

Home Production, Technology and Women's Time Allocation in Rural India

WOMEN IN THE ECONOMY WORKSHOP ISI DELHI

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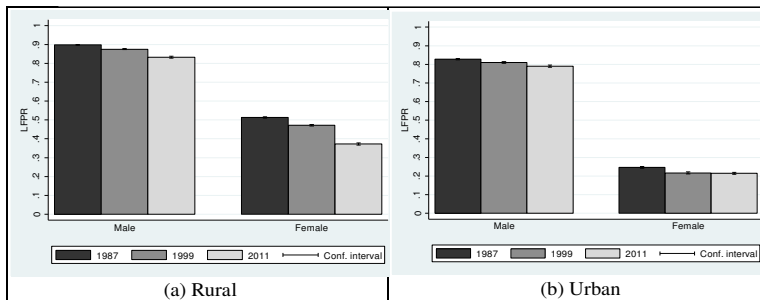
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LFPR by Gender over Time in India (15 to 65 yrs.)



Notes: LFPR is calculated using Employment and Unemployment Schedule, NSS (1987, 1999, 2011). Afridi, Dinkelmann and Mahajan (2018)

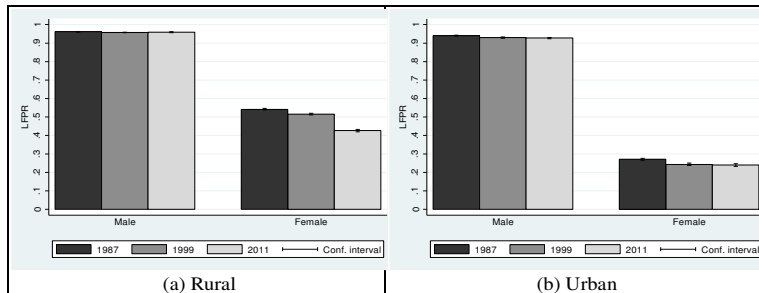
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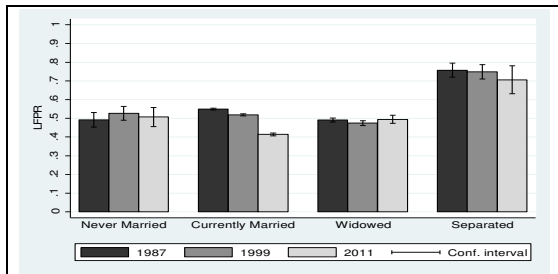
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- In India, female LFPR has declined in rural areas and is almost stagnant in urban areas.
- Lack of access to efficient and clean fuel may contribute a low female LFPR and their psychosocial wellbeing.

LFPR by Gender over Time in India (25 to 65 yrs.)



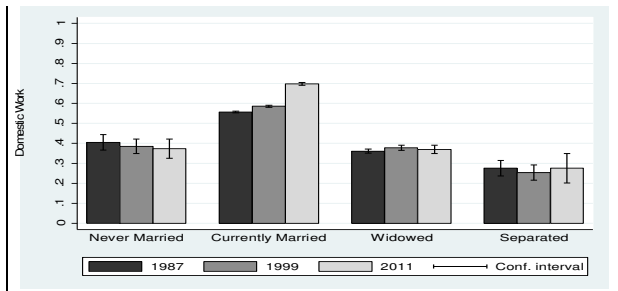
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Female LFPR by Marital Status over Time in India (25 to 65 yrs.)



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Burden of Domestic Work on Females by Marital Status over Time in India (25 to 65 yrs.)



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- Saksena et al. (1995) studied three villages in Himalayas and found that women spent 4-6 hours in collection of solid fuels. Shailaja (2000) finds a disproportionate division of labor in that women collect over 56% fuel wood where as they contribute way little to household income.

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- Can improvements in home production technology release women's time from domestic work?

Preliminary Findings

- Choice of cooking fuel affects women's time use and their psychosocial wellbeing.
- Information campaigns on benefits of cleaner fuel may induce households to switch.
- ATE of such campaigns on time use is miniscule.

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- In each village, 20 households were randomly sampled and were surveyed regarding cooking fuel usage patterns, household characteristics, health expenditures, and time use of primary cook.
- If the household has an LPG connection, the survey collected information about unique consumer and dealer identification codes and status under *Ujjwala Yojna* using LPG consumer booklets.

24 Hour Recall – Time Use Classification

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- **Other:** Participating in school / college / vocational programs; Studying at home

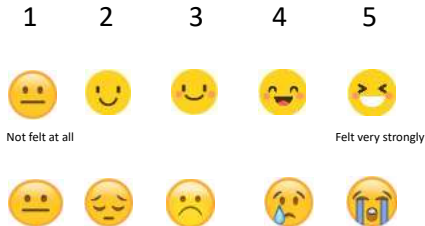
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Notes: All questions were in reference to the last meal prepared by the primary cook.

