An Exploration into the Situation of Women in India

Submitted

As

STS Project

To

Praxis Business School, Kolkata

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Abstract:

Education and right to food security are fundamental human rights and it is necessary, irrespective of gender, to achieve the goal of basic education for all. Literacy Rate has been a major concern in India post-independence but when it comes to women, there are numerous factors that come into play. The present study seeks to find a relation between GSDP and Female Literacy and its impact on Maternal & Child Health and nutritional status of women across the country.

Introduction:

It is well established fact that Female Literacy is negatively correlated with Fertility Rate, Population Growth Rate, Infant and Child Mortality Rate (Rao, 2008). Female Literacy stands at 70.3% in comparison to 84.7% for men (Based on NFHS-4 data). Female Literacy is considered to be a sensitive index of social development compared to overall literacy rate (Dinesh T., 2017). The State GDP (GSDP) records the income of the state from the Goods and Services it produces and provides the insights regarding how rich a state is. The average expenditure towards healthcare is 1.35% of the total GDP. According to the NFHS-5 survey, almost 20% of the women in the reproductive age suffer from malnutrition and below normal BMI (less than 18.5 kg/m^2).

Some of the major societal issues in India that women suffer include under-age marriage, spousal violence lack of awareness towards health care (Kaur R, Garg S., 2008). The advancement of women was considered among the main elements for social development because it played a vital role in economic, social, cultural and political development. This study targets to investigate the association of these issues with the Literacy Rate of Women.

Raghupathi V. and Raghupathi W., in their study in 2020 has shown that there is a positive relationship between the total expenditure on healthcare and the GDP. Moreover, they have come with an interesting insight that as total healthcare expenditures increase the GDP increases. We draw motivation from the study to see what is the effect of the change in GSDP per state on Maternal and Child Health. Increasing expenditure in health sector is targeted to improve the facilities towards the mother and their newly born child.

Nutritional status is an important factor towards the health and well-being of a person. Adequate nutrition is essential to a healthy life and healthy aging on an individual as well as on a societal level (Peter S. et al., 2015). Women are considered care-givers and usually their nutritional well-being takes a back seat (Sharma N., et al., 2016). The effect of the GSDP on the nutritional status of women will try to provide an insight on the effect of the of the former.

Aim and Objective:

Aim: To study the effect of Literacy and GSDP on the women's societal and health well-being.

Objective:

1. Why Female Literacy is important and how it differs based on SDP of states?
2. What is the condition of Maternal and child health based on SDP of states?
3. What is the nutritional status among women and U5 aged children based on Literacy and economy of the state?

Data Source:

The National Family Health Survey 2019-20 (NFHS-5), the fifth in the NFHS series, provides information on population, health, and nutrition for India and each state/union territory (UT). The main objective of each successive round of the NFHS has been to provide high-quality data on health and family welfare and emerging issues in this area. NFHS-5 data will be useful in setting benchmarks and examining the progress the health sector has made over time. Four survey schedules are conducted- Household, Woman's, Man's, and Biomarker - were canvassed in local languages using Computer Assisted Personal Interviewing (CAPI). The samples taken per state vary depending on its area and diversity among a few.

Sample Households, Men and Women taken per State

States		Households	Women	Men
Andaman & Nicobar		2624	2397	367
Andhra Pradesh		11346	10975	1558
Assam		30119	34973	4973
Bihar		35834	42483	4897
Goa		1856	2030	313
Gujarat		29368	33343	5351
Himachal Pradesh		10698	10368	1477
Jammu & Kashmir		18086	23037	3087
Karnataka		26574	30455	4516
Kerala		12330	10969	1473
Maharashtra		31643	33755	5497
Meghalaya		10148	13089	1824
Manipur		7881	8042	1162
Mizoram		7257	7279	1105
Nagaland		10112	9694	1456
Sikkim		3516	3271	469
Telangana		27351	27518	3863
Tripura		7209	7314	990
West Bengal		18187	21408	3021
Arunachal Pradesh		18268	19765	2881
Chhattisgarh		24550	28468	4174
Haryana		18229	21909	3224
Jharkhand		22863	26495	3414
Madhya Pradesh		43552	48410	7025
Odisha		26467	27971	3865
Punjab		18824	21771	3296
Rajasthan		31817	42990	6353
Tamil Nadu		27929	25650	3372
Uttar Pradesh		70710	93124	12043
Uttarakhand		12169	13280	1586

The data for our present study has been taken from the Final Compendium of Fact Sheets which has data for the 28 states. The state level data has been used to study the comparative effect of the features.

Methodology:

Exploratory Data Analysis primarily targets at gaining information by analysing and investigating data sets and summarize their main characteristics, often employing data visualization methods. A comparative study to understand the effect of Female Literacy Rate and the State wise GDP with the different societal issues and health and nutritional parameters have been studied. A visualization analysis and Exploratory Analysis has been conducted for this purpose. The descriptive measures have been calculated in Excel to understand the distribution of the factors through out the country.

