PRELIMINARY DRAFT, NOT TO BE CITED

Presence of grandparents and labour market outcomes of mothers: Evidence from India

Mousumi Dutta
Associate Professor, Economics Department
Presidency University, Kolkata, India
Email: dmousumi1970@gmail.com

Zakir Husain
Associate Professor, Population Research Centre
Institute of Economic Growth, Delhi, India
Email: dzhusain@gmail.com

Presence of grandparents and labour market outcomes of mothers: Evidence from India

Abstract

Given increasing participation in labour markets by women, child care has emerged as an important issue in all countries. Literature in developed countries has generally tended to focus on formal child care systems—particularly examining the impact of price changes on labour market outcomes of mothers. In recent years, however, informal child care provided by aged relatives—particularly grand-parents—has been identified as an important determinant of the mother's decision to undertake paid work. Although the impact of informal care services bythe elderly has emerged as an important area of research in developed countries this issue has remained unexplored in developing countries like India. However, differences in social attitudes and norms towards female employment and provisioning of care services (particularly child and aged care), and presence of a variety of formal care system is likely to change the relationship observed between presence of grand-parents and decision to work of mothers' in developing countries.

This paper examines whether the presence of grand-parents is likely to increase probability of mothers' working. The first part of the analysis is undertaken using the third wave of the Demographic Health Survey data (2005-06). Analysis reveals that presence of co-residential elderly relatives actually reduced the probability of working of women with children aged below 12 years in rural areas, towns and capital cities—only in metropolitan cities do we observe the expected positive relation between the two variables. This is followed by analysis of data from a primary survey covering 750 households in Kolkata, one of the six metropolitan cities covered under the DHS survey, to check robustness of earlier result. The type of grand-parental care provided is also examined.

Keywords: Gender, labour, grand-parents, family structure, Demographic Health Survey, India.

Presence of grandparents and labour market outcomes of mothers: Evidence from India

1. Introduction

In Western societies, starting as a production unit, the family has evolved over the years (Young and Wilmott, 1973). In the first phase, all family members were engaged within the home, working in agricultural land attached to the home, or in home based factories, rearing children and undertaking other activities. In this phase, the home was the centre of all activities, economic or otherwise. In the second phase, the home-centered family broke down. Income earning activities started occurring outside the home. Although women were not debarred from participating in such activities, the gendered segregation of family labour constrained them to remain within the home to take care of children and undertake other household chores. Starting from the end of the nineteenth century women began to understand their body and acquire knowledge about the physical processes, particularly those relating to fertility. Women started to control fertility by refusing to have intercourse during periods of fertility. Along with the emergence of new forms of contraception, legislation restricting child labour and the introduction of compulsory schooling increased the costs of having children and reduced fertility trends. This also reduced the opportunity costs of women working, encouraging them to return to the labour market after children became old enough to take care of themselves. Female work force participation rates started increasing. This, in turn, raised important issues like fertility timing, provisioning of care and household services, and house-work balance. In particular, the unavailability of the working mother from home for long stretches of time raised the question of child care.

There is a large body of research examining the impact of formal child care provision on fertility decision-making processes (Gauthier, 2007; Rindfuss, Guilkey, Morgan, Kravdal, & Guzzo, 2007) and on participation in labour market (Chevalier and Vittanen, 2002; Ribar, 1995; Powell, 2002; Gelbach, 2002; Simonsen, 2006; Lundin et al., 2007). It is also argued that formal childcare affects female labour force participation due to its cost and uncertainty regarding its quality. Several studies have estimated the price elasticity of non-maternal childcare with respect to mother's employment. Such estimates are predictably negative (Blau and Robins, 1988;

Connelly, 1992; Ribar, 1995; Kimmel, 1998, Connelly and Kimmel, 2001; Gong, et al., 2010; Lanot and Walker, 1995).

In recent years, researchers have acknowledged that elderly relatives, particularly grand-parents, are also important providers of child care. "Grandparent care can take many forms, from occasional babysitting through regular help with child care to being the sole or main provider of childcare while parents work, or living with their grandchildren in multi-generation households" (Statham, 2011: 4). With the prolongation of life cycle, societies not only have more grand-parents but also healthier ones (Aldous, 1997). This has resulted in multi-generational bonds—"relations across more than two generations" (Bengston, 2001)—becoming increasingly important. One important form of such multi-generational bonds is created when the grand-parents provide care services to children of working mothers. This, along with the tendency of grand-parents to hold norms/beliefs opposing employment of mothers (Assve et al., 2011), has stimulated studies examining the impact of grand-parental presence on labour market participation of mothers in developing countries.

Such studies find that presence of grand-parents generally do increase the probability of labour market participation of mothers in general by providing cheap child care services. The strength and significance of the grand-parental effect, however, has been observed to vary across socio-cultural contexts. This raises the question as to whether the positive relation between presence of grand-parents and labour market participation by mothers observed in developed countries will also hold in developing countries. Given the scarcity of reliable formal child care, reliance of informal child care services provided by siblings, and norms dictating that women should provide personalized care services to elderly relatives, it is quite possible that presence of grand-parents will not affect labour market outcomes of mothers as in developed countries. This paper examines this question in the context of India, one of the major developing country in Asia with a fast-growing aged population[1] and low female work-force participation rates.[2]

[1] According to the 2001 Census, the total number of older persons in India was approximately 70.6 million and is expected to cross 173 million by 2026 as the life expectancy at birth is projected to increase for both males and females. As a result, the number of aged is expected to sharply increase to more than 315 million by 2050 (Subaiya and Bansod, 2011).

The study uses both primary and secondary data. The initial part of the analysis uses unit level Demographic Health Survey (DHS) data from the third wave (2005-06); subsequent analysis is undertaken using data collected from a primary survey undertaken in Kolkata. A univariate probit model is used to estimate the effect of grand-parental presence on labour market outcomes of mothers. This is followed by an analysis of reasons for not availing grand-parental services in child care and an examination of the type of services provided by them.

The paper starts with a review of studies examining the relation between labour market outcomes and grand-parental presence. This is followed by a description of DHS data and how it was prepared for analysis. The socio-economic profile of respondents is also discussed briefly. The subsequent sections describe the findings, using both univariate and multi-variate methods, from the analysis of DHS and survey data. The paper concludes with a summary of findings and indications for future research.

2. Literature Review

An early attempt to establish a descriptive relationship between labour market outcome of mothers and grandparents' care was made by Liebowitz et al. (1992). Grandparents' childcare was proxied by the variable "grandmother living in the household", to find a marginally significant and positive effect on the probability of working for mothers with children under the age of two years. More recently, Del Boca et al. (2002, 2005) observes that, in Italy, having a grandmother living near the household and in good health increased the probability of being in the labor market of mothers of children under five years.

