



AN ANALYSIS OF WOMEN EMPOWERMENT AND STATE-SPECIFIC VARIATIONS IN INDIA WITH SPECIAL REFERENCE TO PRADHAN MANTRI UJJWALA YOJANA

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RESEARCH ARTICLE



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Abstract

Pradhan Mantri Ujjwala Yojana (PMUY) is a scheme under the Ministry of Petroleum and Natural Gas that aims to deliver free LPG connections to women belonging to Below Poverty Line (BPL) families. It also aligns with India's vision of transitioning to clean and energy-efficient fuels by 2047. However, despite considerable coverage, the inability to realise the targets in their true spirit has been a matter of great concern. The present study, therefore, is an attempt to understand the relationship between LPG connections delivered and their actual utilisation while considering the ground realities resulting in their non-utilisation. It further seeks to evaluate state-specific variations, namely per capita GSDP as a percentage of India's GDP, literacy rate and health status, along with the socio-economic indicators of women empowerment that include female literacy rate and female labour force participation rate as a factor of LPG utilisation across states. To carry out a holistic analysis, data have been collected from various government sources for fifteen states, geographically spread out across the country. The study has been conducted using statistical tools like correlation, regression analysis, and ANOVA with the help of SPSS Software. The results reflect a linear relationship between state-specific factors and household LPG consumption, while a non-linear relationship has been found in the case of parameters of women empowerment and household LPG consumption. Thus, the study concludes that the success of PMUY calls for a behavioural change at the societal level along with a psychological empowerment of women. The study also proposes some measures that may be adopted for course correction in order for the Ujjwala scheme to truly deliver its mandate of women empowerment and the universalisation of LPG.

Keywords: *Pradhan Mantri Ujjwala Yojana (PMUY), clean fuel, socio-economic factors, women empowerment, state-specific variations, affordability*

JEL Classification: H53, Q42, Q48, R10, I38

Introduction

India is a vast country constituting 4 per cent of the world's geographical area and around 18 per cent of its population. According to the Census 2011, approximately 68 per cent of the country's population lives in rural areas and has largely been following practices that are traditional in nature. Among many such traditions, the use of firewood and coal as a primary cooking fuel has remained predominant, the burden of whose collection has essentially rested on the women in the family. The use of solid fuel in households has been one of the most perturbing causes of indoor air pollution that has proved to be fatal. Nearly five to 10 lakh deaths annually estimated in India are due to household air pollution (Sharma et al., 2019). Moreover, since cooking and handling of solid fuel have largely been a prerogative of women in an Indian household, the impact on their health has been profound. Continuous use of these fuels badly influences the health of women and their families, thereby causing lung and heart illnesses (Aggarwal et al., 2018). In addition to the innumerable health concerns, the environmental repercussions have also been drastic. The rampant extraction of these solid fuels has been depleting the already scarce reserves of coal, along with the uncalled-for deforestation, thereby contributing to the extinction of biodiversity and an indirect aggravation of climate change.

Thus, it is in light of all these facts that the government of India introduced Pradhan Mantri Ujjwala Yojana (PMUY) on 1st May 2016 in Ballia, Uttar Pradesh, as a one-stop solution to all the above-mentioned problems. The target of the scheme has been the release of 8 Crore LPG Connections to deprived households by March 2020, which was achieved seven months ahead of the deadline in August 2019. With this, it seeks to bring about universal coverage of clean cooking gas in the country, benefiting the BPL households. In the Union budget for FY 21-22, Ujjwala 2.0 has been announced, wherein an additional one crore LPG connections are sought to be delivered to those low-income families who could not be covered under the earlier phase of PMUY.

This scheme provides for a deposit-free LPG connection along with a hotplate and a first refill free of cost to the beneficiaries. Therefore, this research intends to reflect upon the qualitative difference that PMUY has been able to bring about in the lives of women and overall LPG consumption across states, so as to plug the glaring loopholes.

Review of Literature

Sahoo et al. (2018) highlighted the achievements and challenges faced by PMUY and listed the steps to be taken to make the programme accessible and affordable among the masses. It also specified that the sustainability of refills depends on the paying capacity of poor families, which in turn depends on the income growth of the rural and urban poor. Sharma et al. (2019) focused on the household transition to clean cooking fuel (LPG) in terms of its usage and highlighted the socioeconomic and other factors that may influence this transition. The findings suggested the importance of both common as well as location-specific factors in LPG transition. It also highlighted weak income linkages with LPG usage in regions with a high prevalence of home-produced or collected solid fuel consumption. Duration of LPG acquisition, considered in the study as a behavioural factor, has emerged as an important variable promoting LPG transition over time.

Yadav (2020) carried out a study on 187 women in rural India and used statistical tools like correlation, regression, and ANOVA for the analysis. The study found that all the dimensions of PMUY significantly influence the socio-economic aspects of women's empowerment. It also proposed a new framework that may assist the government in enhancing the effectiveness of PMUY in India. Further, Mall and Rani (2020) showed that beneficiaries were highly satisfied with the simplification of kitchen work and the leisure time available in cooking. However, only some beneficiaries were satisfied with the connection documentation and process. Thus, it is concluded that due to low refill subsidy and high cost of refill, the majority of beneficiaries were not satisfied with the PMUY.

Cabiyo et al. (2020) made use of semi-structured interviews with female and male adults to understand LPG usage in Mulbagal, Karnataka. The findings suggest that respondents perceive the importance of LPG in saving time, rather than for better health. The females had no authority over the money or the mobile phone required to order a timely refill. Such factors together contribute to the 'refill gap'. Thus, the study highlighted affordability as a challenge that can further be amplified by gender norms in low-income households.

After having reviewed the above literature, it was found that there is a need for a more holistic study of household LPG consumption while considering state-specific variations, socio-economic factors of women's empowerment and the inter-relationships between them. Thus, this study is an attempt to fulfil this objective along with suggesting a future course for an effective implementation of PMUY.

Objectives of the Study

- To identify the relationship between Pradhan Mantri Ujjwala Yojana and socio- economic factors of women empowerment.
- To understand the state-specific variations influencing the successful implementation of Pradhan Mantri Ujjwala Yojana.