Summary Stat: Time Use

	(1) LPG	(2) Non-LPG	(3) Diff.
Time spent on personal care	153.54 [50.45]	153.99 [51.62]	-0.45
Time spent on domestic work	456.84 [138.94]	464.30 [144.96]	-7.47
Time spent on childcare	61.96 [76.33]	57.70 [75.16]	4.26
Time spent on work	156.37 [198.75]	182.30 [203.76]	-25.93***
Time spent on leisure	608.12 [154.03]	579.70 [151.80]	28.42***

Notes: Standard deviations are reported in parenthesis. Work includes both paid (farm/non-farm) and unpaid (own farm/non-farm) activities.

Summary Stat: Firewood Collection

	(1) LPG	(2) Non- LPG	(3) Diff.
Total visits to collect firewood	1.91 [2.65]	2.54 [2.70]	-0.62***
Time spent to collect firewood	358.75 [677.90]	463.10 [600.52]	-104.35***
Visits to collect firewood by primary cook	1.08 [1.83]	1.61 [2.12]	-0.53***
Time spent to collect firewood by primary cook	203.09 [408.66]	298.99 [454.06]	-95.91***

Notes: Standard deviations are reported in parenthesis. Questions on firewood collection refers to a typical week in the last month. All variables on time spent are in hours.

Summary Stat: Dung Cake Making

	(1) LPG	(2) Non-LPG	(3) Diff.
# Times hh makes dung cakes	0.59 [0.49]	0.66 [0.47]	-0.07***
Time spent in making dung cakes	250.41 [302.94]	288.79 [281.89]	-38.38***
# Times hh collects dung	1.02 [2.08]	1.46 [2.41]	-0.44***
Time spent in collecting dung	115.84 [372.37]	143.33 [264.64]	-27.49**
Total time spent	366.24 [534.56]	432.12 [452.51]	-65.87***

Notes: Standard deviations are reported in parenthesis. Questions on dung collection and making dung-cakes refers to a typical week in the last month. All variables on time spent are in hours.

Summary Stat: Psychosocial Well Being

	(1) LPG	(2) Non-LPG	(3) Diff.
Felt impatient	2.32 [1.22]	2.75 [1.32]	-0.43***
Felt frustrated	2.08 [1.13]	2.33 [1.21]	-0.26***
Felt tired	2.64 [1.29]	2.84 [1.32]	-0.20***
Felt happy	3.54 [1.19]	3.30 [1.22]	0.24***
Felt capable	3.46 [1.25]	3.34 [1.23]	0.11**
Felt content	3.50 [1.20]	3.33 [1.24]	0.17***

Notes: Standard deviations are reported in parenthesis. Questions on psychosocial wellbeing were asked in the context of last meal prepared by the primary cook.

Time Use: LPG

	(1) Chores	(2) Work	(3) Leisure
LPG Connection Status in Baseline	-10.659* (6.01)	-16.804* (8.97)	20.547*** (6.30)
Age of primary cook	-0.759** (0.32)	0.879** (0.42)	1.264*** (0.32)
Education of the primary cook	-2.039 (1.25)	-6.711*** (1.71)	5.126*** (1.27)
Marital status of the primary cook	28.934*** (10.92)	28.196 (17.19)	-65.739*** (14.23)
Household size	9.637*** (1.24)	1.230 (1.60)	-10.022*** (1.33)
Household head educated beyond primary school	-0.505 (5.52)	-12.857* (7.52)	6.980 (5.87)
Television Dummy	-6.385 (7.39)	-7.216 (10.23)	19.774*** (6.73)
SC/ST	-12.236* (6.47)	24.381*** (9.26)	0.499 (7.31)
Hindu	-8.678 (14.20)	43.538** (18.70)	-27.215* (14.98)
Hh. head self-employed or salaried	-8.719 (6.07)	-8.799 (7.67)	15.244** (6.86)
Kids below 5 years	-12.931* (6.74)	-44.178*** (8.79)	18.723*** (6.51)
Owens or Leases Land	19.309*** (6.82)	31.589*** (9.17)	-39.919*** (7.09)
Assets Index - PCA weighted value of hh assets	14.880*** (5.30)	-35.705*** (8.64)	24.357*** (6.29)
R Squared	0.057	0.080	0.070
No. of Observations	3003	3002	3003

Time Use: PMUY (Estimation Sample: Households with LPG)

	(1) Chores	(2) Work	(3) Leisure
PMUY beneficiary	-8.671 (7.00)	29.438*** (9.85)	-6.457 (7.76)
Age of primary cook	-1.083*** (0.34)	1.952*** (0.48)	0.540 (0.37)
Education of the primary cook	-2.867* (1.48)	-5.211** (2.07)	4.018** (1.63)
Marital status of the primary cook	26.322** (12.62)	36.220** (17.75)	-60.266*** (13.98)
Household size	9.560*** (1.49)	1.318 (2.09)	-10.692*** (1.65)
Household head educated beyond primary school	-3.025 (6.53)	-16.244* (9.18)	15.356** (7.23)
Television Dummy	-8.159 (8.34)	-12.706 (11.74)	24.865*** (9.24)
SC/ST	-16.656** (6.70)	28.853*** (9.43)	-3.988 (7.43)
Hindu	0.270 (13.04)	38.351** (18.34)	-34.029** (14.44)
Hh. head self-employed or salaried	-11.491* (6.93)	-8.632 (9.75)	17.245** (7.68)
Kids below 5 years	-9.178 (6.85)	-37.641*** (9.63)	10.301 (7.58)
Owens or Leases Land	25.294*** (7.33)	23.946** (10.32)	-38.770*** (8.12)
Assets Index - PCA weighted value of hh assets	14.063** (6.30)	-28.119*** (8.87)	22.447*** (6.98)
R Squared	0.068	0.099	0.070
No. of Observations	2018	2017	2018

