.08) | Chamoli (32.25) | | 2 |
| 29 | West Bengal | | Bankura (33.35) | Purulia (57.09) | 2 |
| | Total | 25 | 30 | 20 | 75 |

*Source:* Space Applications Centre, Indian Space Research Organisation, 2018

*Note:* * the extent of land degradation is classified into three groups based on Bot, Nachtergaele and Young (2000).

** Values in parentheses are the percentage of the mapping unit affected by land degradation in each district.

**Table A2: The prevalence of anemia among SC&ST women aged 15–49 years and children aged 6–59 months in low, medium and high degraded districts in rural India, %**

| *S.No.* | *Low degraded districts (0–25%)* | *Prevalence of any anemia, %* | | *Medium degraded districts (25–50%)* | *Prevalence of any anemia, %* | | *High degraded districts (50–100%)* | *Prevalence of any anemia, %* | |
|---|---|---|---|---|---|---|---|---|---|
| | | *Women* | *Children* | | *Women* | *Children* | | *Women* | *Children* |
| 1 | Kangra | 54.2% | 51.1% | Badgam | 69.7% | 74.4% | Kargil | 74.6% | 88.7% |
| 2 | Hoshiarpur | 62.1% | 61.2% | Kathua | 38.9% | 46.1% | Lahul and Spiti | 83.1% | 95.0% |
| 3 | Garhwal | 42.2% | 55.5% | Chamoli | 34.5% | 38.9% | Kinnaur | 80.3% | 83.4% |
| 4 | Sirsa | 64.9% | 73.8% | Pali | 51.0% | 57.2% | Jaisalmer | 34.9% | 43.2% |
| 5 | Bhiwani | 77.5% | 78.0% | Ajmer | 61.1% | 67.7% | Kohima | 27.4% | 38.2% |
| 6 | Dausa | 29.8% | 40.8% | Etawah | 27.1% | 37.0% | Aizawl | 22.5% | 19.9% |
| 7 | Sitamarhi | 63.0% | 67.8% | Kanpur (Dehat) | 66.4% | 67.8% | West Khasi Hills | 48.8% | 37.3% |
| 8 | Samastipur | 62.1% | 71.3% | Chitrakoot | 69.1% | 76.1% | Puruliya | 86.6% | 72.4% |
| 9 | North district | 42.4% | 62.4% | Kaimur (Bhabua) | 61.4% | 67.6% | Giridih | 66.8% | 79.8% |
| 10 | West district | 39.0% | 61.6% | Tawang | 43.5% | 68.1% | Bokaro | 80.2% | 79.8% |
| 11 | South district | 24.9% | 64.3% | Wokha | 36.8% | 36.0% | Bargarh | 73.4% | 72.4% |
| 12 | East district | 35.3% | 45.2% | Churachandpur | 20.7% | 17.9% | Kendujhar | 43.9% | 31.9% |
| 13 | Tirap | 47.3% | 61.2% | Chandel | 22.0% | 24.9% | Koraput | 70.6% | 73.7% |
| 14 | Jaintia hills | 47.5% | 34.1% | Lunglei | 40.1% | 31.3% | Surendranagar | 66.2% | 73.8% |
| 15 | Kokrajhar | 50.2% | 42.5% | West Tripura | 54.7% | 55.6% | Panchmahal | 56.6% | 48.9% |
| 16 | Golaghat | 46.0% | 48.2% | South Tripura | 56.3% | 57.5% | Dhule | 54.3% | 70.2% |
| 17 | Hailakandi | 49.7% | 29.8% | Bankura | 71.5% | 61.9% | Ahmadnagar | 52.1% | 47.2% |
| 18 | Rajnandgaon | 46.0% | 21.1% | Pashchimi Singhbhum | 75.9% | 84.7% | Anantapur | 51.0% | 65.2% |
| 19 | Durg | 62.5% | 51.5% | Mayurbhanj | 47.0% | 39.8% | North Goa | 29.1% | 45.9% |
| 20 | Raipur | 53.0% | 43.5% | Morena | 63.9% | 61.1% | Theni | 50.9% | 55.6% |

