Research Article

Who Cares? Unpaid Labor, Human Capital and Inequality In India

Shivansh Gupta

Heritage International Xperiential School, Heritage Avenue near Sec 58, Gurugram, Haryana, 122102, India

ABSTRACT

India's hidden economy with unpaid care, childcare, eldercare and any household maintenance is what shapes human capital formation yet continues to remain invisible in national statistics. This paper describes the tension between the static neoclassical view where households outsource care to minimize private costs and the feminist critique which emphasizes care work's foundational role and the inequalities it reinforces. Using India's 2014 female-to-male ratio of unpaid care work and the 2019-20 Time Use Survey, we are able to document that the poorest households shoulder on average 53.9 more minutes of unpaid care per day than the richest households. Afterwards, the paper develops a simple two-period model where period-1 care inputs determine period-2 human capital, that helps show that neglecting the feedback of care can have a consequence of socially mediocre outcomes. Finally, it highlights policy interventions that include paid stipends, expanded public early childhood services and conditional cash transfers that all serve to realign the private incentives of individuals with long term efficiency in mind. The framework of the paper highlights how integrating feminist concerns into a much more dynamic neoclassical model now can guide policies to value and redistribute care and ultimately narrow international inequality.

Keywords: Unpaid care work; intra-national care drain; human-capital formation; neoclassical model; feminist economics; gender; socio-economics; hidden economy

INTRODUCTION

India has achieved remarkable gains in school enrollment and child survival over the past two decades, but its current productivity growth and intergenerational mobility remain stubbornly low. A key but invisible driver of human-capital development is unpaid care work i.e. a household production of childcare, eldercare and domestic services which neither GDP nor standard labour-force surveys capture (1). In 2014 Indian women devoted 9.83 times as many hours per day to unpaid care as men making it the largest gender gap in the OECD's Gender, Institutions and Development Database (1).

Under the neoclassical time-allocation framework one can see that households maximize lifetime earnings by reallocating time from lower-value home production to higher-value market work purchasing paid help whenever the market wage exceeds the implicit cost of in-home care (2). Feminist economists counter that unpaid reproductive labour is systematically undervalued and that intra-national "care drains" deprive disadvantaged children of vital early-life stimulation and emotional support which make sure that they help in undermining

Corresponding author: Shivansh Gupta, E-mail: mail@shivanshgupta.com.

Received July 17, 2025**; Accepted** August 4, 2025
https://doi.org/10.70251/HYJR2348.34198204

their cognitive development and entrenching inequality (3-5).

We contribute to this debate in three ways.

Firstly, as part of this paper, we document care deficits among India's poorest children. Using the 2019–20 Time Use Survey (TUS) we show that lower-income households supply disproportionately more unpaid care than wealthier ones and lack substitutes for nurturing activities. Drawing on IHDS and NFHS evidence we are able to review how even small shortfalls in maternal and caregiver time reduce children's cognitive test scores and primary-school completion rates (6, 7). We also discuss the TUS's limitation as it records time supplied, not time received or care quality leaving child-level care outcomes unobserved (2).

The second part of the paper deals with building a two-period human-capital model which contributes to extending Ben-Porath's lifecycle framework (8) and Cunha & Heckman's technology of skill formation (9) in which period-1 care inputs directly shape period-2 productivity. While a static model treats care outsourcing as privately optimal – the difference in our dynamic approach reveals that neglecting developmental returns to care leads to underinvestment in human capital and lower aggregate output.

Thirdly we evaluate three policy mechanisms which in essence include paid caregiver stipends (10), expanded public early-childhood services (3) and conditional cash transfers that either lower the private cost or boost the productivity of care. Simulation results indicate that modest stipends or small enhancements in service quality can substantially increase home-produced care, narrow the care-drain gap and ultimately raise long-run human capital.

By integrating empirics and policy analysis in this paper, we show how recognizing and supporting unpaid care can align neoclassical efficiency with feminist justice which contribute to guiding policies to value and redistribute care and thereby narrow intergenerational inequality.