Time Use: Heterogeneity by Assets

	(1) Chores	(2) Work	(3) Leisure
LPG	-8.376 (6.49)	-28.768*** (9.13)	29.929*** (7.04)
Below Q1	-4.785 (11.04)	-23.570 (15.52)	24.280** (11.96)
LPG × Below Q1	-8.948 (12.01)	42.510** (16.88)	-32.818** (13.01)
Age of primary cook	-0.772*** (0.27)	0.922** (0.39)	1.233*** (0.30)
Education of the primary cook	-2.110* (1.24)	-6.507*** (1.75)	4.986*** (1.35)
Marital status of the primary cook	28.804*** (10.83)	28.512* (15.22)	-65.946*** (11.73)
Household size	9.663*** (1.25)	1.094 (1.76)	-9.915*** (1.35)
Household head educated beyond primary school	-0.474 (5.46)	-12.887* (7.67)	6.989 (5.91)
Television Dummy	-7.695 (6.90)	-8.507 (9.71)	21.762*** (7.47)
SC/ST	-12.563** (5.59)	24.890*** (7.86)	0.242 (6.06)
Hindu	-8.087 (9.77)	43.727*** (13.73)	-27.755*** (10.58)
Hh. head self-employed or salaried	-8.999 (5.75)	-8.223 (8.08)	14.899** (6.23)
Kids below 5 years	-13.062** (5.71)	-43.387*** (8.03)	18.091*** (6.19)
R Squared	0.058	0.082	0.072
No. of Observations	3003	3002	3003

Covariate Balance

	(1) LPG	(2) Non-LPG	(3) Diff.
Age of primary cook	33.80 [11.17]	33.82 [11.85]	-0.02
Education of the primary cook	2.86 [2.60]	2.31 [2.42]	0.55***
Marital status of the primary cook	0.94 [0.24]	0.95 [0.22]	-0.01
Household size	6.29 [2.30]	5.89 [2.25]	0.40***
Household head educated beyond primary school	0.42 [0.49]	0.38 [0.49]	0.04**
Television Dummy	0.78 [0.41]	0.63 [0.48]	0.15***
SC/ST	0.43 [0.49]	0.35 [0.48]	0.08***
Hindu	0.94 [0.24]	0.88 [0.32]	0.06***
Hh. head self-employed or salaried	0.52 [0.50]	0.51 [0.50]	0.01
Kids below 5 years	0.50 [0.50]	0.53 [0.50]	-0.03
Owns or Leases Land	0.54 [0.50]	0.57 [0.50]	-0.03
Assets Index - PCA weighted value of hh assets	1.65 [0.75]	1.41 [0.78]	0.24***

Covariate Balance on the Common Support

	(1) LPG	(2) Non-LPG	(3) Diff.
Age of primary cook	33.80 [11.17]	34.42 [11.92]	-0.62*
Education of the primary cook	2.86 [2.60]	2.76 [2.55]	0.10
Marital status of the primary cook	0.94 [0.24]	0.92 [0.26]	0.01
Household size	6.29 [2.30]	6.41 [2.57]	-0.12
Household head educated beyond primary school	0.42 [0.49]	0.41 [0.49]	0.01
Television Dummy	0.78 [0.41]	0.78 [0.41]	-0.00
SC/ST	0.43 [0.49]	0.41 [0.49]	0.02
Hindu	0.94 [0.24]	0.94 [0.24]	0.00
Hh. head self-employed or salaried	0.52 [0.50]	0.50 [0.50]	0.02
Kids below 5 years	0.50 [0.50]	0.49 [0.50]	0.01
Owns or Leases Land	0.54 [0.50]	0.55 [0.50]	-0.01
Assets Index - PCA weighted value of hh assets	1.65 [0.75]	1.65 [0.82]	-0.00

PSM Estimate: Effects of LPG on Time Use

- Time spent on domestic work, work, and leisure (in minutes) by the primary cook on the day before the survey.

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	(1) Chores	(2) Work	(3) Leisure
ATT	-6.50 (7.76)	-20.30* (11.08)	21.35** (8.33)

PSM Estimate: Effects of LPG on Collecting Firewood

- The number of visits and time spent (in minutes per week) by the primary cook to collect firewood

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	(1) # Visits	(2) Time spent
ATT	-0.45*** (0.11)	-86.10*** (23.89)

PSM Estimate: Effects of LPG on Making Dung Cakes

- The number of visits and time spent (in hours per week) by the primary cook to collect dung and make dung-cakes.

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	(1) Time on making dung cakes	(2) Time on collecting dung	(3) Total time on dung-cakes
ATT	-49.18*** (15.38)	-18.74 (15.31)	-67.91*** (25.28)

PSM Estimate: Effects of LPG on Psychosocial Well Being

- Psychosocial well being.

