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Public preschooling and maternal labor force participation in rural India*

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Abstract

Mothers from poor families in India have a compelling need to work, but childcare for their young children is a constraint. This paper examines how far the public daycare helps in loosening this constraint. To do this, I look at the effect on maternal labor force participation, of daycare implicit in the preschooling provided to young children, through India's largest child development program - Integrated Child Development Scheme (ICDS). Besides preschooling, the ICDS program provides a whole package of other services, including supplementary feeding and immunization. Because of these services, I examine the various pathways through which the benefits on maternal employment can accrue: release of mother's time from child supervision, improvement in health of young children and implicit income subsidy. For the analysis, I primarily use data from the recent demographic health survey data for 2005-6, which for the first time collected information on child level usage of ICDS services. Using probit, covariate matching and conditional logit (village-fixed effects), I find that the mother, whose child is receiving highly correlated services of regular preschooling or daily supplementary feeding, is 12% more likely to work in rural India. This effect is being driven mainly by the rural Central, where such mothers are 25% more likely to work. There is some evidence of positive effect in the rural South also. The investigation of mechanisms provides no support for those related to health benefits of daily supplementary feeding, or its implicit income subsidy. It seems that the effect is being driven mainly by daycare implicit in preschooling. There is also some evidence of health benefit mechanism through immunization received at the ICDS center. Further examination suggests lack of support for self-selection by mother into daycare, because the children receiving regular feeding (highly correlated with daycare) are not anthropometrically better, and there is evidence of possible caste based discrimination against children from scheduled castes families in access to preschooling.

Keywords: child daycare, labor force participation of mother.

1 Introduction

National policy for empowerment of women (2001) and National plan for children (2005) in India emphasize the importance of childcare facilities for effective participation of women in the development process and for essential care and protection of children while mothers work. Moreover, for mothers belonging to

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poor families, child care support is more of a necessity to cope with multiple activities within and outside home. Recognizing this critical need, the Act for India's biggest job guarantee program for poor rural families (National Rural Employment Guarantee Scheme (NREGA)) stipulates to provide basic facilities such as crèche for women workers at the work site (GOI (2006)). Recently government of India has decided to construct NREGA crèche facilities with the Anganwadi centers in India. Anganwadi centers are the main platform of delivery of services for India's biggest early childhood development program called the Integrated Child Development Scheme (ICDS). While the program provides various services, an important part of the program is provision of non-formal preschool education to children ages 3-6 years at the Anganwadi centers free of charge. There are currently more than one million such centers where the children are supposed to come for around three hours of daily activity, thereby releasing mothers from supervision time to engage in other activities. In this paper I look at the "indirect" or "unintended" benefits of the daycare implicit in preschooling provided by the ICDS program on the maternal labor force participation in rural India.

To my knowledge this is the first study which looks at the impact of fully subsidized public preschooling on the maternal labor force participation in India, and one of the few which focuses on developing countries. There are two big challenges for this study. Firstly, the program not only provides preschooling, but also a whole package of other services including supplementary nutrition, immunization and health check-ups. This makes it difficult to disentangle the effect of preschooling alone. Secondly, only non-experimental data is available for the analysis, with inherent difficulty in controlling for selection on unobservables. For the main analysis I use the latest round of demographic health survey data for India - National Family Health Survey3 for 2005-6 - which for the first time collected information on utilization of the ICDS program services at the child level. I further substantiate my findings with another data set - Time Use Survey 1998-99 - which has detailed time use information of women through 24 hour recall.

In non-experimental survey data, the children who are receiving various ICDS services have not been selected randomly. To "identify" the effect of preschooling, observable differences between the women, whose child is receiving preschooling and those whose child is not, need to be accounted for. To do this I start with probit with controls. To minimize the selection bias on observables that may remain with simple technique like probit, because of misspecification in functional form, I then use matching technique like covariate matching. This technique also helps in better balance of unobservables to the extent that they are correlated with observables. To further control for unobservables, like the local market conditions and village infrastructure such as roads, village-fixed effects using conditional logit is estimated. To disentangle the effect of preschooling from other ICDS services, the highly collinear preschooling and supplementary feeding components are combined and so are less frequent services like immunization and health check-ups. I also bundle up the whole package of ICDS services together to examine their combined effect on maternal employment. The whole analysis is carried out for rural India and five rural regions, formed from a combination of geographically contiguous states and similar maternal employment rates.

The results indicate that having a child below 5 years, who is receiving either regular preschooling or daily supplementary feeding, increases maternal labor supply by 4 percentage points in rural India which is a 12% increase from the base level. The effect seems to be driven by the rural Central, comprising of Rajasthan, Chattisgarh and Madhya Pradesh. In this region, the estimates indicate an increase of maternal employment by 12 percentage points (a 25% increase over the base level). There is some evidence of positive effect in the rural South also. For the mothers, whose child receives any of the ICDS services intensely, have a 6 percentage points higher employment (a 17% increase over the base) in rural India. These results seem to be driven by the rural East, where there is a 8 percentage points increase in maternal employment (a 29% increase over the base).

The impact that I find is consistent with evidence from developed countries that maternal employment is largely responsive to provision of subsidized daycare or reduction in child care costs. However, unlike the evidence from developed countries, the effect is not bigger for regions with lower maternal employment. The only region for which the impact is robust is the rural Central, which has the highest maternal employment of 48% in rural India and is also among the poorest.¹ The low elasticity of female labor supply to economic growth or income in India is well documented (Bhalla and Kaur (2011), Mukhopadhyay and Tendulkar (2006), Srivastava and Srivastava (2010)). In India the labor supply is highest for the poorest women, especially those from the most marginalized sections like scheduled castes and scheduled tribes, for whom work is a compulsion and not a choice. On the other hand, the women from the higher caste or richer economic groups are significantly less likely to work (Eswaran et al. (2009)), especially in rural areas.

I further examine the mechanisms responsible for these effects: improved health of the children because of immunization and supplementary feeding, income subsidy implicit in supplementary feeding and daycare releasing mothers from child supervision to engage in other activities. I find support for health benefit of immunization and for potential positive daycare effect, but no support for health benefit mechanism of daily supplementary feeding or implicit income subsidy.

The results indicate that in the rural East, where the effect of immunization is significant, children aged 3-5 years who are fully immunized and received most vaccinations at the ICDS center are 29% less likely to have diarrhea. In my previous paper (Jain, 2013) I find that daily supplementary feeding effects positively only the height of children in the age-group 0-2 years and not of those ages 3-5. If the effect of having a child receiving daily supplementary feeding on maternal employment runs through the health benefits of supplementary feeding, then I should find positive effects for mothers whose youngest child is below 2 years, but not for those whose youngest child is 3-5 years. However, I do not find this to be the case, and in fact the opposite, suggesting positive effect of daycare. Moreover, my calculations indicate that the income subsidy through daily supplementary feeding is too small in magnitude to have a significant effect on maternal employment.

There is further evidence in support of potential positive daycare effect. Findings from time-use of mothers indicate that mothers of children below 5 years on average spend around 2 hours on childcare, and working mothers spend around 30 minutes less than non-working mothers. Two main components of childcare are physical care of children (bathing, dressing and feeding) and their supervision, which could be substituted by daycare to a certain extent. And with that time the mothers could potentially earn around 72% of average monthly expenditure on one household member, which is a significant amount, especially for those from poor families.

Further, there is evidence against endogeneity of participation or self-selection by mothers. Children above 2 years of age (mostly preschool age children), who are receiving daily supplementary feeding from the ICDS centers, are not anthropometrically healthier than those who are not (Jain, 2013). As the receipt of regular feeding is highly correlated with regular preschooling, it does not seem as if more motivated mothers are accessing daycare. Moreover, it seems that there is caste based discrimination in access to preschooling. A scheduled caste child is more likely to receive various ICDS services, but not preschooling, which puts children from different caste groups in close proximity of each other for an extended period of time. This finding is consistent with recent evidence (Shah, 2006) which indicates that the ancient practice of untouchability, in which physical contact with the scheduled castes is prohibited, continues to be practiced in some form or other in 80% of rural Indian villages and extends to all spheres of life, including access to public services.

¹In 2004-05 in rural Chattisgarh, Madhya Pradesh and Rajasthan, 40.8%, 36.9% and 18.7% population respectively was below poverty line (GoI (2007)).

I also find no evidence of selection bias with placebo test of impact of ICDS services on the height of mothers.

The remainder of the paper is organized as follows. Section 2 briefly summarizes the literature on daycare and labor supply of women. Section 3 gives a description of the ICDS program and the potential mechanisms of reduction in child care costs. Section 4 discusses the empirical strategy. Section 5 describes the data used in the analysis. Section 6 presents the empirical results, Section 7 summarizes and discusses the results, and Section 8 concludes.

2 Evidence on daycare and labor supply of women

The literature related to the effects of subsidized child care on female labor supply is mainly focused on developed countries, including US, Sweden and Canada (Heckman (1974), Blau and Robins (1988), Gustafsson and Stafford (1992), Gelbach (2002), Baker et al. (2008), Cascio (2009) and Fitzpatrick (2010)). Most studies find a significant positive maternal labor supply response to reduction in child care prices. However, the effects are not uniform across mother characteristics, location and time. Gelbach (2002) using quarter of birth as an instrument for enrollment in kindergarten in 1980 in US, found that single mothers of five-year olds enrolled into free public schooling, increased their labor supply measures by between 6-24%, and for married mothers of five-year olds between 6-15%. Cascio (2009) using the timing of large increases in public funding of kindergartens in US (which largely occurred in the 1960s and 1970s), found a 12% increase in the employment of single mothers, but not of married mothers. Fitzpatrick (2010) using regression discontinuity, with US Decennial Census 2000 data, found no robust impact of universal pre-kindergarten availability on maternal labor supply. She explains that her results are consistent with recent findings that female labor supply elasticities have declined over time (Blau and Kahn (2007)). She notes that the reason may be the change in the population of women working over time. The baseline rates of maternal employment have changed from between 17% and 55% (20 to 40 years ago) in the previous US literature to 77% in her study. Baker et al. (2008) studies impact of “\$5 per day childcare” program introduced in the late 1990s for all children under 5 years of age in Quebec, Canada. Using difference-in-difference approach across Canadian provinces before and after the program began, they find a statistically significant and sizable increase in employment of married mothers by 7.7 percentage points.

For developing countries the literature on effect of subsidized daycare on maternal employment is pretty limited. Most daycare programs are typically part of the early child development programs, like in the case of India. Few evaluations which are available, mainly focus on the impact of such programs on the health of child (Attanasio and Vera-Hernández (2004), Behrman et al. (2004)), and a few on the impact on maternal labor supply. Attanasio and Vera-Hernández (2004) analyzed a child care program, Hogares Comunitarios de Bienestar Familiar, in rural Colombia, for poor households. Using distance of the household from the program center as IV, they find that for the women, whose children participated in the program, increased their employment by 12-37 percentage points. Other studies in this area have mainly looked at the effect of childcare costs on maternal employment and they found a negative effect for Kenya (Lokshin et al. (2004)) and Romania² (Lokshin and Fong (2006)). For Guatemala urban slums, Hallman et al. (2005) found that child care costs did not effect mother’s labor force participation rate, but hours decreased with higher formal day care prices. Quisumbing et al. (2007) found for urban areas in Greater Accra (Ghana) and Guatemala city, that distance to daycare centers and its fee do not significantly affect earnings of mothers.

For developed countries it seems that maternal employment is largely responsive to reduction in daycare prices, though its becoming less responsive in recent times because of high baseline maternal employment

²Romania is a developing upper-middle income country.

rates. For developing countries also, the limited evidence indicates generally the same pattern, but less so in urban areas. Besides the Colombia study, there are almost no evaluations of effect of public daycare or subsidized daycare on maternal labor supply for developing countries, and this study aims to alleviate this gap.

3 The ICDS program services and their impact on child care costs

The ICDS program was launched in 1975, and since then it has expanded and matured from 33 blocks to 6,284 blocks in India and now has more than one million centers. In 2009-10 the ICDS program was allocated a budget of 1.5 billion USD (Rs 6.7 billion). The program offers various services, from supplementary nutrition to health check-ups to preschooling to immunization, as detailed in Appendix Table A.1. These services are supposed to be delivered in an integrated manner at the anganwadi, or childcare center, located within the village itself. Each center is run by an anganwadi worker (AWW) and one helper (AWH), who undergo three months of institutional training and four months of community-based training.

While the flagship component of the ICDS program is provision of supplementary nutrition to children 0-6, the preschooling component is also important. The preschooling is provided at the Anganwadi itself along with supplementary nutrition to children ages 3-6 years.³ It is supposed to be provided for 28 days in a month for a duration of around three hours daily. While the supplementary nutrition and preschooling components are the core services provided exclusively through the ICDS program, the immunization, health check-up and referral services are delivered in collaboration with the public health officials. The Anganwadi worker helps the public health officials in identification and mobilization of the target group of children and mothers for immunization and health check-up.

As the ICDS program provides various services, the program can reduce child care costs through several mechanisms and their combinations:

1. Increase in household resources because of implicit income subsidy through supplementary nutrition.
2. Provision of supplementary nutrition and immunization is likely to have positive health benefits on children, which can reduce morbidity and mortality, leading to reduction in resources and time required for child care. Healthier young children can also have positive externalities on the health of older children, further reducing child care costs.
3. Time spent in Anganwadis for preschooling releases the mothers from supervision duties and allows them to engage in other activities.

Because of the above mechanisms, I would be analyzing the impact of all ICDS services directly provided to the young children.