The data has been studied for the 6 zones of India: 1. Northern, 2. Eastern, 3. Western, 4. Southern, 5. Central, 6. North-Eastern to understand the general trend of Maternal and Child Health facilities depending on the GSDP. The visual analysis has been done using Tableau and PowerBI for the purpose of the study. The states have been studied separately to understand the effects of the independent factors viz., Female Literacy Rate and GSDP on the other factors.

The descriptive measures include the measures of central tendency and dispersion used to understand the distribution and concentration point of the data and the amount variation in the data. Correlation matrix gives an in-depth understanding of the degree of association of two different variables. Regression analysis has been employed to understand the significance of these independent variables on the health parameters for women.

Results and Findings:

A number of factors influencing female lives have been taken in this study and to understand their association a correlation matrix has been constructed.

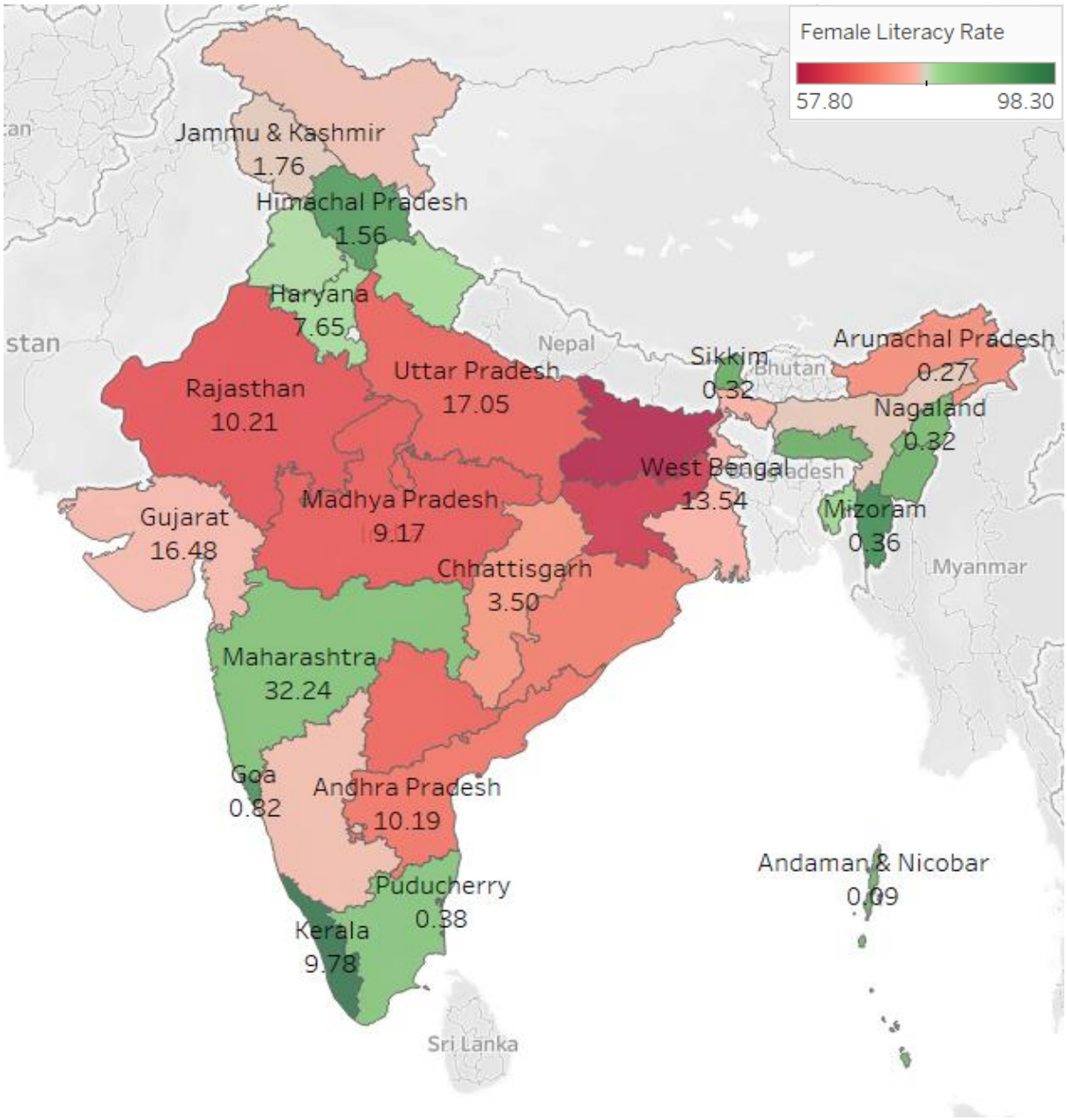
Correlation Matrix

Correlation Matrix	*SDP*	*Female Literacy Rate (14)*	*Sex ratio at birth (4)*	*Women age 20-24 years married before age 18*	*Ever-married women age 18-49 years who have ever experienced spousal*	*Women who have comprehensive knowledge of HIV/AIDS (115)*	*Average out-of-pocket expenditure per delivery in a public*	*Mothers who had an antenatal check-up in the first trimester (40)*	*Institutional births in public facility (51)*	*Women whose (BMI) is below normal (<18.5 kg/m2) (86)*	*All women age 15-49 years who are anaemic (95)*	*Total children age 6-23 months receiving an adequate diet*	*Blood sugar level - high or very high of women*
State GDP	1.00												
Female Literacy Rate (14)	-0.19	1.00											
Sex ratio at birth (4)	-0.26	0.14	1.00										