We begin with a survey of related literature, then describe our data and empirical methods, present the static allocation benchmark and develop the dynamic model, simulate policy interventions, and conclude with implications for research, data and policy.

LITERATURE REVIEW

As previously stated, routine household production of childcare, eldercare, and domestic services are rendered often invisible in official data as seen in Figure 1.

Socio-economic inequality deepens this hidden burden. Households in the bottom expenditure quintile supply substantially more unpaid care than wealthier families who can afford paid help in ultimately creating a persistent "care deficit" for the poorest 20 percent (12). Unable to outsource this, the actually disadvantaged caregivers, who are predominantly women, must me*et al*l care demands themselves by limiting time available for early-childhood stimulation such as reading, interactive play and one-on-one guidance for their own wards.

Yet the Time Use Survey records only time supplied not time received or care quality which means they are simply leaving child-level outcomes unobserved (11). In an ideal dataset, however, we would observe not only hours of caregiving but also measures of care quality including nutritional support, educational activities and emotional responsiveness which likely vary systematically by household income and caregiver constraints.

Empirical studies link care shortfalls to poorer developmental outcomes. Analysis of India Human Development Survey data shows that each additional hour of maternal care in early childhood raises children's

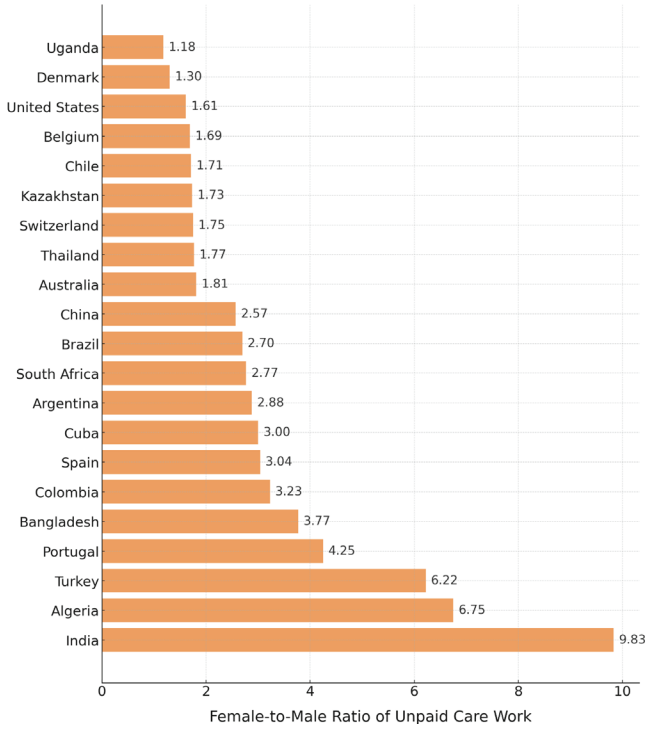

Figure 1. Female-To-Male Ratio Of Time Devoted To Unpaid Care Work In 2024.

cognitive test scores at age seven and increases primary-school completion rates (6). International research further finds that an extra hour per day of high-quality early care boosts adult cognitive scores by roughly 0.8 percent and raises school-completion probabilities by 1.2 percent (7). These findings highlight that both the quantity and quality of care inputs are critical factors of human-capital formation (9).

Two channels drive India's intra-national care drain. First is resource diversion where poorer households without access to paid help must me*et al*l unpaid care demands themselves, often sacrificing paid employment or other productive activities (3). And the second is care quality where time-scarce caregivers provide less individualized stimulation and emotional support which are essential inputs for cognitive and socio-emotional development (4).

When caregivers face severe time scarcity they tend to cut back first on tasks requiring sustained interaction and specialized attention namely early-learning activities (like reading, storytelling) and nutritional support while more routine chores like basic cleaning or laundry are postponed (Engle *et al*. 2007) (13). In rural India Engle and colleagues find that mothers under heavy workload reduce the frequency of interactive play and educational stimulation by 15 percent before trimming other domestic tasks directly undermining children's early cognitive and socio-emotional development (13).