4 Empirical Strategy

To analyze the impact of each of the ICDS services received by the children below 5 years on maternal employment, I estimate the following probit regression equation for married women who have at least one child below 5 years:

$$lfp_i = \alpha Presch_i + \beta Dailyfd_i + \gamma Mhcheck_i + \delta Immun_i + \eta X_i + \lambda_i + u_i \quad (1)$$

³Children below age three receive “take home rations” that last for a week or a month depending on the frequency of distribution.

where lfp_i is a dummy variable with value one for a woman who reports working in the last seven days. $Presch_i$ is a dummy variable with the value one for a woman with at least one child who received *regular* preschooling/early childhood care through ICDS. $Dailyfd_i$ is a dummy variable with the value one for a woman with at least one child who received *daily* supplementary nutrition through ICDS. $Mhcheck_i$ is a dummy variable with the value one for a woman with at least one child who received *monthly* health check-up through ICDS. $Immun_i$ is a dummy variable with the value one for a woman with at least one child who received most vaccinations at the ICDS center. X_i is a vector of control variables composed of the *children characteristics*: age of the youngest child in years, age-square, age-cube, number of below 5 years children, fraction of below 5 years children who are stunted, number of children 6-18 years, number of children above 18 years;⁴ *mother specific characteristics*: mother's age in years, mother's highest number of years of completed education, mother's height in cms, mother's age at first marriage; *spouse specific characteristics*, that is spouse's age, spouse's education; *household head specific characteristics*, or household head's age and household head's education; *socio-economic characteristics*,⁵ that is caste, religion; and *environmental factors* like water source, toilet facility, cooking fuel. α_i captures unobservable or observable but unaccounted state-specific⁶ or village-specific fixed effects. u_i is an error term. α is the parameter of interest.

The above specification estimates the impact of each ICDS service controlling for receipt of other ICDS services by children below 5 years. However, because of likely collinearity between the receipt of various ICDS services, estimates can have lower precision. Therefore, to assess the impact of each ICDS service individually with higher precision, other specifications are also estimated in which the impact of each ICDS services is examined independently of other services. In another specification highly collinear services or similar frequency services are bundled together to improve precision of estimates. Also, to examine the impact of the package of ICDS services put together, another specification is estimated in which the mothers whose children are receiving different ICDS benefits intensely are combined into one single variable called "Any ICDS intensely." This dummy variable takes the value one for the mother whose child received any of the following benefits: regular preschooling/early childhood care or monthly supplementary feeding or monthly health check-up or most vaccinations at the ICDS center; and zero otherwise.

I use non-experimental survey data in which the children who are receiving different ICDS services have not been selected randomly. Therefore, to "identify" the effect of ICDS services on maternal employment, I need to take account of the observable differences between the two groups of mothers, in order to get to the pure effect of ICDS services on likelihood of mother's employment. With probit, I can control for observable characteristics related to children and women with the addition of control variables X_i .

There also might be some unobserved factors (unobserved heterogeneity), or observed but unaccounted factors at the state level, like higher political commitment and/or better administrative structure, which could result in better provision of ICDS services and hence greater use of those services. Or, there might be income shocks at the state level that affect the number of women who go to the ICDS center. In such cases, the probit regression probably suffers from omitted variable bias. To account for within-state differences, I use state fixed-effects model which adds λ_i in the equation above. Similar rationale holds for carrying out village fixed-effects, which controls for village level unobservables such as local labor market conditions, or village infrastructure such as roads. In this case the λ_i in the equation accounts for village fixed-effects, which is

⁴Separate information is provided in the survey on the children who stay at home and those who stay away from home. Therefore, separate variables were used to distinguish these two category children above 5 years of age.

⁵The information on religion and caste was collected both for household head and the woman herself. Mostly the two were equivalent. For the regressions I have used the information pertaining to the woman.

⁶For rural India as a whole some states were combined into two regions because of small sample size. One region contained Jammu&Kashmir, Himachal Pradesh, Uttaranchal, Delhi and Goa. Another region contained Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura and Meghalaya.

estimated using conditional logit regression.

Unbalanced distribution of covariates could yield biased probit estimates because of their sensitivity to functional form. With covariate matching one seeks to better “balance out” the groups being compared in terms of their covariates. Also, if the observables are correlated with the unobservables, then one may be able to balance out the latter by doing a better job of balancing the former. Thus, I use covariate matching (CVM) to minimize the selection bias on observables. In CVM, measures like the Mahalanobis distance are used to calculate the similarity of two women in terms of covariate values and the matching is done on these distances. This method, developed by Abadie and Imbens (2006), adjusts for bias when matching is not perfect, makes no assumption about functional form, and provides the standard errors for matching estimators.

5 Data

The data come from the National Family Health Survey (NFHS), a nationwide cross-section demographic health survey for India. So far three rounds have been conducted in the years 1992-3, 1998-9, and 2005-6. For this paper, I use the third round covering 2005-6, which provides detailed information for women ages 15-49, including their demographic characteristics, work status, reproductive behavior, and important aspects of nutrition and health care, including for children aged 0-5 years. It also collects the anthropometric measurements of height and weight for children 0-5 and women 15-49.

The sample size of women ages 15-49 is 124,385 out of which 67% reside in the rural areas, making up a rural women sample of 67,424. Currently married women⁷ with at least one child 0-5⁸ are the focus of the analysis with a sample size of 21,169.

The indicator for labor force participation status is whether or not the woman reports working in the last 7 days (including those on leave).⁹ Around 34% rural women with at least one child below 5 years report currently working,¹⁰ and there is variation across economic groups: the women from poorer families are more likely to work than those from richer families (Figure 1). There is also wide inter-state variation in work force participation rates from 12% in Punjab to 54% in Chhatisgarh (Figure 2). Because of this wide variation in maternal employment, along with evidence of differences in performance of the ICDS across states (FOCUS (2006)), I also do the analysis at the regional level. Mostly on the basis of geographical contiguity and partly on the basis of percentage of women working with at least one below 5 years child, the states have been grouped into five rural regions: South&West, North, East, Northeast and Central (Table 1). The main limitation of the work related data is lack of information on wages or working hours of women, which precludes richer analysis.

One of the distinctive feature of the latest round of NFHS survey is the collection of information on utilization of various services of the ICDS program by women and children 0-5 in the household. For services which are directly benefiting the children below 5 years, the information on intensity of usage is also collected.¹¹ Among all these different ICDS services, immunization is the most accessible- 19%

⁷Women who are widows, divorced or separated form only 4% of the rural women sample

⁸98% of the women with at least one child below 5 years are currently married.

⁹If the woman responded negatively to working in the last 7 days, they were probed if they worked for cash or kind for selling things, have a small business or worked on the family farm or in the family business in the last 7 days.

¹⁰Another 10% report working in the past 12 months but not currently.

¹¹For immunization of children, the information on “most vaccinations at the ICDS center” (the measure of intensity of immunization used in this paper) is collected in the section under vaccination of children. Therefore, unlike other ICDS services, the reference period for this information is not “last 12 months,” but age of the child.

of children report receiving most of the vaccinations at the ICDS center (Figure 3).¹² The percentage is relatively similar across different age-groups. The percentage of young children receiving monthly health check-up through the ICDS is also high, and it increases with age of children, though rather slowly. For supplementary feeding and preschooling/early childhood care, the access is relatively lower and it picks up for older children, especially from 2 years onwards. In the NFHS-3 questionnaire the information on access and intensity of preschooling is collected with that on early childhood care. The preschooling component of ICDS is officially only for children from 3-6 years. It seems from the data that the question is most likely picking up information on preschooling as very low percentage of children below 2 years are going to ICDS center regularly for either “early childhood care (ECC)” or “preschooling.” Significant regular ICDS attendance of children for either of these services is seen only starting at age of 24 months or 2 years and then it picks up substantially from 3 year onwards (Figure 3).

Summary statistics in Table 2 show that there are significant unconditional mean differences between characteristics of married women with at least one child below 5 years, who is going to the ICDS center regularly for preschooling/ECC, from those whose child is not. Compared to the woman with none of her children going to ICDS center regularly for preschooling/ECC, the one who does have such a child, is more likely to have her youngest child older in age, to be more educated, is taller, to have got married later, to be a Hindu and from schedule caste/tribe, to have drinking water coming from piped water and to be using wood as cooking fuel and living in states like West Bengal, Gujarat, Maharashtra or Karnataka. Similar differences in characteristics are also present between the women with and without at least one child who is receiving “Any ICDS intensely.” In addition to these differences, those whose child is receiving “Any ICDS intensely,” are also more likely to come from poorer households.

Additional dataset used in the paper is Time Use Survey (TUS) Data. This survey was canvassed during July 1998 to June 1999 with a sample size of 18600 households spread over six states namely, Haryana, Madhya Pradesh, Gujarat, Orissa, Tamil Nadu and Meghalaya. The survey estimates are representative at national and state level. Out of the total households interviewed, 12,750 were from rural areas with 53,981 respondents in total and 3675 women¹³ with a child below 5 years. The TUS asked about the time use of all household members above 5 years during the previous 24 hours. Description of activities in the time diary section was open-ended and so was the time allocated to them, allowing for reporting of multiple (simultaneous) activities. I analyze time use of data corresponding to “normal” days only (excluding, for example, holidays).¹⁴

The main variable of interest is the amount of time spent on childcare by mothers 15-50 years with children below 5 years. I combine the time spent on all activities classified as childcare: physical care of children (washing, dressing, feeding); teaching, training and instruction of own children; accompanying children to places (schools, sports, lessons, doctor); supervising children needing care; and travel related to care of children. Some of the limitations of the data are that it is not possible to identify families or the child/children who are being taken care of in the data, and there is age and household expenditure heaping. To identify families, I use the information only on “children” of the household head; “grandchildren” if there is only one daughter/daughter-in-law; and children below 5 years categorized as “other relative” if there is only one adult women also categorized as “other relative.” There is age heaping for adult women in the multiples of five. As for monthly per capita household expenditure (in rupees), there is heaping on multiple

¹²The information in the figure is based on the youngest child. However, the overall trends and figures remain similar even if all the children in the various age-groups are taken.

¹³There are 4633 women with a child below 5 years, but only 3675 report spending positive time on childcare.

¹⁴Time-use information is collected on three type of days: normal, abnormal and weekly. Saturday and Sunday are generally reported as “weekly variant,” and festival days or when someone is sick are “abnormal” days. All household members are interviewed for at least one normal day.

of 100s, especially in the range of 300-600.

6 Empirical Results

6.1 Probit and Conditional Logit

Table 3 presents specifications in which the different control variables are added cumulatively using probit regression for two types of women: those having at least one child below 5 years going to preschool and those whose child is receiving at least one of the ICDS services intensely. These specifications are estimated to see how sensitive the point estimates are to the inclusion of different control variables. Figure 4 and Row A in Table 3 indicate that for women whose child is going for regular preschooling/ECC or receiving any of the ICDS services intensely, have a higher *unconditional* likelihood of working. For regular preschooling/ECC the coefficients reduce in magnitude on addition of maternal characteristics, environmental factors, state dummies and age of the youngest child. For “Any ICDS intensely” the magnitude is also sensitive to all these controls, except age of the youngest child. There is no change in statistical significance of estimates with addition of controls.

Table 4 provides the impact of having a child below 5 years receiving different ICDS services on maternal employment using the probit regression. The analysis has been carried out for rural India and the five rural regions: South&West, North, East, Northeast and Central (Table 1). Columns A, E and K present estimates for all the ICDS services taken together in one regression. Columns B, G and L shows impact of regular preschooling/ECC exclusively. Similarly Columns C, H and M provide estimates for daily supplementary feeding exclusively and Columns D, I and N for most vaccinations at the ICDS center. Results for “Any ICDS intensely” are provided in Columns E, J and O.

When taken exclusively, a child receiving regular preschooling/ECC (Columns B, G and L) has a positive significant¹⁵ effect on likelihood of mother’s employment in rural India and rural Central regions, but the impact goes down and becomes statistically insignificant when other ICDS services are also considered (Columns A, E and K). Although, the impact remains jointly significant with daily supplementary feeding. A child receiving daily supplementary feeding (Columns C, H and M) has a positive effect on maternal employment in most regions, except the rural North and the rural East, when taken exclusively. Again the magnitude and statistical significance goes down when other ICDS services are taken into account, but still remains significant for rural India, rural Northeast and rural Central regions. A child receiving most vaccinations at the ICDS center (Columns D, I and N) has a significant positive impact on maternal employment for rural India, rural North and rural East regions. The impact goes down in magnitude when other ICDS services are also considered, but remains statistically significant for rural India and the rural East.

Because of high collinearity between receipt of daily supplementary feeding and regular preschooling components (Figure 3) it is difficult to separately identify the effect of each one of them. Hence, another specification is estimated which combines these two services. The dummy variable for this combination takes the value one if the mother has at least one child below 5 years who receives either regular preschooling/ECC or daily supplementary feeding. Most vaccinations at the ICDS center and monthly health check-up are also combined in this specification to improve precision of estimates. These two services are combined because they involve infrequent visits to the ICDS center. The dummy variable for this combination takes value one if the woman has a child below 5 years who receives either most vaccinations at the ICDS center or monthly health check-up. For this specification, the estimates in Table 5 (Columns A, E and I) indicate

¹⁵Significant at 1% or 5% level of significance, unless mentioned otherwise.

positive significant effect of having a child, receiving regular preschooling or daily supplementary feeding, on maternal employment for rural India, rural Northeast and rural Central regions. The estimates suggest that having a child receiving either of these services can lead to 4 percentage points more maternal employment, which is a 12% increase from the base level. The effect for the rural Central is big - 12 percentage points more maternal employment - a 25% increase from the base level. For the rural Northeast also the effect is big indicating 9 percentage points more maternal employment, which is a 39% increase from the base level.

Having a child receiving either most vaccinations at ICDS center or monthly health check-up, also has a positive significant effect of 5 and 8 percentage points increase in maternal labor supply in rural India, and the rural East respectively. If the impact of the whole package of ICDS services is considered together, then the estimates in Table 5 (Columns D, H and L) for “Any ICDS intensely” indicate that having a child receiving any of the ICDS benefits intensely, has a positive significant effect on maternal employment for rural India and all regions, except the rural South&West and the rural Central. The magnitude is of the order of 6 percentage points for rural India indicating a 17% increase over the base level. For the regions it is in the range of 4-8 percentage points which converts into an increase in the range of 17-29% over the base level.