Women age 20-24 years married before age 18 years (%) (20)	0.26	-0.61	-0.15	1.00									
Ever-married women age 18-49 years who have ever experienced spousal violence (125)	0.43	-0.64	-0.13	0.62	1.00								
Women who have comprehensive knowledge of HIV/AIDS (115)	-0.04	0.63	-0.02	-0.45	-0.31	1.00							
Average out-of-pocket expenditure per delivery in a public health facility (47)	-0.38	0.35	0.29	-0.15	0.08	0.32	1.00						
Mothers who had an antenatal check-up in the first trimester (40)	0.20	0.23	0.07	-0.30	-0.15	0.40	-0.13	1.00					
Institutional births in public facility (51)	-0.27	-0.12	0.25	0.04	0.04	-0.15	0.03	0.09	1.00				
Women whose (BMI) is below normal (<18.5 kg/m2) (86)	0.46	-0.63	-0.48	0.61	0.42	-0.31	-0.60	-0.15	-0.22	1.00			
All women age 15-49 years who are anaemic (95)	0.10	-0.53	0.08	0.42	0.25	-0.56	-0.46	0.05	0.41	0.35	1.00		
Total children age 6-23 months receiving an adequate diet (80)	-0.42	0.55	0.29	-0.33	-0.31	0.11	0.40	0.00	0.15	-0.65	-0.17	1.00	
Blood sugar level - high or very high of women (>140 mg/dl) and taking medicine to control blood sugar level (101)	0.23	0.46	-0.21	0.03	-0.09	0.35	0.04	0.41	-0.30	-0.07	-0.24	0.19	1.00

The correlation matrix gives the degree of association of the different factor between themselves. The Female Literacy Rate as an independent variable as a very strong relation with “Women married below 18 years”, “Women facing spousal violence”, “Women with Low BMI” and also “Diet of children from 6-23 months”.

1. Importance of Female Literacy and its variance with GSDP:

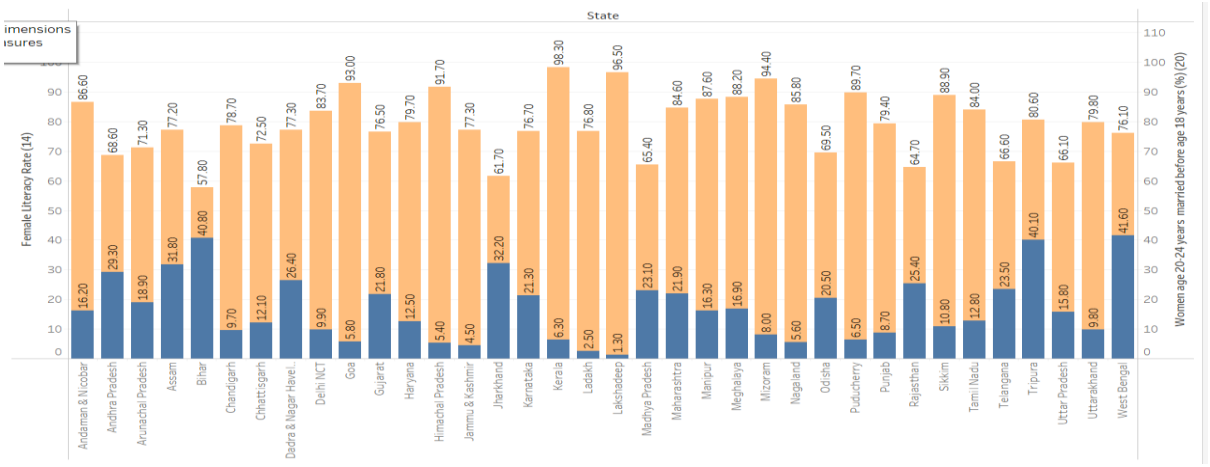
Female Literacy Rate by GSDP



The Red-Green Diverging colour shows the increase of Female Literacy Rate as the colour changes from Red to Green. Maharashtra has the highest GSDP among all states and has a Female Literacy Rate of 84.6% while Bihar has one of the lowest GSDP along with Female Literacy of 57.8%. So, a positive dependency can be seen between Female Literacy Rate and GSDP of the state.