Gray (2005) examines whether a higher proportion of mothers availing of child care services from grand-parents are employed, compared to mothers who do not avail such services. Using simple tabular analysis of British Time Use Survey (2000), Gray finds that while 40 percent of employed mothers having children less than five years receive help from grand-parents, against

---

[2] Work-force participation rate among females have declined from 18 percent (2009-10) to 16 percent (2011-12), according to a recent study by National Sample Survey Organization. In rural areas, 9 million women lost their jobs between 2009-10 and 2011-12. ("Unemployment in India on the rise, women worse hit", Times of India, 21 June 2013, Accessed from http://bit.ly/1cd1PNh on 18 July 2013).

20 percent of unemployed mothers. Corresponding figures are 32 and 16 percent, respectively, for mothers with children under 12 years. Gray also uses data from the British Household Panel Survey data to show that there has been an increase in child care services provided by relatives to working mothers, particularly in families with children below five years.

Posadas and Vidal-Fernández (2012) uses data from the National Longitudinal Youth Survey data (1979) to test the relationship in USA. Results of a linear probability model shows that mothers are significantly more likely to work if grand-parents provide child care services. Extending the basic framework to account for endogeneity (in the form of omitted variable affecting both variables), Posadas and Vidal-Fernández uses an Instrumental Variable model, with maternal grandmother's death as the instrument. Similar results are obtained, with the coefficient of grand-parental care increasing, particularly for socio-economically disadvantaged households.

Another recent work is that of Albuquerque and Passos (2012). The study uses data from the second wave of the European Social Survey (2004/2005). This survey asks the question "What is the main type of childcare that the youngest child receives?", of which a possible response is "child's grandparent(s)". This information allowed Albuquerque and Passos to have a dummy variable that indicates whether the mother's youngest child is taken care of by a grandparent. They initially estimated a univariate probit model, regressing labour market outcome upon the dummy for grand-parental care and other control variables. Results show that grand-parental care has a positive impact on labour force participation of mothers. Since grandparental care might not be a truly exogenous variable, bivariate probit and switching probit models are also estimated. However, model statistics do not indicate that endogeneity is a serious issue, so that results of the univariate probit model may be accepted.

Some studies point out that the positive relationship between mother's decision to work and grand-parental care may be context dependent. For instance, a study by Zamarro (2011) using the Survey of Health, Aging and Retirement in Europe finds a significant and positive effect only in The Netherlands and Greece (out of Sweden, Denmark, Germany, The Netherlands, France,

Austria, Italy, Spain, Greece and Belgium).[3] A similar result is obtained by Aassve et al. (2011). The study regresses labour market outcome of mothers on a dummy indicating whether grand-parents provide child care services (and other co-variates) using data from the Generations and Gender Survey (2005). Results of a univariate probit reveals that the association between mother's labour supply and childcare help received from grandparents is positive and significant in France, Georgia, Germany, Hungary and The Netherlands, but positive and insignificant in Bulgaria and Russia. As the researchers suspect that there may be reverse causality between grand-parental care and labour market outcome of mothers, a bivariate probit is also estimated. In Bulgaria, France, Germany and Hungrary, a positive and significant relationship between labour market outcome and grand-parental care is observed, while in Georgia, Netherlands and Russia the coefficient of grand-parental care is insignificant. Aassves et al. (2011) conclude that the impact of grand-parental care and decision to work of mothers varies from country to country, depending upon social norms governing grand-parents attitude towards mother's work force participation.

Studies for developing countries are rare. In the only study that we have been able to identify, Maurer-Fazio et al. (2011) uses a two-step estimation procedure to find that, in China, women 25 to 50 years old who co-reside with their parents or in-laws are 12.4 percent more likely to participate in the labor market. However, a major limitation of this study is that grandparents in developed countries may provide care services to grand-parents even though they do not cohabitate with their children.

3. Methodology and database

3.1 Database

The paper uses unit level Demographic Health Survey (DHS) data. This survey is the third in a series of national surveys on reproductive health, conducted under the stewardship of the Ministry of Health and Family Welfare, Government of India, with the International Institute for Population Sciences, Mumbai, serving as the nodal agency. DHS is a household survey which

[3] A SURE (Seemingly Unrelated Regression) Model was used for estimation purposes.

provides estimates of indicators of population, health, and nutrition by background characteristics at the national and state levels. Information was collected based on individual interviews. This data was collected through a national-level survey from November 2005 to August 2006. In all 124,385 women aged 15-49 years and 74,369 men aged 15-54 years from 109,041 households from 29 states were interviewed. The sample was drawn using a multi-stage stratified sampling method (IIPS & Macro International, 2006: 11-13).

This study uses the Individual (IAIR51FL) and Household (IAHR51FL) files. In the Household file two variables—one variable indicating whether any grand-parent co-resides with the respondent,[4] and the other denoting the presence of a child below 12 years—was created. These two variables were merged with the Individual file (containing data on women respondents). In the next step currently married women with at least one child below the age of 12 years were selected, deleting all other observations. Finally, using information on occupation of the respondent (v717) we created a binary variable (EMP) representing labour market outcome of the respondent.

3.2 Sample Profile

Out of the 124,385 respondents, 66,469 are currently married women with children below the age of 12 years. This forms the relevant sample for our study. The distribution of the sample across socio-economic covariates is given in Appendix Table A1.

Most of the respondents are from Central and East Indian states, followed by North Indian residents. Respondents from these three zones consist about 75 percent of the sample. Average level of education is low, with about 40 percent of respondents being illiterate and about a third having secondary level of education. Education levels of partner's is slightly higher—about 45 percent have completed secondary level of education, while one out of four respondents are illiterate. Most of the respondents are from the highest wealth index quintile, while representation from the lowest quintile is least. Slightly more than half of the respondents belong

[4] Respondents are women aged 15 to 49 years.

to Forward Caste Hindu communities, while only 6 percent of the sample is members of Scheduled Tribes.

About one out of every three respondents has family size of 5-6 members, followed by 3-4 members. Given that respondents have children aged below 12 years, we would expect that marital duration is not much above 12 years. Table A1 reveals that two third of the respondents have been married for less than 15 years. Among other characteristics are: about 30 percent of respondents co-reside with at least one grand-parent, and about 40 percent are employed.