*contd. table A2*

| *S.No.* | *Low degraded districts (0–25%)* | *Prevalence of any anemia, %* | | *Medium degraded districts (25–50%)* | *Prevalence of any anemia, %* | | *High degraded districts (50–100%)* | *Prevalence of any anemia, %* | |
|---|---|---|---|---|---|---|---|---|---|
| | | *Women* | *Children* | | *Women* | *Children* | | *Women* | *Children* |
| 21 | Ratlam | 57.9% | 76.9% | Neemuch | 55.2% | 66.6% | | | |
| 22 | Kasaragod | 47.2% | 47.4% | Dhar | 62.8% | 78.5% | | | |
| 23 | Palakkad | 52.0% | 45.4% | Sabarkantha | 73.4% | 80.7% | | | |
| 24 | Virudhunagar | 68.9% | 53.8% | Bhavnagar | 63.1% | 54.0% | | | |
| 25 | Tirunelveli | 65.9% | 53.1% | Sangli | 42.6% | 56.2% | | | |
| 26 | | | | Mahbubnagar | 55.1% | 71.4% | | | |
| 27 | | | | Bellary | 52.4% | 79.3% | | | |
| 28 | | | | Chamarajanagar | 39.2% | 53.0% | | | |
| 29 | | | | Dharmapuri | 65.3% | 43.5% | | | |
| 30 | | | | Krishnagiri | 49.9% | 60.1% | | | |
| Total | 25 | 55.7% | 54.9% | 30 | 57.6% | 63.0% | 20 | 62.0% | 59.6% |

*Source:* Space Applications Centre, Indian Space Research Organisation, 2018 and National Family Health Survey, 2015–16.

*Note:* * the spatial extent of land degradation is classified into three groups based on Bot, Nachtergaele and Young (2000).

**Table A3: The prevalence of anemia among non–SC&ST women aged 15–49 years and children aged 6–59 months in low, medium and high degraded districts in rural India, %**

| *S.No.* | *Low degraded districts (0–25%)* | *Prevalence of any anemia, %* | | *Medium degraded districts (25–50%)* | *Prevalence of any anemia, %* | | *High degraded districts (50–100%)* | *Prevalence of any anemia, %* | |
|---|---|---|---|---|---|---|---|---|---|
| | | *Women* | *Children* | | *Women* | *Children* | | *Women* | *Children* |
| 1 | Kangra | 63.1% | 47.6% | Badgam | 62.3% | 65.5% | Kargil | 70.5% | 100.0% |
| 2 | Hoshiarpur | 57.6% | 58.6% | Kathua | 36.5% | 38.8% | Lahul and Spiti | 85.7% | 93.1% |
| 3 | Garhwal | 44.3% | 59.1% | Chamoli | 37.2% | 57.0% | Kinnaur | 86.5% | 68.8% |
| 4 | Sirsa | 56.9% | 74.4% | Pali | 49.0% | 53.2% | Jaisalmer | 34.2% | 43.3% |
| 5 | Bhiwani | 61.3% | 72.8% | Ajmer | 55.6% | 73.4% | Kohima | | |
| 6 | Dausa | 24.6% | 49.3% | Etawah | 26.4% | 40.3% | Aizawl | | |
| 7 | Sitamarhi | 60.4% | 68.5% | Kanpur (Dehat) | 61.5% | 62.3% | West Khasi Hills | | |
| 8 | Samastipur | 58.6% | 61.4% | Chitrakoot | 67.5% | 70.6% | Puruliya | 71.8% | 65.5% |
| 9 | North district | 45.6% | 63.6% | Kaimur (Bhabua) | 56.3% | 62.0% | Giridih | 70.9% | 74.6% |
| 10 | West district | 34.9% | 60.2% | Tawang | 38.5% | 100.0% | Bokaro | 76.4% | 77.6% |
| 11 | South district | 35.7% | 49.8% | Wokha | 54.3% | | Bargarh | 65.7% | 64.9% |
| 12 | East district | 34.9% | 40.1% | Churachandpur | 7.7% | | Kendujhar | 34.5% | 20.0% |
| 13 | Tirap | 57.1% | | Chandel | 17.3% | 44.0% | Koraput | 57.1% | 69.7% |
| 14 | Jaintia hills | | | Lunglei | 82.4% | 66.6% | Surendranagar | 61.9% | 76.4% |
| 15 | Kokrajhar | 55.9% | 35.5% | West Tripura | 52.1% | 33.0% | Panchmahal | 46.2% | 52.9% |
| 16 | Golaghat | 47.8% | 32.5% | South Tripura | 53.2% | 41.9% | Dhule | 52.0% | 66.5% |
| 17 | Hailakandi | 45.5% | 28.6% | Bankura | 65.3% | 30.5% | Ahmadnagar | 41.0% | 42.2% |
| 18 | Rajnandgaon | 43.5% | 32.4% | Pashchimi Singhbhum | 74.0% | 81.0% | Anantapur | 49.4% | 44.3% |
| 19 | Durg | 46.0% | 45.1% | Mayurbhanj | 31.9% | 19.6% | North Goa | 32.4% | 38.3% |
| 20 | Raipur | 51.7% | 46.9% | Morena | 55.5% | 67.2% | Theni | 50.7% | 52.1% |
| 21 | Ratlam | 52.6% | 81.9% | Neemuch | 52.4% | 71.2% | | | |