1. a. Female Literacy Rate v/s Women age 20-24 years married before age 18 years (%)

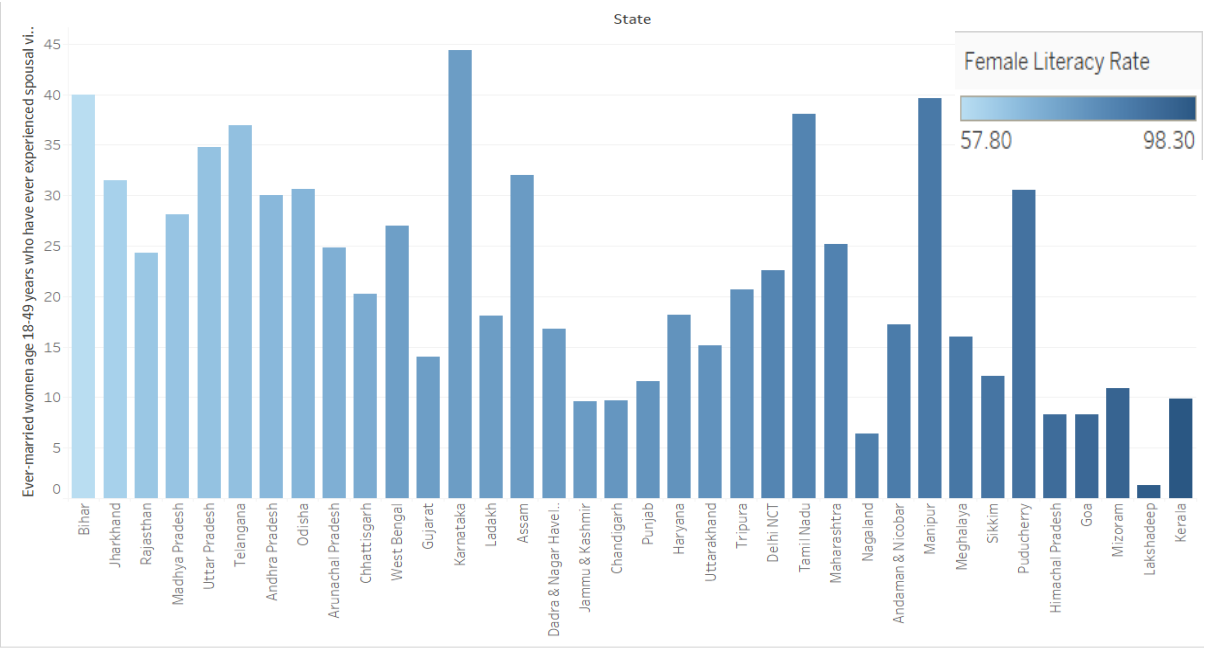
Female Literacy Rate v/s Women married before 18 years



The Blue lines represent the Women in between 20-24 who got married before 18 and the Orange shows the Female Literacy Rate. The stacked bar chart shows a negative relation between Female Literacy Rate vs Women Age 20-24 Years Married Before the Age of 18 Years. The increase in Female Literacy tends to decrease the number of women getting married before 18. Kerala with highest Female Literacy has the lowest Number of underage marriages, while Bihar with lowest Female Literacy has the highest underage marriages.

1. b. Female Literacy Rate v/s Ever-married women age 18-49 years who have ever experienced spousal violence (%)

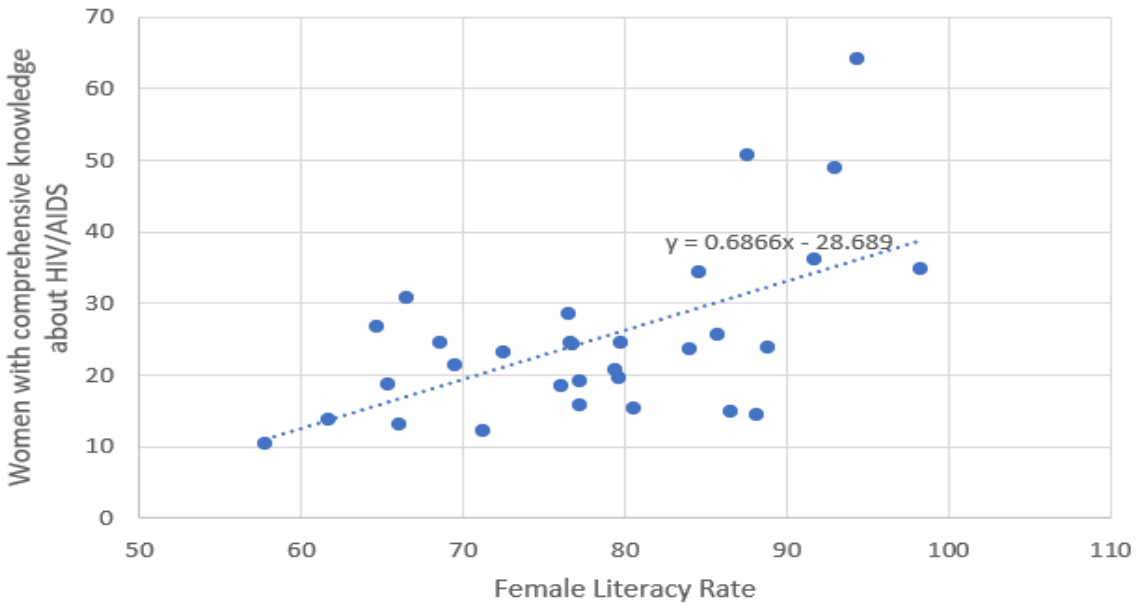
Female Literacy Rate v/s Women experiencing spousal violence