3.3 Empirical methodology

Our research hypothesis is that labour market outcome of mother's (EMP) is determined by the presence of co-residential grandparents (GPP). We first examine the relationship between these two variables across socio-economic correlates. This is followed by analysis using multivariate methods. Since EMP is a binary variable, taking the value of 0 if the mother does not work and the value of 1 if the mother works, the causal relationship between EMP and GPP:

$$EMP = f(GPP)$$

is tested using a probit model. In addition to EMP, we also incorporate covariates reflecting socio-economic and demographic characteristics of the respondent. These covariates include: socio-religious identity, economic status (captured by a wealth index score), place of residence, geographical residence (proxy for culture),[5] age and education level of respondent, education level and occupation of respondent's spouse, and marital duration.

3.4 Primary survey

While use of the DHS data has the advantage that it provides a nationally representative large data set, we should keep in mind that its fundamental purpose is to provide information on reproductive health. As a result there are some limitations in information provided in DHS pertaining to our research issue. For instance, we are able to identify households with co-residing

[5] India has been divided into five cultural zones: North (comprising of Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Uttaranchal, Delhi, Rajasthan, and Uttar Pradesh), Central (Bihar, Jharkhand, Chhattisgarh and Madhya Pradesh), East (Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Meghalaya, Assam, West Bengal, and Orissa.), West (Gujarat, Maharashtra and Goa.) and South (Andhra Pradesh, Karnataka, Kerala and Tamil Nadu).

grand parents. There is no information, however, on health status of grand parents. Further, distance between grand-parental home and residence of child, an important determinant of provisioning of child care by grandparents, is not collected by DHS. As a result, the impact of grand-parental care on labour market outcomes of mothers is not captured perfectly in this data set.

To overcome this deficiency we have supplemented the analysis of DHS data by a primary survey of mothers in Kolkata, a metropolitan city in Eastern India. The choice of Kolkata is dictated by the presence of a variety of formal care services, available as a substitute to grand-parental care services. Such substitutes range from crèches (of varying prices and quality) to part- or full-time maid servants and nannies.[6] The survey was conducted from November 2012 to March 2013, covering about 750 women with at least one child aged below 8 years. The sample profile is described subsequently. The econometric methodology is similar to the one used to analyse DHS data—univariate probit model is used to estimate the relation between presence of healthy grand-parent residing close to the parents and labour market outcome of mother.

4. Impact of grand-parental presence on female work force participation

4.1 Variations across socio-economic correlates

Table 1 gives the percentage of mothers who are working in families with co-residential elderly and in families without co-residential elderly, respectively, across socio-economic correlates. We would expect that the percentage of mothers who are working is higher in families with elderly relatives, than in two-generation families. Contrary to this expectation, however, we find that in most cases the opposite holds true—indicating that the presence of co-residential elderly restricts work force participation of mothers. Only in metropolitan and capital cities does our hypothesis hold to some extent. In metropolitan cities, for instance, respondents from the first, third and fifth wealth index quintile, illiterate women, women whose partners are illiterate or have below primary education, and women from disadvantaged socio-religious groups (Scheduled Castes and Scheduled Tribes) tend to work if they have co-residential elderly family member.

[6] The difference between maid servants and nannies is that the former may perform a variety of household functions, while the nanny restricts herself to only the child-related activities.

Table 1: Percentage of working mothers and presence of co-residential elderly across correlates—India, by place of residence

Correlates	Group	Metropolitan		Capital		Town		Rural		All	
		Elderly	No elderly	Elderly	No elderly	Elderly	No elderly	Elderly	No elderly	Elderly	No elderly
Geographical Zone	North	23.6	20.5	31.5	27.1	23.2	26.2	40.0	43.3	35.4	35.3
	Central	-	-	23.2	29.9	15.9	20.5	48.6	55.9	38.5	44.1
	East	21.2	26.7	7.1	20.5	32.5	32.9	37.8	45.6	34.8	40.4
	West	32.4	25.1	24.7	30.5	27	29.5	57	60.6	41.5	41.7
	South	31.9	33.8	22.5	26.9	29.2	34.3	42.7	52.5	35.2	41.0
Wealth index (quintiles)	Poorest	50	46.2	58.8	49.4	41.9	44.6	63.1	63.4	62.1	62.2
	Poorer	41.2	41.4	53.8	45	35.6	41.4	54.5	56.1	52.9	53.9
	Middle	51.5	35.1	47.4	38	35.2	35.9	45.8	49.7	44.6	45.4
	Richer	31.2	29.4	29.4	33.6	24.8	27.3	34.4	37.4	31.5	32.9
	Richest	22.2	19.2	19.2	21.6	22.4	23.5	24	26.9	22.1	23.1
Highest educational level	No education	38.3	29.8	38.7	36.5	31.6	35	57.8	59.3	53.5	52.3
	Primary	33.3	29.7	26.7	34.7	27.6	27.2	44.4	47.2	40.2	40.5
	Secondary	21.3	19	16.2	21.4	19.1	23	29.5	35.4	24.6	27.8
	Higher	27.4	33.3	27.4	29.4	36.8	39.3	38.5	45.8	33.1	36.8
Recode of partners education	No education	40.7	34	38.7	40.3	35.7	38.1	57.3	60	53.5	54.1
	Below primary	34.5	35.4	29.2	35.3	27	33.2	51.5	54.6	45.5	47.6
	Middle level	23.9	20.7	20.6	25.3	22.3	24.8	39.3	43.6	32.9	34.2
	Secondary	12.5	25.4	21.7	25.2	18.3	30.1	34.2	42.6	27.8	35.4
	Higher level	25	26.4	24.2	23.3	28.6	28.9	34.5	36.9	29.3	29.7

Socio-religious identity	**Muslim**	17.7	16	14.9	21.5	16.1	20.5	30.8	31.6	23.6	25.6
	Hindu-SC	37.2	33.7	30.5	40.2	33.6	34.7	44.3	52.2	40.6	45.7
	Hindu-ST	37.5	29	44	34.4	36	36	71.9	72.6	67.6	66.4
	Hindu-Gen	25.2	24.7	25.5	27.9	24	26.1	44.3	49.3	36.8	38.7
	All Others	31	33.2	23.3	36.9	36.5	38	44.1	54.9	40.2	48
Marital duration (years)	**0-4**	17.6	13.7	15.6	13.6	17.8	16.5	29	33.5	24.4	25.2
	5-9	23.8	21.3	22	23.4	23.3	25.2	41.3	43.6	34.1	34.7
	10-14	30.2	28.2	26.9	33.1	31	32.6	49.1	54.8	41.3	44.4
	15-19	31.1	30.8	29.9	37.2	30	35.6	54.7	58.2	45.9	48.2
	20-24	43.8	38.4	37.8	37.9	34.8	35.8	59.4	59.4	52.2	50.6
	25-29	16.7	30.7	19.4	35	32	34.9	55.7	59.7	48.3	51
	30+	18.8	23.5	38.2	28.1	16.9	26.6	50.2	58	43.3	46.7

4.2 Results of univariate probit model

Table 2 presents results of the probit model with marginal effects, and not coefficients, being reported. The results are similar to that of the findings of the bivariate analysis. The coefficient of GPP in the results derived from the all-India, rural, town and capital cities are all statistically insignificant even at 10 percent level. The coefficient of GPP is positive (as hypothesised) and statistically significant at one percent level only for the metropolitan cities (Table 2).

