



JANUARY 22, 2024

Does mother's education matter for childcare? A Comparative Study of Nuclear and Multigenerational Households in India

T S Kavita Rajeshwari, Avanindra Nath Thakur, and Indrani Sengupta

WORKING PAPER, JSGP, O P JINDAL GLOBAL UNIVERSITY
<https://jgu.edu.in/>



Does mother's education matter for childcare? A Comparative Study of Nuclear and Multigenerational Households in India

T. S. Kavita Rajeshwari (PhD Scholar, O P Jindal Global University, Sonipat, India)

Dr. Avanindra Nath Thakur (Associate Professor, O P Jindal Global University, Sonipat, India)

Dr. Indrani Sengupta (Assistant Professor, Shiv Nadar University, Chennai, India)

1. Introduction

Parent's allocation of time on childcare is a crucial aspect of parenting as the amount and quality of time devoted to childcare have a long-lasting impact on children's human capital. Childcare includes activities such as feeding, bathing, playing, teaching, and other forms of care that are essential for a child's growth and development. Mothers occupy a centre stage in child rearing as society expects women to contribute in domestic activities more than men (Forbes et.al, 2020) which affects women's participation in the labour market (Becker, 1985). Several factors can influence a mother's time use on childcare, such as her marital status, level of education, household structure, income, culture, norms, and characteristics of her children. For instance, a mother's time use may vary depending on whether she is married, divorced, never-married, or cohabiting, as well as the availability and quality of support from her spouse or partner. Additionally, a mother's level of education may affect her pence and opportunities for time use on childcare. Similarly, living in a nuclear or multigenerational household can also impact a mother's time use, depending on the support available from other family members. Finally, the needs and characteristics of a mother's children can influence her time use, depending on their developmental stages and cultural values surrounding childrearing and gender roles (Pepin et al., 2018).

The intergenerational transfers theory proposes that family dynamics are crucial when it comes to raising and nurturing children. Parents and grandparents make decisions on how to allocate their time and resources based on a wide range of factors including their pences, needs, and constraints. The level and standard of support offered by grandparents, combined with the balance between parental income and child development, can have a major impact on the amount of time parents dedicate to childcare. Essentially, the interaction between various generations within a family can significantly influence the holistic growth and welfare of children (Cheng and Zhao, 2023).

In India, two common types of family structures are nuclear households and multigenerational households. A nuclear household typically consists of parents and their unmarried children, whereas a multigenerational household includes parents, their married sons, and their sons' wives and children. In multigenerational households, mothers may have more or less time for childcare depending on the availability and quality of support from their in-laws, especially their mothers-in-law. This support can be in the form of help with childcare, emotional support, and

guidance on parenting practices and norms. For instance, mothers in nuclear households may have more autonomy and decision-making power over their time and resources, but they may also face more challenges and responsibilities in balancing work and family. On the other hand, mothers in multigenerational households may have less autonomy but may benefit from the support and guidance of their extended family members.

Education is a powerful tool that can lead to greater investment in child care, both within nuclear and multigenerational households. There are several ways in which this can happen: To begin, education can increase mothers' income and employment opportunities, granting them greater control over their time and resources (Caldwell, 1984). With newfound autonomy, they may choose to devote more time to child care, particularly if they place a high value on their children's development and education. However, the availability and quality of formal and informal child care services, as well as societal norms and expectations regarding women's roles, may also affect this outcome. Furthermore, education can raise mothers' expectations and aspirations for their children's education and development, motivating them to invest more time and resources in their child care. This shift in mindset may also influence the bargaining process with spouses and in-laws, as mothers may demand more support and cooperation. However, differences in family members' interests and pences, as well as cultural values and beliefs regarding gender roles and childrearing, may also play a role. Lastly, education can provide mothers with access to information and guidance on child care practices and norms, improving their knowledge and skills in providing quality care. This may strengthen their authority in making child care decisions and negotiating with family members. Nonetheless, the credibility and acceptability of information sources, as well as the willingness of family members to comply, may also affect this outcome.

Nonetheless, more educated mothers may also face more trade-offs and conflicts between their work and family roles, and may have less time for childcare due to their participation in the labor market or other activities. Understanding the factors that influence the amount of time mothers spend on childcare can inform policymakers and families in making decisions regarding childcare policies and practices that promote positive outcomes for both mothers and children. Investing in the well-being of children is crucial for the sustainable economic growth of any society. Adequate nutrition, physical care, and early education have a positive impact on families, communities, and the state. However, most childcare responsibilities still fall on women, which can lead to their absence from the workforce, hindering present growth for future gains. Research indicates that working mothers can serve as role models for their children, inspiring them to pursue ambitious careers. This often results in a better distribution of domestic work within the household, with working mothers' sons contributing more towards household chores. With access to quality childcare, women can balance their paid work and unpaid childcare responsibilities, particularly if their children are under six years of age. However, gendered norms and ideologies may make it challenging for women to balance employment and childcare. Grandparents often serve as primary caregivers, but there is a gender bias towards

daughters-in-law. Women in both nuclear and multigenerational households may struggle to allocate sufficient time for childcare and employment activities due to societal expectations. Thus, this study aims to explore the impact of education on childcare time of working and non-working mothers in nuclear and multigenerational households.

The section that follows delves into the literature review, while section 3 explains the data and methodology used in the study. Section four takes a closer look at how various socio-demographic factors impact the amount of time spent on childcare by both men and women. Moving on to section five, the study discusses the time investment of mothers and fathers in both nuclear and multigenerational households. Section six examines the relationship between levels of education and childcare and instruction time. Finally, section seven covers the empirical model, as well as the results, conclusion, and limitations of the study.

2. Review of Literature

Time allocation by parents constitute a veritable literature that consider parental time as a contributing factor towards human capital accumulation of the children (Becker, 1964; Guryan et. al, 2008; Cardoso et. al, 2010; Youderian, 2019; Du et. al, 2023). Different level of time allocation can have an impact on the well-being of the child in terms of labour market outcomes. Parental time allocated to child care is mediated by the underlying social and cultural norms that leads to sexual division of labour within the household. Becker (1985) pointed out that lower labour market returns of married women can be attributed to the greater responsibility of child care and household work. Several studies have found that mothers are the primary care givers even when both the parents are part of the labour market (Zick and Bryant, 1996; Aldous et. al, 1998; Poza et. al. 2001; Craig, 2006; Craig and Mullan, 2011). The reason for working mothers investing more time in child care is social expectations build around motherhood and the social norms that requires women to invest more time in home (Jayachandran, 2021).