The Female Literacy Rate has a significant effect on the Number of women facing spousal violence. The number of women facing spousal violence steadily decreases as we go from lower Female Literacy states to higher Literacy states.

1. **c. Female Literacy Rate v/s Women who have comprehensive knowledge of HIV/AIDS**

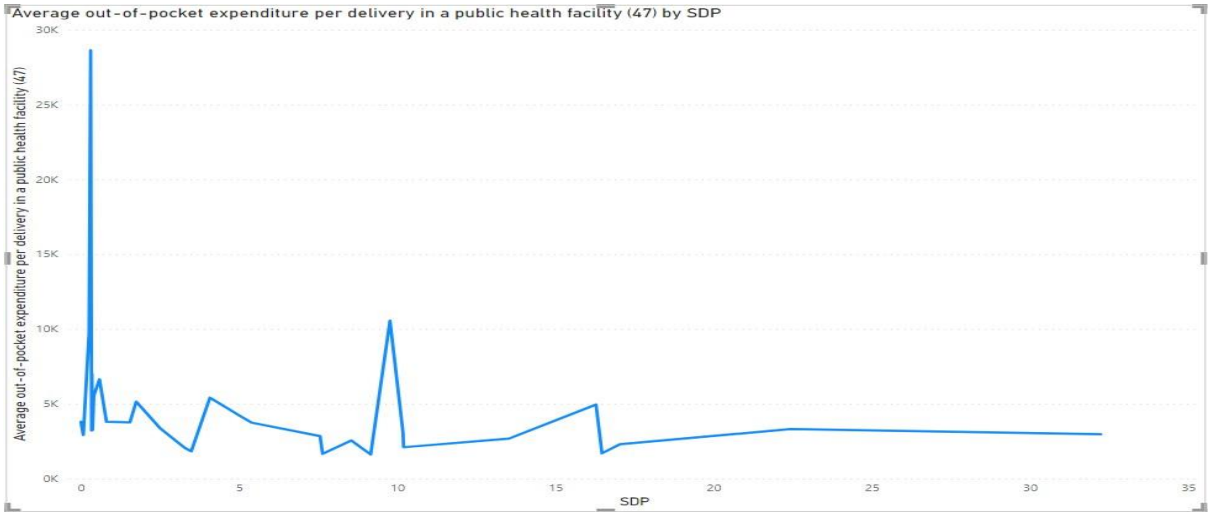
Female Literacy Rate v/s Women who have comprehensive knowledge of HIV/AIDS (115)



HIV/AIDS is a very sensitive issue and a prevalent problem that needs proper sensitization. HIV is one of the significant causes of morbidity and can only be solved with comprehensive education and awareness. The awareness towards this issue is seen to significantly increase as Literacy increases among women. With the regression equation: $Women\ with\ knowledge\ on\ HIV\ or\ AIDS = 0.68 * Female\ Literacy\ Rate - 28.6$, it can be seen that the independent value has significant impact (p-value = 0.0001).