Similar patterns of intra-national care drains appear beyond India. In Mexico pre-transfer data from the Oportunidades program reveal that the poorest quintile spends on average 45 minutes more per day on unpaid childcare than the richest quintile time that wealthier families can substitute with paid services ultimately creating systematic care deficits for low-income children (Gertler *et al*. 2012) (10). Hochschild's comparative work further documents how both urban–rural migration in China and internal migration in the Philippines extract care time from origin communities producing parallel deficits in care inputs across intra-national lines (Hochschild 2017) (5).

METHODS AND MATERIALS

Data Sources

We draw on four primary data sets to quantify unpaid care burdens and their consequences in India. First is the 2019-20 Time Use Survey (TUS) conducted by India's Ministry of Statistics and Programme Implementation provides household-level minutes spent on unpaid care and domestic activities (e.g. cooking, cleaning, childcare, eldercare). Second is unit-level microdata from the National Sample Survey Office (NSSO) 78th round supplementing the TUS with expenditure quintiles and paid-help usage. Third is the India Human Development Survey (IHDS) which offers child-level cognitive test scores and school-completion information for children aged 5–14. Fourthly is the National Family Health Survey (NFHS-5) which supplies household and maternal characteristics (education, health, demographics) to control for observable confounders.

Empirical Strategy

To document intra-national care drains we estimate Tobit models of daily unpaid care minutes on household expenditure quintile dummies controlling for urban/rural status, caregiver age, education and household composition. We compare predicted care supplied by the poorest versus richest quintiles to calculate average "care deficits." We then link caregiver time to child outcomes by regressing IHDS test scores and completion indicators on logged unpaid-care minutes and essentially, we are controlling for child age, gender, parental education and state fixed effects. Standard errors are clustered at the village (rural) or urban block level.

Quality-of-Care Measures

Recognizing that TUS records only time supplied, we proxy care quality using IHDS indicators of parental engagement (reading to children, playing, taking to health check-ups) and NFHS measures of nutritional status. We estimate linear models of these proxies on unpaid-care hours and caregiver constraint variables (e.g. number of young children, maternal employment status) to assess which care components are most vulnerable to time scarcity.

Theoretical Model

Building on Ben-Porath (1967) and Cunha & Heckman (2007) we formulate a two-period household model. In period 1 parents allocate time endowment T between market labor L, home care C_1, and leisure; in period 2, children's human capital H_2 depends on C_1 and exogenous inputs. Utility is $U = u^*(C, L) + \beta^* v^*(H_2)$. Households maximize lifetime utility subject to budget and time constraints. We derive first-order conditions and characterize the privately optimal C_1^* under competitive wages and a market price for outsourced care. A social planner's problem internalizes the effect of C_1 on H_2.

RESULTS

Feminist Economics Diagnosis: The Care-Drain Concept

The concept of the "care drain," first articulated by Hochschild, describes how the international migration of primary caregivers creates a deficit of emotional and care capital in origin communities much like a "brain drain" but focused on reproductive labour (5). In India this idea extends to intra-national transfers where when wealthier households hire paid domestic workers they effectively extract unpaid care time from poorer families that cannot afford to outsource their own care needs.

Feminist economists emphasises that unpaid reproductive labour including childcare, eldercare and household maintenance is foundational to economic reproduction yet systematically undervalued. National accounts and labour-force surveys omit almost all reproductive activities and none of the unpaid direct caregiving services appear in GDP or official labour statistics (6). Globally women perform 76.2 percent of all unpaid domestic and care work while men contribute under 24 percent (6). This invisibility entrenches a gender bias whereby care work is deemed "non-productive" and it reinforces class inequities by forcing poorer women to shoulder the entire burden themselves.

Under severe time constraints actual caregivers in poor households must prioritize subsistence tasks like nutrition, hygiene and basic chores at the expense of enriching activities such as educational stimulation and one-on-one play. Empirical studies show that when feeding and cleaning absorb most caregiver hours children receive significantly fewer cognitively and emotionally stimulating interactions undermining early learning and socio-emotional development (13).