Table 6 presents the results with village fixed effects, which indicate that impact of having a child, receiving either regular preschooling/ECC or daily supplementary feeding, on maternal employment (Columns A, E and I) remains robust to controls for village level unobservables for rural India and the rural Central, but not for the rural Northeast. The magnitudes are not directly comparable to the estimates reported above. However, a comparison with the estimates from simple logit specification (without village fixed-effects) in Appendix Table A.2, indicates that the estimates for rural India increase in magnitude with village-level effects, and decrease somewhat for the rural Central. The impact of having a child, receiving either most vaccinations at the ICDS center or monthly health check-up, is not robust to controls for village-level unobservables. However, the impact is strongly significant for rural India and the rural East when taken exclusively (Column C), and weakly significant when taken in combination with other services (Column A). There is a substantial decrease in magnitude in both the cases. The impact of receiving the whole package of ICDS services together (Columns D, H and L) is robust only for rural India and the rural East. The magnitude decreases substantially for both of them.

6.2 Covariate Matching

In the covariate matching (CVM) estimation in Table 7, I allow for bias adjustment when matches are not exact and for heteroscedasticity-consistent standard errors. I start with one match and then increase the number of matches to two to take advantage of more information, without also incorporating observations that are not sufficiently similar. Both the magnitude and precision of estimates remain largely similar between the one and two matches.¹⁶ As it is not possible to take more than one treatment variable in CVM, I restrict the analysis to examining the impact of “regular Preschooling/ECC” (Rows A and D), regular preschooling/ECC in combination with daily supplementary feeding (Rows B and E), and that of the whole package of ICDS services bundled into “Any ICDS intensely” (Rows C and F). For rural India and the rural Central, the impact of having a child receiving regular preschooling or daily supplementary feeding, remains robust to better control for selection on observables, and on unobservables to the extent they are correlated with observables. In comparison to the probit estimates (Table 5, Columns B and J), the magnitude of CVM

¹⁶I also carried out three matches for rural India for regular preschooling/ECC and “Any ICDS intensely”. The results do not change much in magnitude (0.04 for both) and significance.

estimates is lower for rural India and similar for the rural Central. The impact on maternal employment, of having a child receiving any of the ICDS services intensely, also remains robust to better control on observables for rural India and the rural East. The magnitude of effect with CVM is slightly lower than the probit for rural India, and same for the rural East.

6.3 Impact on some Southern States separately from those of the Western States

Besides the regions mentioned above, the rural South&West is separated into two sub-regions: the South and the West. The rural South comprises of Tamil Nadu, Kerala, Karnataka and Goa (Table 1). The results for this region are in the Appendix Table A.3. The results suggest positive significant impact of having a child receiving regular preschooling or daily supplementary feeding, on maternal employment in this region. This is true for all specifications, except with village-fixed effects. It is possible that the estimates for this specification are unbiased, but insignificant due to small sample size. The magnitude of effect suggests an increase in maternal employment by 6 percentage points in this region, which is a 19% increase from the base level. For the rural West the impact is insignificant, both statistically and economically.

7 Summary and Discussion of Results

To summarize, the results indicate that the mother whose child is receiving daily supplementary feeding or preschooling, is more likely to work in rural India, and this effect seems to be driven mainly by the rural Central, and possibly by the rural South. The effect remains robust to controls for village level unobservables and better control for selection on observables through covariate matching (Table 8). In addition, there is a weak significant effect of having a child receiving most vaccinations at the ICDS center or monthly health check-up, on mother's employment in rural India. This effect seems to be driven mainly by the rural East (Table 8). For the mother whose child is receiving any of the ICDS services intensely, is also more likely to work in rural India, and this effect seems to be driven by the rural East.

7.1 Do the weak impact related to immunization of children indicates health benefits?

The results indicate weak positive effect of having a child receiving most vaccinations at the ICDS center on maternal labor force participation in rural India, and the rural East. If the immunization is having a positive impact on maternal employment, then it has to run through the health benefits that the children receive from getting immunized. A fully immunized child is less likely to fall sick, which releases the mother's time from taking care of sick children to engage in other activities. Results in Table 9 indicate that immunization through the ICDS centers has a positive significant effect on boys and girls 10-59 months getting full immunization¹⁷ for rural India, and the rural East. However, for rural India I do not find that the children who are fully vaccinated and have received most vaccinations at the ICDS center, have lower disease incidence or severity (Table 10) for children ages 0-2 or 3-5 years. On the other hand, for the rural East I do find that the children 3-5, who are fully immunized and are receiving most vaccinations at the ICDS center, are 29% less likely to have diarrhea (Table 11). Thus, it seems that there are health benefits of immunization, which might be having a positive impact on maternal employment.

¹⁷According to the guidelines developed by the World Health Organization, children are considered fully vaccinated when they have received a vaccination against tuberculosis (BCG), three doses of the diphtheria, whooping cough (pertussis), and tetanus (DPT) vaccine; three doses of the poliomyelitis (polio) vaccine; and one dose of the measles vaccine by the age of 12 months. BCG should be given at birth or at first clinical contact, DPT and polio require three vaccinations at approximately 4, 8, and 12 weeks of age, and measles should be given at or soon after reaching 9 months of age.

7.2 How important is daily supplementary feeding service for maternal employment?

In my earlier paper Jain (2013) I find that daily supplementary feeding has a positive impact on the height of the children in the age-group 0-2 years but no impact on those ages 3-5. Less malnourished children are less likely to be sick, thereby requiring less child care time which helps mother redirect their time and energy to other activities. If the health benefits of daily supplementary feeding were driving the impacts on maternal employment, then I should see the impact on the mothers with the youngest child in the 0-2 age-group children, rather than those whose youngest child is above 2 years of age. To check this hypothesis, I separate the women whose youngest child is 0-23 months old from those of 24-59 months. I take 24 months children in the older group because the percentage of children reporting regular preschooling/ECC increases substantially for children starting from 24 months of age (Figure 5). Even if 24 months children are taken along with 0-23 months children, the results remain largely similar.

Estimates in Tables 12 and 13 suggest that it is not the health benefits of daily supplementary feeding which is driving the impact on maternal employment, because I do not find significant positive effect of daily supplementary feeding whether taken exclusively or with other ICDS services for 0-23 months children. On the other hand, for the 24-59 months children, it is positive and statistically significant whether taken separately or together with other ICDS services, indicating positive effect of daycare implicit in preschooling.

What about the income effect of transfer of resources to the household through daily supplementary feeding? Economic theory predicts that if leisure is normal good, then increase in income should increase consumption of leisure and decrease labor supply. Thus, with increase in transfer of resources one would expect the labor supply of women to decrease rather than increase. Also, in comparison to the wages of casual female laborer in rural areas, the transfer of resources is too small to have any significant effect on maternal employment - daily supplementary nutrition transfer for a month is equivalent to only a little more than one day wage of female casual laborer wage.¹⁸ Thus, it seems that the benefits on maternal employment are not driven by health benefits of daily supplementary feeding or implicit income subsidy.

7.3 How important is preschooling/ECC service for maternal employment?

7.3.1 How much could mother potentially earn when the child goes to daycare and how significant it is?

In 2005-06, the female casual laborer earned Rs 38 in a day (USD 0.8). Average work time per day of casual wage laborers is roughly 390 minutes.¹⁹ The children are supposed to spend around 3 hours in the daycare. If the mothers can find work for this duration, pro rata average wage earned would be Rs 18 as casual wage laborer. If they work for 25 days in a month, they could earn Rs 450 (USD 9) per month. Average monthly per capita consumer expenditure in 2005-06 was Rs 625 (USD 12.5) in rural India (NSSO (2008)). Thus, the woman could potentially earn around 72% of average monthly expenditure on one household member, which is a significant amount, especially for poor households.²⁰

¹⁸In 2005-6, the norm for expenditure on supplementary nutrition was Rs 2 per child. If the program is performing well and the normative expenditure is fully transferred to the household, then the maximum amount the household would receive is Rs 50 (USD 1) per month (for 25 days per month). In 2005-06, the female casual laborer earned around Rs 38 in a day (USD 0.8). Thus, monthly daily supplementary nutrition transfer is equivalent to 1.3 times daily female casual laborer wage.

¹⁹Calculated using Time Use Survey 1998-99 survey data for women who reported their main occupation as casual wage laborers, and time they spent in doing major agricultural operations. The average work time including travel time is 435 minutes.

²⁰In 2005-06, nearly 19% of the Indian rural population belonged to households with monthly per capita consumption expenditure less than the rural poverty line expenditure of Rs 365 (USD 7.3) (NSSO (2008)).

7.3.2 How far daycare can substitute mother's childcare time?

TUS data indicates that the mothers on average spend around 2 hours on childcare. The time differs by work status of mothers, and working mothers spend less time on childcare across all consumption expenditure quintiles than the non-working mothers (Figure 6). There is an average difference of about 30 minutes and it differs by state (Figure 7) ranging from 45 minutes in rural Gujarat to 17 minutes in rural Madhya Pradesh. Among the states, Haryana is the only one which has negligible difference of -2 minutes, along with somewhat negligible maternal employment of 2% in 1998-99. Also, the most important components of childcare on which a large proportion of women report spending time on are a) physical care of children: washing, dressing and feeding; and b) supervising children needing care. 94% and 22% non-working mothers report spending on the two categories respectively. The percentage for working mothers is a little less at 92% and 20%, respectively. The difference in time spent between non-working and working mothers for each category is around 23-24 minutes (Figure 8). What part of the mother's childcare time can be substituted by daycare? The feeding portion of the physical care component and supervision of children can be substituted by the daycare to a certain extent. The ICDS centers are supposed to provide feeding to the children when they come for preschooling. Supervision of children by Anganwadi workers is implicit during preschooling time.

The above analysis indicates that mothers can potentially significantly benefit from working when the child is in daycare, the working mothers are likely to have a higher demand for non-parental childcare, and the mother's childcare time can be substituted by the daycare to a certain extent. Thus, the impact on maternal employment could be in principle be driven by having a child going to regular preschooling/ECC.

7.3.3 Do mother self-select into preschooling / daycare?

One could argue that the motivated mothers are more likely to work and also more likely to send their children to the ICDS centers. Therefore, the impact that I find of having a child going to daycare on mother's employment is not due to the program benefit but it reflects the higher motivation level of the mothers. If this is true, then motivated mother are also more likely to take better care of their children. Thus, the children who go to daycare are more likely to be healthier. But in my previous paper (Jain (2013)) I do not find that the children in the age-group 3-5 years who are going to ICDS centers for daily supplementary feeding (along with daycare) to be anthropometrically better than those who are not.²¹

Moreover, results from determinants of various ICDS services (Table 14) indicate that the children from scheduled castes households are more likely to receive various ICDS benefits, but not preschooling. For preschooling either the scheduled castes children ages 3-5 years are significantly less likely to receive it, or the likelihood is zero in magnitude and statistical significance.²² This is particularly striking in comparison to receipt of supplementary feeding by children aged 3-5 years. The children 3-5 from the scheduled castes are more likely to receive "any" or "daily" supplementary feeding, whether it is in comparison to all children or those receiving some benefit from the ICDS center. There do not seem to be striking systematic difference in characteristics of scheduled caste children 24-59 months or 36-59 months, besides age, between those who are receiving regular preschooling and those who are not, among the children receiving daily supplementary feeding (Appendix Table A.4). These results can be indicative of presence of discrimination against this caste group children to be in ICDS centers, because of the practice of untouchability, in which physical

²¹Though the official prescribed age-group for preschool/ECC is 3-6 years children, I find that significant proportion of children start going to ICDS centers regularly from 24 months onwards.

²²For the 0-5 age-group as a whole, scheduled caste children are 1.4% more likely (significant at 10%) to receive any preschooling among all the children, but 5.3% less likely (significant at 5%) to receive it among those who are receiving some ICDS benefit.

contact with scheduled caste people is prohibited. In a recent study (Shah (2006)) based on a field survey carried out in 2001-2 in 560 villages in eleven states in India, it was found that untouchability is practised in one form or another in almost 80 per cent of the villages surveyed. The study found that it extends to all spheres of life, including the public sphere such as entry into primary health centers, sitting arrangements in primary schools, access to drinking water supply, and interaction with high caste teachers and students. Therefore, it is highly likely that this malpractice also extends to preschooling service at the Anganwadi centers, where children from various socio-economic backgrounds have to sit in close quarters for extended period of time.

I also do a placebo test of impact of ICDS services on height of mothers, to test for direction of selection bias. Results in Appendix Table A.5 indicate that there is no positive or negative selection bias, so far as height of mother is concerned.

8 Conclusion

For poor mothers in India working is not a choice, but a compulsion. The difference in time spent on childcare between working and non-working mothers from TUS data, indicates that the mothers who are in the labor force are likely to have a greater demand for non-parental child care. This suggests that the lack of affordable child-care alternatives can limit how mothers use their time. It can also force those, who are compelled to work, to leave their young children in care of older siblings and relatives, and sometimes even unattended (Narayanan (2008)). This has implications for psychological health of women, well-being of young children and education of older siblings.

The ICDS program is stipulated to provide preschooling to children in the 3-6 year age-group for about half a day. Only 14% children²³ in these ages seem to be receiving regular preschooling. Anecdotal evidence²⁴ and social audits (Narayanan (2008)) indicate that wherever the ICDS centers works well and is accessible, working women are likely to use the preschooling facilities for daycare.