However, Sullivan (2013) emphasizes on the importance of segregating housework from child care because the subjective benefit derived from the two differs as housework is boring and repetitive while child care is rewarding. The above study suggests that the relative share of housework and child care varies depending on the socioeconomic resources, especially educational attainment of women. Education facilitates bargaining for women within the household which allows them to exercise choice related to the type of domestic work or child care. Guryan et. al (2008) documented a significantly positive relation between education of mothers and child care where college educated mothers spend more time in child care than high school degree holders in the context of United States. On the other hand, empirical evidence in the context of UK and Spain shows education level of the mother is an important determinant of time devoted to child care where time devoted to child care increases with mother (Giminez-Nadal and Monila, 2012). Hill and Stafford (1980) further classify child care activities into 'playing with children', 'helping with teaching' and 'child related travel' and found that highly educated women spend more time in these activities. This is related to the literature of intensive

parenting which Laureau (1993) calls ‘concerted cultivation’ which is predominant among middle class mothers. Closer to the concept of intensive parenting is the notion of intensive mothering which places primacy towards caregiving over other personal goals (Forbes et. al, 2020). On the other hand, studies have also shown how educational attainment of women increases female labour force participation along with the demand for formal child care facilities (Augustine et. al, 2009; Galasso et. al, 2017). The relation between women’s education and child care becomes more complicated in the developing countries due to the presence of laws which interferes with the labour market decision of women as well as their time investment in child care activities.

Literature also showed that the characteristics of the child, especially, age of the child is a governing factor in the decision on time allocation. Infants are more likely to be under family day care (Pungello and Kutz- Costes, 1999). On the other hand, Kimmel and Connelly (2007) found that mother’s time invested in child care increases with number of children in the family and decreases with the age of children. In India, Irani and Vemireddy (2020) found evidence of larger time investment on infant child care by mothers than on older children. In the absence of well-designed child care policies, this will imply lower female labour force participation even after women complete higher education.

Developing countries are characterized by households where more than two generations live together and hence time allocation is a result of bargaining within the household where power dynamics play an important role especially between mother-in-law and daughter in law (Srivastava, 2020). Chen et. al (2000) have documented that the presence of paternal grandparents decreases mother’s involvement in child care which arises due to strong patrilineal culture in China. Similarly, Crompton and Pollock (2014) provide evidence that married women’s probability of joining labour force is higher if they live in proximity with mother-in-laws who can engage in unanticipated child care. Ta et. al (2018) also found that women allocate less time on child care and other household activities in case of an extended family structure as they can easily shift the burden to other family members. Contrary to this, Bhattacharya (2023) found that the daughter in law spends more time in child care in the presence of mother-in-law in India. This finding is contingent upon the education level of the daughter in law i.e., the mother-in-law devotes more time in child care if the daughter in law is educated up to tertiary level. Co-residence with mother-in-law changes the bargaining power for women as it hinders their autonomy (Caldwell, 1984). However, Caldwell (1984) suggests that education has a transformative power as it creates awareness of rights and privileges in the household. However, patriarchal bargaining theory suggests that social norms established by patriarchy tend to outweigh the benefits of education which eventually leads to conflict within the household (Srivastava, 2000). Besides examining the power dynamics between the same sex members in a multigenerational household with regards to child care, it is important to delve into different dynamics within the family that involves looking at the interaction between daughter in law and father-in-law in the presence and absence of mother-in-law. The division of time allocated to

child care also varies with the gender of the grandparent where grandmothers are found to invest more time on child care depending on the share of market work (Leopold and Skopek, 2014). This dimension of gender dynamics in time investment in child care has received less attention, especially, in the context of developing countries. The interaction among various members of the household in a multigenerational framework will enable us to look at multiple levels of negotiations that results in variation in time investment among the couples. There is also paucity of evidence on how educated married working women and educated non-working women negotiate on the domestic front in different types of family structure- nuclear and multigenerational households.

3. Data and Methodology

The study uses the first nationally representative time use data of India published by National Statistical Office (NSO) in 2020. The survey was conducted during Jan-December 2019 and collected socio-demographic data of 5,18,744 individuals and the time use data for 4,47,250 persons of six years and above. The time spent on various activities was collected using personal interview method for 24hours period from 4am on the previous day to 4am on the day of the interview for every 30 minutes. The survey covered a total number of 1,38,799 households, comprising of 82,897 rural and 55,902 urban households. Time use data was missing for 1,951 adult members, hence the final number of observations used for the analysis constitutes 4,45,299 persons. The number of children below six years are 71,494 and they have been mapped to their families using the household identification number. The study has extracted the data for nuclear households and multigenerational households using the data of relationship to head reported for each household member.

The concept of "nuclear households" pertains to families composed of married couples and their children living together. 1,007 participants who were identified as never married were excluded from the analysis, along with their family members (totaling 1,062 individuals), as the connection with the child could not be established in the nuclear household. The remaining number of individuals in nuclear households, which included single parents, totaled to 183,782. Nevertheless, the data pertaining to households with single parents (either a father or a mother) who were currently married (a total of 2,116 households) were excluded from the nuclear household data, resulting in a final dataset of 181,666 observations.

Bengtson (2001) argued that multigenerational households are important because of demographic changes, the role of grandparents and other kin, and the strength and resilience of intergenerational bonds. Atypical multigenerational household includes the husband's parents - the father-in-law (patriarch) and mother-in-law (demipatriarch), the husband (son), and his wife (daughter-in-law), along with their children. Traditionally, the father-in-law makes unilateral decisions on consumption expenditures and the distribution of household public goods, while the mother-in-law makes decisions about the division of labor within the household. The son is usually the primary breadwinner, and the daughter-in-law performs most of the household work.