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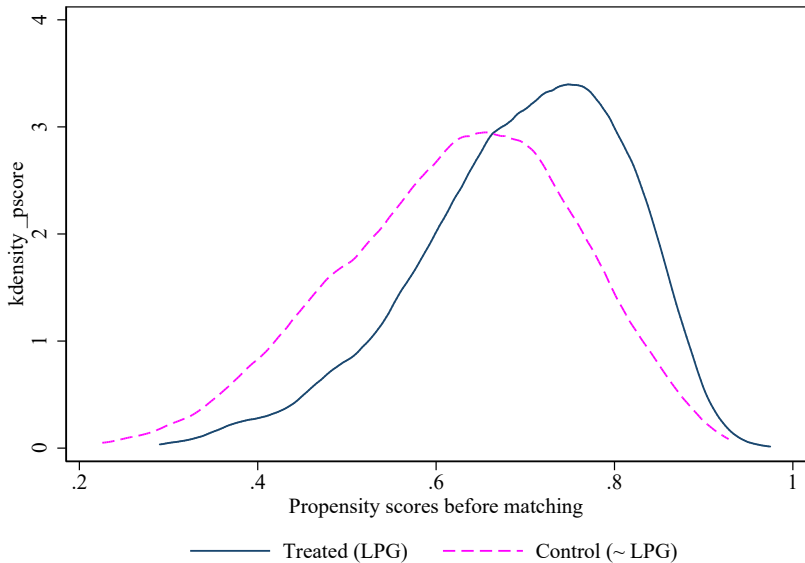
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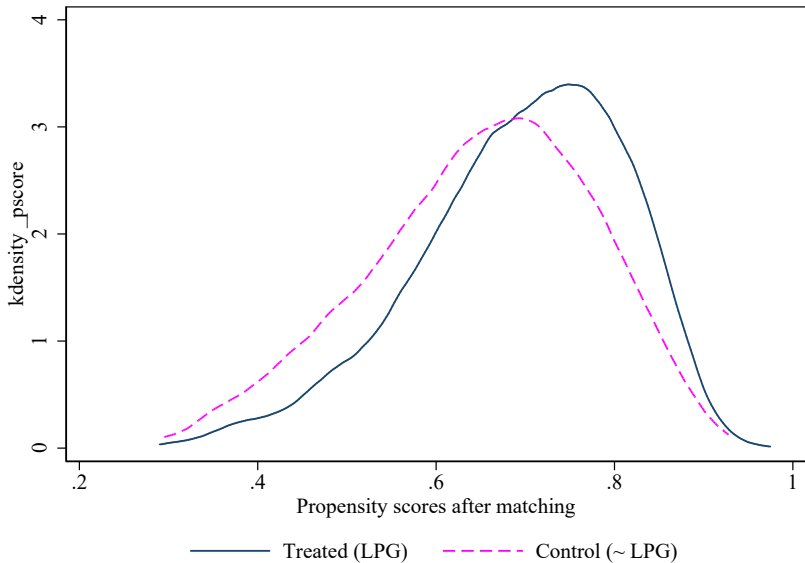
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	(1) Impatient	(2) Frustrated	(3) Tired	(4) Happy	(5) Capable	(6) Content
ATT	-0.43*** (0.07)	-0.26*** (0.06)	-0.19*** (0.07)	0.27*** (0.07)	0.14** (0.07)	0.22*** (0.07)

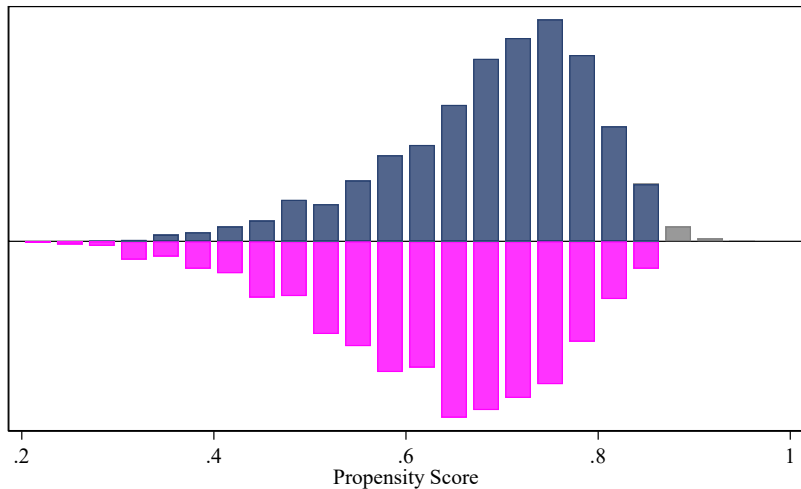
Propensity Scores Before Matching



Propensity Scores After Matching



Distribution of Scores by Treatment and Support



Untreated
Treated: On support
Treated: Off support

Design

Design

- 2 treatment groups and 1 control group
 - Health Information
 - Health and Subsidy Information
 - Neither (Control group)

Design

- 2 treatment groups and 1 control group
 - Health Information
 - Health and Subsidy Information
 - Neither (Control group)
- ASHA worker of village makes 6 visits to 20 randomly sampled households in treatment villages over 9 months.