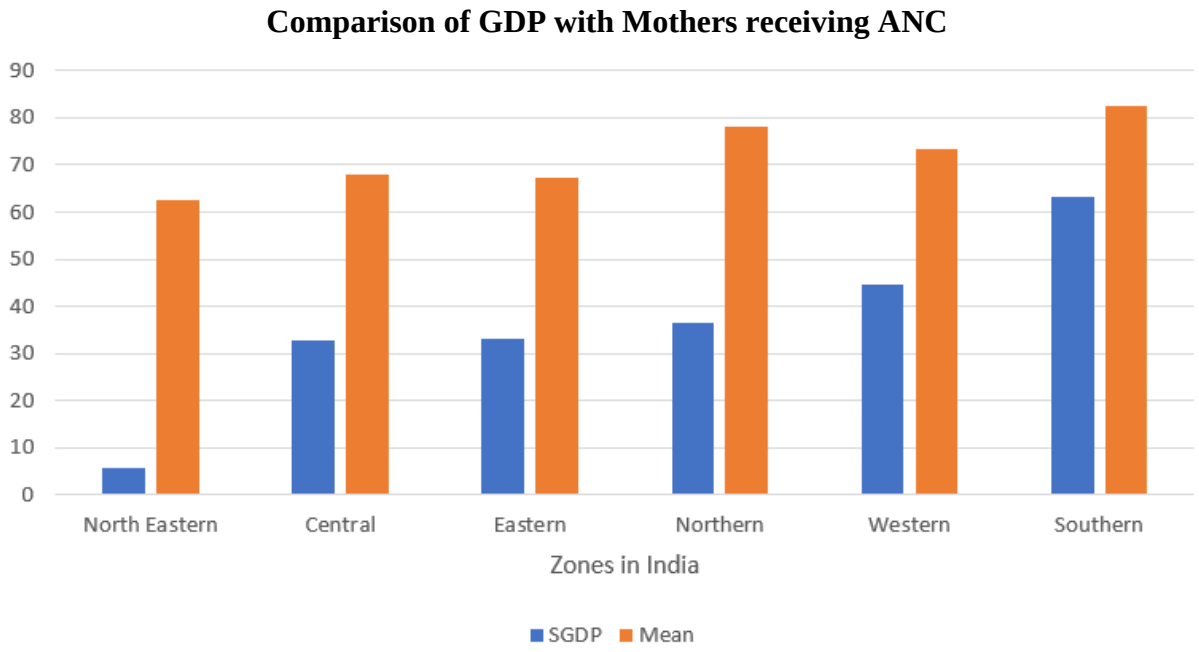
2. **The condition of Maternal and child health based on SDP of states:**
   a) **SDP v/s Average out-of-pocket expenditure per delivery in a public health facility (Rs.)**

Average out-of-pocket expenditure in public health facility v/s SDP



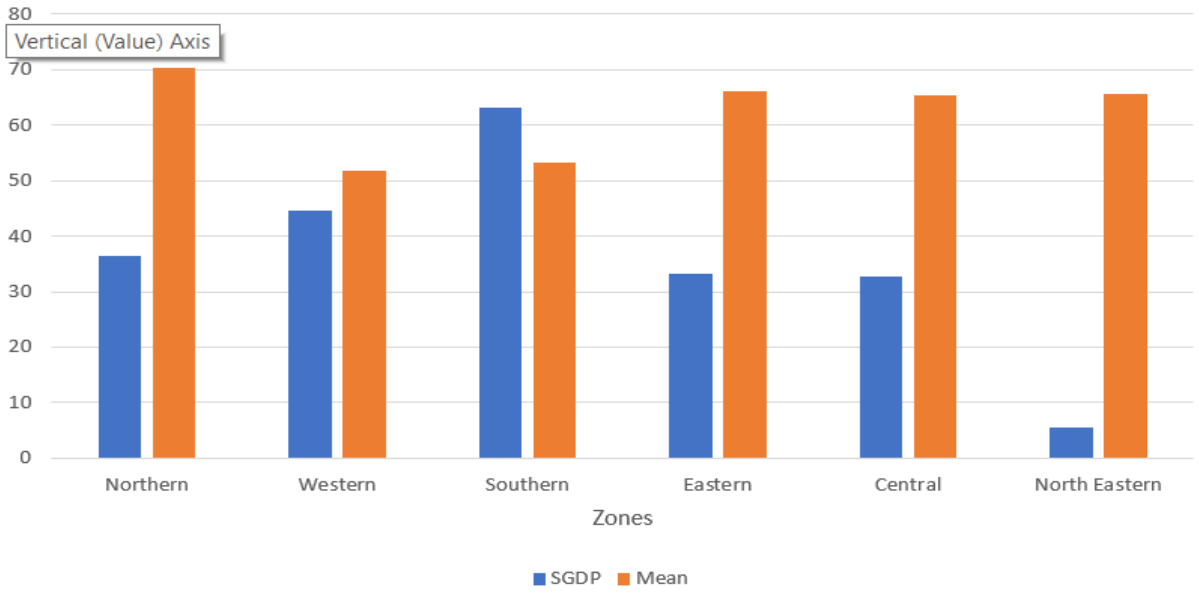
Average out-of-pocket expenditure is the amount a patient has to spend in the public hospitals and health care centers above what is covered by the state governments and the medical insurances. With increasing GDP per state, we see that there is significant decrease in this cost. So, it is seen that the richer states are providing better facilities in health care that can be afforded by all sectors of the population.

2. b. GDP v/s Mothers who had an antenatal check-up in the first trimester (%)



The improvement in maternal care increases as we go from lower GDP zones to higher GDP zones. The average number of women receiving Antenatal Care (ANC) in their first trimester shows a steady increase as we go from lower GDP zones in North East and Central towards the higher GDP zones of South.