She is normatively subordinate to her husband as well as to her parents-in-law. The mother-in-law plays a major role in ensuring that daughters-in-law treat housework as ideal wifely duty. Although the daughter-in-law may contest the allocation of housework, asymmetric power between the female-in-laws leads to an unequal division of housework between them.

In our analysis, we define multigenerational households as those that include a grandchild or grandchildren. Our focus is on the typical case, which includes a head of the household, their spouse, a married child and their spouse, other relatives, and the grandchild(ren). We excluded households without the spouse of the married child, which means we did not consider households where the son is the head of the household, with or without the father. After this exclusion, the total count of observations for multigenerational households is 72,392. To ensure accurate mapping of the child to their parents, we removed households with more than one reported spouse of the married child. Additionally, we excluded households where the male was reported as the spouse of the married child and the female reported as the married child. This left us with 57,335 persons in multigenerational households for our analysis. When analyzing multigenerational households, we treat the daughter-in-law as the mother and examine her time spent on childcare and instruction, both when working and not working.

4. How males and females participate and spend their time on childcare and instruction?

This section discusses the different factors that influence the time spent on childcare and instruction. It includes information on average time spent, across various sectors, social groups, age groups of children, monthly per capita expenditure (MPCE) quintiles, education level, and working status. Furthermore, this section provides an analysis of the time spent on subcategories of childcare and instruction.

According to the descriptive results (Table 1), 19.8% of people in India engage in unpaid childcare and instruction for household members. Out of this, 13.3% are male, and 26.6% are female. The participation rate in childcare is higher in rural areas than in urban areas, indicating that parents living in rural areas are more involved in childcare.

The data also shows that the participation rate is highest for the scheduled caste group at 27.5%, while the lowest is for the "others" category at 25.2%. This could be due to socio-economic factors such as income levels and access to resources. Moreover, the participation rate is lowest for the first MPCE quintile (lowest 20%) at 22.7%, with only marginal differences in participation rate among other MPCE quintiles. This suggests that the level of monthly per capita household expenditure is not a significant indicator of participation in childcare.

Additionally, the study found that the participation rate is lowest for those with an education level below primary at 20.2%, while those with an educational attainment of post-graduation and above have the highest participation rate at 33.8%. This indicates that higher levels of education lead to greater investment of time in childcare. However, the illiterate population has a higher

participation rate than those with education below primary, possibly due to a lack of access to market or support services.

Table 1: Participation rate (%) per person on childcare and instruction

	All	Male	Female
Mean time spent on childcare and instruction (All)	19.8	13.3	26.6
Rural	20.4	13.8	27.2
Urban	18.5	12.3	25.2
Social group			
ST	20.3	14.4	26.3
SC	20.5	13.8	27.5
OBC	20.3	13.6	27.2
Others	18.5	12.2	25.2
Religion			
Hindu	19.3	13.0	25.9
Muslim	23.5	15.2	31.9
Christianity	19.6	13.9	25.1
Sikhism	18.4	11.6	25.8
Income quintiles			
1st Quintile	17.5	12.0	22.7
2nd Quintile	20.6	13.8	27.7
3rd Quintile	20.6	13.7	28.0
4th Quintile	19.9	13.0	27.1
5th Quintile	20.8	14.1	27.8
Education level			
Illiterate	20.9	13.6	24.9
Below Primary	15.5	11.2	20.2
Primary	18.7	12.4	25.7
Middle	20.0	13.4	28.1
Secondary	20.1	13.6	28.8
Higher Secondary	20.3	12.7	30.7
Graduation	23.0	15.9	33.3
Post graduation	26.1	19.8	33.8

Source: Author's own calculation from Time Use Data (2019)

Table 2 highlights that individuals spend an average of 32 minutes daily on childcare and instruction. Females tend to spend more time on this activity than males, with an average of 50 minutes for females and 14 minutes for males. Interestingly, the study discovered that the average time spent on childcare and instruction by males is nearly the same in both rural and urban areas, at 14 minutes per day. However, females tend to spend more time in urban areas, at 53 minutes compared to 49 minutes in rural areas.

Moreover, the data suggests that the time spent on childcare and instruction is highest for children below 1 year, with females spending an average of 137 minutes and males spending an average of 33 minutes. For children below 6 years, females spend an average of 88 minutes daily, while males spend an average of 24 minutes. As children grow older, the time spent gradually reduces, with 12 minutes for females and 5 minutes for children in the age group of 15 to 17 years. Nonetheless, it is essential emphasizes the importance of spending quality time with adolescents aged between 15 to 17 years, as it is vital for their emotional and cognitive growth. However, the data reveals that Indians are lagging in spending time and interacting with adolescents, which can negatively impact their well-being. It is crucial to prioritize spending quality time with adolescents for their optimal development (Table 2).

Furthermore, the study reveals that the average time spent on childcare and instruction declines with increased educational attainment from illiterate to below primary level. The study shows a positive association between the rise in educational attainment and the average time spent on childcare and instruction at higher levels of education. Women with post-graduation education spend an average of 90 minutes, while men spend an average of 30 minutes. The study also suggests little difference in the average time spent on childcare and instruction for social groups, except for Scheduled Tribe (ST) families and women. They spend less time, with 2 and 6 minutes, respectively, compared to other social groups. Working women spend less time on childcare (39 minutes) than non-working women (52 minutes). In contrast, working men spend more time on childcare when they participate in the labour market (18 minutes) than when they are not in the labour force (8 minutes).

Table 2: Average time per person on childcare and instruction (in minutes) in presence of a child in the household

	All	Male	Female
Time on childcare and instruction	32	14	50
Rural	32	14	49
Urban	33	14	53
Age group of the child			
Children below 1	88	33	137
Children below 6	57	24	88
Children 6 to 14	20	10	31
Children 15 to 17	8	5	12
MPCE quintiles			
1st Quintile	34	15	53
2nd Quintile	32	14	49
3rd Quintile	31	13	49
4th Quintile	31	13	49
5th Quintile	33	15	52
Education level			

Illiterate	38	16	50
Below Primary	20	11	30
Primary	26	11	43
Middle	28	12	47
Secondary	33	14	56
Higher Secondary	42	16	71
Graduation	53	24	89
Post graduation	58	30	90
Social group			
ST	30	15	45
SC	33	14	51
OBC	32	14	51
Others	32	13	51
Working status			
Working	22	18	39
Unemployed	27	17	62
Not in the labour force	38	8	52

Source: Author's own calculation from Time Use Data (2019)

Table 3 focuses on subcategories of child care and found that physical development activities take up most of the time spent on childcare. However, child development activities like talking, reading books, playing sports, minding, training, and teaching take 5 minutes or less per activity in a day. The study also highlights that childcare is often reported as a minor activity in the Time use data, as it is performed simultaneously with domestic work and during women's leisure time. If we consider only the data when childcare and instruction are reported as the main activity, the average time spent per person is just 15 minutes per day, with 8 minutes spent by males and 23 minutes spent by females.