The results in this paper suggest that the public daycare enables the women to work in rural India, and the results seem to be mainly driven by those in the rural Central, who are among the poorest in rural India. There is some evidence of positive impact in the rural South also. It seems that for evaluating the benefits of such programs, these “unintended” benefits, which go beyond the stipulated provision of education to children, should be taken into consideration. The preliminary results also suggest caste based discrimination in access of preschooling. This issue needs to be explored in greater depth as this has important policy implication for access to public services by the most marginalized sections of Indian society.

Considering maternal work force participation rates differ considerably among regions, even for those at similar poverty levels, it would be important to understand the determinants of this differential. This would help in assessing the demand and broader benefits of public preschooling services. Although, regional analysis is imperative, the current sample size limits the exercise. With the small sample sizes, it is hard to distinguish if the non-significance of estimates for some regions, like the rural South, is really due to “non-significance” or because of large standard errors.

The Baker et al. (2008) study of low-income couples in Canada found that, although availability of child care subsidy increased maternal labor supply, the psychological and health status of children worsened. The effect of child care subsidy on well-being of children, and also of mothers, has not been covered in this study, but needs attention in the future.

²³ Another 8% children in the age-group 24-35 months seem to be receiving regular preschooling

²⁴ <http://www.economist.com/node/18485871> - last accessed June 6, 2012.

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Figure 1: Percentage of married women currently working by economic status - Rural India (Base: Married women with children below 5 years)

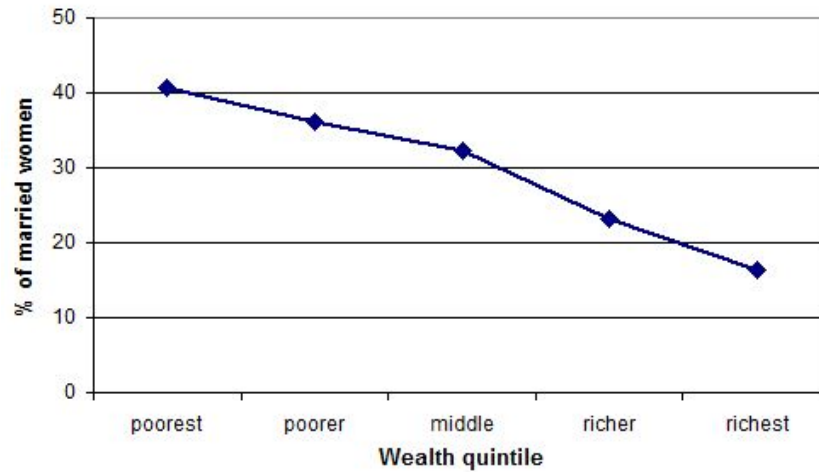


Figure 2: Percentage of married women currently working (base: Married women with at least one child below 5 years) - by State in Rural India

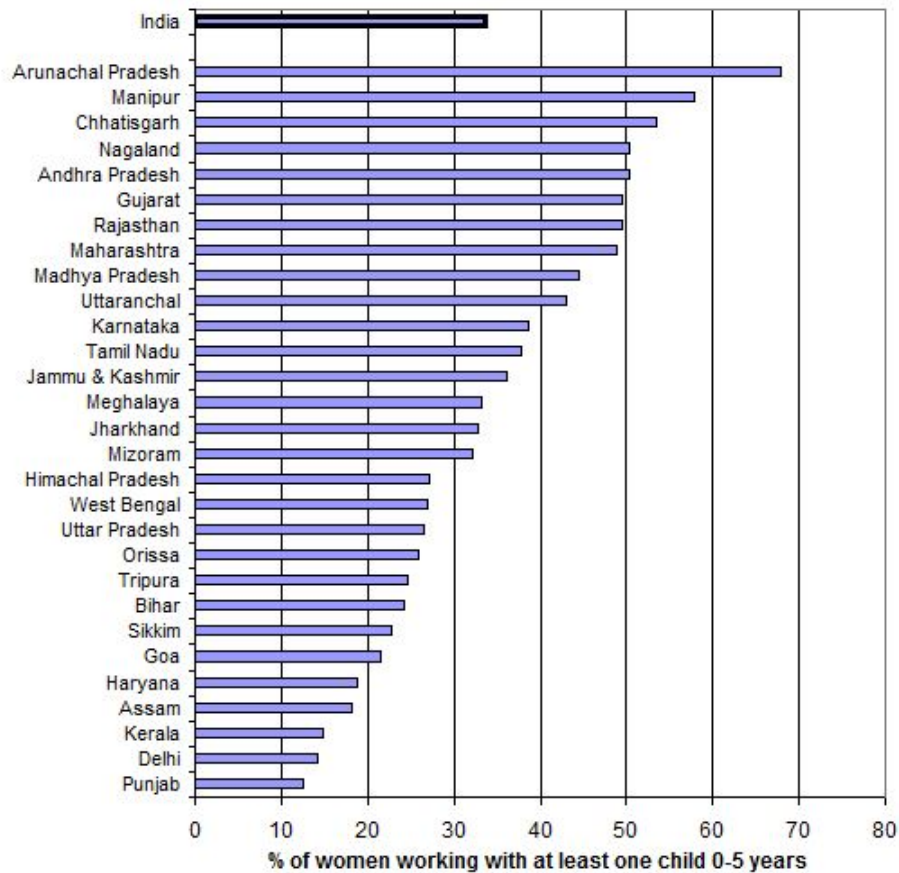
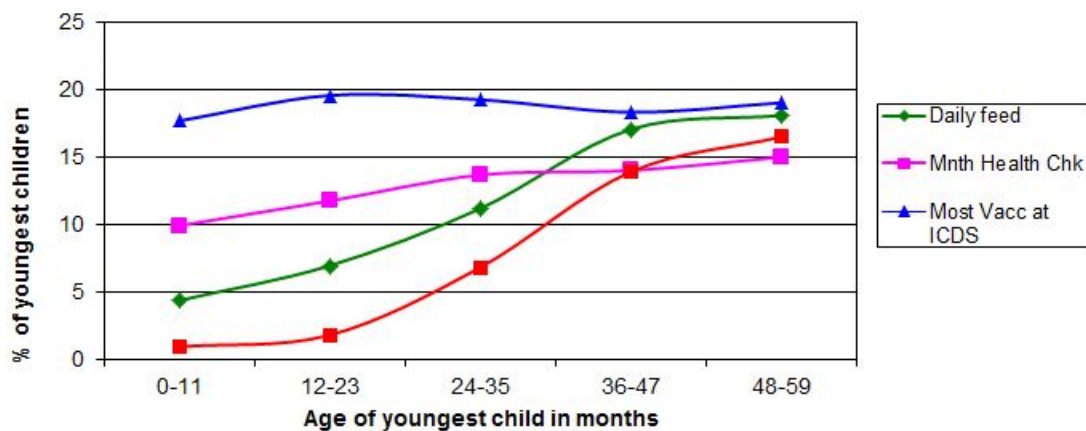


Table 1: Regional grouping of states on basis of geographical contiguity

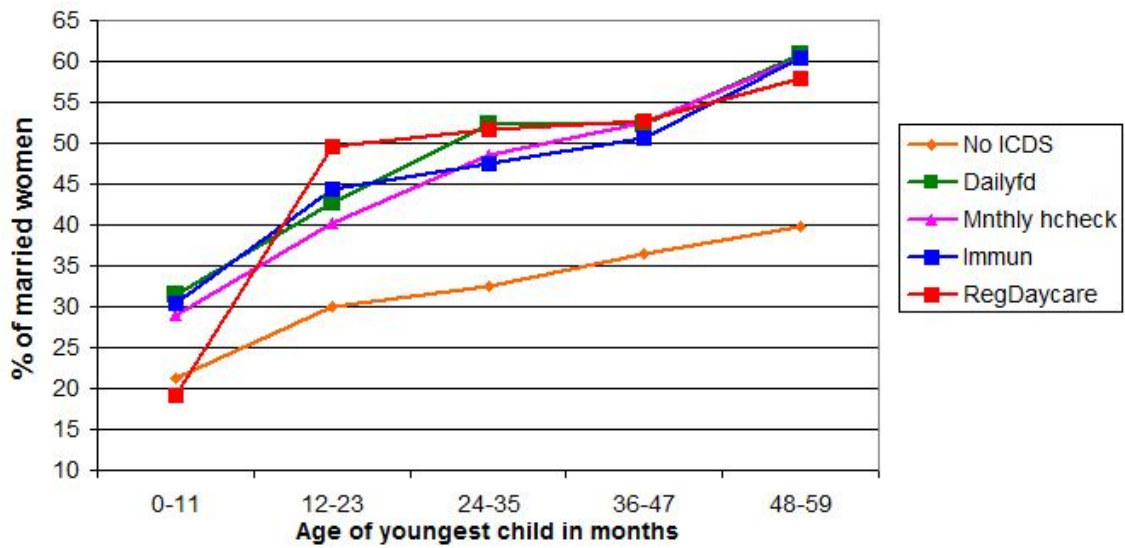
| Region | States | % of married women currently working (base: with at least one child below 5 year child) |
|------------|--|---|
| South&West | Gujarat, Maharashtra, Goa, Andhra Pradesh, Karnataka, Kerala & Tamil Nadu | 15-50 |
| North | Jammu&Kashmir, Himachal Pradesh, Uttaranchal, Punjab, Haryana, Delhi & Uttar Pradesh | 12-43 |
| East | Bihar, West Bengal, Jharkhand & Orissa | 24-33 |
| Northeast | Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Meghalaya & Assam | 18-68 |
| Central | Rajastan, Chattisgarh & Madhya Pradesh | 44-54 |
| South West | Goa, Karnataka, Kerala & Tamil Nadu | 15-39 |
| West | Gujarat, Maharashtra & Andhra Pradesh | 49-50 |

Figure 3: Percentage of youngest children below 5 years receiving different ICDS benefits intensely - Rural India



Dailyfd - Daily supplementary feeding; Mnthly hcheck - Monthly health check-up; Immun - Most vaccinations at ICDS center; RegDaycare - Regular Daycare/ECC

Figure 4: Percentage of married women currently working whose youngest child below 5 years receives different ICDS benefits intensely - Rural India



No ICDS - No ICDS intensely or none at all; Dailyfd - Daily supplementary feeding; Mnthly hcheck - Monthly health check-up; Immun - Most vaccinations at ICDS center; RegDaycare - Regular DaycareECC

Table 2: Summary statistics; Base: Married Women with at least one child below 5 years