Table 2: Summary results of univariate probit of EMP on GPP—Across settlement types

Statistic	All India	Metro city	Capital cities	Towns	Rural
dEMP/dGPP*	0.01	0.07	0.003	0.01	-0.01
z	0.92	3.35	0.19	1.03	-0.87
Control variables	Yes	Yes	Yes	Yes	Yes
N	25250	2974	6055	8630	7591
LR-χ^2	1784.2	227.3	459.95	937.89	513.84
R^2	0.0619	0.0738	0.0679	0.992	0.0545

Note: * *dEMP/dGPP is for discrete change of dummy variable from 0 to 1.*

One possible reason why presence of grandparents does not affect labor market outcomes of mothers (except in metro cities) may be reverse causality—a working woman is more likely to retain grand parents within the same roof (Aassve et al., 2011; Albuquerque and Passos, 2012). It is prudent to rule out reverse causality even though studies have not found this to be a serious problem. In this case we have a bi-variate probit model with discrete endogenous regressors. Arendt and Holm (2006) suggests that a simple linear probability model may often provide a satisfactory approximation of the model underlying decision to keep grand-parents co-residential. On re-estimating the earlier models using the Instrumental Variable method, however, we get results (not shown) similar to those in the univariate model. In line with earlier studies, however, reverse causality does not seem to be an important issue.

What, then, are the other possible explanations for the failure to find a link between co-residential grandparents and labor market outcomes of mothers? Possible explanations are:

a) As noted earlier, mere co-residence does not capture the actual role played by grand parents in providing child care services. For instance, grand-parents may be co-residential because they are too old to take care of themselves or they are in poor health; on the other hand, grand-parents may not co-reside but live at a distance convenient for parents to drop (pick up) children.
b) Women working in the informal sector or in primary sector may often work either within the home (in rolling *biris*,[7] making paper bags, etc.), or can take their children with them to work.
c) Substitutes to grand-parents exist in the form of older daughters (Bhatty, 1998) and non-working female relatives.[8]
d) Norms, too, may play a role. The culture in rural areas and in towns, particularly, is often conservative. Women are expected by the elderly to look after in-laws and children and not work.

These explanations may explain why grand-parental presence does not affect labour market outcome of married women in non-metropolitan cities. Even in metropolitan cities we find that it is only among the lowest expenditure quintiles (labeled 1 in Table 3) that the expected relation between grand-parental care and labour market participation of the respondent is observed.

[7] *Biri* is an indigenous type of cigarette. *Biri*-making, making paper bags, etc. are activities commonly practiced by women and even children in urban slums. While such activities are not particularly remunerative, they offer a steady flow of income and also have the advantage that they can be undertaken at home.
[8] It may be noted in this context that about 70 percent of households where the respondent works, but there are no grandparents, have more than 4 family members.

Table 3: Summary results of probit model—For metropolitan city residents across wealth index quintiles and education levels

Statistics	**Expenditure quintiles**					**Education**			
	1	**2**	**3**	**4**	**5**	**Illiterate**	**Primary**	**Sec**	**Above Sec**
dEMP/dGPP	0.21	0.10	0.06	0.01	0.02	0.16	0.02	0.11	-0.06
z	2.17*	1.01	1.39	0.27	0.51	2.43*	0.32	4.44*	-1.43
Control Variables	Included								
N	294	239	291	296	288	544	314	1484	631
LR-χ^2	56.93	47.97	37.58	43.73	52.22	47.47	53.78	115.99	54.66
Pr. > χ^2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
R^2	01777	0.2256	0.2090	0.2202	0.1822	0.0793	0.1708	0.0850	0.0718

Note: * denotes significance at 1% level.

When we examine the results across education classes in metropolitan areas, we find that it is among the less educated respondents that grand-parental presence encourages labour market participation.[9] In case of respondents with at least 12 years of schooling, the coefficient of GPP is actually negative (though insignificant). In fact, tabular analysis indicates that respondents from families without grand-parents participate to a greater extent in the labour market.[10] Given that working at home is still an emerging phenomenon in 2013 (while the DHS data relates to 2005), it is unlikely that educated women workers are working at home. In fact, analysis of the DHS data reveals that out of the 207 respondents from this group who are employed, *all* are working *away* from home. So their children clearly need some form of child care arrangement. Nor is it likely that familial substitutes to grand-parental care exist, given that about 70 percent of such families have less than five members. This is surprising as we would expect that this class exhibits some similarity in behavioural patterns with residents in developed countries. Therefore, in the second part of our analysis, when we use primary data—taking into consideration proximity of non-co-residential grand-parents, and health and age of co-residential grand-parents—we focus on this group.

5. Results from a primary survey

In this section we present results from a primary survey undertaken in Kolkata, the third largest metropolitan city in India. Kolkata is the capital city of West Bengal, one of the largest states in eastern India. It is also the cultural, educational and commercial center of the state. The Kolkata Municipality has an area of 185 square kilometers. It may be divided into three zones. North Kolkata is the oldest part of the city. Characterised by 19th-century architecture and narrow alleyways, the culture of this part of the city is comparatively conservative. Central Kolkata hosts the central business district. South Kolkata developed after India gained independence in 1947; it includes upscale neighbourhoods, with inhabitants commonly believed to be more dynamic, liberal and progressive. Two planned townships in the greater Kolkata region are Bidhannagar and Rajarhat (also called Salt Lake City and New Town, respectively). Like South Kolkata, these areas are also supposed to be modern in their outlook and life style. In addition, Kolkata has

[9] The coefficient of GPP is statistically significant at 1% level for respondents without education or with 5-11 years of schooling; in case of respondents with 1-4 years of schooling the coefficient of GPP is positive, but not significant.