Table 3: Average time per person (in minutes) on subcategories of childcare and instruction

	All	Male	Female
childcare_caring	22	6	38
childcare_medical	0	0	0
childcare_training	2	1	3
childcare_talkread	2	1	2
childcare_playing	5	5	5
childcare_minding	1	0	1
childcare_schoolmeet	0	0	0
childcare_others	1	0	2
Average time on total childcare and instruction	32	14	50

Source: Author's own calculation from Time Use Data (2019)

5. Parental time investment in nuclear and multigenerational households

Households where family members co-reside, mothers spend significantly more time on childcare activities than fathers (Table 4). On an average, mothers spend 105 minutes on childcare, which is more than double the time spent by fathers (23 minutes) and higher than the combined time spent by both parents (43 minutes). This trend suggests that mothers are more involved in childcare activities in multigenerational households. The reasons for this could be attributed to traditional gender roles, social and cultural dynamics, or differences in availability or willingness to participate in childcare activities.

However, in nuclear households, we see a different pattern. The total childcare time is 29 minutes on average, which is higher than father's time in multigenerational households. Interestingly, father's childcare time in nuclear households has the lowest duration at 21 minutes, while mother's childcare time has an average of 72 minutes, indicating a clear contrast in parental involvement and a propensity for mothers to engage in extended activities with their children.

After analyzing the demographic differences between rural and urban areas, a few variations become evident. The average childcare time for households living together in rural areas is 54 minutes, while in urban areas it is 56 minutes. Interestingly, the amount of time mothers spend on childcare in both rural and urban settings is consistently high, at 104 and 106 minutes respectively, which confirms the trend of maternal involvement across different geographical contexts. Fathers' childcare time in multigenerational and nuclear households remains low in both rural and urban areas, at 23 and 21 minutes respectively. This consistency highlights the persistent questions about the nature and causes of less pronounced fatherly engagement in childcare.

The distinction between nuclear and multigenerational childcare sessions is further highlighted in the urban setting, where all persons' childcare time in nuclear households and mothers' childcare time in nuclear households exceed their rural counterparts at 49 and 77 minutes, respectively. This suggests potential urban-specific influences on individual childcare time. Disparities between paternal and maternal involvement in both multigenerational and nuclear childcare contexts suggest deep-seated structural differences.

For children under the age of one, child care time reaches its peak at 177 minutes. As children grow older, this time decreases, with the oldest age group of 15- to 17-year-olds receiving 52 minutes of maternal care. This trend could indicate the evolving needs and social dynamics of children as they mature, with younger children possibly requiring more interaction with their mothers. A similar trend, though less prominent, can be observed in the amount of time spent on childcare in general. The youngest age group receives 87 minutes of childcare, which drops to 28 minutes for the oldest age group. This may reflect the changing nature of childcare and group dynamics, suggesting that older children may seek childcare outside of the family or spend more time with peers independently.

Childcare provided by fathers in nuclear households shows a gradual decrease from 46 minutes for younger children to 5 minutes for the older ones. Meanwhile, mothers' childcare time in nuclear households starts at a high value of 184 minutes for infants and drops significantly to only 14 minutes for teenagers. On the other hand, the duration of all childcare in nuclear households varies greatly, with younger children engaging in 117 minutes of independent childcare, followed by a slight increase for children aged 6 to 14, and declining to the lowest mean duration of 10 minutes for the oldest children. This suggests that independent childcare is particularly important for younger children and may contribute to their development. The data raises interesting questions about paternal roles in different stages of child development, but the reasons behind the observed patterns are not immediately clear.

Descriptive statistics indicate noteworthy connections between parental caregiving in nuclear and multigenerational households, and how these patterns shift as the child ages. Notably, mothers tend to be more engaged than fathers in childcare responsibilities. As children mature from infancy to adolescence, the overall amount of time dedicated to childcare decreases, potentially due to societal pressures to foster autonomy or a prioritization of outside activities and socializing. This trend reflects the natural progression of developmental stages and evolving priorities, where younger children benefit from and depend on time spent with their parents, while older children value independence. Additionally, the data consistently indicates a pence for maternal involvement, which underscores the necessity of further investigating socio-cultural and personal factors that shape this dynamic.

Working mothers spend less time on childcare in both multigenerational (65 minutes) and nuclear (39 minutes) households than stay-at-home mothers in both family structures. However, the data also reveals that mothers in multigenerational households spend more time on childcare and instruction than those in nuclear households, regardless of their employment status. Interestingly, even working, and non-working men in multigenerational households spend more time on childcare than their nuclear household counterparts (Table 4). This raises the question of why working parents in multigenerational households can invest more time in childcare. Is it due to stronger societal norms in multigenerational households that prioritize meeting basic needs, or is it because of more available free time since domestic tasks are shared, leaving room for childcare? Or do working women in multigenerational households multitask more by performing domestic work and childcare activities simultaneously? Further investigation is necessary to answer these questions.

The data in Table 5 also shows that mothers residing in cohabiting households dedicate less time to paid activities in comparison to those in nuclear households. On average, mothers in multigenerational households spend around 44 minutes per day on paid activities, while those in nuclear households spend 58 minutes per day. Similarly, the female labor force participation rate is also lower for mothers in multigenerational households despite the availability of childcare assistance (Table 6). This may be due to various factors such as social norms, income effects, and gender roles of caregiving work. For example, the female labor force participation rate was

found to be 21.6% for mothers in nuclear households, while it was only 17.3% for those in multigenerational households. It is crucial to investigate whether the decline in labor force participation rate is linked to a reduction in monetary needs or a desire to spend more time with their children. It is worth noting that mothers of children aged 15-17 years in multigenerational households spend on average 38 minutes per day more on childcare than those in nuclear households (Table 4).

