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Why Care for the Care Economy: Empirical Evidence from Nepal

CAMA Working Paper 31/2022
April 2022

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Keywords

Unpaid Care, Women, Employment, Nepal, Gender inequality

JEL Classification

I31, J16, O15

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ISSN 2206-0332

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Using data from the Nepal Living Standards Survey (NLSS)-III-2010/11 this study examines the effect of unpaid care work on the capability of care providers to earn a living and to attain tertiary education. The conceptual model, motivated by the Capability Approach, delineates contemporaneous and compounding effects of undertaking unpaid care work on the caregiver and its wider intergenerational and societal effects. Using an instrumental variables approach, the empirical analysis identifies adverse gender-differentiated effects of time devoted to caregiving: While women and men experience commensurate declines in their weekly employment hours, likelihood of employment and tertiary education decreases for women only. The study is one of the few least developed-country studies that use time-use survey data to examine causal effects of unpaid work, and the first study for Nepal. It draws attention of policymakers to the adverse effects of care burden on individual well-being and its broader development outcomes in Nepal.

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1 Introduction

Feminist economics has long emphasized the importance of unpaid care work for both human well-being and reproducing the labor power for the monetary economy on a daily and intergenerational basis. Unpaid care work generally refers to unpaid services provided within households, including care of persons and housework or domestic chores. This work contributes to the well-being of the care recipients—dependent adults and children—by meeting their physical and emotional needs. But caregiving also has the potential to negatively impact the care provider’s well-being by limiting their capabilities, such as their ability to pursue further education, take up paid employment, and be healthy. These adverse impacts on caregivers in turn can have consequences over the long term, for human well-being intergenerationally and for economic growth (Beneria, Berik, and Floro 2016).

This study develops a conceptual framework based on the Capability Approach (CA) to examine the consequences of unpaid care work at multiple levels. The empirical analysis focuses on the contemporaneous effects of unpaid care work on care providers in Nepal, a South-Asian low-income, subsistence agricultural economy where unpaid care work is the sole responsibility of households and predominantly women in them (Central Bureau of Statistics (CBS), 2019). The study uses a unique time-use dataset for Nepal, generated as part of the NLSS 2010/11. As per our knowledge, so far only two other least developed-country studies examine the impact of unpaid care work on paid work by using time-use survey (TUS) data (Ford 2017, Ward 2017), and this is the first study to do so for Nepal.

First, we examine how “unpaid care work,” which comprises care provided to children and elderly/sick/disabled in the household, can affect care providers’ well-being, have spillover effects

intergenerationally, and affect macroeconomic outcomes, by presenting three conceptual models motivated by the CA (Sen 1999, 2004; Nussbaum 2003; Strenio 2020): 1) Vicious Cycle model; 2) Lifecycle and Intergenerational Model; and 3) Caregiving and Well-being model. Second, we use data from NLSS-III (2010/11) and perform an instrument variables analysis to examine the causal effects of unpaid care work on care providers' ability to undertake employment to earn a living and to attain tertiary education. "Employment" refers to work outside home including farm activities, animal husbandry, businesses, wage, and salaried work in a week. In NLSS 2010/11 an individual is considered employed if they spend greater than zero hour in a week in these activities. "Tertiary education" refers to holding a bachelor- or master-level college degree. We look at three outcome variables - likelihood of employment, number of weekly hours employed (at work) outside the home, and likelihood of attaining tertiary education, each disaggregated by gender.

We find a significant tradeoff between unpaid care work and the likelihood of employment for women in Nepal, whereas men and women both reduce their weekly work hours as a result of caregiving by similar margins. Further, unpaid care work negatively affects only women's ability to attain tertiary education. While we cannot examine the compounding long-term consequences of negative employment and education effects due to the cross-sectional nature of the data, we show in the conceptual models that these effects can be transmitted intergenerationally, contributing to persistent gender inequality and adverse macroeconomic consequences, thus obstructing Nepal's overall development. Conceptualizing the impact of unpaid caregiving in terms of societal well-being outcomes could help in formulating more focused and effective policy decisions to ensure that caregivers are not deprived of opportunities to seek education, take paid work, and be healthy.

The study makes three contributions to the existing literature. To our knowledge, it is the first attempt: 1) to apply the CA to highlight consequences of unpaid care work for care providers' deprivation of capabilities and functionings and to conceptualize linkages between unpaid care labor and overall macroeconomic development; 2) to evaluate the impact of unpaid care work on care provider's employment and education outcomes in Nepal using time-use data from NLSS; 3) to highlight how unpaid care work has gender-differentiated labor market and education consequences in a low-income economy.