2. c. SDP v/s Institutional births in public facility (%)

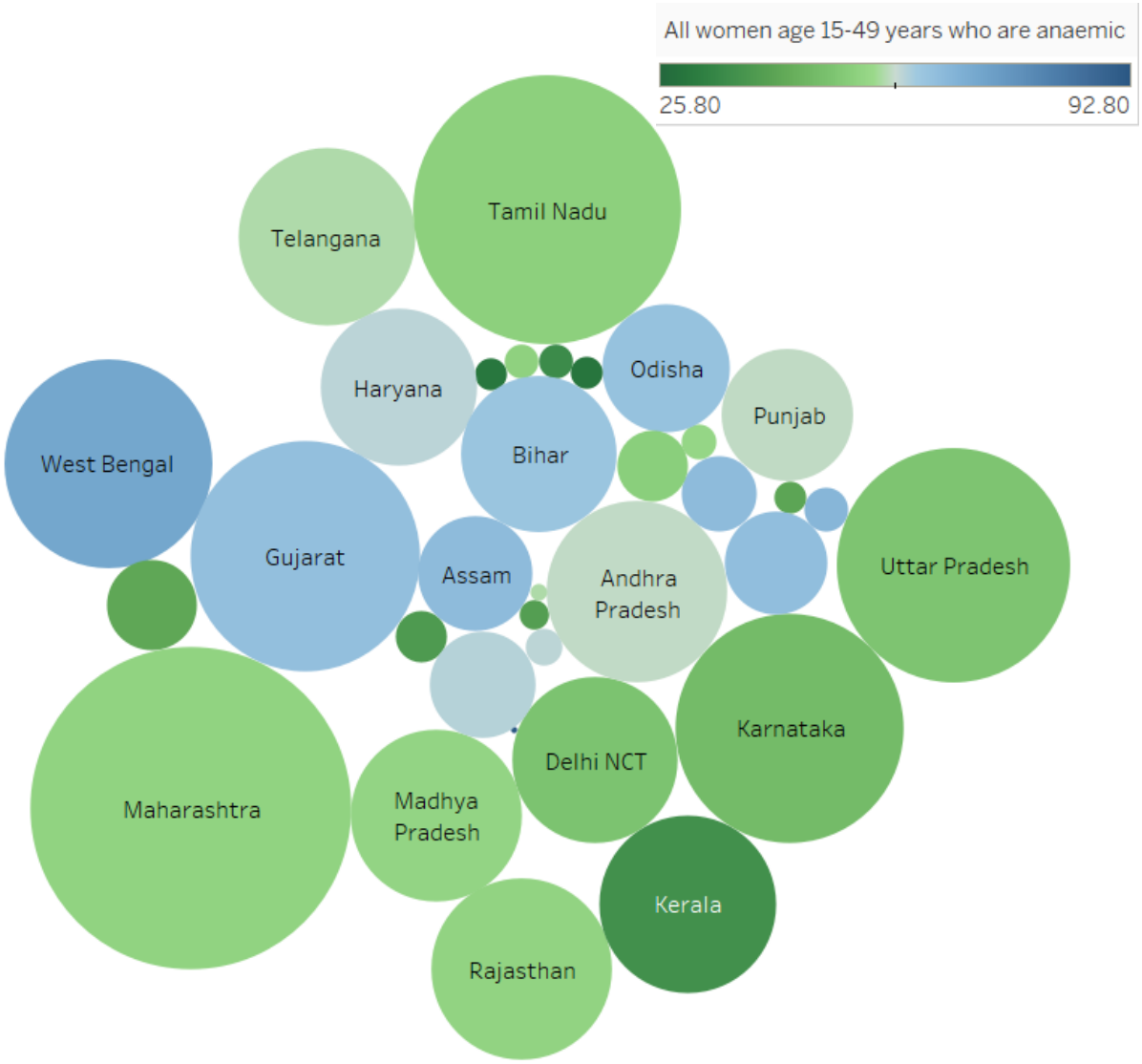


The increase in GDP, marks the movement from poorer zones to richer zones and the number of deliveries in public facility steadily decreases with this movement. The people in richer states tend to avail private facilities, and has the capability to afford private facilities more than that in the poorer stated and this is the reason of this decrease.

3. The nutritional status among women and U5 aged children based on Literacy and economy of the state.

3. a. SDP v/s All women age 15-49 years who are anaemic (%)

Number of women suffering from Anaemia with GSDP



The Bubble map show the GSDP as the size of each bubble. The Bubbles represent each state. The colour changes from green to blue as we go from lower number of women who are anaemic to higher number. Women in richer states tend to suffer from Anaemia much less than that in the poorer states. With increase in GSDP, the investment in health and nutrition of women also increases.