[10] Results are significant at 10% level.

extensive suburbs. The Kolkata metropolitan area, spread over 1,886.67 km^2, comprises 39 local municipalities and 24 panchayat samitis, as of 2011, in addition to the three municipal corporations. The total population of this urban agglomeration is 4.5 million persons in 2011.

Between November 2012 and March 2013 we undertook a survey of currently married women with at least one child aged below 8 years, residing in the Kolkata Metropolitan area. Due to some practical considerations, a stratified sample was taken, with respondents being selected from different educational levels, occupational categories, and residing in different areas of Kolkata. The objective was to capture a representative sample. However, this may affect the extent to which the study can be generalized.

5.1 Profile

Initially, a target of 800 respondents was set. After editing, 50 questionnaires were discarded as some responses were either missing or inconsistent; in the second stage, 14 women who were divorced were dropped as some of the information pertaining to the partner was missing, and only 751 currently married women retained. The sample profile is given in Table 4.

Table 4: Characteristics of Respondent, household and husband

Household characteristics		Percent	Characteristics of Respondent and Husband		Percent
Residential area	South Kolkata	40.7	Grouped age of respondents	20 to 25 years	4.7
	North Kolkata	19.4		26 to 30 years	25.4
	Subarbs	33.8		31 to 35 years	41.3
	Salt Lake	6.0		36 to 40 years	23.3
Living sons aged below 8 years	No children	57.7		More than 40 years	5.3
	One child	41.1	Education of respondent	HS	18.8
	Two, or more, children	1.1		Graduate	49.3
Family structure	Nuclear	32.8		Post Graduate / Doctorate	19.4
	With in-laws	53.5		Others	12.5
	With parents	6.1	Employment staus of respondent	No	46.3
	With greater family / Joint	7.6		Part-time (informal)	4.9
Religion	Others	8.0		Part-time (formal)	3.5
	Hindu	92.0		Full-time	45.3

Household characteristics		Percent	Characteristics of Respondent and Husband		Percent
Caste	Others	10.5	Ocupation of Respondent	Housewife	46.3
	General	89.5		School or College Teacher	13.6
Language	Else	13.4		Service / Administration	16.4
	Bengali	86.6		Professional Medical	13.2
Asset quintile group	Poorest	19.4		Sales Business Others	10.5
	Poor	17.6	Education of partner	HS	13.0
	Middle	18.5		Graduate	57.4
	Rich	18.4		Post Graduate	7.9
	Richest	26.1		Doctorate	1.9
Expenditure quintile group	Poorest	17.2		PG Diploma/ Certificate	5.2
	Poor	17.8		Professional courses	14.2
	Middle	13.7		Others	0.4
	Rich	17.8	Occupation of husband	Teacher / Service / Administrative	56.2
	Richest	33.4		Professional / Medical	8.3
				Sales Business	34.2
				Others	1.3

5.2 Econometric specification

We elicited information on age, health status and proximity of parents and parents in laws. Responses were combined and recoded to create a binary variable ES (Elderly support), with a value of unity if any of the four garnd-parents were alive, healthy and lived close to the respondent (and zero otherwise). The respondent's employment status is regressed on ES and the following control variables:

a) Normalized factor scores for asset holding (NASSET) and expenditure pattern on servants and holidays (NEXP);[11]

[11] The questionnaire had detailed questions on expenditure and asset holding of respondents. These responses were analyzed to identify variables exhibiting variation (frequency of one category of response should not exceed 90%). Principal component analysis with orthogonal rotation was performed on the selected variables to separate out the variables into factor scores, such that eigenvalues explained at least 40 percent of the variation. Two factor scores were obtained—asset holding and expenditure pattern on servants and holidays. These were normalized to scores of 0 to 100.

b) Age of respondent (AGE);
c) Religion of respondent —HINDU (if respondent was a Hindu), with others as reference category;
d) Caste of respondent—GCASTE (if respondent belonged to upper castes), with others as reference category;
e) Language of respondent, corresponding to cultural pattern —LANG (if respondent's mother vernacular was Bengali), with others as reference category;
f) Family structure—NUCLEAR (if respondent belonged to a nuclear family), WPARENT (if respondent resided with her parents), JOINT (If respondent resided in joint family), with respondents residing with parent-in-laws as reference category;
g) Geographical residence, another proxy for culture—NORTH (if respondent resided in North or Central Kolkata), SUBARBS (if respondent resided in subarba areas), SLAKE (if respondent resided in Salt Lake or Rajarhat), and South Kolkata residents as reference category;
h) Education of respondent
i) Occupation of husband
j) Attitude of parents-in-laws towards women (NORM, =1 if they objected to women participating in labour market)

Two variants of the dependent variable were taken—any full time work, and employment in the formal sector (full time or part time). Since both were binary, univariate probit models were estimated. In addition, an alternative variety of the models accounting for endogenity between ES and labour market participation was also estimated. Results do not change, and the C statistic (also known as a GMM distance or difference-in-Sargan statistic) does not indicate endogenity (Hayashi, 2000: 218-222, 232-234). Hence, we report only the results of the univariate models (Table 5).

5.3 Effect of grand-parental support

Results of the probit model shows expected results. The derivative of ES is positive and significant, indicating that grand-parental presence encourages mothers to work. Another important result is that grand-parental objections to working reduce probability of mother's

participating in the labour market. While the relation between probability of working and asset score is positive, the relation with expenditure score varies, depending upon the definition of working adopted. The coefficient of expenditure score, in contrast, is insignificant in both models.

Table 5: Results of probit model—Impact of grand-parental support on labour market outcome

Variables	Full time work			Formal work (full/part time)		
	dF/dx	z	Prob.	dF/dx	z	Prob.
ES*	0.27	3.80	0.00	0.27	3.58	0.00
NASSET	0.002	1.90	0.06	0.001	1.41	0.16
NEXP	0.001	0.73	0.46	-0.0002	-0.23	0.82
AGE	0.02	3.74	0.00	0.01	2.27	0.02
HINDU*	0.06	0.46	0.65	0.13	1.04	0.30
GCASTE*	0.03	0.34	0.74	0.02	0.26	0.80
BENGALI*	0.07	0.85	0.40	0.10	1.15	0.25
NUCLEAR*	0.21	2.83	0.01	0.21	2.86	0.00
WPARENT*	0.22	2.50	0.01	0.24	2.69	0.01
JOINT*	0.24	2.93	0.00	0.26	3.16	0.00
NORTH*	-0.14	-2.30	0.02	-0.16	-2.61	0.01
SUBARB*	0.02	0.43	0.67	0.03	0.59	0.56
SLAKE*	-0.06	-0.70	0.49	-0.09	-0.96	0.34
HS*	-0.20	-3.09	0.00	-0.17	-2.61	0.01
PG*	0.21	3.40	0.00	0.20	3.33	0.00
EOTHER*	0.53	7.14	0.00	0.52	7.11	0.00
HHS*	0.06	0.79	0.43	0.04	0.55	0.58
HPG*	0.02	0.27	0.79	0.06	0.71	0.48
HEOTHER*	-0.08	-1.27	0.20	-0.08	-1.24	0.22
HPROF*	0.11	1.32	0.19	0.14	1.67	0.10
HSALES*	0.06	1.15	0.25	0.06	1.29	0.20
CHILDREN	-0.15	-2.67	0.01	-0.16	-2.75	0.01
NORM*	-0.42	-3.55	0.00	-0.47	-3.73	0.00
Model statistics						
obs. P	0.45			0.49		
pred. P.	0.42			0.47		
N	750.00			750.00		
LR 2	288.23		0.00	280.46		0.00