*contd. table A3*

| *S.No.* | *Low degraded districts (0–25%)* | *Prevalence of any anemia, %* | | *Medium degraded districts (25–50%)* | *Prevalence of any anemia, %* | | *High degraded districts (50–100%)* | *Prevalence of any anemia, %* | |
|---|---|---|---|---|---|---|---|---|---|
| | | *Women* | *Children* | | *Women* | *Children* | | *Women* | *Children* |
| 22 | Kasaragod | 34.4% | 43.4% | Dhar | 47.8% | 77.1% | | | |
| 23 | Palakkad | 39.4% | 35.0% | Sabarkantha | 66.6% | 72.5% | | | |
| 24 | Virudhunagar | 54.9% | 63.8% | Bhavnagar | 53.7% | 76.4% | | | |
| 25 | Tirunelveli | 62.0% | 66.7% | Sangli | 52.5% | 50.5% | | | |
| 26 | | | | Mahbubnagar | 49.0% | 65.1% | | | |
| 27 | | | | Bellary | 56.7% | 70.3% | | | |
| 28 | | | | Chamarajanagar | 45.0% | 52.5% | | | |
| 29 | | | | Dharmapuri | 60.2% | 68.6% | | | |
| 30 | | | | Krishnagiri | 46.0% | 44.6% | | | |
| Total | 25 | 51.9% | 56.2% | 30 | 53.3% | 59.9% | 20 | 54.3% | 57.8% |

*Source:* Space Applications Centre, Indian Space Research Organisation, 2018 and National Family Health Survey, 2015–16.

*Note:* * the spatial extent of land degradation is classified into three groups based on Bot, Nachtergaele and Young (2000).

**Table A4: Background characteristics and health status of SC&ST women aged 15–49 years in the degraded districts in India**

| *S.No.* | *Variables* | *Extent of land degradation (as % of the mapping unit affected)* | | | |
|---|---|---|---|---|---|
| | | *Low (0–25%)* | *Medium (25–50%)* | *High (50–100%)* | *Total* |
| 1 | Improved sources of drinking water, yes | 89.1% | 84.0% | 79.6% | 84.2% |
| 2 | Improved toilet facility, yes | 41.5% | 27.9% | 19.5% | 29.4% |
| 3 | Types of cooking fuel: firewood | 64.4% | 70.4% | 75.0% | 70.0% |
| 4 | Religion: Hindu | 87.8% | 88.7% | 88.8% | 88.5% |
| 5 | Wealth index: poor = (poorest + poorer) | 55.5% | 68.8% | 72.0% | 65.9% |
| 6 | No. of HH having children <5 years | 40.7% | 41.9% | 41.8% | 41.5% |
| 7 | Any anemia | 55.7% | 57.6% | 62.0% | 58.3% |
| 8 | Household size, | | | | |
| | ≤ 4 | 35.4% | 35.5% | 34.0% | 35.0% |
| | ≥ 5 | 64.6% | 64.5% | 66.0% | 65.0% |
| 9 | Age, years | | | | |
| | 15-19 | 18.2% | 17.3% | 18.8% | 18.0% |
| | 20-29 | 35.2% | 36.3% | 34.1% | 35.4% |
| | 30-39 | 25.8% | 25.9% | 26.7% | 26.1% |
| | 40-49 | 20.7% | 20.5% | 20.3% | 20.5% |
| 10 | Years of schooling | | | | |
| | ≤4 | 41.0% | 50.5% | 51.9% | 48.2% |
| | ≥5 | 59.0% | 49.5% | 48.1% | 51.8% |
| 11 | Body mass index | | | | |
| | ≤18.49 | 24.6% | 30.4% | 37.1% | 30.7% |
| | 18.50-24.99 | 62.0% | 59.4% | 54.4% | 58.7% |
| | ≥25.0 | 13.3% | 10.1% | 8.4% | 10.6% |

*Source:* Space Applications Centre, Indian Space Research Organisation, 2018 and National Family Health Survey, 2015–16.