Hypotheses of the Study

The study considers the following hypotheses in order to examine the relationship between the success of Ujjwala Yojana and the socio- economic factors of women empowerment, along with state-wise differences.

- Hypothesis (Ho1): Household LPG Consumption is significantly related to the state-specific variations.
- Hypothesis (Ho2): Household LPG Consumption is significantly related to the socio- economic variables of women's empowerment.

Research Methodology

Dimensions under study: In the present study, the household consumption of LPG under Pradhan Mantri Ujjwala Yojana is taken as a dependent variable and the socio-economic factors of women empowerment, along with literacy and income status of the 15 states under study, are chosen as independent variables for the research, as depicted in Table 1.

Table 1: Dimensions Under Study

PMUY Success Rate	State-Specific Variations	Women Empowerment
Household consumption of LPG	• Per Capita GSDP as a percentage of India's GDP • Literacy rate • Health status	• Female literacy rate • Worker-population ratio of females

Source: Author's compilation

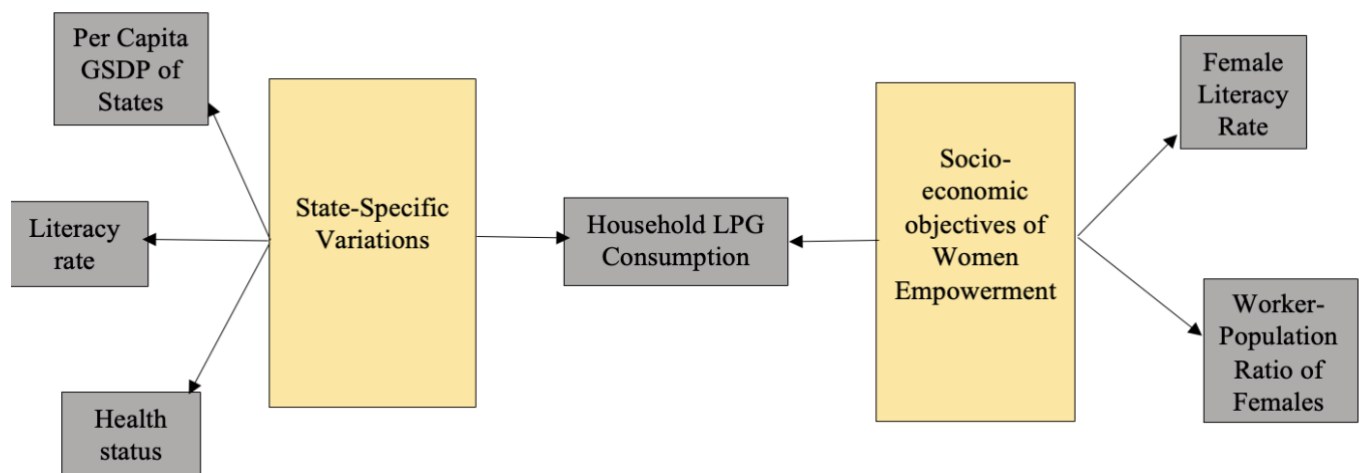
Collection of Data: For the study, 15 states were selected at random, spanning across the country and data on the listed parameters, both for state-specific variations and women's empowerment, were collected. The source for the data was

government websites and reports, including the National Family Health Survey (NFHS), Petroleum Planning & Analysis Cell (PPAC), Census 2011, Ministry of Petroleum and Natural Gas, Lok Sabha data, Ministry of Statistics and Programme Implementation (MOSPI), E&U Surveys of Labour Bureau, Kerala TB Elimination Mission report (Government of Kerala).

Measurement Instrument: To carry out the study, various statistical tools, namely correlation, regression analysis, and ANOVA, have been employed with the help of SPSS Software.

Proposed Model of Research: Figure 1 illustrates the proposed model of research based on which the present study has been conducted. The model highlights the dependence of household LPG consumption on various state-specific variations and women's empowerment parameters. For the consideration of state-specific variations, literacy rate of states, per capita GSDP and health status have been analysed while for women empowerment parameters, worker-population ratio of females and their literacy rate have been studied.