2. Background: Nepal

Nepal is among the least-developed countries in the world. It is pre-dominantly a subsistence-based agrarian economy, employing 64 percent of the total employed in agriculture, 15 percent in industry, and 21 percent in services (International Labour Organization (ILO) 2019). In Nepal, 62.2 percent of the labor force is concentrated in the informal sector (CBS 2019).

As of 2020, Nepal has a total population of 29 million of which 65 percent are in the working age group of 15-64 years (UN Department of Economic and Social Affairs (DESA), Population Division 2019). Population ages 65 years and above are expected to more than double from 5.8 percent (1.7 million) of the population in 2019 to 12.8 percent (4.6 million) by 2050, which is higher than the average growth for least-developed countries (UN DESA, Population Division 2019). These demographic changes are expected to increase the demand for elderly care in the coming decades. King, Randolph, Floro, and Suh (2021) argue that care needs across countries depend on fertility rates, aging of the population, and the prevalence and causes of morbidity, on this account Nepal's need for care is likely to expand. Moreover, in low-income countries, like Nepal, unpaid care work, is more time-consuming because limited resources in these countries make substitutes for unpaid care work, whether through the market or public

provision, scarce. Therefore, given the current lackluster care infrastructure and anticipated demographic change, both care and employment needs could peak at the same time.

A field survey conducted in Nepal as part of the research project - ‘Balancing Unpaid Care Work and Paid Work: Successes, Challenges and Lessons for Women’s Economic Empowerment Programmes and Policies’ during 2016-17 shows that 56 percent of women respondents in nuclear families and 64 percent in extended families reported being solely responsible for household work (Chopra and Zambelli 2017). According to the Nepal Labour Force Survey (NLFS) 2017/18, 71.4 percent of those aged 15 years and above report doing at least some unpaid domestic chores, and child and elderly care activities, and this proportion is higher for women (90.7 percent) compared to men (47.2 percent). Within this unpaid work category, 32 percent of women and 16 percent of men report providing care to children and elderly.

Literature Review: The Tradeoff between Unpaid Care Work and Paid Work

Unpaid care work is an indispensable part of household provisioning, contributing to societal well-being and supporting the monetary economy through the reproduction of labor power. However, heavy burden of unpaid care work can generate costs to the care provider, including time poverty (lack of time for personal care or leisure), poor health, and limited employment opportunities, particularly for women.

Global evidence indicates that unpaid care work is unequally shared between men and women (ILO 2018). Women and girls worldwide perform 76.2 percent of the total amount of unpaid care work and spend on average 3.2 times more time than men in unpaid care work, these figures reach 80 percent and 4.1 times in Asia and the Pacific region. The unequal sharing of unpaid care work reinforces unequal social, economic, and political opportunities for women and furthers the patriarchal status quo.

Scholarship on unpaid caregiving provides evidence on the economic and health costs of unpaid care work, and its consequences for gender inequality. Studies indicate an inverse relationship of caregiving with labor force participation (LFP) and earnings (Carmichael and Charles 1998 and 2003; Lilly, Laporte and Coyte 2007; Houtven, Harold, Coe, and Skira 2013). There is evidence for existence of multiple caregiving thresholds, beyond which increase in caregiving hours have a larger negative effect on LFP than below this threshold (Heitmueller 2007; Houtven et al. 2013). Since unpaid care work is disproportionately done by women, this negative impact is more profound for women, affecting their ability to participate in the paid economy, and leading to gender gaps in employment outcomes, wages, and pensions. In 2018, globally 606 million women of working age (15-59 years) reported to be outside the labor force due to unpaid care work, compared to 41 million men (ILO 2018). Ferrant, Pesando, and Nowacka (2014) shows that a decrease in women's unpaid care work by one hour is associated with nearly a five-percentage point (pp) increase in their LFP rate (for a given level of GDP per capita, fertility rate, female unemployment rate, female education, urbanization rate and maternity leave). Further, using a nationwide data and spatio-temporal variation in childcare programmes in Germany, Müller and Wrohlich (2020) find that increase in availability of subsidized childcare slots (that reduces mother's care burden within households), by one pp increases mothers' LFP rate by 0.2 pp.