When affluent families outsource care they gain time and emotional surplus but poorer households suffer "care deficits" losing vital early-life inputs for children and essential support for elderly or disabled members. As Dalla Costa and James argue the idea is that reproductive labour underpins community cohesion and constitutes the basis for generating future human capital (14). In India extracting care time from those least able to afford its loss is a structural injustice where the disadvantaged children miss critical developmental stimuli and poor caregivers (often women) are pushed out of paid work or into precarious low-quality jobs which help perpetuating intergenerational disadvantage.

Neo-Classical Story (Static Benchmark)

Under the neoclassical paradigm, households allocate a fixed time endowment T among market labourLL, home production H (including unpaid care), and leisure N to maximize utility over consumption C and home-produced care Z:

$$\text{Max } f0\text{L, H, N IS } U(C, Z)$$

subject to

$$T = L + H + N \text{ and } C = w*L + Y - p_h H_p$$

where w is the market wage, Y non-labour income, p_h the price of purchased care hours H_p and H unpaid home care supplied directly. Following Becker's time-allocation theory (2), households equate the marginal utility per hour of market work to leisure and equate the implicit cost of in-home care p_h to its marginal utility.

Varian's two-good two-factor model then shows that under perfect competition and full information voluntary exchanges of care hours yield a Pareto-efficient allocation of labour (9). Comparative advantage implies that households outsource care whenever

$$w > p_h$$

and supply unpaid care when

$$p_h > w$$

While this static framework captures private-cost minimization and predicts a redistribution of unpaid care across income levels it still clearly neglects how today's care inputs H influence tomorrow's human-capital accumulation. By treating care outsourcing as efficient in a single period we can actually see that the model overlooks a social externality – the developmental returns of care that do not feed into market prices.

DISCUSSION

Dynamic Two-Period Model of Care and Human-Capital Formation

To capture the long-run effects of unpaid care, we extend the static one-period allocation problem into two discrete periods (t = 1, 2). In period 1 we have taken a representative household chooses market labour (L_1), home-produced care (H_1) and leisure (N_1) to maximize lifetime utility:

L_1, H_1, N_1 MAX is $U_1 = U(C_1, Z_1) + \beta V(HK_2)$

subject to

$T = L_1 + H_1 + N_1$
$C_1 = w_1 L_1 + Y_1 - p_h H_{p1}$
$HK_2 = f(H_1, I)$

Here:

1. T is the fixed time endowment
2. C_1 is consumption; Z_1 is utility from care and leisure
3. w_1 is the market wage; Y1 non-labour income.
4. Hp1 denotes hours of purchased care at price ph , while Hh is home-produced care
5. $\beta \in (0, 1)$ discounts future utility
6. HK2 is period-2 human capital, produced via the function f(·) increasing in H_1 and other investments I [Ben-Porath (8), Cunha & Heckman (9)].

In specifying the human-capital production function of f(·) we follow Cunha and Heckman's (2007) – the technology of skill formation framework (9) which was built upon Ben-Porath's lifecycle model (8). Therefore, we assume:

1. f itself as a function is twice differentiable and additively separable in the home-produced care given as H1 and other investments as I
2. $\partial f/\partial H1 > 0$ and $\partial 2f/\partial H12 < 0$ which implies diminishing marginal returns to caregiving
3. households themselves have perfect foresight, full information and unrestricted access to market-priced care at price ph.

The above assumptions keep the model tractable while still acknowledging key real-world frictions. In practice it is clear that caregiving effectiveness varies across households, some families face borrowing or informational constraints that impede access to paid care and cultural norms may restrict the available outsourcing channels. Allowing for heterogeneous discount rates, differential returns to caregiving and binding credit constraints could improve the model's fit across diverse settings. However for simplicity we maintain the canonical Cunha and Heckman (2007) framework and leave these extensions for future work.