Figure 1: Model of Research

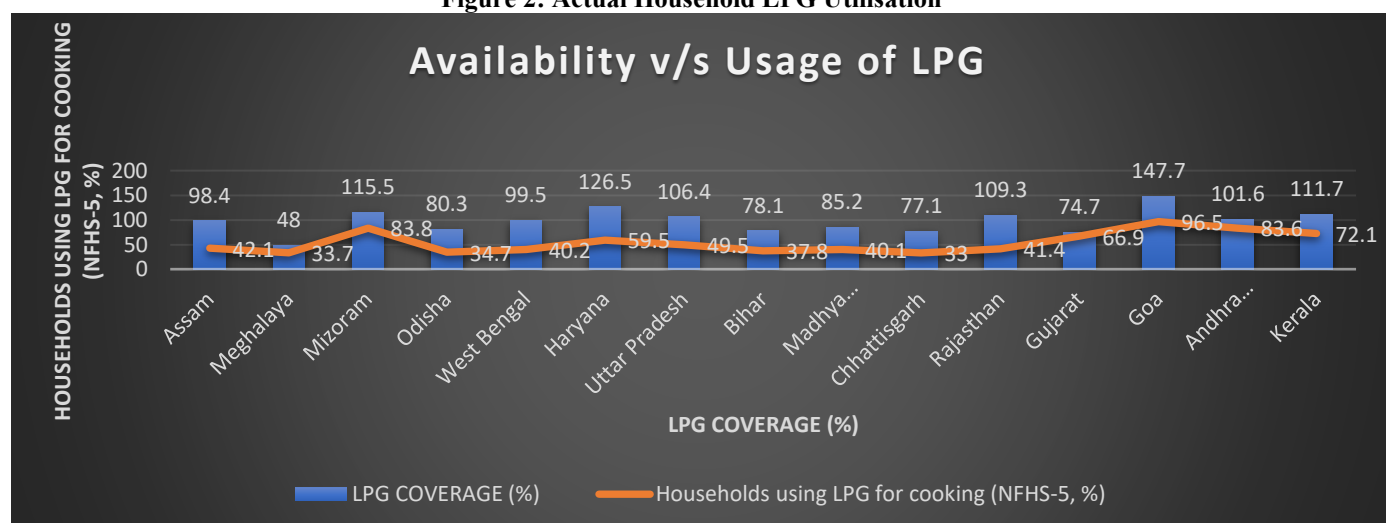


Source: Author's depiction

Results And Discussion

LPG Coverage and its Actual Consumption: Figure 2 illustrates the LPG coverage across states and its subsequent utilisation by the households. States like Andhra Pradesh, Goa, and Mizoram have seen successful utilisation of the clean cooking fuel, while states like Assam, Bihar, Nagaland, Meghalaya, and West Bengal tend to lag behind. Thus, the data shows that the overall utilisation of LPG is much less when compared with the percentage of LPG connections achieved across the states. Further, data in Annexure 1 shows that the gap between availability and usage of LPG is found to be starker in the rural areas of these states. This means that the households have been facing other roadblocks apart from accessibility alone, which might include affordability of LPG, that withhold them from going for LPG refills.

Figure 2: Actual Household LPG Utilisation

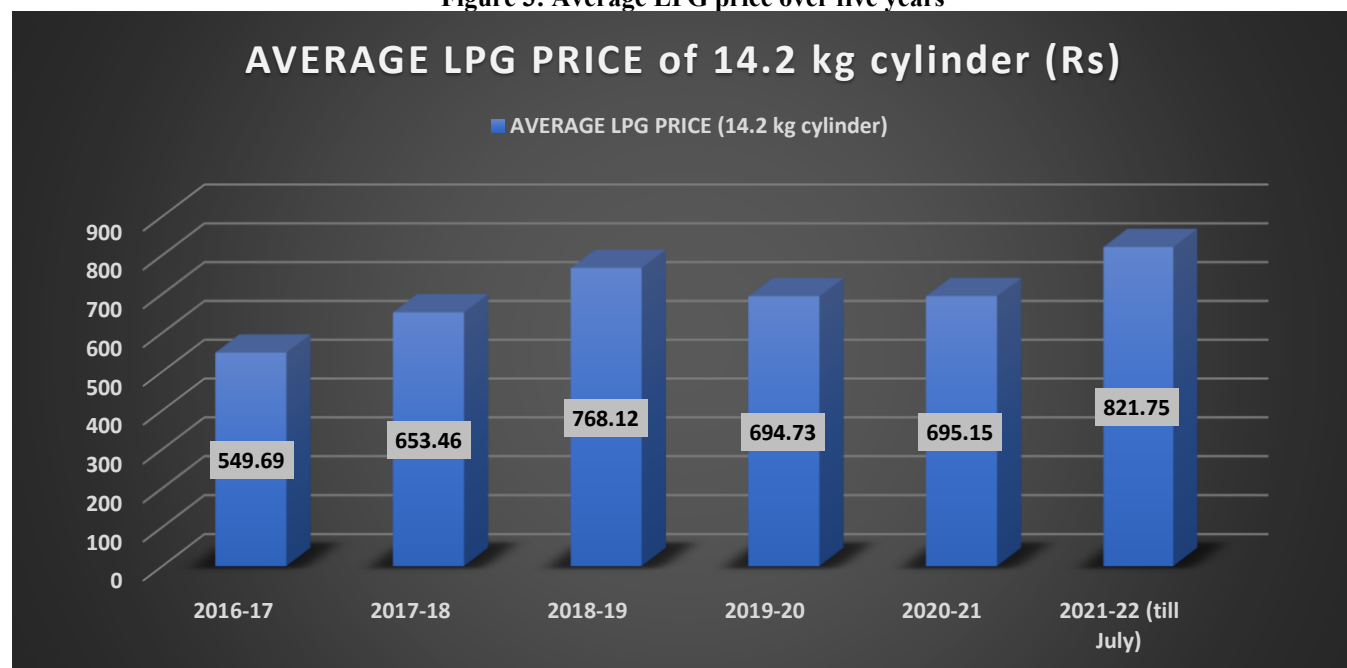


Source: Author's depiction of NFHS-5 and Ministry of Petroleum & Natural Gas data

Figure 3 represents the average LPG price from 2016-17 to 2021-22. The average LPG price of a 14.2 kg cylinder over these years has seen a general hike. The rise has not been uniform. However, when compared with the prices in 2016-17, the prices in 2021-22 (till July) have seen a nearly 50 per cent hike. This, therefore, explains to a certain extent the imbalance witnessed between LPG coverage and its actual household utilisation, along with the reports of the retraction of those already using it because of its increasing unaffordability. Moreover, the starker gap seen in the states' rural areas is testimony to the fact that the burden of the price rise has been most pronounced in the country's rural areas.

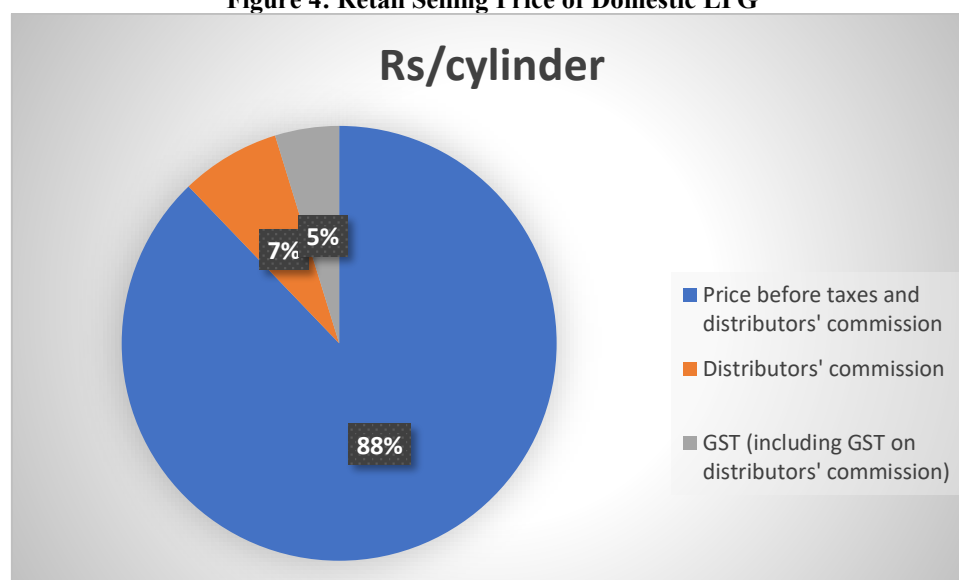
Figure 4 shows the retail selling price of domestic LPG as on August 1, 2021. Its composition includes 7 per cent distributor's commission and 5 per cent GST, while 88 per cent of it is the price before taxes and distributors' commission.