Table 4: Average time per person in a day on childcare and instruction in presence of a child (nuclear) /grandchild (multigenerational) in the household

	Male	Female	Father_nuclear	Mother_nuclear	Father_multigen	Mother_multigen
Time on childcare and instruction	14	50	21	72	23	105
Rural	14	49	21	71	23	104
Urban	14	53	20	77	23	106
Age group of the child						
Children below 1	33	137	46	184	34	177
Children below 6	24	88	32	119	28	129
Children 6 to 14	10	31	16	52	17	67
Children 15 to 17	5	12	5	14	11	52
Education level						
Illiterate	16	50	17	54	17	79
Below Primary	11	30	21	73	24	93
Primary	11	43	19	72	22	99
Middle	12	47	19	75	22	103
Secondary	14	56	20	84	24	107
Higher Secondary	16	71	23	94	23	122
Graduation	24	89	30	101	26	118
Post graduation	30	90	37	93	27	116
Working status						
Working	18	39	20	39	23	65
Unemployed	17	62	69	94	38	167
Not in the labour force	8	52	21	81	33	113

Source: Author's own calculation from Time Use Data (2019)

Table 5: Average time per person spent on paid activities in nuclear and multigenerational household

	Father_nuclear	Mother_nuclear	Father_coresiding	Mother_coresiding
Time spent on paid activities	375	58	366	44
Time spent on paid activities when a child is below 6 years	377	37	361	35

Source: Author's own calculation from Time Use Data (2019)

Table 6: Female labour force participation rate by marital status and the age of the child(ren)

	All_nuclear	All_multigenerational
FLFP rate of mothers whose marital_status is married	21.6	17.27
FLFP rate of mothers whose marital_status is married & child is below 6	15.01	14.58
FLFP rate of mothers whose marital_status is married & child is between 6 to 14 years	24.89	22.74
FLFP rate of mothers whose marital_status is married & child is between 15 to 17 years	28.76	20.88
FLFP rate of mothers whose marital_status is married & presence female child is between 15 to 17 years	30.2	22.02
FLFP rate of mothers whose marital_status is married & presence of male child is between 15 to 17 years	27.41	20.29

Source: Author's own calculation from Time Use Data (2019)

6. The Impact of Education on Parental time on childcare activities

Pairwise correlation matrix shows that education and working status is positively correlated with involvement in most childcare activities while time spent on employment activities is negatively correlated with childcare activities in both nuclear and multigenerational households (Table 7 & Table 8). Moreover, the data (Table 9 & Table 10) indicates that the pattern of the relationship between education levels and time spent on various activities for mothers in nuclear and multigenerational households is not linear. While education level has a consistent positive relation with time spent on childcare and instruction, this is different for time spent on employment and related activities, unpaid domestic work, and self-care. Changes in levels of education follow a U-shaped relation with unpaid domestic work and employment activities, while mean time spent on leisure increases and self-care declines with education levels.

Notably, data in Table 4 shows that as education levels rise, the time spent on childcare and instruction steadily increases, starting at 46 minutes for the illiterate group and reaching 68 minutes for individuals with postgraduate education. The activity of father's childcare in multigenerational households follows a gradual upward trend, with a slight fluctuation, from 17 minutes in the lowest education bracket to 27 minutes in the highest. These results suggest that fathers with higher education levels may be more involved in co-childcare activities, although the increases are not as significant as in other categories.

On the other hand, it is worth noting that when it comes to mother's childcare in multigenerational households, there is a consistent increase in time spent, regardless of education level. Starting from 79 minutes for those who are illiterate and peaking at 116 minutes for postgraduates, this trend may indicate a growing awareness of the importance of maternal interaction in child development. It could also be a result of improved socio-economic conditions associated with education.

Similarly, there is an upward trend in all childcare in nuclear households with educational advancement, starting at 40 minutes for the illiterate group and rising to 61 minutes for graduates and postgraduates. Father's childcare in nuclear households also shows a similar increase, suggesting that higher education levels may be linked to increased paternal involvement in childcare. However, the rate of increase is not as steep as that of mother's childcare in nuclear households, which could be attributed to various socio-cultural and educational factors.

Data indicates that there is a noticeable increase in the amount of time mothers spend on childcare as their educational level rises, with a peak of 101 minutes for those who have achieved a graduation level of education. However, there seems to be a slight decline in maternal involvement for postgraduates, suggesting that higher levels of education may result in a marginal decrease in maternal participation in childcare. Nonetheless, mothers still play a significant role in childcare at all educational levels.

Table 7: Pairwise correlation matrix of mothers in nuclear households

Variables	(1) time_chi ldcare_i	(2) educatio nlevel	(3) working _status	(4) childbelo w6	(5) child6to 14	(6) child15t o17	(7) quintile_ UMPCE	(8) time_em ploymen ~i
(1) time_childcare_i	1.000							
(2) educationlevel	0.1472* 0.0000	1.000						
(3) working_status	0.1907* 0.0000	0.0239* 0.0000	1.000					
(4) childbelow6	0.5555* 0.0000	0.0565* 0.0000	0.1780* 0.0000	1.000				
(5) child6to14	-0.2608* 0.0000	-0.0974* 0.0000	-0.0951* 0.0000	-0.2945* 0.0000	1.000			
(6) child15to17	-0.3933* 0.0000	-0.1415* 0.0000	-0.1091* 0.0000	-0.5407* 0.0000	-0.0491* 0.0000	1.000		

(7) quintile_UMPCE	-0.0436* 0.0000	0.3518* 0.0000	0.0111* 0.0000	-0.1614* 0.0000	0.0827* 0.0000	0.1254* 0.0000	1.000	
(8) time_employment	-0.2167* 0.0000	-0.0195* 0.0000	-0.6753* 0.0000	-0.1763* 0.0000	0.0847* 0.0000	0.1111* 0.0000	0.0116* 0.0093	1.000
* p<..05 (5% level of significance)								