| Variables | Regular Preschool/ECC | | No regular Preschool/ECC | | p-value | Any ICDS intensely [†] | | No ICDS intensely | | p-value |
|---------------------------------------|-----------------------|-----------|--------------------------|-----------|-----------|---------------------------------|-----------|-------------------|-----------|-----------|
| | Mean | Std. Dev. | Mean | Std. Dev. | | Mean | Std. Dev. | Mean | Std. Dev. | |
| Women currently working | 0.47 | 0.50 | 0.32 | 0.47 | (0.000)** | 0.42 | 0.49 | 0.30 | 0.46 | (0.000)** |
| Age of the youngest child (yrs) | 2.1 | 1.4 | 1.5 | 1.3 | (0.000)** | 1.6 | 1.4 | 1.5 | 1.3 | (0.000)** |
| Number of <5 yrs children | 1.5 | 0.6 | 1.4 | 0.6 | (0.000)** | 1.4 | 0.6 | 1.4 | 0.6 | (0.000)** |
| Fraction of <5 yrs stunted children | 0.5 | 0.4 | 0.5 | 0.5 | (0.36) | 0.5 | 0.5 | 0.5 | 0.5 | (0.53) |
| Number of 6-18 yrs children | 1.2 | 1.3 | 1.3 | 1.5 | (0.13) | 1.2 | 1.4 | 1.3 | 1.5 | (0.000)** |
| Number of above 18 yrs children | 0.0 | 0.2 | 0.1 | 0.3 | (0.000)** | 0.0 | 0.2 | 0.1 | 0.3 | (0.000)** |
| Age of woman in years | 26.6 | 4.9 | 26.3 | 5.8 | (0.036)* | 26.1 | 5.3 | 26.4 | 5.9 | (0.001)** |
| Education of woman in years | 4.0 | 4.2 | 3.4 | 4.4 | (0.000)** | 3.6 | 4.2 | 3.4 | 4.4 | (0.001)** |
| Height of woman in cms | 151.8 | 5.7 | 151.4 | 5.8 | (0.036)* | 151.6 | 5.7 | 151.4 | 5.8 | (0.016)* |
| Age of woman at marriage in years | 16.3 | 3.5 | 15.9 | 3.7 | (0.000)** | 16.1 | 3.5 | 15.8 | 3.8 | (0.000)** |
| Spouse's age in years | 32.6 | 6.0 | 31.7 | 6.8 | (0.000)** | 31.8 | 6.4 | 31.8 | 6.9 | (0.83) |
| Spouse's education in years | 5.7 | 4.7 | 5.9 | 5.0 | (0.18) | 5.6 | 4.8 | 6.0 | 5.0 | (0.000)** |
| Household head's age in years | 41.8 | 14.9 | 43.2 | 14.8 | (0.001)** | 42.1 | 14.6 | 43.5 | 14.8 | (0.000)** |
| Household head's education in years | 4.3 | 4.3 | 4.1 | 4.6 | (0.027)* | 4.1 | 4.4 | 4.1 | 4.7 | (0.57) |
| Wealth score | -0.7 | 0.6 | -0.7 | 0.7 | (0.69) | -0.8 | 0.7 | -0.7 | 0.8 | (0.000)** |
| Agricultural land in acres | 4.6 | 51.4 | 4.1 | 44.6 | (0.76) | 3.4 | 37.1 | 4.5 | 49.1 | (0.15) |
| Religion - Hindu | 0.84 | 0.36 | 0.81 | 0.39 | (0.000)** | 0.86 | 0.35 | 0.79 | 0.41 | (0.000)** |
| Religion - Muslim | 0.11 | 0.31 | 0.15 | 0.36 | (0.000)** | 0.10 | 0.29 | 0.17 | 0.38 | (0.000)** |
| Religion - Christian | 0.02 | 0.15 | 0.02 | 0.13 | (0.15) | 0.02 | 0.13 | 0.02 | 0.13 | (0.42) |
| Religion - Others | 0.03 | 0.16 | 0.03 | 0.16 | (0.95) | 0.03 | 0.17 | 0.02 | 0.15 | (0.012)* |
| Caste - Scheduled caste | 0.23 | 0.42 | 0.21 | 0.41 | (0.029)* | 0.23 | 0.42 | 0.20 | 0.40 | (0.000)** |
| Caste - Scheduled tribe | 0.13 | 0.34 | 0.11 | 0.32 | (0.033)* | 0.17 | 0.38 | 0.09 | 0.28 | (0.000)** |
| Caste - Other backward cste | 0.38 | 0.48 | 0.42 | 0.49 | (0.003)** | 0.37 | 0.48 | 0.43 | 0.50 | (0.000)** |
| Caste - Others | 0.26 | 0.44 | 0.26 | 0.44 | (0.65) | 0.23 | 0.42 | 0.28 | 0.45 | (0.000)** |
| Water - Piped | 0.36 | 0.48 | 0.19 | 0.40 | (0.000)** | 0.28 | 0.45 | 0.18 | 0.38 | (0.000)** |
| Water - Tubewell | 0.45 | 0.50 | 0.61 | 0.49 | (0.000)** | 0.50 | 0.50 | 0.65 | 0.48 | (0.000)** |
| Water - Protected well, etc. | 0.03 | 0.17 | 0.03 | 0.16 | (0.46) | 0.02 | 0.15 | 0.03 | 0.17 | (0.033)* |
| Water - Unprotected well, etc. | 0.16 | 0.36 | 0.16 | 0.37 | (0.56) | 0.20 | 0.40 | 0.15 | 0.35 | (0.000)** |
| Toilet - Flush | 0.17 | 0.38 | 0.18 | 0.38 | (0.43) | 0.15 | 0.36 | 0.19 | 0.39 | (0.000)** |
| Toilet - Pit latrine & others | 0.06 | 0.24 | 0.06 | 0.24 | (0.69) | 0.04 | 0.21 | 0.07 | 0.26 | (0.000)** |
| Toilet - No facility | 0.77 | 0.42 | 0.76 | 0.43 | (0.35) | 0.80 | 0.40 | 0.74 | 0.44 | (0.000)** |
| Cooking fuel - Electricity / Kerosene | 0.06 | 0.24 | 0.07 | 0.26 | (0.08) | 0.05 | 0.22 | 0.08 | 0.27 | (0.000)** |
| Cooking fuel - Wood | 0.69 | 0.46 | 0.58 | 0.49 | (0.000)** | 0.71 | 0.46 | 0.54 | 0.50 | (0.000)** |
| Cooking fuel - Others | 0.25 | 0.43 | 0.35 | 0.48 | (0.000)** | 0.24 | 0.43 | 0.39 | 0.49 | (0.000)** |
| State - Uttar Pradesh | 0.07 | 0.25 | 0.22 | 0.41 | (0.000)** | 0.07 | 0.26 | 0.26 | 0.44 | (0.000)** |
| State - West Bengal | 0.16 | 0.36 | 0.08 | 0.27 | (0.000)** | 0.10 | 0.30 | 0.08 | 0.27 | (0.000)** |
| State - Madhya Pradesh | 0.06 | 0.24 | 0.07 | 0.25 | (0.10) | 0.12 | 0.32 | 0.05 | 0.21 | (0.000)** |
| State - Gujarat | 0.09 | 0.28 | 0.03 | 0.18 | (0.000)** | 0.06 | 0.24 | 0.03 | 0.17 | (0.000)** |
| State - Maharashtra | 0.16 | 0.37 | 0.05 | 0.22 | (0.000)** | 0.13 | 0.33 | 0.03 | 0.17 | (0.000)** |
| State - Andhra Pradesh | 0.08 | 0.28 | 0.05 | 0.22 | (0.000)** | 0.05 | 0.23 | 0.05 | 0.23 | (0.94) |
| State - Karnataka | 0.09 | 0.29 | 0.03 | 0.18 | (0.000)** | 0.06 | 0.24 | 0.03 | 0.16 | (0.000)** |
| State - Tamil Nadu | 0.06 | 0.25 | 0.03 | 0.16 | (0.000)** | 0.05 | 0.22 | 0.02 | 0.15 | (0.000)** |
| Observations | 1792 | | 18104 | | | 6128 | | 13893 | | |

* significant at 5%; ** significant at 1%; ECC - early childhood care; State specific statistics are presented for only those states which contribute 5% or more women with children aged 0-5 years receiving regular daycare; [†] "Any ICDS intensely" indicates women with at least one child aged 0-5 years receiving any of the ICDS benefits intensely (regular preschooling or early childhood care/monthly supplementary feeding/monthly health check-up/most vaccinations at ICDS center).

Table 3: Probit: Cumulative addition of controls; Dependent variable - current work status of married women with at least one child below 5 years

| | Regular preschool / ECC | Any ICDS intensely [†] |
|--|-------------------------|---------------------------------|
| A No controls | 0.14 (0.01)*** | 0.12 (0.01)*** |
| B + Woman | 0.16 (0.01)*** | 0.13 (0.01)*** |
| C + SES | 0.15 (0.01)*** | 0.12 (0.01)*** |
| D + Spouse/head | 0.15 (0.01)*** | 0.12 (0.01)*** |
| E + Environ | 0.13 (0.01)*** | 0.10 (0.01)*** |
| F + State | 0.08 (0.01)*** | 0.06 (0.01)*** |
| G + Fraction Stunted <5 yrs | 0.08 (0.01)*** | 0.06 (0.01)*** |
| H + Number of children | 0.08 (0.01)*** | 0.06 (0.01)*** |
| I + Age of youngest child / All controls | 0.06 (0.01)*** | 0.06 (0.01)*** |
| Observations | 19896 | 20021 |
| MeanY | 0.34 | 0.34 |

* significant at 10%; ** significant at 5%. *** significant at 1%; Robust standard errors in parentheses; ECC - early childhood care; [†] “Any ICDS intensely” indicates women with at least one child aged 0-5 years receiving any of the ICDS benefits intensely (regular preschooling or early childhood care/monthly supplementary feeding/monthly health check-up/most vaccinations at ICDS center); Each cell is a separate regression and the estimates indicate marginal effects; Each of the specification terms specifies the following controls: *Woman* - mother’s age in years, mother’s highest number of years of completed education, mother’s height in cms; *SES* - mother’s age at first marriage, caste, religion; *Spouse/head* - spouse’s age, spouse’s education, household head’s age, household head’s education; *Environ* - source of drinking water, toilet facility, cooking fuel; *State* - state dummies; *Fraction stunted <5 yrs* - fraction of <5 yrs children who are stunted; *Number of children* - number of children below 5 yrs, number of children 6-18 yrs, number of children above 18 yrs; *Age of youngest child* - age of youngest child in yrs, age square, age cube; Each specification contains the controls that it specifies plus all the controls above it. For eg. *SES* would contain the controls it signifies plus the controls specified in *Woman*.

Table 4: Probit: Effect of different ICDS services on current work status of married women with at least one child below 5 years

| | Rural India | | | | | Rural South&West | | | | | Rural North | | | | |
|---------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|-----------------|-------------------|----------------|------------------|-------------------|------------------|-------------------|------------------|------------------|
| | (A) | (B) | (C) | (D) | (E) | (F) | (G) | (H) | (I) | (J) | (K) | (L) | (M) | (N) | (O) |
| Regular preschool / ECC | 0.02 (0.02) | 0.06 (0.01)*** | | | | 0.02 (0.03) | 0.05 (0.02)* | | | | -0.01 (0.04) | 0.01 (0.03) | | | |
| Daily supplementary feeding | 0.04 (0.01)** | | 0.06 (0.01)*** | | | 0.02 (0.03) | | 0.04 (0.02)** | | | 0.02 (0.04) | | 0.02 (0.03) | | |
| Monthly health check-up | 0.01 (0.01) | | | | | -0.01 (0.03) | | | | | 0.03 (0.04) | | | | |
| Most vaccinations at ICDS | 0.05 (0.01)*** | | | 0.05 (0.01)*** | | 0.03 (0.02) | | | 0.03 (0.02) | | 0.05 (0.02)* | | | 0.05 (0.02)** | |
| Any ICDS intensely [†] | | | | | 0.06 (0.00)*** | | | | | 0.04 (0.01)* | | | | | 0.04 (0.01)** |
| Observations | 19659 | 19896 | 19950 | 20017 | 20021 | 4045 | 4130 | 4143 | 4177 | 4179 | 5422 | 5484 | 5502 | 5513 | 5513 |
| MeanY | 0.33 | 0.34 | 0.34 | 0.34 | 0.34 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| P-value: all ICDS components=0 | 0.00 | | | | | 0.30 | | | | | 0.27 | | | | |
| P-value: Preschool=Feeding=0 | 0.00 | | | | | 0.30 | | | | | 0.90 | | | | |
| | Rural East | | | | | Rural Northeast | | | | | Rural Central | | | | |
| Regular preschool / ECC | 0.03 (0.03) | 0.05 (0.03)* | | | | 0.02 (0.05) | 0.05 (0.05) | | | | 0.03 (0.05) | 0.10 (0.04)** | | | |
| Daily supplementary feeding | 0.02 (0.03) | | 0.05 (0.02)* | | | 0.16 (0.06)** | | 0.15 (0.05)*** | | | 0.15 (0.04)*** | | 0.14 (0.03)*** | | |
| Monthly health check-up | 0.03 (0.03) | | | | | -0.03 (0.06) | | | | | -0.01 (0.03) | | | | |
| Most vaccinations at ICDS | 0.10 (0.02)*** | | | 0.10 (0.02)*** | | 0.03 (0.05) | | | 0.05 (0.05) | | -0.01 (0.02) | | | 0.01 (0.02) | |
| Any ICDS intensely [†] | | | | | 0.08 (0.01)*** | | | | | 0.07 (0.03)** | | | | | 0.03 (0.02) |
| Observations | 3483 | 3511 | 3515 | 3519 | 3519 | 3969 | 3990 | 3994 | 4004 | 4004 | 2739 | 2780 | 2795 | 2803 | 2805 |
| MeanY | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 |
| P-value: all ICDS components=0 | 0.00 | | | | | 0.01 | | | | | 0.00 | | | | |
| P-value: Preschool=Feeding=0 | 0.41 | | | | | 0.01 | | | | | 0.00 | | | | |

* significant at 10%; ** significant at 5%. *** significant at 1%; Coefficients indicate marginal effects; Robust standard errors in parentheses; ECC - early childhood care; [†] "Any ICDS intensely" indicates women with at least one child aged 0-5 years receiving any of the ICDS benefits intensely (regular preschooling or early childhood care/monthly supplementary feeding/monthly health check-up/most vaccinations at ICDS center); For regional classification of states see Table 1. Each column is a separate regression with the following controls: age of youngest child in yrs, age square, age cube, number of children below 5 yrs, number of children 6-18 yrs, number of children above 18 yrs, fraction of below 5 yrs stunted children, mother's age in years, mother's highest number of years of completed education, mother's height in cms, mother's age at first marriage, caste, religion, source of drinking water, toilet facility, cooking fuel, spouse's age, spouse's education, household head's age, household head's education and state dummies.

Table 7: Probit & CVM: Effect of different ICDS services on the current work status of married women with at least one child below 5 years

| | | Rural India | | | Rural South&West | | | Rural North | | |
|---|---|-------------------|--------------------|-------------------|------------------|--------------------|------------------|-------------------|--------------------|-------------------|
| | | Probit | Covariate Matching | | Probit | Covariate Matching | | Probit | Covariate Matching | |
| | | | 1 match | 2 matches | | 1 match | 2 matches | | 1 match | 2 matches |
| A | Regular preschool/ECC | 0.06 (0.01)*** | 0.04 (0.02)*** | 0.05 (0.02)*** | 0.05 (0.02)* | 0.04 (0.02)* | 0.04 (0.02)* | 0.01 -0.03 | 0.06 (0.04)* | 0.07 (0.04)* |
| | Obs | 19896 | 19896 | 19896 | 4130 | 4130 | 4130 | 5484 | 5484 | 5484 |
| B | Regular preschool/ECC or Daily supplementary feeding | 0.06 (0.01)*** | 0.03 (0.01)** | 0.04 (0.01)*** | 0.03 (0.02) | -0.01 (0.02) | -0.01 (0.02) | 0.03 (0.03) | 0.07 (0.03)** | 0.08 (0.03)** |
| | Obs | 19971 | 19971 | 19971 | 4149 | 4149 | 4149 | 5508 | 5508 | 5508 |
| C | Any ICDS intensely [†] | 0.06 (0.00)*** | 0.05 (0.01)*** | 0.05 (0.01)*** | 0.04 (0.01)* | 0.00 (0.02) | 0.01 (0.02) | 0.04 (0.01)** | 0.06 (0.02)*** | 0.06 (0.02)*** |
| | Obs | 20021 | 19987 | 19987 | 4179 | 4179 | 4179 | 5513 | 5513 | 5513 |
| | | Rural East | | | Rural Northeast | | | Rural Central | | |
| | | Probit | Covariate Matching | | Probit | Covariate Matching | | Probit | Covariate Matching | |
| | | | 1 match | 2 matches | | 1 match | 2 matches | | 1 match | 2 matches |
| D | Regular preschool/ECC | 0.05 (0.03)* | 0.02 (0.03) | 0.02 (0.03) | 0.05 (0.05) | 0.04 (0.06) | 0.03 (0.05) | 0.10 (0.04)** | 0.14 (0.05)*** | 0.09 (0.04)** |
| | Obs | 3511 | 3511 | 3511 | 3990 | 3990 | 3990 | 2780 | 2781 | 2781 |
| E | Regular preschool/ECC or Daily supplementary feeding | 0.06 (0.02)** | 0.04 (0.03) | 0.04 (0.03) | 0.10 (0.04)** | 0.07 (0.06) | 0.07 (0.05) | 0.11 (0.03)*** | 0.13 (0.04)*** | 0.11 (0.03)*** |
| | Obs | 3515 | 3515 | 3515 | 3997 | 3997 | 3997 | 2797 | 2802 | 2802 |
| F | Any ICDS intensely [†] | 0.08 (0.01)*** | 0.08 (0.02)*** | 0.08 (0.02)*** | 0.07 (0.03)** | 0.07 (0.04) | 0.08 (0.03)** | 0.03 (0.02) | 0.05 (0.02)** | 0.05 (0.02)** |
| | Obs | 3519 | 3519 | 3519 | 4004 | 3997 | 3997 | 2805 | 2806 | 2806 |

* significant at 10%; ** significant at 5%. *** significant at 1%; CVM - Covariate Matching; Coefficients indicate marginal effects; Robust standard errors in parentheses; ECC - early childhood care; [†] “Any ICDS intensely” indicates women with at least one child aged 0-5 years receiving any of the ICDS benefits intensely (regular preschooling or early childhood care/monthly supplementary feeding/monthly health check-up/most vaccinations at ICDS center); For regional classification of states see Table 1. Each column is a separate regression with the following controls: age of youngest child in yrs, age square, age cube, number of children below 5 yrs, number of children 6-18 yrs, number of children above 18 yrs, fraction of below 5 yrs stunted children, mother’s age in years, mother’s highest number of years of completed education, mother’s height in cms, mother’s age at first marriage, caste, religion, source of drinking water, toilet facility, cooking fuel, spouse’s age, spouse’s education, household head’s age, household head’s education and state dummies.