Given these assumptions, the optimal choice of H_1 satisfies the first-order condition. The first-order condition for H_1 equates the marginal rate of substitution between care and consumption to the net price of home care, adjusted for its future benefit:

$$(\partial U/\partial H_1)/(\partial U/\partial C_1) = p_h - \beta * f_{H1} * dV/dHK_2$$

where $f_{H1} = (\partial f/\partial H_1)$, the term $\beta * f_{H1} * dV/dHK_2$ captures the developmental externality of care on tomorrow's human capital. The static model by contrast sets MRS $= p_h$ and thus ignores intertemporal returns, leading to over-outsourcing of care.

Our two-period framework shows that when households internalize care's impact onHK_2, private incentives align more closely with the social optimum, increasing equilibrium H_1 and aggregate human capital.

Policy Instruments and Model Extensions

Within this dynamic setup, policy interventions operate by either reducing the effective price of home care or enhancing its productivity in the human-capital production function.

1. Paid Caregiver Stipends: A per-hour transfer is tied to documented caregiving activities lowers the net price of home-produced care. The modified FOC becomes:

   $$(\partial U/\partial H_1)/(\partial U/\partial C_1) = p_h - s - \beta * f_{H1} * dV/dHK_2$$

   If $s \geq$ the developmental externality term, households choose H_2 at the socially optimal level [Gertler et al. (10)].

2. Expanded Public Early-Childhood Services: Public centres (e.g. preschools, community crèches) provide complementary inputs - trained staff, nutritious meals and learning materials that boost the productivity of each hour of home-produced care. If access to public services P enters the production function additively:

   $HK_2 = f(H_1, I) + \gamma * P$ with $\gamma > 0$, then the term $\beta * f_{H1} * dV/dHK_2$ rises, encouraging higher H_1 without altering time budgets [Addati et al. (3); Desai et al. (6)].

3. Conditional Cash Transfers (CCTs): CCTs link payments to child-development activities (e.g. attendance at early-childhood programmes or

routine health checks) and hence effectively in combining stipends and service access. By jointly lowering private costs and raising productivity returns, CCTs offer a powerful lever to close care deficits [Gertler et al. (10)].

Modeling Policy Shocks

The analysis remains conceptual as we don't calibrate the stipend *s* or the service-productivity boost γ to any Indian policy solution but rather they are used as hypothetical policy levers. Having a per-hour caregiver stipend s in household's first condition gives

$$(\partial U/\partial H_1)/(\partial U/\partial C_1) = p_h - \beta * f_{H1} * dV/dHK_2$$

This shows how raising s can slowly narrow the gap between private and social individual incentives of individuals. If s itself remains small compared to the developmental externality term $\beta * f_{H1} * dV/dHK_2$ - the increase in home-produced care is modest. Yet, if s approaches or exceeds that term - households themselves internalise all of care's future benefits that they could get and instead choose the social-optimum level of H_1. Similar to this is the embedding of the public-service productivity parameter γ in

$$HK_2 = f(H_1, I) + \gamma * P$$

This reveals that any positive γ raises marginal returns to caregiving. A sensitivity analysis would vary s and γ across small, moderate and large values which would help identify the threshold at which each policy parameter becomes large enough to induce meaningful changes in caregiving behaviour and boost long-run human capital.

Avoiding Unintended Consequences

Prohibiting paid care work does not increase home-produced care; it merely pushes care transactions underground and forces low-wage workers into informal, lower-quality jobs, without benefiting child outcomes [Folbre (5); Dalla Costa & James (7)]. Effective policy must support rather than suppress care transfers to reconcile efficiency with justice.

CONCLUSION

This paper has shown that India's intra-national care drain where the poorest households provide nearly an extra hour of unpaid care each day that wealthier families outsource creates hidden deficits in early life inputs and entrenches intergenerational inequality. By embedding care within a two-period neoclassical framework we are able to actually demonstrate that the private calculus of care outsourcing overlooks the developmental returns of today's caregiving on tomorrow's human capital. Incorporating care's intertemporal feedback reconciles this sort of neoclassical efficiency with the feminist insistence on the value of reproductive labour.