Figure 3: Average LPG price over five years



Source: Author's depiction of Lok Sabha data

Figure 4: Retail Selling Price of Domestic LPG



Source: Author's depiction of PPAC data

State-Wise Variations in LPG Consumption

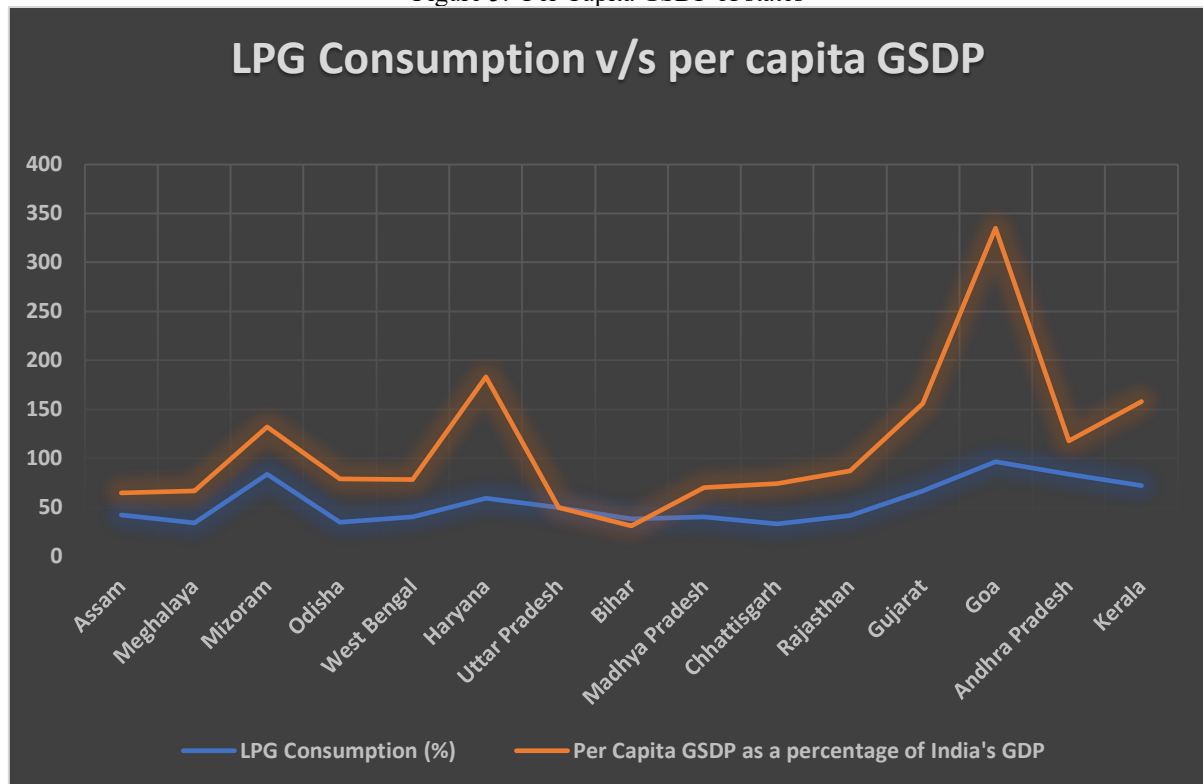
These have been studied under the following heads:

i) Per Capita GSDP as a percentage of India's GDP

Figure 5 depicts the household LPG consumption against the per capita GSDP of states. Based on this, a higher per capita GSDP of states as a percentage of India's GDP amounts to a higher LPG consumption. The per capita GSDP of states like Mizoram,

Goa and Andhra Pradesh constitutes 132 per cent, 335 per cent and 118 per cent of India's GDP respectively and are found to exhibit comparatively better performance in the household LPG utilisation. This is mainly because a higher per capita income would contribute to a higher purchasing power of the masses. Thus, the higher the per capita GSDP, the more likely households are to go for LPG refills.