*Note:* * the spatial extent of land degradation is classified into three groups based on Bot, Nachtergaele and Young (2000).

**Table A5: Background characteristics and health status of non SC&ST women aged 15–49 years in the degraded districts in India**

| *S.No.* | *Variables* | *Extent of land degradation (as % of the mapping unit affected)* | | | |
|---|---|---|---|---|---|
| | | *Low (0–25%)* | *Medium (25–50%)* | *High (50–100%)* | *Total* |
| 1 | Improved sources of drinking water, yes | 91.0% | 86.4% | 75.3% | 85.6% |
| 2 | Improved toilet facility, yes | 54.3% | 43.3% | 37.3% | 46.2% |
| 3 | Types of cooking fuel: firewood | 56.5% | 54.2% | 55.1% | 55.3% |
| 4 | Religion: Hindu | 85.9% | 92.7% | 91.9% | 89.9% |
| 5 | Wealth index: poor = (poorest + poorer) | 42.7% | 40.3% | 42.4% | 41.7% |
| 6 | No. of HH having children <5 years | 39.6% | 36.9% | 39.5% | 38.5% |
| 7 | Any anemia | 51.9% | 53.3% | 54.3% | 53.0% |
| 8 | Household size, n | | | | |
| | ≤ 4 | 36.3% | 34.7% | 35.7% | 35.6% |
| | ≥ 5 | 63.7% | 65.3% | 64.3% | 64.4% |
| 9 | Age, years | | | | |
| | 15-19 | 17.9% | 17.5% | 15.1% | 17.1% |
| | 20-29 | 33.1% | 33.6% | 35.0% | 33.7% |
| | 30-39 | 26.7% | 26.7% | 28.7% | 27.1% |
| | 40-49 | 22.4% | 22.2% | 21.2% | 22.1% |
| 10 | Years of schoolingd | | | | |
| | ≤4 | 31.9% | 36.9% | 37.7% | 35.2% |
| | ≥5 | 68.1% | 63.1% | 62.3% | 64.8% |
| 11 | Body mass indexd | | | | |
| | ≤18.49 | 24.3% | 26.1% | 28.8% | 26.0% |
| | 18.50-24.99 | 59.3% | 57.8% | 57.3% | 58.2% |
| | ≥25.0 | 16.3% | 16.0% | 13.8% | 15.6% |

*Source:* Space Applications Centre, Indian Space Research Organisation, 2018 and National Family Health Survey, 2015–16.

*Note:* * the spatial extent of land degradation is classified into three groups based on Bot, Nachtergaele and Young (2000).

**Table A6: Background characteristics and health status of SC&ST children aged 6-59 months in the degraded districts in India**

| *S.No.* | *Variables* | *Extent of land degradation (as % of the mapping unit affected)* | | | |
|---|---|---|---|---|---|
| | | *Low (0–25%)* | *Medium (25–50%)* | *High (50–100%)* | *Total* |
| 1 | Improved sources of drinking water, yes | 87.1% | 79.6% | 77.0% | 81.1% |
| 2 | Maternal age, years | | | | |
| | 15-29 | 72.7% | 74.9% | 74.8% | 74.2% |
| | 30-49 | 27.3% | 25.1% | 25.2% | 25.8% |
| 3 | Maternal schooling, years | | | | |
| | ≤4 | 46.0% | 53.1% | 51.6% | 50.5% |
| | ≥5 | 54.0% | 46.9% | 48.4% | 49.5% |
| 4 | Maternal anemia | 60.2% | 60.9% | 65.1% | 61.9% |
| 5 | Age, months | | | | |
| | 6-23 | 32.7% | 32.4% | 34.7% | 33.1% |
| | 24-42 | 35.0% | 36.6% | 35.5% | 35.8% |
| | 43-59 | 32.3% | 31.0% | 29.8% | 31.1% |
| 6 | Gender | | | | |
| | Male | 50.3% | 50.2% | 53.2% | 51.1% |
| | Female | 49.7% | 49.8% | 46.8% | 48.9% |
| 7 | Diarrhea over last two weeks, yes | 7.8% | 8.0% | 9.0% | 8.2% |
| 9 | Children anemia | 54.8% | 63.0% | 59.6% | 59.6% |
| 10 | Birth weight (gram) | | | | |
| | < 2500 | 11.6% | 14.9% | 17.8% | 14.8% |
| | ≥ 2500 | 63.8% | 61.2% | 62.6% | 62.4% |
| | Other | 24.6% | 23.9% | 19.5% | 22.8% |
| 11 | Height-for-age (Z-score), stunting | | | | |
| | < – 2 | 45.2% | 47.3% | 46.0% | 46.3% |
| | ≥ – 2 | 51.6% | 48.0% | 48.7% | 49.2% |
| | Other | 3.1% | 4.2% | 4.1% | 3.8% |
| 12 | Weight-for-height (Z-score), wasting | | | | |
| | < – 2 | 17.2% | 23.9% | 26.3% | 22.6% |
| | ≥ - 2 | 79.5% | 71.5% | 68.3% | 73.0% |
| | Other | 3.1% | 4.2% | 4.1% | 3.8% |
| 13 | Weight-for-age (Z-score), underweight | | | | |
| | < – 2 | 36.8% | 46.2% | 47.0% | 43.6% |
| | ≥ - 2 | 60.0% | 49.2% | 47.7% | 52.0% |
| | Other | 3.1% | 4.2% | 4.1% | 3.8% |