Table 8: Summary Table: Effect of different ICDS services on the current work status of married women with at least one child below 5 years

| | Probit | | Covariate Matching | | Logit | Conditional Logit - VFE | Logit - VFE sample |
|---|-------------------|-------------------|--------------------|-------------------|-------------------|----------------------------|-----------------------|
| | | | 1 match | 2 matches | | | |
| <i>Rural India</i> | | | | | | | |
| Regular preschool/ECC or Daily supplementary feeding | 0.04 (0.01)*** | 0.06 (0.01)*** | 0.03 (0.01)** | 0.04 (0.01)*** | 1.20 (3.07)*** | 1.34 (3.96)*** | 1.24 (3.48)*** |
| Most vaccinations at ICDS or Monthly health check-up | 0.05 (0.01)*** | | | | 1.23 (4.19)*** | 1.12 (1.69)* | 1.22 (3.77)*** |
| Observations | 19969 | 19971 | 19971 | 19971 | 19969 | 16840 | 16840 |
| MeanY | 0.34 | | | | | | |
| <i>Rural Central</i> | | | | | | | |
| Regular preschool/ECC or Daily supplementary feeding | 0.12 (0.03)*** | 0.12 (0.03)*** | 0.13 (0.04)*** | 0.11 (0.03)*** | 1.66 (3.59)*** | 1.59 (2.77)*** | 1.63 (3.47)*** |
| Most vaccinations at ICDS or Monthly health check-up | 0.00 (0.02) | | | | 0.99 (0.14) | 0.97 (0.23) | 1.01 (0.11) |
| Observations | 2801 | 2801 | 2802 | 2802 | 2801 | 2715 | 2714 |
| MeanY | 0.48 | | | | | | |
| <i>Rural East</i> | | | | | | | |
| Regular preschool/ECC or Daily supplementary feeding | 0.03 (0.02) | | | | 1.16 (1.15) | 1.37 (1.75)* | 1.27 (1.73)* |
| Most vaccinations at ICDS or Monthly health check-up | 0.08 (0.02)*** | 0.09 (0.02)*** | 0.10 (0.02)*** | 0.10 (0.02)*** | 1.54 (3.90)*** | 1.30 (1.84)* | 1.50 (3.44)*** |
| Observations | 3515 | 3519 | 3,519 | 3,519 | 3515 | 3048 | 3048 |
| MeanY | 0.26 | | | | | | |

* significant at 10%; ** significant at 5%. *** significant at 1%; VFE - Village fixed-effects; Coefficients indicate marginal effects for probit & covariate matching and odds ratio for logit & conditional logit; In parentheses robust standard errors for probit & covariate matching and robust z statistics for logit and conditional logit ; ECC - early childhood care; For regional classification of states see Table 1. For each region each column is a separate regression with the following controls: age of youngest child in yrs, age square, age cube, number of children below 5 yrs, number of children 6-18 yrs, number of children above 18 yrs, fraction of below 5 yrs stunted children, mother's age in years, mother's highest number of years of completed education, mother's height in cms, mother's age at first marriage, caste, religion, source of drinking water, toilet facility, cooking fuel, spouse's age, spouse's education, household head's age, household head's education and state dummies (except for conditional logit).

Table 9: Probit: Effect of different ICDS services on the full immunization of boys and girls 10-59 months

| | Rural India | | Rural South&West | | Rural North | | Rural East | | Rural Northeast | | Rural Central | |
|-----------------------------|--------------------|------------------|-----------------------------|------------------|--------------------|-----------------|-------------------|------------------|------------------------|----------------|----------------------|------------------|
| | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls |
| Regular preschool / ECC | 0.05 (0.03) | 0.09 (0.02)** | 0.05 (0.04) | 0.10 (0.04)* | 0.05 (0.08) | 0.02 (0.06) | 0.02 (0.06) | 0.10 (0.06) | -0.10 (0.06) | 0.04 (0.09) | 0.17 (0.07)* | 0.13 (0.06)* |
| Daily supplementary feeding | 0.03 (0.03) | 0.00 (0.03) | 0.03 (0.04) | 0.01 (0.04) | 0.03 (0.07) | -0.04 (0.05) | 0.08 (0.05) | 0.08 (0.05) | 0.04 (0.08) | 0.06 (0.08) | 0.01 (0.05) | -0.06 (0.05) |
| Monthly health check-up | 0.09 (0.02)** | 0.16 (0.02)** | 0.07 (0.03)* | 0.11 (0.03)** | 0.04 (0.05) | 0.14 (0.07) | 0.04 (0.04) | 0.08 (0.04) | 0.33 (0.12)* | 0.15 (0.13) | 0.19 (0.04)** | 0.23 (0.03)** |
| Most vaccinations at ICDS | 0.09 (0.01)** | 0.13 (0.01)** | -0.01 (0.03) | 0.00 (0.03) | 0.11 (0.04)** | 0.09 (0.04)* | 0.11 (0.03)** | 0.20 (0.04)** | -0.03 (0.07) | 0.06 (0.08) | 0.18 (0.03)** | 0.25 (0.03)** |
| Observations | 11248 | 10251 | 2174 | 1901 | 3254 | 2762 | 1986 | 1906 | 2228 | 2177 | 1602 | 1495 |
| MeanY | 0.40 | 0.39 | 0.55 | 0.54 | 0.33 | 0.30 | 0.42 | 0.41 | 0.31 | 0.33 | 0.32 | 0.32 |

* significant at 5%. ** significant at 1%; Coefficients indicate marginal effects; Robust standard errors in parentheses; ECC - early childhood care; For regional classification of states see Table 1. Each column is a separate regression with the following controls: age of child in months, age square, age cube, birth interval, birth order, mother's education in years, mother's age in years, mother's height in cms, wealth score, caste, religion, source of drinking water, toilet facility, cooking fuel, spouse's age, spouse's education, household head's age, household head's education and state dummies.

Table 10: Probit: Effect of different ICDS services on the incidence and severity of diseases and weight-for-age among boys and girls below 5 years

| | Children 0-2 years | | | | | | Children 3-5 years | | | | | |
|--|--------------------|------------------|------------------|--------------------|-------------------|-------------------|--------------------|------------------|------------------|--------------------|------------------|-----------------|
| | Diarrhea A | Fever B | Cough C | Bld stools D | Rap brthg E | Weight F | Diarrhea G | Fever H | Cough I | Bld stools J | Rap brthg K | Weight L |
| Regular preschool / ECC | 0.001 (0.03) | -0.011 (0.03) | -0.031 (0.04) | -0.001 (0.00) | -0.022 (0.03) | 0.01 (0.11) | 0.001 (0.01) | 0.000 (0.01) | 0.016 (0.02) | 0.000 (0.00) | 0.009 (0.01) | 0.05 (0.07) |
| Daily supplementary feeding | 0.001 (0.02) | 0.018 (0.02) | 0.028 (0.02) | 0.004 (0.00) | 0.008 (0.02) | 0.12 (0.06)* | -0.001 (0.01) | 0.028 (0.01)* | 0.020 (0.02) | -0.003 (0.00) | 0.006 (0.01) | -0.03 (0.07) |
| Monthly health check-up | 0.033 (0.01)** | 0.001 (0.02) | 0.019 (0.02) | -0.004 (0.00)** | 0.027 (0.01)** | -0.09 (0.04)** | 0.001 (0.01) | -0.009 (0.01) | -0.004 (0.01) | -0.001 (0.00) | -0.001 (0.01) | -0.05 (0.07) |
| Full immunization & ICDS [†] | -0.023 (0.01) | 0.002 (0.02) | 0.008 (0.02) | 0.002 (0.00) | -0.013 (0.02) | 0.06 (0.06) | -0.010 (0.01) | 0.002 (0.01) | -0.007 (0.01) | 0.002 (0.00) | -0.003 (0.01) | 0.00 (0.06) |
| Full immunization & nonICDS [§] | 0.001 (0.01) | 0.011 (0.01) | 0.019 (0.01) | -0.002 (0.00) | -0.005 (0.01) | 0.18 (0.04)*** | 0.011 (0.00)* | 0.012 (0.01) | 0.004 (0.01) | 0.005 (0.00)*** | -0.008 (0.01) | -0.04 (0.05) |
| Observations | 10938 | 10939 | 10940 | 10937 | 10916 | 10941 | 15040 | 15036 | 15030 | 15037 | 15029 | 15050 |
| Mean Y | 0.14 | 0.19 | 0.22 | 0.01 | 0.12 | | 0.06 | 0.14 | 0.17 | 0.01 | 0.09 | |

* significant at 10%; ** significant at 5%. *** significant at 1%; Coefficients indicate marginal effects; Robust standard errors in parentheses; Bld Stools - Blood in Stools; Rap brthg - Rapid Breathing; Weight - Weight-for-age; ECC - early childhood care; [†]Full immunization & ICDS indicates that the child has received full immunization and received most vaccinations at ICDS center; [§]Full immunization & nonICDS indicates that the child has received full immunization and received most vaccinations at other place; For regional classification of states see Table 1. Each column is a separate regression with the following controls: age of child in months, age square, age cube, gender, birth interval, birth order, mother's education in years, mother's age in years, mother's height in cms, wealth score, caste, religion, source of drinking water, toilet facility, cooking fuel, spouse's age, spouse's education, household head's age, household head's education and state dummies. For incidence of severe diarrhea and severe cough states were grouped into regions.

Table 11: Probit: Effect of different ICDS services on the incidence of diseases and weight-for-age among boys and girls below 5 years - Rural East

| Rural East | Children 0-2 years | | | | | Children 3-5 years | | | | |
|--|--------------------|------------------|------------------|------------------|------------------|--------------------|--------------------|------------------|-------------------|------------------|
| | Diarrhea | Fever | Cough | Rapid brthg | Weight | Diarrhea | Fever | Cough | Rapid brthg | Weight |
| Regular preschool / ECC | -0.044 (0.05) | 0.054 (0.09) | 0.013 (0.09) | -0.027 (0.06) | -0.027 (0.19) | 0.036 (0.03) | -0.056 (0.02)** | -0.005 (0.03) | -0.005 (0.02) | 0.166 (0.13) |
| Daily supplementary feeding | -0.004 (0.04) | -0.028 (0.05) | -0.042 (0.04) | -0.010 (0.04) | -0.033 (0.12) | -0.033 (0.01)** | 0.052 (0.04) | 0.029 (0.04) | 0.029 (0.03) | 0.093 (0.12) |
| Monthly health check-up | 0.015 (0.03) | 0.027 (0.04) | 0.054 (0.04) | 0.045 (0.03) | -0.015 (0.08) | 0.000 (0.02) | -0.037 (0.02)* | 0.019 (0.03) | -0.007 (0.02) | -0.155 (0.10) |
| Full immunization & ICDS [†] | -0.027 (0.03) | 0.011 (0.04) | 0.048 (0.05) | 0.003 (0.04) | 0.085 (0.10) | -0.020 (0.01)** | 0.020 (0.03) | 0.009 (0.03) | -0.002 (0.02) | -0.074 (0.12) |
| Full immunization & nonICDS [§] | 0.018 (0.03) | -0.018 (0.03) | 0.007 (0.03) | -0.025 (0.02) | 0.108 (0.08) | -0.005 (0.01) | -0.014 (0.02) | -0.031 (0.02) | -0.028 (0.01)* | 0.000 (0.08) |
| Observations | 1976 | 1979 | 1976 | 1971 | 1980 | 2747 | 2747 | 2746 | 2747 | 2748 |
| MeanY | 0.15 | 0.23 | 0.27 | 0.17 | | 0.07 | 0.17 | 0.2 | 0.12 | |

* significant at 10%; ** significant at 5%. *** significant at 1%; Coefficients indicate marginal effects; Robust standard errors in parentheses; Weight - Weight-for-age; ECC - early childhood care; [†]Full immunization & ICDS indicates that the child has received full immunization and received most vaccinations at ICDS center; [§]Full immunization & nonICDS indicates that the child has received full immunization and received most vaccinations at other place; For regional classification of states see Table 1. Each column is a separate regression with the following controls: age of child in months, age square, age cube, birth interval, birth order, mother's education in years, mother's age in years, mother's height in cms, wealth score, caste, religion, source of drinking water, toilet facility, cooking fuel, spouse's age, spouse's education, household head's age, household head's education and state dummies.