Figure 5: Per Capita GSDP of states

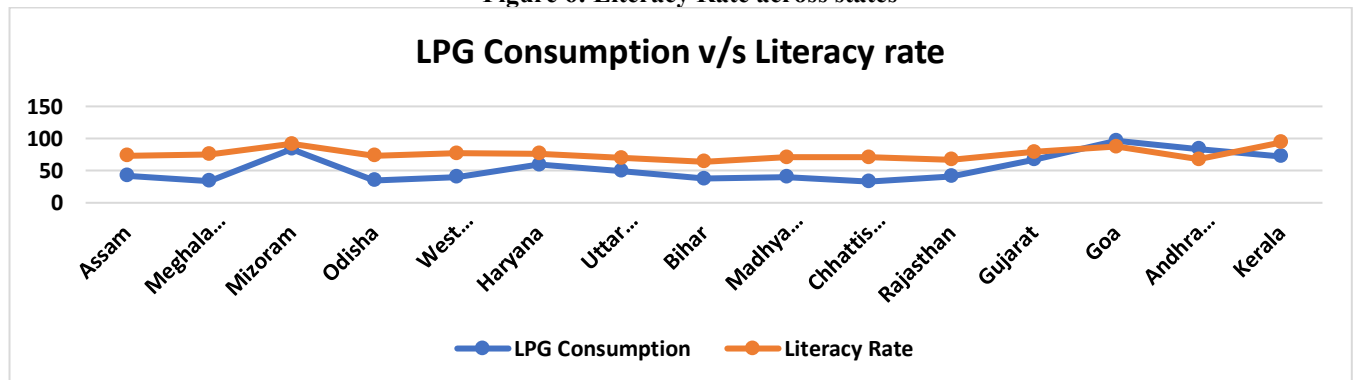


Source: Author's depiction of MOSPI, NFHS-5 data

Literacy Rate

Figure 6 illustrates the LPG consumption of states against their literacy rate. States like Goa and Mizoram, which have a high literacy rate of 87.4 per cent and 91.6 per cent respectively, are found to have a higher LPG consumption. While in other states like West Bengal and Haryana, despite the literacy rate being higher than the average, the states do not show a very satisfactory consumption of LPG. This could largely be attributed to the glaring rural-urban disparity in terms of literacy about the PAHAL scheme as has been found in the 'Primary survey on household cooking fuel usage and the willingness to convert to LPG' report of PPAC (PPAC, 2016). The literacy penetration needs to be made more uniform for the overall LPG consumption to go up. Thus, the higher the literacy rate, the more likely the members of the household are to understand the importance of using clean cooking fuel.

Figure 6: Literacy Rate across states



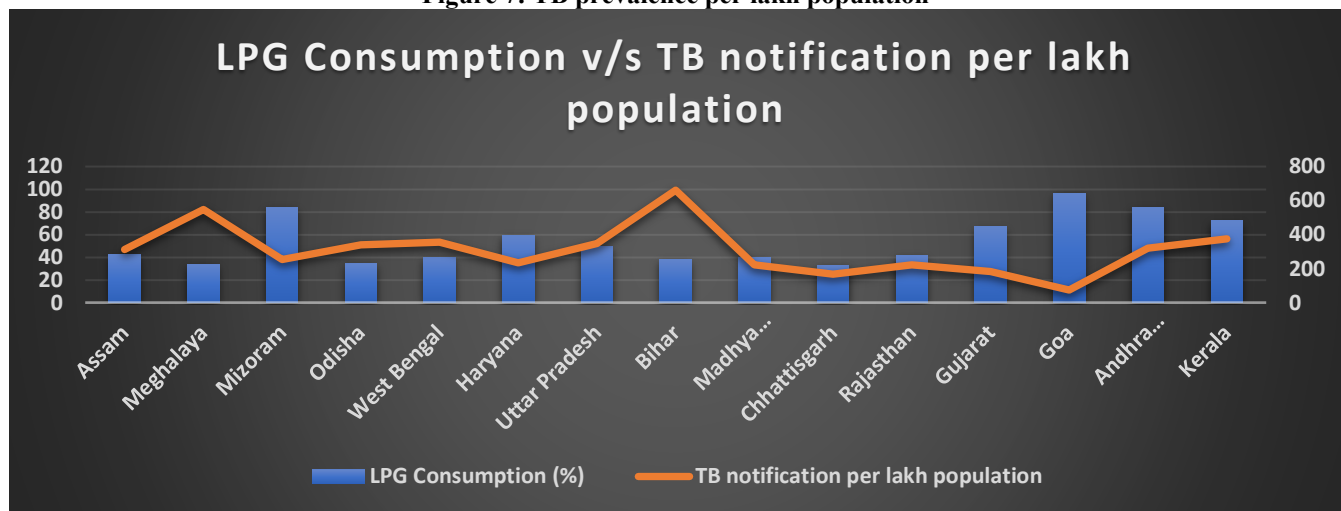
Source: Author's depiction of Census 2011, NFHS data

Health Status

Figure 7 shows the LPG consumption across states and the tuberculosis (TB) prevalence therein. It exemplifies that the states with a lower LPG consumption have a higher TB prevalence rate per lakh population, as is demonstrated by Bihar, Meghalaya,

etc. However, states like Kerala, despite having a higher LPG consumption than average, register higher TB cases. This, as per the Kerala TB Elimination Mission report (Government of Kerala), is largely attributed to reasons other than air pollution, which include diabetes, migration of people from other states to Kerala, and the like (Government of Kerala, 2017). Thus, the use of LPG as a cooking fuel considerably reduces TB cases in households.