*Source:* Space Applications Centre, Indian Space Research Organisation, 2018 and National Family Health Survey, 2015–16.

*Note:* * the spatial extent of land degradation is classified into three groups based on Bot, Nachtergaele and Young (2000).

**Table A7: Background characteristics and health status of non SC&ST children aged 6-59 months in the degraded districts in India**

| *S.No.* | *Variables* | *Extent of land degradation (as % of the mapping unit affected)* | | | |
|---|---|---|---|---|---|
| | | *Low (0–25%)* | *Medium (25–50%)* | *High (50–100%)* | *Total* |
| 1 | Improved sources of drinking water, yes | 90.7% | 83.4% | 73.0% | 84.0% |
| 2 | Maternal age, years | | | | |
| | 15-29 | 73.8% | 79.0% | 80.2% | 77.1% |
| | 30-49 | 26.2% | 21.0% | 19.8% | 22.9% |
| 3 | Maternal schooling, years | | | | |
| | ≤4 | 39.9% | 34.6% | 30.7% | 35.9% |
| | ≥5 | 60.1% | 65.4% | 69.3% | 64.1% |
| 4 | Maternal anemia | 55.5% | 54.3% | 59.8% | 56.0% |
| 5 | Age, months | | | | |
| | 6-23 | 32.7% | 33.4% | 33.7% | 33.2% |
| | 24-42 | 35.3% | 36.3% | 34.7% | 35.5% |
| | 43-59 | 32.0% | 30.3% | 31.6% | 31.3% |
| 6 | Gender | | | | |
| | Male | 50.1% | 52.9% | 51.2% | 51.3% |
| | Female | 49.9% | 47.1% | 48.8% | 48.7% |
| 7 | Diarrhea over last two weeks, yes | 8.9% | 7.8% | 6.4% | 7.9% |
| 9 | Children anemia | 56.2% | 59.9% | 57.7% | 56.2% |
| 10 | Birth weight (gram) | | | | |
| | < 2500 | 12.8% | 15.1% | 13.9% | 13.9% |
| | ≥ 2500 | 62.9% | 71.6% | 72.5% | 68.2% |
| | Other | 24.4% | 13.3% | 13.6% | 17.9% |
| 11 | Height-for-age (Z-score), stunting | | | | |
| | < – 2 | 41.0% | 38.5% | 39.5% | 39.7% |
| | ≥ – 2 | 55.7% | 56.6% | 56.1% | 56.1% |
| | Other | 3.1% | 3.9% | 4.1% | 3.6% |
| 12 | Weight-for-height (Z-score), wasting | | | | |
| | < – 2 | 15.2% | 21.3% | 21.4% | 18.8% |
| | ≥ - 2 | 81.6% | 73.8% | 74.2% | 77.1% |
| | Other | 3.1% | 3.9% | 4.1% | 3.6% |
| 13 | Weight-for-age (Z-score), underweight | | | | |
| | < – 2 | 34.3% | 36.0% | 37.9% | 35.7% |
| | ≥ - 2 | 62.4% | 59.1% | 57.7% | 60.1% |
| | Other | 3.1% | 3.9% | 4.1% | 3.6% |

*Source:* Space Applications Centre, Indian Space Research Organisation, 2018 and National Family Health Survey, 2015–16.

*Note:* * the spatial extent of land degradation is classified into three groups based on Bot, Nachtergaele and Young (2000)