Table 12: Probit: Effect of different ICDS services on the current work status of married women with the youngest child 0-23 months vs with those in the age-group 24-59 months

| | Youngest child 0-23 months | | | | | Youngest child 24-59 months | | | | |
|---------------------------------|----------------------------|----------------|----------------|-------------------|-------------------|-----------------------------|-------------------|-------------------|-------------------|-------------------|
| | (A) | (B) | (C) | (D) | (E) | (F) | (G) | (H) | (I) | (J) |
| Regular preschool / ECC | 0.01 (0.03) | 0.02 (0.02) | | | | 0.02 (0.03) | 0.07 (0.02)*** | | | |
| Daily supplementary feeding | 0.01 (0.02) | | 0.02 (0.02) | | | 0.06 (0.02)** | | 0.09 (0.01)*** | | |
| Monthly health check-up | -0.02 (0.02) | | | | | 0.03 (0.02) | | | | |
| Most vaccinations at ICDS | 0.05 (0.01)*** | | | 0.05 (0.01)*** | | 0.04 (0.01)** | | | 0.06 (0.01)*** | |
| Any ICDS intensely [†] | | | | | 0.04 (0.01)*** | | | | | 0.08 (0.01)*** |
| Observations | 10644 | 10717 | 10750 | 10788 | 10789 | 9015 | 9179 | 9200 | 9229 | 9232 |
| MeanY | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |

* significant at 10%; ** significant at 5%. *** significant at 1%; Coefficients indicate marginal effects; Robust standard errors in parentheses; ECC - early childhood care; [†] “Any ICDS intensely” indicates women with at least one child aged 0-5 years receiving any of the ICDS benefits intensely (regular preschooling or early childhood care/monthly supplementary feeding/monthly health check-up/monthly health check-up/most vaccinations at ICDS center). Each column is a separate regression with the following controls: age of youngest child in yrs, age square, age cube, number of children below 5 yrs, number of children 6-18 yrs, number of children above 18 yrs, fraction of below 5 yrs stunted children, mother’s age in years, mother’s highest number of years of completed education, mother’s height in cms, mother’s age at first marriage, caste, religion, source of drinking water, toilet facility, cooking fuel, spouse’s age, spouse’s education, household head’s age, household head’s education and state dummies.

Table 13: Probit: Effect of *combination* of ICDS services on the current work status of married women with the youngest child 0-23 months vs with those in the age-group 24-59 months

| | Youngest child 0-23 months | | | Youngest child 24-59 months | | |
|--|----------------------------|----------------|-------------------|-----------------------------|-------------------|-------------------|
| | (A) | (B) | (C) | (D) | (E) | (F) |
| Regular preschool/ECC or Daily supplementary feeding | 0.01 (0.02) | 0.02 (0.02) | | 0.06 (0.01)*** | 0.08 (0.01)*** | |
| Most vaccinations at ICDS or Monthly health check-up | 0.03 (0.01)** | | 0.04 (0.01)*** | 0.06 (0.01)*** | | 0.07 (0.01)*** |
| Observations | 10760 | 10760 | 10789 | 9209 | 9211 | 9230 |
| MeanY | 0.28 | 0.28 | 0.28 | 0.40 | 0.40 | 0.40 |

* significant at 10%; ** significant at 5%. *** significant at 1%; Coefficients indicate marginal effects; Robust standard errors in parentheses; ECC - early childhood care; Each column is a separate regression with the following controls: age of youngest child in yrs, age square, age cube, number of children below 5 yrs, number of children 6-18 yrs, number of children above 18 yrs, fraction of below 5 yrs stunted children, mother's age in years, mother's highest number of years of completed education, mother's height in cms, mother's age at first marriage, caste, religion, source of drinking water, toilet facility, cooking fuel, spouse's age, spouse's education, household head's age, household head's education and state dummies.

Table 14: Probit: Relative likelihood of different caste groups receiving various ICDS services in comparison to the control group - “Other Caste”

| | Any ICDS | | Any supplementary feeding | | | | Any preschool / ECC | | | |
|-------------------|-------------------------|-------------------------|---------------------------|------------------------------|-------------------------|------------------------------|-------------------------|------------------------------|-------------------------|------------------------------|
| | 0-2 yrs | 3-5 yrs | 0-2 yrs | | 3-5 yrs | | 0-2 yrs | | 3-5 yrs | |
| | All [§] (A) | All [§] (B) | All [§] (C) | ICDS = 1 [¶] (D) | All [§] (E) | ICDS = 1 [¶] (F) | All [§] (G) | ICDS = 1 [¶] (H) | All [§] (I) | ICDS = 1 [¶] (J) |
| Caste - Sch caste | 0.07 (0.019)*** | 0.08 (0.016)*** | 0.08 (0.016)*** | 0.07 (0.029)** | 0.09 (0.015)*** | 0.06 (0.015)*** | 0.01 (0.01) | -0.01 (0.02) | 0.02 (0.01) | -0.07 (0.028)*** |
| Caste - Sch tribe | 0.05 (0.022)** | 0.03 (0.02) | 0.08 (0.019)*** | 0.12 (0.029)*** | 0.05 (0.018)*** | 0.05 (0.016)*** | 0.01 (0.01) | 0.01 (0.03) | -0.01 (0.01) | -0.08 (0.032)*** |
| Caste - OBC | 0.03 (0.016)* | 0.03 (0.014)** | 0.00 (0.01) | -0.02 (0.03) | 0.03 (0.013)** | 0.02 (0.02) | 0.00 (0.01) | -0.01 (0.02) | 0.00 (0.01) | -0.05 (0.026)** |
| Observations | 11133 | 15472 | 11102 | 3783 | 15441 | 5813 | 11018 | 3789 | 15377 | 5840 |

| | Any ICDS intensely) | | | | Daily supplementary feeding | | | | Regular preschool / ECC | | | |
|-------------------|-------------------------|------------------------------|-------------------------|------------------------------|-----------------------------|------------------------------|-------------------------|------------------------------|-------------------------|------------------------------|-------------------------|------------------------------|
| | 0-2 yrs | | 3-5 yrs | | 0-2 yrs | | 3-5 yrs | | 0-2 yrs | | 3-5 yrs | |
| | All [§] (K) | ICDS = 1 [¶] (L) | All [§] (M) | ICDS = 1 [¶] (N) | All [§] (O) | ICDS = 1 [¶] (P) | All [§] (Q) | ICDS = 1 [¶] (R) | All [§] (S) | ICDS = 1 [¶] (T) | All [§] (U) | ICDS = 1 [¶] (V) |
| Caste - Sch caste | 0.07 (0.018)*** | 0.02 (0.02) | 0.08 (0.016)*** | 0.04 (0.017)** | 0.02 (0.007)*** | 0.05 (0.027)* | 0.04 (0.011)*** | 0.07 (0.029)** | 0.00 (0.00) | 0.00 (0.01) | 0.01 (0.01) | -0.03 (0.03) |
| Caste - Sch tribe | 0.04 (0.020)** | 0.02 (0.02) | 0.04 (0.018)* | 0.02 (0.02) | 0.01 (0.01) | 0.03 (0.03) | 0.01 (0.01) | 0.00 (0.03) | 0.00 (0.00) | 0.01 (0.01) | -0.01 (0.01) | -0.06 (0.028)** |
| Caste - OBC | 0.04 (0.015)*** | 0.03 (0.020)* | 0.04 (0.013)*** | 0.04 (0.016)** | 0.00 (0.01) | 0.00 (0.02) | 0.02 (0.009)** | 0.03 (0.03) | 0.00 (0.00) | -0.01 (0.01) | 0.01 (0.01) | -0.01 (0.02) |
| Observations | 11133 | 3875 | 15472 | 5935 | 11102 | 3844 | 15441 | 5904 | 11018 | 3789 | 15377 | 5840 |

* significant at 10%; ** significant at 5%. *** significant at 1%; The estimates indicate marginal effects; Robust standard errors in parentheses; OBC - Other Backward Castes; [§] Sample includes all children in the age-group; [¶] Sample includes only those children who report receiving some benefit from the ICDS program in that age-group; ECC - early childhood care; [†] “Any ICDS intensely” indicates women with at least one child aged 0-5 years receiving any of the ICDS benefits intensely (regular preschooling or early childhood care/monthly supplementary feeding/monthly health check-up/any immunization); The regression also includes the following covariates: child’s age, birth interval, birth order, mother’s age, mother’s education, mother’s height, spouse’s age, spouse’s education, household head’s age, household head’s education, wealth index, religion, water, toilet, cooking fuel, state dummies;

Figure 5: Percentage of children below 5 years receiving regular preschooling/early childhood care by 3 months age intervals - Rural India

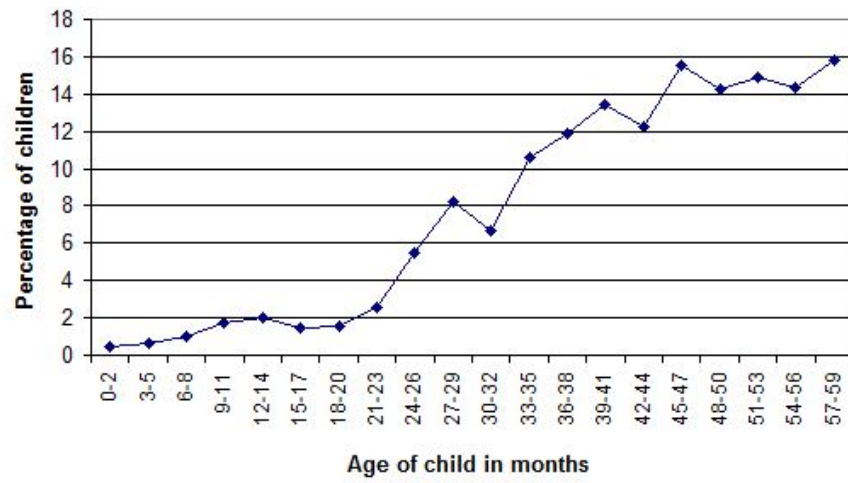
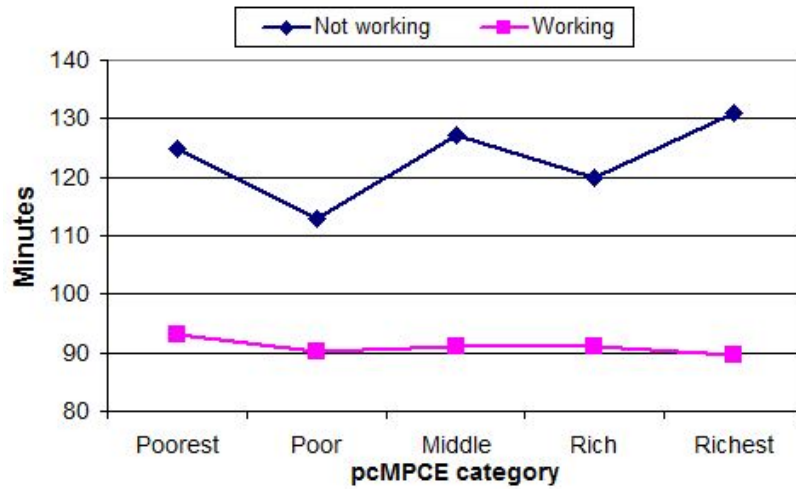
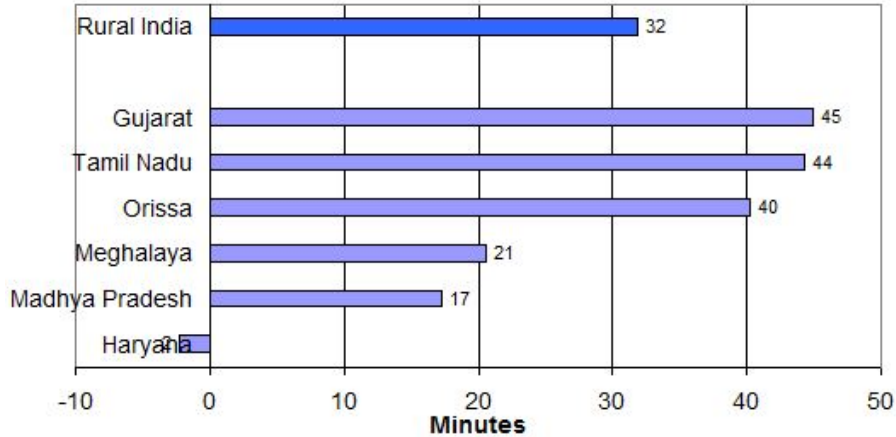


Figure 6: Minutes spent on childcare by working and non-working mothers by consumption expenditure quintile - Rural India (Base: Women with children below 5 years spending non-zero time on childcare)



pcMPCE - per capita monthly household consumption expenditure

Figure 7: Difference in time spent on childcare (in minutes) between non-working and working mothers - by State (Base: Women with children below 5 years spending non-zero time on childcare)



A APPENDIX

Figure 8: Difference in time spent on childcare (in minutes) between non-working and working mothers - by type of care in rural India (Base: Women with children below 5 years spending non-zero time on the specific type of care)