Figure 7: TB prevalence per lakh population



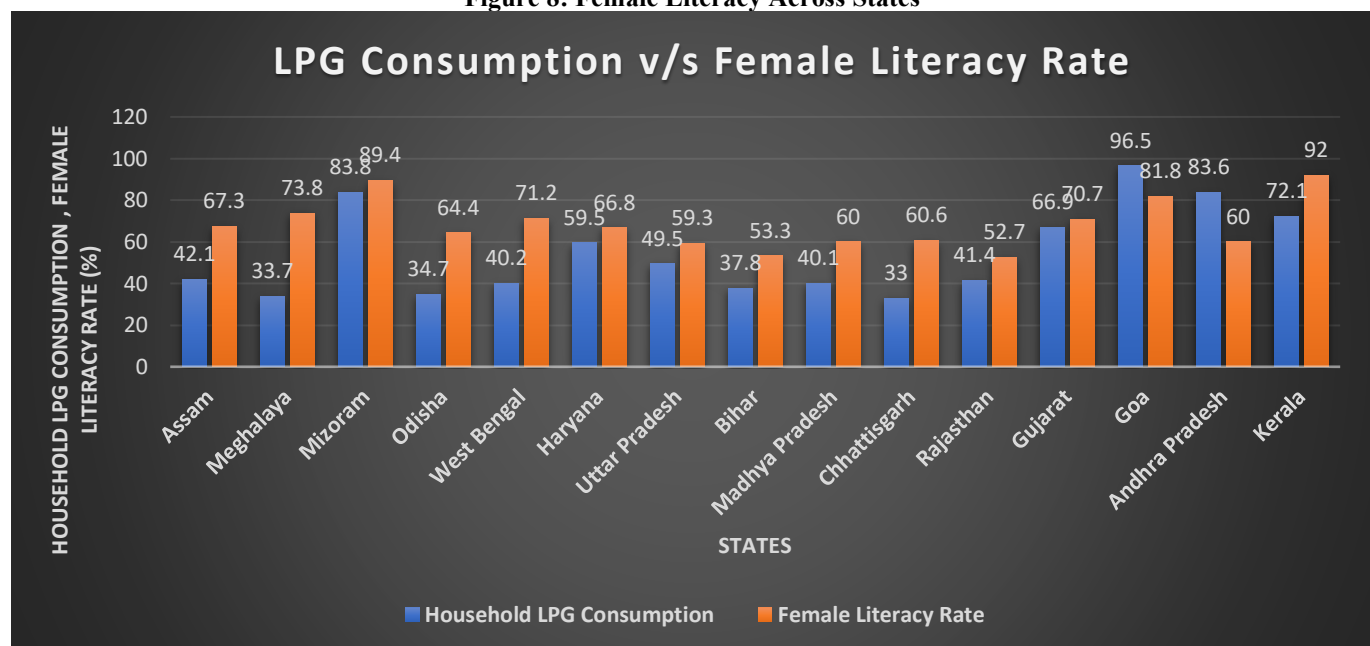
Source: Author's depiction of NFHS data

Socio-Economic Factors for Women Empowerment

Female Literacy Rate

Figure 8 shows the LPG consumption against female literacy rate across states. In some states like Kerala, Goa and Mizoram, a relatively high female literacy rate corresponds to a higher LPG consumption while in other states such as Meghalaya, Assam, and West Bengal, in spite of a better female literacy than various other states, the household LPG consumption is below par. Thus, it means that high female literacy alone cannot ascertain the adoption of LPG in households. In fact, a study by ICRIER shows that due to high levels of patriarchy in states, women despite possessing graduate and post-graduate degrees, are out of the labour force. Therefore, a high female literacy rate does not necessarily point towards a high LPG consumption.

Figure 8: Female Literacy Across States



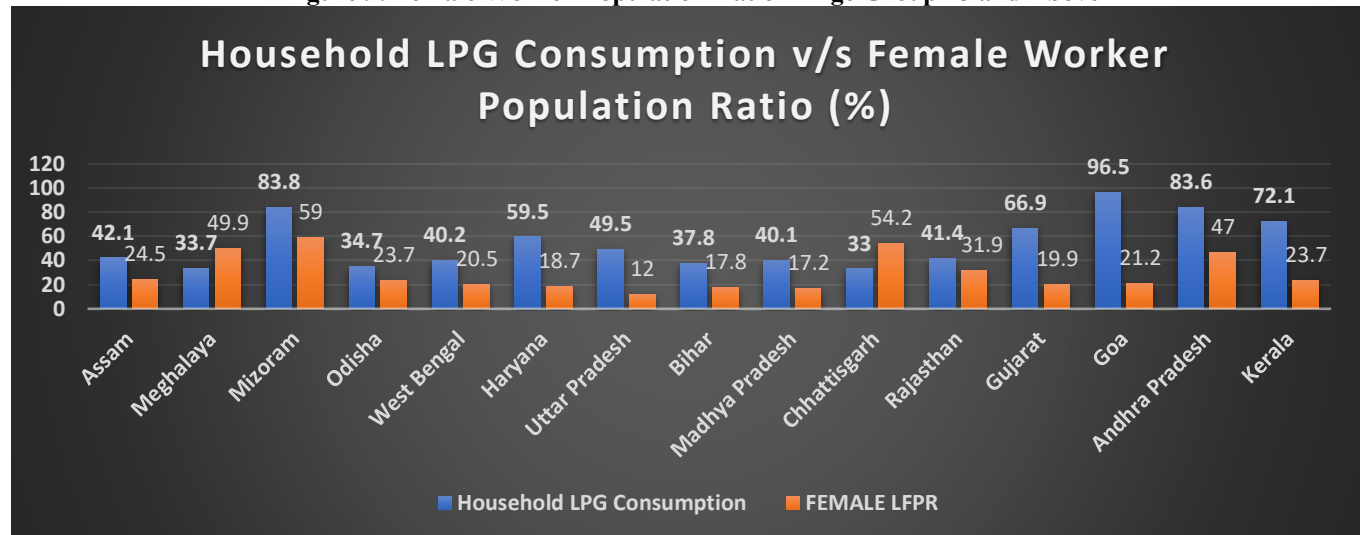
Source: Author's depiction of Census 2011, NFHS-5 data

Female Worker-Population Ratio

Figure 9 depicts the LPG consumption across states against the percentage of females in that state in the workforce. In states like Chhattisgarh, Meghalaya etc., while the female worker-population ratio is comparatively high, the household LPG consumption

remains low when compared with other states having lower female labour force participation rates. On the other hand, in states like Goa, Gujarat, and Kerala, in spite of the low female worker-population ratio, the LPG consumption is relatively high. Thus, a high female workforce participation does not necessarily mean higher LPG consumption by the household. This might be because of the unpaid nature of women's work despite being involved in a productive activity (Thomas et al., 2022) or possibly the aspect of who actually has control over women's earnings and women's decision-making power in a traditional Indian household.

Figure 9: Female Worker-Population Ratio in Age Group 15 and Above



Source: Author's depiction of E&U Surveys of Labour Bureau data

Hypothesis Test

Table 2 documents the Correlation of household LPG consumption with various state-specific variations and women empowerment parameters. The analysis of the table shows that per capita GSDP of states has a significant correlation with household LPG Consumption at the 0.01 level. The literacy rate in states and the literacy rate of females also share a significant correlation at the 0.05 level with household LPG Consumption. Though not significant, the negative value of correlation between household LPG consumption and TB notification per lakh population suggests that the higher the LPG consumption by households, the lower is the incidence of TB.