Variables	Full time work			Formal work (full/part time)		
	dF/dx	z	Prob.	dF/dx	z	Prob.
Pseudo R2	0.28			0.27		

Among other results are: older women are more likely to work; Hindu women, those belonging to Upper Castes or from the Bengali community are also more likely to work; respondents residing with parents-in-laws are less likely to be employed than women residing I nuclear families, with their own parents or in joint families; probability of participating in labour market is lower for women residing in North Kolkata; probability of working increases with education; education and occupation of husband does not have any effect on the probability of working; increase in number of children lowers probability of working.

5.4 Services provided by grand-parents

Analysis of the data from the survey yields expected results, possibly because the presence of potential elderly support can be better captured than in the DHS data. We find that grand-parental presence increases probability of mothers' working. This is similar to results reported for studies of European societies. This raises three questions: Who provides greater support—parents (of the mother), or her parents-in-laws? What support services are provided by grand-parents? In cases where working women do not use support services of grand-parents, what are the reasons for not availing such services? In this section we answer these questions.

Analysis of responses from the survey (Figure 1) reveals that majority of respondents working full time avail of care services provided by grandparents. Further, it is parents-in-laws who are more likely to provide care services. The latter is guided by practical considerations, and reflect the dominant family structure—the majority (54 percent of respondents) reside with parents-in-laws.

Figure 1: Percentage of care providers by labour market outcome of respondent

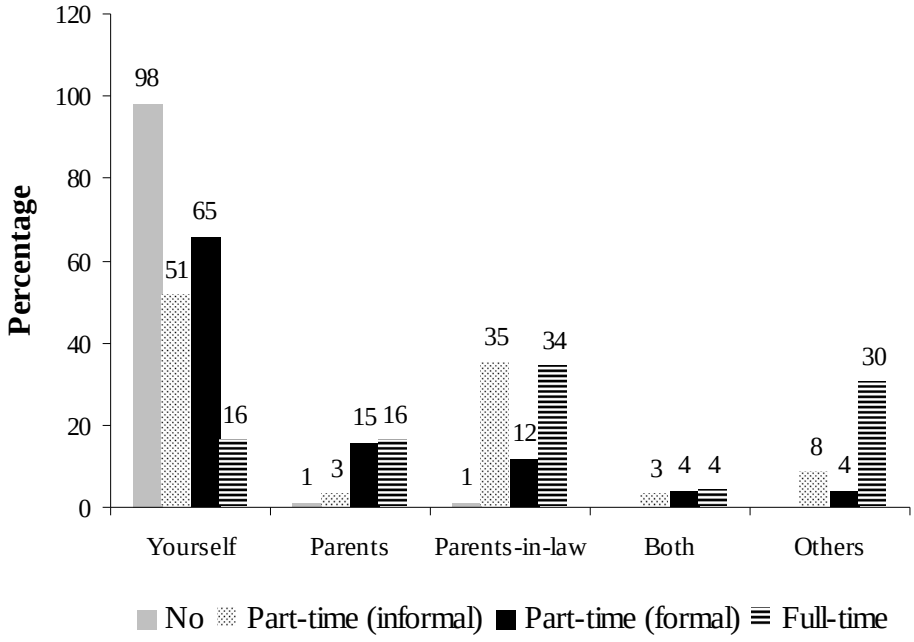


Table 6 reports on the services provided by grand-parents to children. A majority of grand-parents cook/supervise cooking, serve food/feed grand-children and read to/play with grand-children. Most grand-parents do not accompany children to and from schools; nor do they take children to cinema halls.[12] The only 'outside the home' activity performed by grand-parents is taking children out to play in nearby parks or in common space of multi-storied apartments—about 21 percent of paternal grand-parents and 24 percent of maternal grand-parents perform this service on a regular basis, while 42 percent and 51 percent, respectively, irregularly. It was also observed that grand-parents generally do not supervise homework of grand-children.

[12] This may be partly because of the age of the grand-parents, and partly because of the reducing popularity of cinema halls due to the increasing number of TV channels.

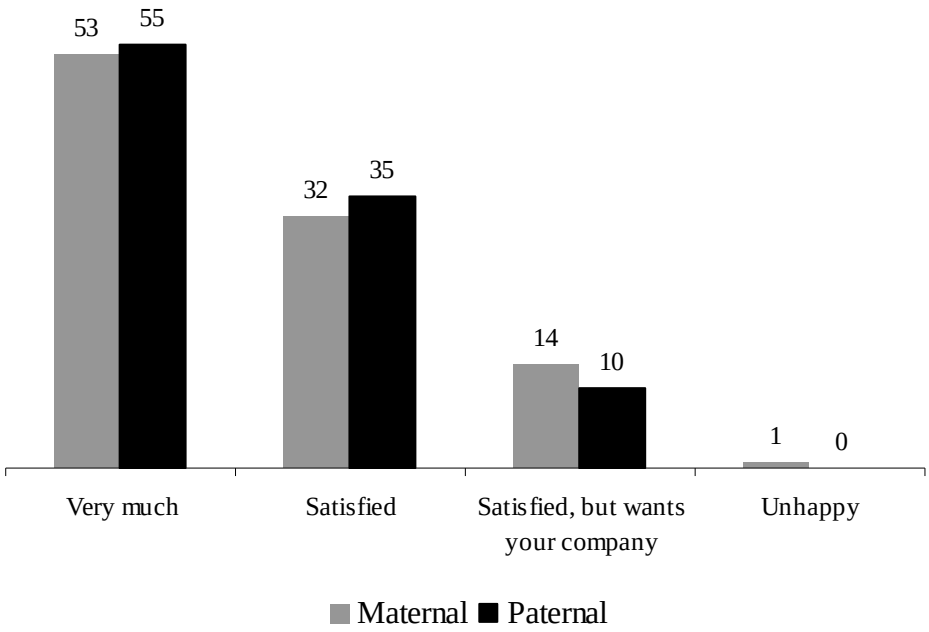
Table 6: Child care services provided by grand-parents when mother is working full time