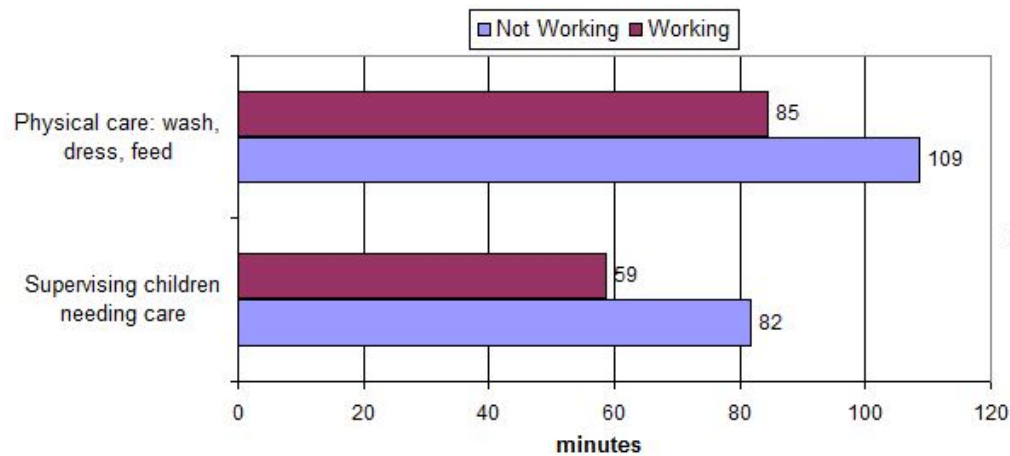


Table A.1: Types of services provided by the ICDS program

| ICDS Services | Target Group | Service Providers |
|--------------------------------|--|---|
| Supplementary Nutrition | Children <6yrs, Pregnant and lactating mothers (PLM) | Anganwadi Workers (AWW) and Anganwadi Helper (AWH) |
| Immunization* | Children <6yrs, PLM | Auxiliary Nurse Midwife (ANM)/ Medical Officer (MO) |
| Health Check-ups* | Children <6yrs, PLM | ANM/MO/AWW |
| Referral | Children <6yrs, PLM | AWW/ANM/MO |
| Pre-School Education | Children 3-6 years | AWW |
| Nutrition and Health Education | Women (15-45 years) | AWW/ANM/MO |

Source: Ministry of Woman and Child Development, Government of India; * AWW assists ANM in identifying and mobilizing the target group;

Table A.2: Logit: Effect of *combination* of ICDS services on the current work status of married women with at least one child below 5 years

| | Rural India | | | | Rural South&West | | | | Rural North | | | |
|---|--------------------|-------------------|-------------------|-------------------|-----------------------------|------------------|----------------|------------------|----------------------|-------------------|------------------|------------------|
| | (A) | (B) | (C) | (D) | (E) | (F) | (G) | (H) | (I) | (J) | (K) | (L) |
| Regular preschool/ECC or Daily supplementary feeding | 1.20 (3.07)*** | 1.30 (4.63)*** | | | 1.08 (0.82) | 1.13 (1.42) | | | 1.12 (0.76) | 1.18 (1.14) | | |
| Most vaccinations at ICDS or Monthly health check-up | 1.23 (4.19)*** | | 1.29 (5.36)*** | | 1.11 (1.13) | | 1.13 (1.54) | | 1.27 (2.04)** | | 1.30 (2.22)** | |
| Any ICDS intensely [†] | | | | 1.30 (5.74)*** | | | | 1.17 (1.98)** | | | | 1.26 (2.27)** |
| Observations | 19969 | 19971 | 20019 | 20021 | 4147 | 4149 | 4177 | 4179 | 5508 | 5508 | 5513 | 5513 |
| | Rural East | | | | Rural Northeast | | | | Rural Central | | | |
| Regular preschool/ECC or Daily supplementary feeding | 1.16 (1.15) | 1.36 (2.42)** | | | 1.69 (2.24)** | 1.73 (2.45)** | | | 1.66 (3.59)*** | 1.65 (3.66)*** | | |
| Most vaccinations at ICDS or Monthly health check-up | 1.54 (3.90)*** | | 1.60 (4.40)*** | | 1.16 (0.58) | | 1.27 (0.98) | | 0.99 (0.14) | | 1.08 (0.85) | |
| Any ICDS intensely [†] | | | | 1.50 (3.99)*** | | | | 1.50 (2.17)** | | | | 1.13 (1.34) |
| Observations | 3515 | 3515 | 3519 | 3519 | 3997 | 3997 | 4004 | 4004 | 2801 | 2801 | 2805 | 2805 |

* significant at 10%; ** significant at 5%. *** significant at 1%; Coefficients indicate odds ratio; Robust z statistics in parentheses; ECC - early childhood care; [†] "Any ICDS intensely" indicates women with at least one child aged 0-5 years receiving any of the ICDS benefits intensely (regular preschooling or early childhood care/monthly supplementary feeding/monthly health check-up/monthly health check-up/monthly health check-up/monthly health check-up/monthly health check-up); For regional classification of states see Table 1. Each column is a separate regression with the following controls: age of youngest child in yrs, age square, age cube, number of children below 5 yrs, number of children 6-18 yrs, number of children above 18 yrs, fraction of below 5 yrs stunted children, mother's age in years, mother's highest number of years of completed education, mother's height in cms, mother's age at first marriage, caste, religion, source of drinking water, toilet facility, cooking fuel, spouse's age, spouse's education, household head's age, household head's education and state dummies.

Table A.3: Summary Table: Effect of different ICDS services on the current work status of married women with at least one child below 5 years - rural South (Tamil Nadu, Kerala, Karnataka, Goa)

| | Probit | | Covariate Matching | | Logit | Conditional Logit - VFE | Logit - VFE sample |
|---|------------------|-------------------|--------------------|-------------------|------------------|----------------------------|-----------------------|
| | | | 1 match | 2 matches | | | |
| <i>Rural South</i> | | | | | | | |
| Regular preschool/ECC or Daily supplementary feeding | 0.06 (0.02)** | 0.09 (0.02)*** | 0.06 (0.03)** | 0.08 (0.03)*** | 1.33 (2.11)** | 1.27 (1.43) | 1.37 (2.22)** |
| Most vaccinations at ICDS or Monthly health check-up | 0.05 (0.02)** | | | | 1.29 (2.02)** | 1.08 (0.49) | 1.23 (1.60) |
| Observations | 2277 | 2279 | 2,279 | 2,279 | 2277 | 1838 | 1838 |
| MeanY | 0.33 | | | | | | |

* significant at 10%; ** significant at 5%. *** significant at 1%; VFE - Village fixed-effects; Coefficients indicate marginal effects for probit & covariate matching and odds ratio for logit & conditional logit; In parentheses robust standard errors for probit & covariate matching and robust z statistics for logit and conditional logit ; ECC - early childhood care; For regional classification of states see Table 1. For each region each column is a separate regression with the following controls: age of youngest child in yrs, age square, age cube, number of children below 5 yrs, number of children 6-18 yrs, number of children above 18 yrs, fraction of below 5 yrs stunted children, mother's age in years, mother's highest number of years of completed education, mother's height in cms, mother's age at first marriage, caste, religion, source of drinking water, toilet facility, cooking fuel, spouse's age, spouse's education, household head's age, household head's education and state dummies (except for conditional logit).

Table A.4: Difference in characteristics of scheduled caste children between those receiving regular preschooling/ECC and those not receiving it (Base: Scheduled caste children receiving daily supplementary feeding)

| | 24-59 months | | | 36-59 months | | |
|-------------------------|--------------|--------------|-----------|--------------|--------------|-----------|
| | RegPresch | No RegPresch | P-value | RegPresch | No RegPresch | |
| Age in months | 44.5 | 39.0 | (0.000)** | 48.2 | 45.8 | (0.005)** |
| Birth Interval (months) | 25.1 | 25.2 | (0.99) | 24.7 | 25.4 | (0.84) |
| Birth order | 2.3 | 2.6 | (0.039)* | 2.3 | 2.8 | (0.018)* |
| Mother's age (years) | 25.7 | 26.2 | (0.36) | 26.1 | 26.8 | (0.26) |
| Mother's edu (years) | 3.2 | 3.5 | (0.42) | 3.0 | 3.2 | (0.73) |
| Mother's height in cms | 150.9 | 150.5 | (0.55) | 150.9 | 151.1 | (0.84) |
| Spouse's age (years) | 32.0 | 32.2 | (0.68) | 32.4 | 32.8 | (0.64) |
| Spouse's edu (years) | 5.4 | 5.7 | (0.48) | 5.3 | 5.6 | (0.61) |
| Hh head age (years) | 38.7 | 38.5 | (0.87) | 38.9 | 38.3 | (0.69) |
| Hh head edu (years) | 3.9 | 4.2 | (0.53) | 3.9 | 4.3 | (0.49) |
| Wealth index | -0.8 | -0.8 | (0.96) | -0.9 | -0.9 | (0.93) |
| Religion - Hindu | 0.86 | 0.84 | (0.61) | 0.88 | 0.86 | (0.68) |
| Religion - Muslim | 0.00 | 0.01 | (0.49) | 0.00 | 0.01 | (0.44) |
| Religion - Others | 0.14 | 0.15 | (0.69) | 0.12 | 0.13 | (0.83) |
| Water - Piped Water | 0.43 | 0.32 | (0.028)* | 0.40 | 0.33 | (0.20) |
| Water - Tubewell | 0.44 | 0.52 | (0.13) | 0.45 | 0.50 | (0.45) |
| Water - Others | 0.13 | 0.16 | (0.40) | 0.15 | 0.18 | (0.54) |
| Toilet - Flush | 0.17 | 0.13 | (0.29) | 0.18 | 0.11 | (0.11) |
| Toilet - Others | 0.83 | 0.87 | (0.29) | 0.83 | 0.89 | (0.11) |
| Cooking fuel - Wood | 0.69 | 0.66 | (0.56) | 0.68 | 0.69 | (0.92) |
| Cooking fuel - Others | 0.31 | 0.34 | (0.56) | 0.32 | 0.31 | (0.92) |
| Observations | 291 | 201 | | 232 | 115 | |

* significant at 5%. ** significant at 1%; ECC - early childhood care; RegPresch - Receiving regular preschooling/ECC; No RegPresch - Receiving no regular preschooling/ECC or no preschooling/ECC at all

Table A.5: OLS: Effect of different ICDS services on the height of married women with at least one child below 5 years

| | Rural India | | | | | Rural South&West | | | | | Rural North | | | | |
|---------------------------------|-----------------|----------------|----------------|----------------|----------------|------------------|----------------|-----------------|-----------------|-----------------|-----------------|----------------|-----------------|-----------------|-----------------|
| | (A) | (B) | (C) | (D) | (E) | (F) | (G) | (H) | (I) | (J) | (K) | (L) | (M) | (N) | (O) |
| Regular preschool / ECC | 0.04 (0.20) | 0.12 (0.16) | | | | -0.22 (0.34) | 0.07 (0.26) | | | | 0.32 (0.49) | 0.16 (0.38) | | | |
| Daily supplementary feeding | 0.11 (0.19) | | 0.12 (0.15) | | | 0.28 (0.32) | | 0.26 (0.23) | | | -0.16 (0.48) | | -0.06 (0.35) | | |
| Monthly health check-up | -0.08 (0.16) | | | | | 0.00 (0.27) | | | | | -0.15 (0.45) | | | | |
| Most vaccinations at ICDS | 0.16 (0.13) | | | 0.11 (0.13) | | 0.24 (0.23) | | | 0.18 (0.23) | | -0.20 (0.28) | | | -0.21 (0.28) | |
| Any ICDS intensely [†] | | | | | 0.03 (0.11) | | | | | -0.11 (0.20) | | | | | -0.03 (0.23) |
| Observations | 19696 | 19934 | 19989 | 20057 | 20061 | 4055 | 4141 | 4154 | 4189 | 4191 | 5439 | 5501 | 5520 | 5531 | 5531 |
| F test: all ICDS components=0 | 0.54 | | | | | 0.56 | | | | | 0.28 | | | | |
| Prob > F | 0.71 | | | | | 0.69 | | | | | 0.89 | | | | |
| | Rural East | | | | | Rural Northeast | | | | | Rural Central | | | | |
| Regular preschool / ECC | 0.14 (0.41) | 0.24 (0.31) | | | | 0.01 (0.64) | 0.03 (0.58) | | | | 0.68 (0.48) | 0.71 (0.44) | | | |
| Daily supplementary feeding | 0.07 (0.41) | | 0.14 (0.32) | | | -0.21 (0.52) | | -0.09 (0.42) | | | 0.07 (0.42) | | 0.29 (0.38) | | |
| Monthly health check-up | 0.20 (0.31) | | | | | 0.49 (0.54) | | | | | -0.30 (0.31) | | | | |
| Most vaccinations at ICDS | 0.18 (0.27) | | | 0.23 (0.26) | | -0.06 (0.74) | | | -0.11 (0.70) | | 0.37 (0.27) | | | 0.28 (0.25) | |
| Any ICDS intensely [†] | | | | | 0.34 (0.22) | | | | | 0.09 (0.42) | | | | | 0.09 (0.25) |
| Observations | 3487 | 3515 | 3519 | 3523 | 3523 | 3975 | 3996 | 4000 | 4010 | 4010 | 2740 | 2781 | 2796 | 2804 | 2806 |
| F test: all ICDS components=0 | 0.47 | | | | | 0.23 | | | | | 1.17 | | | | |
| Prob > F | 0.76 | | | | | 0.92 | | | | | 0.32 | | | | |

* significant at 10%; ** significant at 5%. *** significant at 1%; Robust standard errors in parentheses; ECC - early childhood care; [†] “Any ICDS intensely” indicates women with at least one child aged 0-5 years receiving any of the ICDS benefits intensely (regular preschooling or early childhood care/monthly supplementary feeding/monthly health check-up/most vaccinations at ICDS center); For regional classification of states see Table 1. Each column is a separate regression with the following controls: age of youngest child in yrs, age square, age cube, number of children below 5 yrs, number of children 6-18 yrs, number of children above 18 yrs, fraction of below 5 yrs stunted children, mother’s age in years, mother’s highest number of years of completed education, mother’s height in cms, mother’s age at first marriage, caste, religion, source of drinking water, toilet facility, cooking fuel, spouse’s age, spouse’s education, household head’s age, household head’s education and state dummies.