Design

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 - Health Information
 - Health and Subsidy Information
 - Neither (Control group)
- ASHA worker of village makes 6 visits to 20 randomly sampled households in treatment villages over 9 months.
- Information provided through videos, comic book loaded onto tablets provided to ASHAs and follow-up discussions with household head, primary cook and other members.

ASHA Training Kit

ASHA Training Kit



सर्वोत्तम स्वास्थ्य
 एक बुद्धिमत्
 जीवन का परिणाम
 स्वास्थ्य का आधार है।
 जीवन का आधार है।

शुद्ध जल पाने

वर्ष	शुद्ध जल पाने	वर्ष	शुद्ध जल पाने
2011	100%	2012	100%
2013	100%	2014	100%
2015	100%	2016	100%
2017	100%	2018	100%
2019	100%	2020	100%

वर्ष	शुद्ध जल पाने	वर्ष	शुद्ध जल पाने	वर्ष	शुद्ध जल पाने
2011	100%	2012	100%	2013	100%

Impact of HAP on Health

Impact of HAP on Health

- Respiratory Diseases
- Cardio-vascular diseases
- Eye diseases
- Pre-term death of foetus, low birth-weight

LPG Subsidy

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LPG Subsidy

- Government provides subsidy on 12 cylinders per household every year.
- The subsidy is deposited into your bank account when you purchase an LPG refill.
- For example, if you buy an LPG refill cylinder for Rs. 820, subsidy of Rs. 320 is deposited into your bank account.
- A refill costs effectively Rs. 500 after subsidy. If you use one refill per month, you are spending only Rs. 20 per day for cooking fuel.

Balance: Village Amenities

	<i>Control</i>	<i>Treatment</i>		<i>Difference</i>		
	C (N=58)	H (N=46)	H + S (N=46)	C - H	C - (H + S)	H - (H+S)
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Village amenities</i>						
Total Households	279.48 (25.63)	321.96 (22.87)	278.18 (21.74)	-42.48 (34.35)	1.30 (33.61)	43.78 (31.56)
Proportion SC/ST population	0.36 (0.03)	0.35 (0.03)	0.38 (0.04)	0.02 (0.04)	-0.02 (0.05)	-0.03 (0.05)
Pvt. primary school	0.30 (0.07)	0.34 (0.07)	0.32 (0.07)	-0.04 (0.09)	-0.02 (0.09)	0.02 (0.09)
Govt. middle school	0.72 (0.06)	0.84 (0.05)	0.72 (0.06)	-0.12 (0.08)	-0.00 (0.09)	0.12 (0.08)
Primary health sub center	0.26 (0.06)	0.32 (0.07)	0.24 (0.06)	-0.06 (0.09)	0.02 (0.09)	0.08 (0.09)
Treated tap water	0.16 (0.05)	0.20 (0.06)	0.10 (0.04)	-0.04 (0.08)	0.06 (0.07)	0.10 (0.07)
Open drainage	0.66 (0.07)	0.64 (0.07)	0.64 (0.07)	0.02 (0.10)	0.02 (0.10)	-0.00 (0.10)
Proportion of irrigated land	0.60 (0.04)	0.56 (0.04)	0.60 (0.03)	0.04 (0.05)	-0.01 (0.05)	-0.04 (0.05)
All weather road	0.82 (0.05)	0.80 (0.06)	0.74 (0.06)	0.02 (0.08)	0.08 (0.08)	0.06 (0.08)

Notes: We use amenities data at the village and household level from the 2011 Census. **H** denotes health only information and **H + S** implies health and subsidy information. Standard errors are reported in parentheses. The *p*-values reported in the last row of the table corresponds to the F-test for joint significance of village- and household-level amenities in determining the treatment status in a linear probability model.

Balance: Household Amenities

	<i>Control</i>	<i>Treatment</i>		<i>Difference</i>		
	C (N=58)	H (N=46)	H + S (N=46)	C - H	C - (H + S)	H - (H+S)
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Household amenities</i>						
Own house	93.48 (1.10)	94.88 (0.92)	95.43 (0.99)	-1.41 (1.43)	-1.95 (1.48)	-0.54 (1.35)
Use fire-wood	48.80 (4.96)	41.49 (4.73)	49.14 (5.21)	7.32 (6.85)	-0.33 (7.19)	-7.65 (7.03)
Use LPG/PNG	13.05 (2.34)	13.44 (2.01)	10.99 (2.02)	-0.39 (3.08)	2.06 (3.09)	2.45 (2.84)
Have treated tap water	4.81 (1.52)	4.99 (1.86)	4.71 (2.06)	-0.18 (2.40)	0.10 (2.56)	0.28 (2.77)
Have latrine within house	33.29 (2.78)	33.28 (2.45)	29.66 (2.84)	0.02 (3.71)	3.63 (3.98)	3.61 (3.75)
Own television	45.58 (2.22)	46.06 (1.96)	41.78 (2.70)	-0.48 (2.96)	3.80 (3.49)	4.28 (3.33)
<i>p</i> -values for joint significance	-	-	-	0.97	0.98	0.74

Notes: We use amenities data at the village and household level from the 2011 Census. **H** denotes health only information and **H + S** implies health and subsidy information. Standard errors are reported in parentheses. The *p*-values reported in the last row of the table corresponds to the F-test for joint significance of village- and household-level amenities in determining the treatment status in a linear probability model.