Source: Author's own calculation from Time Use Data (2019)

Table 8: Pairwise correlation matrix of mothers in multigenerational households

Variables	(1) time_child care_i	(2) educatio nlevel	(3) working _status	(4) childbelo w6	(5) child6to 14	(6) child15t o17	(7) quintile_ UMPCE	(8) time_emplo ymen~i
(1) time_childcare_i	1.000							
(2) educationlevel	0.1117* 0.0000	1.000						
(3) working_status	0.1821* 0.0000	0.0124 0.1632	1.000					
(4) childbelow6	0.4403* 0.0000	0.0555* 0.0000	0.1473* 0.0000	1.000				
(5) child6to14	-0.2700* 0.0000	-0.0952* 0.0000	-0.1087* 0.0000	-0.3993* 0.0000	1.000			
(6) child15to17	-0.1986* 0.0000	-0.1368* 0.0000	-0.0471* 0.0000	-0.3023* 0.0000	0.1183* 0.0000	1.000		
(7) quintile_UMPCE	0.0126 0.1560	0.3394* 0.0000	0.0293* 0.0000	-0.0908* 0.0000	0.0557* 0.0000	0.0376*0 .0000	1.000	
(8) time_employment	-0.2217* 0.0000	0.0106 0.2341	-0.6667* 0.0000	-0.1483* 0.0000	0.0977* 0.0000	0.0537* 0.0000	-0.0072 0.4184	1.000
* p<..05 (5% level of significance)								

Source: Author's own calculation from Time Use Data (2019)

Table 9: Mean time spent per day of working mothers by levels of educational attainment in nuclear households in the presence of a child in the household

	Age	Employment	Unpaid domestic	Leisure	Selfcare	Paid activities	Childcare and instruction
Illiterate	37	254	268	70	659	349	27
Below Primary	34	250	284	74	653	336	35
Primary	34	246	286	80	653	329	36
Middle	34	239	292	81	654	322	43
Secondary	34	232	280	96	648	312	48
Higher Secondary	34	266	267	93	640	322	55
Graduation	36	296	250	86	632	344	60
Post graduation	38	318	229	102	626	373	59

Source: Author's own calculation from Time Use Data (2019)

Table 10: Mean time spent per day of working mothers by levels of educational attainment in multigenerational households in the presence of a grandchild in the household

	Age	Employment	Unpaid domestic	Leisure	Selfcare	Paid activities	Childcare and instruction
Illiterate	34	241	250	67	670	355	37
Below Primary	32	262	258	64	673	342	48
Primary	31	214	284	71	664	346	62
Middle	30	235	270	67	665	323	63
Secondary	30	220	280	84	653	333	64
Higher Secondary	29	267	240	92	631	341	91
Graduation	32	304	212	89	645	379	75
Post graduation	34	323	186	100	640	389	80

Source: Author's own calculation from Time Use Data (2019)

7. Model Specification

Descriptive results reveals that there is a correlation between a mother's education level and the time she spends on childcare and instruction. Mothers who have higher education levels tend to spend more time on childcare and instruction. However, the study also finds that the working status of mothers reduces the average time spent on childcare and instruction. Moreover, the literature suggests that having higher education levels increases the benefits of participating in the labor market beyond secondary education. Therefore, there is a positive association between a mother's education level and her working status and a likely trade-off between working time and childcare for mothers.

The study uses the linear regression analysis model to test the association between the levels of education and the time spent on childcare and instruction by working and non-working mothers in nuclear and multigenerational household structures.

Estimation strategy: $Y^* = \beta_0 + \beta_1 (\text{levels of education}) + \gamma X_j + e_i$

The dependent variable is the time spent on childcare and instruction time, and the independent variable of interest is the level of education. The control variables considered for the analysis are sector (rural/urban), age, social group, child(ren) below 6 years, 6-14 years, 15-17 years, usual monthly per capita expenditure, and time spent on employment and related, production for own final use, adult care, unpaid volunteer work, socializing and religious activities, leisure and self-

care. The analysis did not include the time spent on unpaid domestic work as it found a high correlation between domestic and childcare work since they are mostly performed simultaneously. The study considers a subset of the population; only women who have a child (children) and are currently married have been considered in the nuclear households, while only daughter-in-law, identified by the gender and the relationship to the household head who are currently married and have children in the household have been considered for the analysis in multigenerational households.

The data is clustered by state, which is accounted for in the standard errors to adjust for within-group correlation, thereby providing robust inference. As one would expect, the number of working mothers in nuclear and multigenerational households is much lower than in multigenerational households. The total number of observations of non-working mothers is 41,140, and working mothers are 11,767 in nuclear households. Similarly, the total number of observations of non-working mothers is 10,124 and working mothers is 2,144 in multigenerational households. F-Statistic is considerably high and statistically significant ($\text{Prob} > F < 0.0001$), implying the robust joint significance in childcare and instruction times in all four models.

Regression results

The regression analysis showed that non-working mothers who live in nuclear families in urban areas spend more time taking care of their children compared to mothers in rural areas. Surprisingly, there was a significant difference in the amount of time spent on childcare between working mothers in urban and rural areas; however, there was no difference for non-working mothers who live in multigenerational families. This suggests that gender norms are still prevalent for non-working mothers who live in multigenerational households regardless of the location.

Social group did not have a significant impact on childcare time in nuclear households. However, in multigenerational households, the childcare time of non-working mothers in the Schedule Caste category was higher than that of mothers from other categories. Additionally, the childcare time of working mothers from Schedule Caste and Schedule Tribes categories was higher than that of mothers from other categories.

Additionally, the age of mothers was negatively associated with the time spent on childcare, except for working mothers in multigenerational households. Both working and non-working mothers were found to spend more time on childcare when the child is below six years of age compared to when the child is older. The study also revealed that as the child grows, there is a statistically significant decline in the time spent on childcare.

Furthermore, the study suggests that there is a positive association between childcare time and the third quintile onwards for all except non-working mothers in multigenerational households. There is a significant increase in the childcare time for non-working mothers when they are in

fifth MPCE quintile. The study also found that time spent on various other activities during the day is negatively associated with the time spent on childcare, as engagement in other activities reduces the available time for mothers.