Activity	Response	Maternal grand-parents		Paternal grand-parents	
		Frequency	Percent	Frequency	Percent
Does parents take child to school	No	56	73.7	25	69.4
	Irregularly	7	9.2	6	16.7
	In case of emergency	2	2.6	1	2.8
	Generally/Always	11	14.5	4	11.1
Does parents bring back children from school	No	56	65.1	21	51.2
	Irregularly	5	5.8	4	9.8
	In case of emergency	4	4.7	4	9.8
	Generally/Always	21	24.4	12	29.3
Do parents cook/supervise cooking	No	17	13.2	4	5.6
	Irregularly	25	19.4	14	19.7
	In case of emergency	6	4.7	5	7.0
	Generally/Always	81	62.8	48	67.6
Do parents serve food/feed child	No	14	10.1	3	4.0
	Irregularly	27	19.4	14	18.7
	In case of emergency	12	8.6	8	10.7
	Generally/Always	86	61.9	50	66.7
Do parents play with/read to child	No	6	4.2	2	2.6
	Irregularly	25	17.4	16	21.1
	In case of emergency	6	4.2	4	5.3
	Generally/Always	107	74.3	54	71.1
Do parents supervise child's homework	No	65	71.4	23	53.5
	Irregularly	14	15.4	10	23.3
	In case of emergency	8	8.8	7	16.3
	Generally/Always	4	4.4	3	7.0
Do parents take child to cinema	No	77	82.8	36	80.0
	Irregularly	12	12.9	5	11.1
	In case of emergency	2	2.2	3	6.7
	Generally/Always	2	2.2	1	2.2
Do parents take child to play outside home	No	44	36.7	15	25.4
	Irregularly	43	35.8	25	42.4
	In case of emergency	8	6.7	5	8.5
	Generally/Always	25	20.8	14	23.7
Do you feel that support	No	3	2.0	3	3.8

Activity	Response	Maternal grand-parents		Paternal grand-parents	
		Frequency	Percent	Frequency	Percent
of parents is important for working	Yes	146	98.0	76	96.2

Analysis of the responses also revealed that almost all the children were happy with their grand-parents (Figure 2). Of course, this result is based on reports by mothers, and not children. We cannot rule out the possibility that satisfaction level of children is mis-reported by mothers to justify their participation in labour market.

Figure 2: Mental satisfaction of children with working mothers and provided care services by grand-parents—Percentage



It is not surprising that almost all working mothers feel that support of grand-parents is essential for their labour market participation. We found that 97 percent of respondents felt that the support of the grand-parents was crucial in facilitating their work.

It was also found that parents tended to seek grand-parental services except when such services could not be feasibly sought—when grand-parents are dead, or too old, or unwell, or resides in a distant city or too far from home (Table 7).

Table 7: Reasons for not seeking care service from grand-parents

Reasons	Parent-in-laws	Parents
Dead	30.2	13.5
Not well/Too old	35.1	25.2
Lives too far	20.7	49.9
Child does not enjoy staying with them	7.8	3.0
Not on good terms	1.9	0.5
Also work	2.5	5.6
Others	0.5	0.8

In this context, one point must be clarified. A study of women workers in Kolkata's Information Technology sector reports that women are gradually shifting away from their traditional role as provider of care services within the home; working women are generally relying on paid providers of care services, and are now playing the role of planner and supervisor (Husain and Dutta, forthcoming). The same study also reports that working women spend a major proportion of their leisure time with their children. This is also confirmed in this study. Working women spend about 5 hours of their working days with their children; this increases to about 10 hours during non-working days. This is quite high.

6. Conclusion

To sum up, analysis of DHS data do not reveal any positive impact of grand-parental presence on women's participation in the labour market. Both bi-variate and multi-variate analysis fail to find any positive relationship between the two except in metropolitan cities. Even in the latter, disaggregated analysis by standard of living and expenditure classes fail to find ant clear relationship. This may be explained partly in terms of differences in socio-economic conditions with developed countries, and partly because of the lack of a suitable proxy to capture the potential of grand-parental support in the DHS data set. In an attempt to remedy this deficiency a primary survey of graduate women was undertaken in Kolkata, a metropolitan city in India. The survey found that the presence of healthy grand-parents living close significantly increased the probability of mothers' working. This finding has some important implications.

Studies on working women report on the difficulties of balancing work and household (Mitter and Rowbotham, 1995; COD, 2004; Ramsay and McCorduck, 200; Soriyan and Aina, 1991; Upadhyay, 2005). This becomes a major issue in Asian societies as the concept of household sharing of labour is yet to become widespread. In particular, the responsibilities of child care falls almost entirely on mothers. The consequent pressure on working women affects them physically and mentally, and may even lead to their withdrawal from the labour market. For instance, we found that 81 respondents (representing 17 percent of ever working women) had given up work after their first child because of the pressure of looking after the child; the majority (66, representing 82 percent) had never returned to work. The potential of grand-parental supply of child care services becomes crucial in the context of retaining women in employment in developing countries.

The sociologist, E.W. Burgess, had argued that urbanization, increased individualism and secularism, and the emancipation of women had transformed the family from a social institution based on law and custom to one based on companionship and love, laying down the basis of the modern nuclear family (Burgess, 1926). During the transition from families as unit of social evolution to families as supporting individuals' needs, grand-parents seem to have moved out of the picture. Recently, Bengstron (2011) has argued that relations across more than two generations are becoming increasingly important to individuals and families. Considering the dramatic increase in life expectancy over the past half century, this is not surprising. But a corollary to this hypothesis is that multigenerational bonds are becoming more important than nuclear family ties for well-being and support over the course of their lives.

> "Grandparents provide many unacknowledged functions in contemporary families (Szinovacz, 1998). They are important role models in the socialization of grandchildren (Elder, Rudkin, & Conger, 1994; King & Elder 1997). They provide economic resources to younger generation family members (Bengtson & Harootyan, 1994). They contribute to cross-generational solidarity and family continuity over time (King, 1994; Silverstein et al., 1998)… Perhaps most dramatic is the case in which grandparents (or great-grandparents) are raising grandchildren (or great-grandchildren)" (Bengstron, 2011: 7).