Balance: Household Characteristics

	<i>Control</i>		<i>Treatment</i>		<i>Difference</i>	
	C	H	H + S	C - H	C - (H + S)	H - (H+S)
	(N=1160)	(N=920)	(N=920)			
	(1)	(2)	(3)	(4)	(5)	(6)
Household size	6.14 (0.08)	6.18 (0.07)	6.13 (0.07)	-0.04 (0.14)	0.01 (0.13)	0.05 (0.13)
Female headed hh.	0.06 (0.01)	0.05 (0.01)	0.07 (0.01)	0.01 (0.01)	-0.01 (0.01)	-0.02* (0.01)
Age of primary cook	34.10 (0.37)	33.81 (0.36)	33.47 (0.35)	0.29 (0.70)	0.63 (0.67)	0.34 (0.59)
Household head edu. above primary	0.42 (0.02)	0.43 (0.02)	0.37 (0.02)	-0.01 (0.03)	0.05 (0.03)	0.06* (0.03)
Hh. head self-employed or salaried	0.51 (0.02)	0.53 (0.02)	0.50 (0.02)	-0.02 (0.03)	0.02 (0.03)	0.03 (0.03)
SC/ST	0.39 (0.02)	0.41 (0.02)	0.41 (0.02)	-0.02 (0.04)	-0.03 (0.05)	-0.01 (0.05)
OBC	0.44 (0.02)	0.43 (0.02)	0.44 (0.02)	0.01 (0.05)	0.00 (0.05)	-0.01 (0.05)
Hindu	0.93 (0.01)	0.94 (0.01)	0.90 (0.01)	-0.01 (0.04)	0.03 (0.04)	0.04 (0.04)
Trust info. from ASHA	0.83 (0.01)	0.81 (0.01)	0.84 (0.01)	0.02 (0.02)	-0.01 (0.02)	-0.03 (0.02)
<i>p</i> -values for joint significance	-	-	-	0.99	0.79	0.50

Notes: We use the baseline survey data collected by the authors. **H** denotes health only information and **H + S** implies health and subsidy information. Standard errors clustered at the village level are reported in parentheses. The *p*-values reported in the last row of the table corresponds to the F-test for joint significance of household characteristics in determining the treatment status in a linear probability model.

Households Perceptions of Health Impacts of Solid Fuels

	Proportion			
	All	C	H	H + S
Number of households	3000	1160	920	920
No effects	0.16	0.15	0.15	0.16
Short-term effects	0.70	0.69	0.70	0.70
Long-term effects	0.13	0.14	0.13	0.12
Do not know	0.02	0.02	0.02	0.02

Notes: Response to the question "Do you think that smoke from cooking with wood, dung or other traditional fuels has any adverse health effect on you and your family?" (0) No (1) Yes, short-term effects (3) Yes, long-term effects (4) Don't know

Households Knowledge of Health Impacts of Solid Fuels

	All	C	H	H + S
Panel A: Full sample				
Number of households	3000	1160	920	920
Health awareness score (out of 9)	3.88	3.80	3.97	3.87
All correct responses (%)	0.03	0.04	0.03	0.02
Panel B: Those who consider smoke from firewood as potential source for short- & long-term illness				
Number of households	2473	961	765	747
Number of households	2473	824	829	820
Health awareness score (out of 9)	4.70	4.61	4.78	4.72
All correct responses (%)	0.04	0.05	0.03	0.03

Notes: Health awareness score is derived from responses to the questions "Do you think that AILMENT can occur due to inhaling smoke from solid fuels?". We asked each respondent's awareness on a total of nine AILMENTS. Among them low birth weight, pneumonia, tuberculosis, heart disease, cataract, and lung cancer are caused by smoke while polio, diabetes, and anemia are not caused by smoke from firewood. The health awareness score counts the number of correct responses to these nine questions.

Fuel Used to Prepare the Last Meal

	Used only <i>Chulha</i>		Used only LPG	
	(1)	(2)	(3)	(4)
Health information treatment				
Health & subsidy information treatment				
Baseline (y_{t-1})				
Baseline Avg.				
R Squared				
No. of Observations				

Fuel Used to Prepare the Last Meal

	Used only <i>Chulha</i>		Used only LPG	
	(1)	(2)	(3)	(4)
Health information treatment	-0.039*			
	(0.02)			
Health & subsidy information treatment				
Baseline (y_{t-1})	0.299***			
	(0.02)			
Baseline Avg.	0.54			
R Squared	0.175			
No. of Observations	2949			

Fuel Used to Prepare the Last Meal

	Used only <i>Chulha</i>		Used only LPG	
	(1)	(2)	(3)	(4)
Health information treatment	-0.039*	-0.048**		
	(0.02)	(0.02)		
Health & subsidy information treatment		-0.020		
		(0.03)		
Baseline (y_{t-1})	0.299***	0.299***		
	(0.02)	(0.02)		
Baseline Avg.	0.54	0.54		
R Squared	0.175	0.175		
No. of Observations	2949	2949		