The study revealed that the education attainment of secondary and higher levels of education of mothers improves the childcare time both for working and non-working mothers in nuclear households. However, an educational attainment of higher secondary and above improves the childcare time for working women compared to mothers with no literacy, but there is no significant association of the education level with the mean time on childcare for non-working mothers except for those with a post-graduate and above educational qualification at 10% level of significance.

The study suggests that education has a significant impact on childcare except for non-working mothers in multigenerational households, and it needs to be explored why. It could be that non-working mothers in multigenerational households with no literacy are already dedicating higher time on childcare, or their higher engagement in domestic work takes away their quality time with children.

Overall, the model illuminates several significant relationships that highlight the importance of socio-demographic factors in explaining variations in childcare and instruction time. However, the modest R-squared suggests that other unobserved factors may also be influential. Further research could explore additional variables or alternative modeling techniques to enrich our understanding of the underlying phenomena.

It is important to acknowledge a potential limitation due to omitted variable bias, where unaccounted factors may interfere with the estimated relationships.

Table 11: Regression results to determine the association of education levels and the time spent on childcare and instruction by working and non-working mothers in nuclear and multigenerational households.

	Nuclear hhds_mother not working	Nuclear hhds_mother working	Coresiding hhds_mother not working	Coresiding hhds_mother working
Time on childcare and instruction	Coef. (std error)	Coef. (std error)	Coef. (std error)	Coef. (std error)
Education level (base: Below Primary)				
Illiterate	0.186(1.937)	2.576(1.588)	-0.208(4.99)	0.14(5.996)
Primary	-0.149(2.296)	2.23(3.144)	-1.477(6.179)	4.478(3.449)
Middle	-0.766(2.368)	2.029(2.092)	3.746(5.722)	2.093(6.455)
Secondary	6.221*(3.52)	7.954*** (2.817)	6.571(6.109)	0.338(5.899)
Higher Secondary	9.979** (4.166)	13.848*** (2.845)	12.003(7.546)	21.664*** (9.282)
Graduation	20.749*** (3.567)	17.854*** (3.578)	17.803(11.117)	21.614** (8.203)

Post graduation and above	30.031*** (6.29)	26.371*** (6.293)	23.249* (12.109)	33.073*** (10.112)
Sector (base: Rural)				
Urban	7.016*** (2.134)	3.364* (1.74)	2.662 (3.947)	8.201** (3.963)
Social group (base: Others)				
ST	4.437* (2.509)	0.366 (4.395)	4.938 (4.476)	13.991** (6.431)
SC	2.539 (2.171)	0.859 (3.724)	10.616*** (3.802)	13.924* (7.94)
OBC	2.748 (3.002)	0.567 (2.996)	7.277 (5.461)	5.218 (5.978)
age	-5.833*** (1.09)	-5.965*** (1.071)	-4.423*** (1.328)	-0.993 (2.45)
agesquare	.059*** (0.013)	.065*** (0.013)	.034* (0.018)	-0.008 (0.033)
Child below 6 years : (Yes) (base: No)	56.327*** (3.249)	42.084*** (1.497)	57.595*** (3.696)	35.427*** (4.007)
Child 6-14 years : (Yes) (base: No)	-18.26*** (1.647)	-10.469*** (2.112)	-20.4*** (3.32)	-18.407*** (4.191)
Child 15-17 years : (Yes) (base: No)	-16.945*** (1.779)	-8.928*** (1.281)	-16.989*** (3.262)	-7.951*** (2.66)
UMPCE Quintile (base: lowest 20%)				
2nd Qunitile	1.522 (2.118)	2.64** (1.106)	-2.203 (3.027)	5.572 (3.96)
3rd Quintile	4.842** (2.266)	5.037*** (1.825)	-2.576 (3.25)	17.435** (7.153)
4th Qunitile	9.302*** (3.153)	5.466** (2.164)	4.646 (4.03)	16.835** (6.326)
5th Quintile	14.747*** (4.132)	9.774*** (2.245)	11.55** (4.974)	18.867*** (5.459)
time_employment_i	-.242*** (0.013)	-.191*** (0.013)	-.289*** (0.011)	-.228*** (0.02)
time_own_production~i	-.255*** (0.026)	-.199*** (0.017)	-.332*** (0.044)	-.235*** (0.024)
time_unpaid_volunt~i	-.266*** (0.035)	-.178*** (0.015)	-.278*** (0.073)	-.154** (0.06)
time_social_religi~i	-.275*** (0.022)	-.194*** (0.015)	-28700000 (0.012)	-.255*** (0.025)
time_leisure_i	-.309*** (0.019)	-.21*** (0.016)	-.334*** (0.023)	-.263*** (0.034)
time_adultcare_i			-.233** (0.087)	-.401*** (0.142)
time_selfcare_i	-.304*** (0.014)	-.207*** (0.016)	-.313*** (0.02)	-.231*** (0.028)
Constant	467.032*** (17.389)	376.69*** (23.199)	456.322*** (26.102)	321.365*** (40.365)
Mean dependent var	82.287	44.135	112.486	70.639
R-squared	0.504	0.462	0.393	0.428
F-test	25194.7	4652.267	253117.102	4172.667
Akaike crit. (AIC)	463159.33	125268.494	117493.666	23796.307
SD dependent var	96.36	76.633	102.714	87.981
Number of obs	41140	11767	10124	2144
Prob > F	0	0	0	0
Bayesian crit. (BIC)	463392.198	125467.567	117695.901	23955.079
*** $p < .01$, ** $p < .05$, * $p < .1$				

Source: Author's own calculation from Time Use Data (2019)

Conclusion

The study finds that parental involvement in childcare may be influenced by their level of education, with a general trend towards greater participation across the educational spectrum. This progression underscores the complex relationship between education and familial roles in child development, suggesting that education may enhance parental awareness of the benefits of childcare in early childhood development, leading to more investment of time in both nuclear and multigenerational households. It is important to note, however, that these results do not necessarily indicate causality but rather an association that requires further investigation.