3. b. SDP v/s Total children age 6-23 months not receiving an adequate diet (%)

Regression Matrix of Total children in 6-23 months not having adequate diet on GSDP

Regression Statistics	
Multiple R	0.445950354
R Square	0.198871719
Adjusted R Square	0.17383646
Standard Error	5.689480173
Observations	34

ANOVA

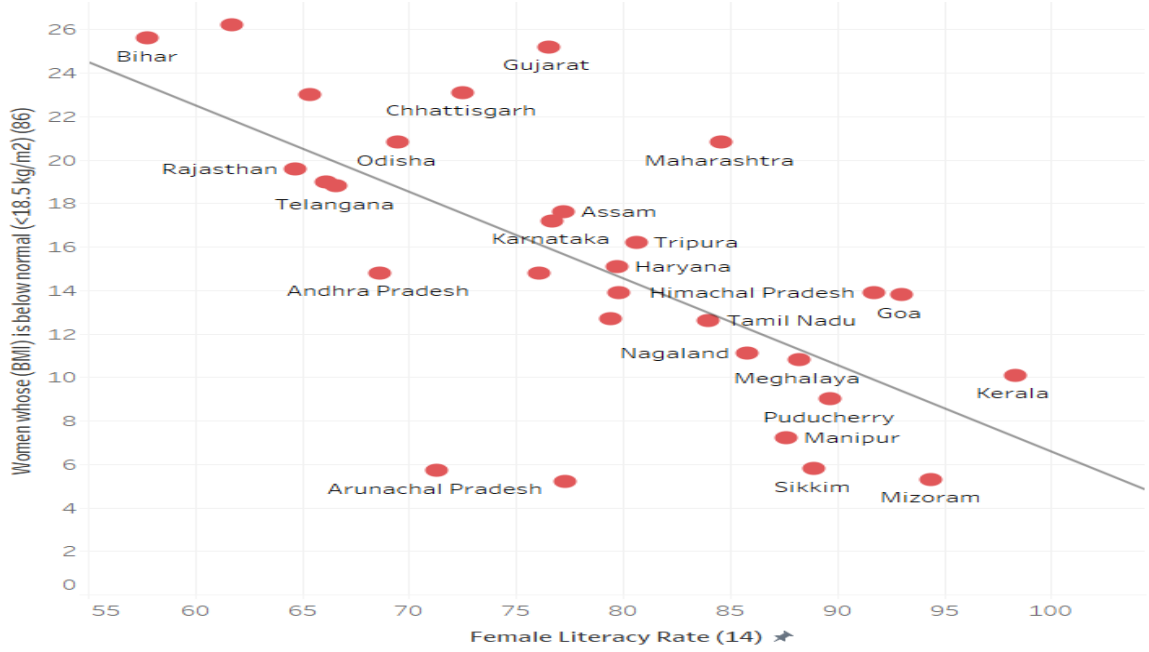
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	257.137915	257.137915	7.943665379	0.008207851
Residual	32	1035.845908	32.37018464		
Total	33	1292.983824			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	17.77537495	1.299614042	13.67742605	6.4731E-15	15.12814777	20.42260212	15.12814777	20.42260212
SDP	-0.369818281	0.131213314	-2.818450883	0.008207851	-0.637091056	-0.102545506	-0.637091056	-0.102545506

The total number of children between 6-23 months not receiving adequate diet is negatively and strongly dependent on the GSDP of the state as can be seen from the matrix. The coefficient of the independent variable (GSDP) is -0.37 with a significant p-value of 0.008. With increase in the GSDP the number of children not receiving adequate diet steadily decreases. GSDP has a strong impact on infant health as is visible here.

3. c. Female Literacy v/s Women whose Body Mass Index (BMI) is below normal (BMI < 18.5 kg/m2)

Scatter Plot of Female Literacy v/s Women with below normal BMI



The scatter plot shows the decreasing trend in the number of women who have below normal BMI with increase in Female Literacy. With increase in Female Literacy Rate, women tend to be more aware about their own well-being and to maintain the proper nutrition level. The steady decrease is shown by the fitted trend line.

Conclusion:

Female Literacy Rate is a primary factor to determine the position of women in the society. The study shows its steady increase from poorer states to richer states. The health and nutritional status of women shows a significant improvement with increasing GSDP. The women in the richer states tend to be more aware of the health needs and are less vulnerable to Maternal and child health issues. The nutritional status is measured by the BMI which increases with increase in GSDP of the states. Children under food security in the earlier months are also more in richer states.

With increase in Female Literacy, women tend to be more protected from societal issues of spousal violence and underage marriages. The awareness towards HIV/AIDS is an important issue in today's world which also shows an increase as Literacy increases among women.

Maternal and Child Health has been a focus for all governmental policies which seems to be adequately addressed in richer states. The reason being their capacity to invest more on healthcare.

Thus, Female Literacy Rate and GSDP of states play vital role in determining the societal and physical wellbeing of women in India.

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