Fuel Used to Prepare the Last Meal

	Used only <i>Chulha</i>		Used only LPG	
	(1)	(2)	(3)	(4)
Health information treatment	-0.039*	-0.048**	0.040*	
	(0.02)	(0.02)	(0.02)	
Health & subsidy information treatment		-0.020		
		(0.03)		
Baseline (y_{t-1})	0.299***	0.299***	0.332***	
	(0.02)	(0.02)	(0.02)	
Baseline Avg.	0.54	0.54	0.29	
R Squared	0.175	0.175	0.170	
No. of Observations	2949	2949	2949	

Fuel Used to Prepare the Last Meal

	Used only <i>Chulha</i>		Used only LPG	
	(1)	(2)	(3)	(4)
Health information treatment	-0.039*	-0.048**	0.040*	0.048*
	(0.02)	(0.02)	(0.02)	(0.02)
Health & subsidy information treatment		-0.020		0.018
		(0.03)		(0.03)
Baseline (y_{t-1})	0.299***	0.299***	0.332***	0.332***
	(0.02)	(0.02)	(0.02)	(0.02)
Baseline Avg.	0.54	0.54	0.29	0.29
R Squared	0.175	0.175	0.170	0.170
No. of Observations	2949	2949	2949	2949

Separate Cooking Area and Ventilation

	Separate room for cooking		Chimney/outlet in kitchen	
	(1)	(2)	(3)	(4)
Health information treatment				
Health & subsidy information treatment				
Baseline (y_{t-1})				
Baseline Avg.				
R Squared				
No. of Observations				

Notes: Standard error are reported in parenthesis. *** $p < 1\%$, ** $p < 5\%$, * $p < 10\%$. Source: Village amenities data from the Census 2011.

Separate Cooking Area and Ventilation

	Separate room for cooking		Chimney/outlet in kitchen	
	(1)	(2)	(3)	(4)
Health information treatment	0.052***			
	(0.02)			
Health & subsidy information treatment				
Baseline (y_{t-1})	-0.040**			
	(0.02)			
Baseline Avg.	0.54			
R Squared	0.057			
No. of Observations	2949			

Notes: Standard error are reported in parenthesis. *** $p < 1\%$, ** $p < 5\%$, * $p < 10\%$. Source: Village amenities data from the Census 2011.

Separate Cooking Area and Ventilation

	Separate room for cooking		Chimney/outlet in kitchen	
	(1)	(2)	(3)	(4)
Health information treatment	0.052*** (0.02)	0.063*** (0.02)		
Health & subsidy information treatment		0.024 (0.03)		
Baseline (y_{t-1})	-0.040** (0.02)	-0.040** (0.02)		
Baseline Avg.	0.54	0.54		
R Squared	0.057	0.058		
No. of Observations	2949	2949		

Notes: Standard error are reported in parenthesis. *** $p < 1\%$, ** $p < 5\%$, * $p < 10\%$. Source: Village amenities data from the Census 2011.

Separate Cooking Area and Ventilation

	Separate room for cooking		Chimney / outlet in kitchen	
	(1)	(2)	(3)	(4)
Health information treatment	0.052*** (0.02)	0.063*** (0.02)	0.030* (0.02)	
Health & subsidy information treatment		0.024 (0.03)		
Baseline (y_{t-1})	-0.040** (0.02)	-0.040** (0.02)	0.040*** (0.01)	
Baseline Avg.	0.54	0.54	0.29	
R Squared	0.057	0.058	0.023	
No. of Observations	2949	2949	2949	

Notes: Standard error are reported in parenthesis. *** $p < 1\%$, ** $p < 5\%$, * $p < 10\%$. Source: Village amenities data from the Census 2011.

Separate Cooking Area and Ventilation

	Separate room for cooking		Chimney / outlet in kitchen	
	(1)	(2)	(3)	(4)
Health information treatment	0.052*** (0.02)	0.063*** (0.02)	0.030* (0.02)	0.054*** (0.02)
Health & subsidy information treatment		0.024 (0.03)		0.054*** (0.02)
Baseline (y_{t-1})	-0.040** (0.02)	-0.040** (0.02)	0.040*** (0.01)	0.039*** (0.01)
Baseline Avg.	0.54	0.54	0.29	0.29
R Squared	0.057	0.058	0.023	0.028
No. of Observations	2949	2949	2949	2949

Notes: Standard error are reported in parenthesis. *** $p < 1\%$, ** $p < 5\%$, * $p < 10\%$. Source: Village amenities data from the Census 2011.

Time Spent on Domestic Chores

(1)

(2)

(3)

(4)

(5)

(6)

(7)

Health info.

Health & sub. info.

Baseline (y_{t-1})

Baseline Avg.

R Squared

No. of Obs.