To summarize, our findings indicate that parents invest more time in childcare activities as their education level rises, with mothers taking the lead in all categories across different educational levels. Despite the higher opportunity cost of time for working and highly educated mothers, we observe a positive correlation between education and time spent on childcare. For mothers in nuclear households, there is a significant increase in childcare time as education level exceeds higher secondary education. However, education does not appear to have a significant impact on childcare time for non-working mothers in multigenerational households. These insights could have implications for stakeholders in education, child development, and policy-making, providing them with valuable information on how parental engagement in children's childcare might intersect with educational initiatives and support programs.

Limitations of the study

Studying how parents spend time taking care of their children is a complex task that presents several challenges. One of the primary challenges is the lack of consistent and reliable data regarding parental time use across different countries and over time. This is because the accuracy of time use data may be affected by measurement errors, biases, and inconsistencies, as the Indian time use data depends on recall methods that may not accurately capture the complete time use of parents. (Gershuny and Sullivan, 2003) Another challenge is the diversity and complexity of contexts and cultures. Parental time use on childcare may differ depending on various factors, such as social, economic, and cultural contexts, as well as the characteristics of parents and children, such as income, education, marital status, household structure, child age, gender, ability, and need. This, in turn, makes it difficult to draw general conclusions or compare findings across different studies, as they may not account for or control all relevant factors and variations. (Craig and Mullan, 2011).

References

Aldous, J., Mulligan, G. M., & Bjarnason, T. (1998). Fathering over time: What makes the difference? *Journal of Marriage and the Family*, 809-820.

- Augustine, J. M., Cavanagh, S. E., & Crosnoe, R. (2009). Maternal education, early child care and the reproduction of advantage. *Social forces*, 88(1), 1-29.
- Becker, Gary S. *Human Capital*. New York: Columbia University Press (for NBER), 1964.
- Becker, G. S. (1985). Human capital, effort, and the sexual division of labor. *Journal of labor economics*, 3(1, Part 2), S33-S58.
- Bhattacharya, L. (2023). *Time allocation of daughters-in-law and mothers-in-law in India: The role of education as bargaining power* (No. 1343). GLO Discussion Paper.
- Cardoso, A. R., Fontainha, E., & Monfardini, C. (2010). Children's and parents' time use: empirical evidence on investment in human capital in France, Germany and Italy. *Review of Economics of the Household*, 8, 479-504.
- Chen, F., Short, S. E., & Entwisle, B. (2000). The impact of grandparental proximity on maternal childcare in China. *Population Research and Policy Review*, 19, 571-590.
- Cheng, C., & Zhao, M. (2023). Multigenerational coresidence and parental time in developmental childcare in China. *Research in Social Stratification and Mobility*, 85, 100800.
- Compton, J., & Pollak, R. A. (2014). Family proximity, childcare, and women's labor force attachment. *Journal of Urban Economics*, 79, 72-90.
- Craig, L. (2006). Does father care mean fathers share? A comparison of how mothers and fathers in intact families spend time with children. *Gender & society*, 20(2), 259-281.
- Craig, L., & Mullan, K. (2011). How mothers and fathers share childcare: A cross-national time-use comparison. *American sociological review*, 76(6), 834-861.
- Du, F., Dong, X. Y., & Zhang, Y. (2023). Educational differences in parental time devoted to childcare in China. *China Economic Review*, 102001.
- Forbes, L. K., Donovan, C., & Lamar, M. R. (2020). Differences in intensive parenting attitudes and gender norms among US mothers. *The Family Journal*, 28(1), 63-71.
- Galasso, V., Profeta, P., Pronzato, C., & Billari, F. (2017). Information and Women's Intentions: Experimental Evidence About Child Care. *European Journal of Population*, 33, 109-128.
- Gimenez-Nadal, J. I., & Molina, J. A. (2013). Parents' education as a determinant of educational childcare time. *Journal of population economics*, 26, 719-749.
- Guryan, J., Hurst, E., & Kearney, M. (2008). Parental education and parental time with children. *Journal of Economic perspectives*, 22(3), 23-46.
- Hill, C. R., & Stafford, F. P. (1980). Parental care of children: Time diary estimates of quantity, predictability, and variety. *Journal of Human Resources*, 219-239.
- Jayachandran, S. (2021). Social norms as a barrier to women's employment in developing countries. *IMF Economic Review*, 69(3), 576-595.

- Leopold, T., & Skopek, J. (2015). The demography of grandparenthood: An international profile. *Social Forces*, 94(2), 801-832.
- Kimmel, J., & Connelly, R. (2007). Mothers' time choices: Caregiving, leisure, home production, and paid work. *Journal of Human Resources*, 42(3), 643-681.
- Laureau, A. (1993). *Unequal Childhoods: Class, race, and family*. Berkley, CA: University of California Press.
- Pepin, J. R., Sayer, L. C., & Casper, L. M. (2018). Marital status and mothers' time use: Childcare, housework, leisure, and sleep. *Demography*, 55(1), 107-133.
- Pungello, E. P., & Kurtz-Costes, B. (1999). Why and how working women choose child care: A review with a focus on infancy. *Developmental review*, 19(1), 31-96.
- Sousa-Poza, A., Schmid, H., & Widmer, R. (2001). The allocation and value of time assigned to housework and child-care: An analysis for Switzerland. *Journal of Population Economics*, 14(4), 599-618.
- Srivastava, A. (2020). Time Use and Household Division of Labor in India—Within-Gender Dynamics. *Population and Development Review*, 46(2), 249-285.
- Sullivan, O. (2013). What do we learn about gender by analyzing housework separately from child care? Some considerations from time-use evidence. *Journal of Family Theory & Review*, 5(2), 72-84.
- Ta, N., Liu, Z., & Chai, Y. (2019). Help whom and help what? Intergenerational co-residence and the gender differences in time use among dual-earner households in Beijing, China. *Urban Studies*, 56(10), 2058-2074.
- Youderian, X. (2019). Human capital production with parental time investment in early childhood. *Macroeconomic Dynamics*, 23(4), 1504-1527.
- Zick, C. D., & Bryant, W. K. (1996). A new look at parents' time spent in child care: Primary and secondary time use. *Social Science Research*, 25(3), 260-280.