Table 2: Correlation between LPG consumption with the state-specific variations and women empowerment parameters

		LPG Consumpti on	Per Capita GSDP	Literacy rate	TB notification per lakh population	Female literacy rate	Female worker population ratio
LPG Consumption	Pearson Correlation	1	.799**	.627*	-.432	.593*	.266
	Sig. (2-tailed)		.000	.012	.108	.020	.337
	N	15	15	15	15	15	15
Per Capita GSDP	Pearson Correlation	.799**	1	.638*	-.605*	.562*	.093
	Sig. (2-tailed)	.000		.010	.017	.029	.740
	N	15	15	15	15	15	15
Literacy rate	Pearson Correlation	.627*	.638*	1	-.308	.978**	.137
	Sig. (2-tailed)	.012	.010		.264	.000	.627
	N	15	15	15	15	15	15
TB notification per lakh population	Pearson Correlation	-.432	-.605*	-.308	1	-.171	-.215
	Sig. (2-tailed)	.108	.017	.264		.543	.441
	N	15	15	15	15	15	15

Female literacy rate	Pearson						
	Correlation	.593*	.562*	.978**	-.171	1	.191
	Sig. (2-tailed)	.020	.029	.000	.543		.496
	N	15	15	15	15	15	15
Female worker population ratio	Pearson						
	Correlation	.266	.093	.137	-.215	.191	1
	Sig. (2-tailed)	.337	.740	.627	.441	.496	
	N	15	15	15	15	15	15

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

In Table 3, the linear regression model on LPG Consumption estimated with the parameters of state-specific variations found the calculated R- square to be 0.663 and adjusted R-square to be 0.571. This means that 66.3 per cent of the total variance in household LPG Consumption can be explained by the state-specific variations. In Table 4, the F-test is recorded at 7.216, the total value of degrees of freedom is 14, and the significance is 0.006, which leads to the conclusion that the test is significant as the significance value is less than 0.05. Thus, it can be inferred that there is a linear relationship between household LPG Consumption and state-specific variations.

Testing of (Ho1): Null hypothesis Ho1 is rejected as the household LPG consumption under PMUY is significantly related to the state-specific variations.

Table 3: Linear regression model on LPG Consumption estimated with the parameters of state-specific variations

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.814 ^a	.663	.571	13.87500

Table 4: Significance analysis of state-specific variations for LPG consumption

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4167.738	3	1389.246	7.216	.006 ^b
	Residual	2117.671	11	192.516		
	Total	6285.409	14			

a. Dependent Variable: LPG Consumption

b. Predictors: (Constant), TB notification per lakh population, Literacy rate, Per Capita GSDP

In Table 5, the linear regression model on LPG Consumption estimated with the parameters of women empowerment found the calculated R- square to be 0.376 and adjusted R-square to be 0.272. This means that only 37.6 per cent of the total variance in household LPG consumption can be explained by the parameters of women empowerment. In Table 6, the F-test is recorded as 3.616, the total value of degrees of freedom is 14 and the significance is 0.059, which depicts that these parameters are not significant at the 5% level of significance. Thus, it can be inferred that there is no linear relationship between household LPG Consumption and socio-economic factors of women empowerment. However, it is important to note that these results reflect the overall significance of parameters of women empowerment and not that of the individual parameters.

Testing of (Ho2): Null hypothesis Ho2 is accepted as the household LPG consumption under PMUY is not significantly related to the parameters of women empowerment.

Table 5: Linear regression model on LPG Consumption estimated with the parameters of women empowerment

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.613 ^a	.376	.272	18.07829

a. Predictors: (Constant), Female literacy rate, Female worker population ratio

Table 6: Significance analysis of women empowerment parameters for LPG consumption

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2363.514	2	1181.757	3.616	.059 ^b
	Residual	3921.895	12	326.825		
	Total	6285.409	14			

a. Dependent Variable: LPG Consumption

b. Predictors: (Constant), Female literacy rate, Female worker population ratio

Policy Implications Based on Empirical Findings

- The study highlights the importance of multi-dimensional policy emphasis based on bottom-up planning to enhance LPG utilisation, as any one socio-economic factor alone does not confirm its optimal utilisation.
- The policy emphasis should be redirected towards ensuring the affordability of LPG refills along with strengthening the supply chains
- Information, Education and Communication (IEC) campaigns need to be undertaken to bring about a behavioural change at the societal level towards LPG acceptance.
- Mechanisms for periodic feedback from the beneficiaries need to be evolved to incorporate commensurate changes to improve the effectiveness of the scheme.
- The rural-urban gap in LPG consumption needs to be bridged with an enhanced focus on their awareness towards schemes like PAHAL, PMUY etc.
- Women empowerment, not only financially and educationally, but also psychologically is important coupled with societal backing.
- Civil society organisations and Self-help groups (SHGs) need to be roped in to ensure an effective ground-level implementation of PMUY.

Conclusion

This paper is an effort towards studying the effectiveness of the Ujjwala scheme in delivering the intended outcomes. In terms of the actual utilisation of LPG, the analysis throws light on some ground realities. It shows that in spite of having achieved considerable coverage of LPG connections, its utilisation as a primary cooking fuel falls behind. Thus, having LPG connections alone is not enough. To truly achieve the goal of a smokeless kitchen, women's empowerment needs to be leveraged along with an eco-friendly cooking fuel, as envisaged by Pradhan Mantri Ujjwala Yojana. It is crucial to ensure robust monitoring of LPG utilisation once the connections are delivered. As found in the study, there has been a continuous spurt in the LPG prices primarily because of the pandemic and the diversion of government expenditure. This has prompted a lot of people to retract from using this source as it breaches their affordability. In fact, many who were already using it have slipped back into the fold of less efficient solid fuels. Thus, the government seriously needs to consider rationalising the LPG rates for this scheme to meaningfully

serve its purpose. Since women's empowerment lies at the heart of this scheme, it needs to be ensured that this aim is facilitated through an enhanced focus on awareness generation campaigns that would educate women and their families about the innumerable benefits of using LPG as a cooking fuel. The study highlights that a higher female labour force participation rate (LFPR) and literacy rate do not necessarily mean an enhanced household LPG consumption. Therefore, women need to break-free from the stereotypical notions of society and eliminate the psychological roadblocks that prevent them from exercising their rights. Women's education and their role in the decision-making process of the family need to be strengthened, coupled with an increased acceptance of women's financial independence, in society. The study also highlights how the regional differences among states have led to a highly skewed distribution of the actual benefits emanating from the Ujjwala yojana. The states with higher per capita GDP are more likely to have higher LPG consumption due to greater ability to afford the same. Similarly, the states with a higher literacy rate have greater LPG consumption than the ones with poor literacy rates. On the health front, it was found that LPG consumption, by and large, reduces the incidence of tuberculosis. This is further ascertained by the findings of NFHS-5, which reflect a higher occurrence of tuberculosis in households using solid fuels when compared with those using clean cooking fuel. Thus, the study highlights how these parameters need to be worked upon through a bottom-up approach to bring about a more equitable distribution of benefits flowing from the Ujjwala scheme among various states.