Our study provides a confirmation of Burgess's hypothesis, showing that grand-parents need not be dead-weights in the modern society but can provide important services that increase family welfare. Such services are important for another reason in developing countries with poor social security systems. When grand-parents provide child care services, ties between non-co-residential family members strengthens—for instance, the incentive of parents to look after grand-parents and ensure that they remain healthy is greater. Such reciprocal ties are essential in societies characterized by 'living apart but together' (Sokolovsky, 2001).[13]

The impact on the child is, on the whole, beneficial. Many studies have shown that parents have a strong preference for very young children to be cared for by grandparents while they work, believing that this is better for the child's wellbeing (Barnes et al., 2006; Bell et al., 2005; Wheelock and Jones, 2002). In USA grandchildren with stronger ties to grandparents reported fewer depressive symptoms as adolescents or young adults than those with weaker ties, and this was particularly the case for grandchildren of single parent families (Ruiz and Silverstein, 2007). In England, analysis of longitudinal data showed a positive association between grandparental closeness and child adjustment when children were on average nine years old, but by the age of 14 that link had disappeared (Bridges et al., 2007). A UK study funded by the ESRC, reported that grandparental involvement was significantly associated with fewer emotional problems and with more pro-social behaviour, especially when grandparents were involved in the child's hobbies and interests; their schooling and education; and talking about future plans (Griggs, 2010). Lussier et al. (2002) reports that greater closeness to maternal grandparents was significantly associated with fewer adjustment problems after parents had separated. The role of grand-parents in normalising the situation for grand-children and in distracting and reassuring them after divorce of their parents has also been reported by Timonen et al. (2009); grand-parents could be regarded as "anchors of stability at a time of uncertainty" (Timonen et al., 2009: xi).

Negative impact of grand-parental care on children has also been reported. Studies have found that children receiving grand-parental care perform better in vocabulary tests but fare worse in

[13] In such families, although co-residential arrangements have disintegrated, the joint family persists as a functional unit with the family drawing closer during crisis (Nayyar, 1999).

comparison to children receiving formal care in numeracy and literacy tests (Gregg, 2005; Hansen and Hawkes, 2009; Sylva, 2011), are more prone to be over-weight and hyperactive and are more likely to have difficulties in interaction with peers (Fergusson et al., 2008). These effects are more likely to be observed among children from advantaged families.

Before concluding, however, two caveats should be sounded. The first is that respondents in developing countries kept their children with grand-parents because they want to. But, it is also true, that formal child care options are limited, so that respondents have limited options to turn to. For instance, quality crèches are few in Kolkata, and are priced beyond the reach of middle class families. Most of the respondents without elderly (healthy) relatives to turn to are forced to rely on *ayahs* (maid-servants who look after children).[14] This neither enables socialization (a benefit of crèches), nor is it as reliable as grand-parental care. It is, therefore, necessary to increase choice of working mothers by developing a variety of formal child care arrangements.

The second caveat is that the positive impact of grand-parental presence on mothers' participation in labour market was found only in metropolitan cities. It is necessary to examine, with a better definition of elderly support than that used to analyze DHS data, whether the relationship is really non-existent in towns and rural areas; if so, a natural question arises as to why the expected relationship is not found in such areas. This constitues an area for further research.

[14] It was noted that 53 percent of respondents working full time and not availing of grand-parental care relied on *ayahs*.

REFERENCES

Elizabeth Bott. 1971. Family and Social Network (2nd ed.). (Originally published, 1957). New York:Free Press.

Young, M. and P. Willmott (1973) *The symmetrical family*. London: Routledge & Kegan Paul.

Appendix

Table A1: Sample profile of respondents—Demographic Health Survey data (2005-06)

Socio-economic correlates	Group	Place of residence				
		Metro	**Capital**	**Town**	**Rural**	**Total**
Geographical Zone	North	35.9	8.1	17.8	21.3	20
	Central		44.9	23	30.6	28.4
	East	22.3	1.9	35.9	28.9	26.7
	West	21.7	24.9	11.8	9.2	12.6
	South	20	20.2	11.5	10	12.3
Highest educational level of respondent	No education	24.2	25.8	25.8	51.4	40.7
	Primary	13.3	11.8	12.6	16.5	14.8
	Secondary	45.4	43	47.7	29.3	36.2
	Higher	17.2	19.5	13.9	2.7	8.3
Highest educational level of respondent's partner	No education	12.7	14.6	14.6	30.2	23.6
	Below primary	11.6	12.1	11.5	17.7	15.2
	Middle level	52.9	46.3	49.5	43.1	45.6
	Secondary	1.8	2.4	2.3	1.8	2
	Higher level	20.9	24.7	22.1	7.2	13.6
Socio-religious identity	Muslim	15.6	23.3	15.6	12.1	14.5
	Hindu-Scheduled Castes	16.9	13.3	13.7	16	15.2
	Hindu-Scheduled Tribes	0.9	3	2.5	9.1	6.3
	Hindu-General Castes	59.9	54.6	51.3	49.2	51.1
	All Others	6.8	5.8	17	13.6	13
Wealth index (by quintile)	Poorest	0.4	1.2	3.3	22.6	14.1
	Poorer	2.8	3.6	7.6	24.1	16.4
	Middle	11.6	10.3	15.3	24	19.5
	Richer	30.1	29.4	28.8	18.8	23.1
	Richest	55.1	55.5	45	10.6	26.9
Marital duration (grouped) [excludes: married gauna not performed]	0-4 years	16.8	17.9	18.3	17.1	17.5
	5-9 years	26.9	25.3	25.1	23.5	24.4
	10-14 years	25	23	23.4	21.4	22.3
	15-19 years	17.3	18	17.1	17.4	17.4
	20-24 years	8.1	8.6	9.1	10.5	9.8
	25-29 years	3.9	4.6	4.6	6.7	5.8
	30 years & above	1.9	2.5	2.4	3.3	2.9
Person aged 60 years or more	None	76	74.2	73.7	69.2	71.3
	Only male aged	7.8	9.4	9.3	11.8	10.7

Socio-economic correlates	Group	Place of residence				
		Metro	**Capital**	**Town**	**Rural**	**Total**
	Only female aged	9.7	9.3	10.4	11.1	10.6
	Aged of both sex	6.4	7.1	6.6	8	7.4
Respondent's occupation	Not Employed	74.3	72.4	71.9	51.1	60
	Employed	25.7	27.6	28.1	48.9	40

Source: *Estimated from DHS Individual file.*