Time Spent on Domestic Chores

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Fuel						
Health info.	0.210 (1.98)						
Health & sub. info.	-1.622 (2.16)						
Baseline (y_{t-1})	0.013 (0.01)						
Baseline Avg.	13.21						
R Squared	0.011						
No. of Obs.	2949						

Time Spent on Domestic Chores

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Fuel	Water					
Health info.	0.210 (1.98)	0.217 (1.73)					
Health & sub. info.	-1.622 (2.16)	1.831 (1.81)					
Baseline (y_{t-1})	0.013 (0.01)	0.065*** (0.02)					
Baseline Avg.	13.21	29.25					
R Squared	0.011	0.026					
No. of Obs.	2949	2949					

Time Spent on Domestic Chores

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Fuel	Water	Cooking				
Health info.	0.210 (1.98)	0.217 (1.73)	0.762 (2.96)				
Health & sub. info.	-1.622 (2.16)	1.831 (1.81)	-4.756* (2.77)				
Baseline (y_{t-1})	0.013 (0.01)	0.065*** (0.02)	0.089*** (0.02)				
Baseline Avg.	13.21	29.25	201.83				
R Squared	0.011	0.026	0.050				
No. of Obs.	2949	2949	2949				

Time Spent on Domestic Chores

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Fuel	Water	Cooking	Cleaning			
Health info.	0.210 (1.98)	0.217 (1.73)	0.762 (2.96)	2.914 (4.91)			
Health & sub. info.	-1.622 (2.16)	1.831 (1.81)	-4.756* (2.77)	-1.952 (4.72)			
Baseline (y_{t-1})	0.013 (0.01)	0.065*** (0.02)	0.089*** (0.02)	0.096*** (0.02)			
Baseline Avg.	13.21	29.25	201.83	169.74			
R Squared	0.011	0.026	0.050	0.041			
No. of Obs.	2949	2949	2949	2949			

Time Spent on Domestic Chores

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Fuel	Water	Cooking	Cleaning	Shopping		
Health info.	0.210 (1.98)	0.217 (1.73)	0.762 (2.96)	2.914 (4.91)	-0.304 (0.68)		
Health & sub. info.	-1.622 (2.16)	1.831 (1.81)	-4.756* (2.77)	-1.952 (4.72)	-0.403 (0.70)		
Baseline (y_{t-1})	0.013 (0.01)	0.065*** (0.02)	0.089*** (0.02)	0.096*** (0.02)	-0.007** (0.00)		
Baseline Avg.	13.21	29.25	201.83	169.74	1.31		
R Squared	0.011	0.026	0.050	0.041	0.004		
No. of Obs.	2949	2949	2949	2949	2949		

Time Spent on Domestic Chores

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Fuel	Water	Cooking	Cleaning	Shopping	Animals	
Health info.	0.210 (1.98)	0.217 (1.73)	0.762 (2.96)	2.914 (4.91)	-0.304 (0.68)	-1.533 (3.53)	
Health & sub. info.	-1.622 (2.16)	1.831 (1.81)	-4.756* (2.77)	-1.952 (4.72)	-0.403 (0.70)	-4.047 (3.27)	
Baseline (y_{t-1})	0.013 (0.01)	0.065*** (0.02)	0.089*** (0.02)	0.096*** (0.02)	-0.007** (0.00)	0.188*** (0.02)	
Baseline Avg.	13.21	29.25	201.83	169.74	1.31	39.93	
R Squared	0.011	0.026	0.050	0.041	0.004	0.106	
No. of Obs.	2949	2949	2949	2949	2949	2949	

Time Spent on Domestic Chores

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Fuel	Water	Cooking	Cleaning	Shopping	Animals	Others
Health info.	0.210 (1.98)	0.217 (1.73)	0.762 (2.96)	2.914 (4.91)	-0.304 (0.68)	-1.533 (3.53)	0.431 (0.34)
Health & sub. info.	-1.622 (2.16)	1.831 (1.81)	-4.756* (2.77)	-1.952 (4.72)	-0.403 (0.70)	-4.047 (3.27)	-0.186 (0.28)
Baseline (y_{t-1})	0.013 (0.01)	0.065*** (0.02)	0.089*** (0.02)	0.096*** (0.02)	-0.007** (0.00)	0.188*** (0.02)	0.005 (0.01)
Baseline Avg.	13.21	29.25	201.83	169.74	1.31	39.93	3.99
R Squared	0.011	0.026	0.050	0.041	0.004	0.106	0.007
No. of Obs.	2949	2949	2949	2949	2949	2949	2949

Summary

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- Having an LPG connection reduces time spent on household chores - cooking and possibly fuel collection by women.
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Summary

- Having an LPG connection reduces time spent on household chores - cooking and possibly fuel collection by women.
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- Suggestive evidence: in households that are poorer, LPG usage releases more time for income generating work (paid or unpaid) by women.
- Preliminary results suggest that more efficient technology of home production can improve women's welfare.
- An intervention providing information on health benefits of LPG and available subsidies can induce households to choose a cleaner and efficient home production technology.

Summary

- Having an LPG connection reduces time spent on household chores - cooking and possibly fuel collection by women.
- Regular usage of LPG may raise leisure time of women in better off households.
- Suggestive evidence: in households that are poorer, LPG usage releases more time for income generating work (paid or unpaid) by women.
- Preliminary results suggest that more efficient technology of home production can improve women's welfare.
- An intervention providing information on health benefits of LPG and available subsidies can induce households to choose a cleaner and efficient home production technology.
- Causal effects (ATE) on time savings are very small.