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Competing Interest: No

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Annexures

Annexure 1: Households using clean fuel for cooking (%)

S.No.	STATES	LPG COVERAGE (%)	HOUSEHOLDS USING CLEAN FUEL FOR COOKING (%)		
			Urban	Rural	Total
1	Assam	98.4	85.5	33.7	42.1
2	Meghalaya	48.0	76.7	21.7	33.7
3	Mizoram	115.5	97.9	66.4	83.8
4	Odisha	80.3	76.9	26.1	34.7
5	West Bengal	99.5	80.3	20.5	40.2
6	Haryana	126.5	90.5	42.6	59.5
7	Uttar Pradesh	106.4	88.3	36.2	49.5
8	Bihar	78.1	78.6	30.3	37.8
9	Madhya Pradesh	85.2	84.3	23.6	40.1

10	Chhattisgarh	77.1	80.2	19.2	33.0
11	Rajasthan	109.3	87.8	26.2	41.4
12	Gujarat	74.7	94.3	46.1	66.9
13	Goa	147.7	98.8	93.1	96.5
14	Andhra Pradesh	101.6	96.6	77.9	83.6
15	Kerala	111.7	78.5	66.3	72.1

Source: Compiled from Ministry of Petroleum & Natural Gas, NFHS data

Annexure 2: Average LPG price over five years (Rates in Delhi)

YEAR	AVERAGE LPG PRICE (14.2 kg cylinder)
2016-17	549.69
2017-18	653.46
2018-19	768.12
2019-20	694.73
2020-21	695.15
2021-22 (till July)	821.75

Source: Lok Sabha data

Annexure 3: Retail Selling Price of Domestic LPG (Subsidised Domestic LPG at Delhi as on August 1 2021)

PRICE BUILD UP	Rs/cylinder
Price before taxes and distributors' commission	732.92
Distributors' commission	61.84
GST (including GST on distributors' commission)	39.74
TOTAL	834.5

Source: PPAC

Annexure 4: Per Capita GSDP of states and LPG consumption

STATES	LPG CONSUMPTION (%)	PER CAPITA GSDP AS A PERCENTAGE OF INDIA'S GDP (%)
Assam	42.1	65
Meghalaya	33.7	67
Mizoram	83.8	132
Odisha	34.7	79
West Bengal	40.2	78
Haryana	59.5	183
Uttar Pradesh	49.5	50
Bihar	37.8	31
Madhya Pradesh	40.1	70
Chhattisgarh	33	74
Rajasthan	41.4	87
Gujarat	66.9	156
Goa	96.5	335
Andhra Pradesh	83.6	118
Kerala	72.1	158

Source: Author's compilation from MOSPI, NFHS-5 data

Annexure 5: Literacy Rate across states and LPG consumption

STATES	LPG CONSUMPTION (%)	LITERACY RATE (%)
Assam	42.1	73.2
Meghalaya	33.7	75.5
Mizoram	83.8	91.6
Odisha	34.7	73.5
West Bengal	40.2	77.1
Haryana	59.5	76.6
Uttar Pradesh	49.5	69.7

Bihar	37.8	63.8
Madhya Pradesh	40.1	70.6
Chhattisgarh	33.0	71.0
Rajasthan	41.4	67.1
Gujarat	66.9	79.3
Goa	96.5	87.4
Andhra Pradesh	83.6	67.4
Kerala	72.1	93.9

Source: Author's compilation from Census 2011, NFHS data

Annexure 6: TB prevalence per lakh population and LPG consumption

STATES	LPG Consumption (%)	TB notification per lakh population
Assam	42.1	311
Meghalaya	33.7	549
Mizoram	83.8	253
Odisha	34.7	338
West Bengal	40.2	356
Haryana	59.5	234
Uttar Pradesh	49.5	346
Bihar	37.8	661
Madhya Pradesh	40.1	224
Chhattisgarh	33	167
Rajasthan	41.4	222
Gujarat	66.9	181
Goa	96.5	74
Andhra Pradesh	83.6	320
Kerala	72.1	374

Source: Author's compilation from NFHS data

Annexure 7: Female Literacy Across States and LPG consumption

STATES	HOUSEHOLD LPG CONSUMPTION (%)	FEMALE LITERACY RATE (%)
Assam	42.1	67.3
Meghalaya	33.7	73.8
Mizoram	83.8	89.4
Odisha	34.7	64.4
West Bengal	40.2	71.2
Haryana	59.5	66.8
Uttar Pradesh	49.5	59.3
Bihar	37.8	53.3
Madhya Pradesh	40.1	60
Chhattisgarh	33	60.6
Rajasthan	41.4	52.7
Gujarat	66.9	70.7
Goa	96.5	81.8
Andhra Pradesh	83.6	60
Kerala	72.1	92

Source: Author's compilation from Census 2011, NFHS data

Annexure 8: Female Worker-Population Ratio (15 years and Above) and LPG consumption

STATES	HOUSEHOLD LPG CONSUMPTION (%)	FEMALE WORKER-POPULATION RATIO (%)
Assam	42.1	24.5
Meghalaya	33.7	49.9
Mizoram	83.8	59.0
Odisha	34.7	23.7
West Bengal	40.2	20.5
Haryana	59.5	18.7

Uttar Pradesh	49.5	12.0
Bihar	37.8	17.8
Madhya Pradesh	40.1	17.2
Chhattisgarh	33	54.2
Rajasthan	41.4	31.9
Gujarat	66.9	19.9
Goa	96.5	21.2
Andhra Pradesh	83.6	47.0
Kerala	72.1	23.7

Source: Author's compilation from E&U Surveys of Labour Bureau, NFHS data

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