Our analysis identifies three policy levers of paid caregiver stipends, expanded public early-childhood services, and conditional cash transfers that by lowering the effective price of care raise household care inputs and narrow the care-drain gap. These measures support rather than prohibit care transfers avoiding the unintended distortions of bans on paid care work (11).

Looking ahead, we need richer data on both the quantity and quality of child-level care inputs - linking time-use modules to developmental assessments to calibrate and evaluate policy interventions. Future research could extend our model to heterogeneous households and incorporate local labour-market constraints on paid care supply and quantify the macroeconomic gains from scaling up care subsidies. By recognizing unpaid care as a pivotal economic input and aligning incentives with long-run social welfare we think India can address both gender and class disparities and chart a more inclusive path to sustainable growth.

ACKNOWLEDGMENTS

I am thankful for excellent research assistance and support from Dr. Rocco Zizzamia: a Fulford Junior Research Fellow [2023–2025] at Somerville College and Post-Doctoral Researcher at the Centre for the Study of African Economies & Oxford Martin School, Department of Economics, University of Oxford. Their advice, continuous feedback and expertise in the domain has been invaluable for drafting the paper to its current status. Any errors are my own.

DECLARATION OF CONFLICT OF INTERESTS

The author declares that there are no conflicts of interest regarding the publication of this article.

REFERENCES

1. OECD. Gender, Institutions and Development Database. OECD, 2014.
2. Becker GS. A Theory of the Allocation of Time. Economic

Journal, 75(299): 493–517, 1965. https://doi.org/10.2307/2228949
3. Addati L, Cattaneo U, Esquivel V & Valarino I. Care Work and Care Jobs for the Future of Decent Work. International Labour Office, 2018.
4. Hochschild AR. The care drain and its effects on the families left behind. *Comparative Sociology*. 2017; 16: 369–392. https://doi.org/10.1163/15691330-12341427
5. Folbre N. Greed Lust, and Gender: A History of Economic Ideas. Oxford University Press, 2009. https://doi.org/10.1093/oso/9780199238422.001.0001
6. Desai S, Vanneman R & National Council of Applied Economic Research. India Human Development Survey – Wave 1 (ICPSR 22626). 2010.
7. Heckman JJ, Pinto R & Savelyev PA. Understanding the mechanisms through which an influential early childhood program boosted adult outcomes. American Economic Review. 2013; 103 (6): 2052–2086. https://doi.org/10.1257/aer.103.6.2052
8. Ben-Porath Y.The Production of Human Capital and the Life Cycle of Earnings. *Journal of Political Economy*. 1967; 75 (4): 352–365. https://doi.org/10.1086/259291
9. Cunha F & Heckman JJ. The Technology of Skill Formation. *American Economic Review*. 2007;97(2): 31–47. https://doi.org/10.1257/aer.97.2.31
10. Gertler P, Martínez S & Rubio-Codina M. Impact Evaluation of Mexico's Oportunidades Program. *Journal of Develop-ment Economics*. 2012; 99 (2): 235–248. https://doi.org/10.1016/j.jdeveco.2011.09.004
11. Ministry of Statistics and Programme Implementation. Time Use Survey Factsheet 2019–20. Government of India, 2025 (accessed 2025-07-13).
12. Sahu P. Gender Conundrum and Unpaid Work in India: Empirical Evidence from India's First Large-Scale Time-Use Survey. Indian Journal of Labour Economics. 2024; 67 (1): 45–67.
13. Engle PL, Black MM, Behrman JR, de Mello MC, *et al*. Strategies to avoid the loss of developmental potential in more than 200 million children in the developing world. *The Lancet*. 2007; 369 (9557): 229–242. https://doi.org/10.1016/S0140-6736(07)60112-3
14. Dalla Costa M & James S. The Power of Women and the Subversion of the Community (IMF Working Paper WP/15/55). International Monetary Fund, Asia and Pacific Department, 1975.