Using longitudinal data, Brimblecombe et al. (2020) estimate the employment and health costs to the young population who provides care in England. They find that people aged 16 to 25 who provided care at baseline (2014/16) were less likely to be employed, had lower earnings from paid employment, and had poorer mental and physical health at follow-up (2015/17) compared to young people of the same age who were not providing care at baseline. Few other studies have

used longitudinal datasets to assess the impact of caregiving on labor market outcomes (Heitmueller 2007; Houtven, Harold, Coe, and Skira 2013; Fahle and McGarry 2018). These studies have pointed to a negative relationship between caregiving and labor supply, with some evidence of stronger labor market trade-offs for women than men. Moreover, only a few studies have explicitly examined the differential impact of caregiving on men and women. In Britain, Carmichael and Charles (2003) found that women providing care for at least 10 hours a week experienced larger adverse effect on their labor market participation compared to men. Other studies have generally found labor market effects to be similar across genders (Lilly, Laporte and Coyte 2010, Nguyen and Connelly, 2014, Stanfors, Jacobs and Neilson 2019). In contrast to the mixed evidence on labor market outcomes, most studies identify stronger negative effects on women's mental health, including stress, depression, anxiety, and life satisfaction (Yee and Schulz 2000; Raschick and Ingersoll-Dayton 2004). Pinquart and So rnsen (2006) in a meta-analysis of the literature find that these gender differences can be partly explained by women providing longer and more intense care.

The other relation that is often explored is between gender inequality in unpaid care work and gender inequality in labor market. In countries where women spend nearly eight times the amount of time on unpaid care activities than men, female share of labor force is 35 percent compared to 50 percent when the gender ratio drops to two times (for a given level of GDP per capita, fertility rate, urbanization rate, maternity leave and gender inequality in unemployment and education) (Ferrant, Pesando, and Nowacka 2014). Women's reconciliation of care responsibilities with paid employment can lead to "occupational downgrading", where women choose employment below their skills level and accept poor job quality (Hegewisch and Gornick 2011). Low- and middle-income families are unable to rely on market provisioning of care, such as hiring

domestic workers, thus they combine their employment and unpaid care work that have negative employment repercussions. Among working parents in Vietnam, caregiving responsibilities resulted in lost income, promotions, or difficulties in retaining jobs of 63 percent of one or both parents surveyed (Vo, Penrose, and Heymann 2007). Moreover, unpaid care work can have indirect macroeconomic effects as it is a cost to the society in terms lower utilization of female labor, thereby lower economic growth (Elborgh-Woytek et al. 2013). There is growing research on incorporating gender, in particular care activities, into macroeconomic models to improve the relevance of macroeconomic theory and obtain effective policy outcomes (Seguino 2020, Braunstein, Bouhia, and Seguino 2020).

It is important to note that studies relating unpaid care work and employment outcomes are mostly based on developed countries where regular TUSs gained momentum at the start of the 21st century. Lack of time-use data has constrained research on the impact of unpaid care activities on paid activities, gender inequality and well-being, especially in low-income countries, due to the high cost of implementing TUSs (Charmes 2019). There is a handful of Nepal-specific studies that have studied the linkages between unpaid care work, paid work, education, and women's status, by mostly relying on data collected through primary research using a small sample size. For instance, Ghosh and Chopra (2019) show that quality of paid work and a reallocation of time between paid work and unpaid work are necessary for women's empowerment in Nepal. Marphatiaa and Moussiéb (2013) argue that women's education plays a role in recognizing the importance of their care work, which can lead to its redistribution. They suggest that a more equitable sharing of care work is needed to improve women's status; and that gender norms about women's role in society must be transformed so that unpaid care work does not prevent girls' education in Nepal.

Our study contributes new empirical evidence to the sparse scholarship on the nexus of unpaid care work and employment and education opportunities in low-income countries. The analysis utilizes time-use dataset for Nepal, generated as part of NLSS 2010-11. Nepal is one of the eight least-developed countries that have collected time-use data (Ferrant and Thim 2019). The 2010/11 NLSS-III collected time-use data using an activity list comprising care, domestic, and employment activities. This approach is common in low-income countries where resource constraints and illiteracy prevent conducting regular TUSs (Esquivel, Budlender, Folbre, and Hirway 2008; Esquivel 2011). Typically, countries add a time-use module to an existing survey, such as a labor force or household survey, and use an activity-list approach to generate time-allocation data, albeit this information is less detailed than time-use diary approach (Esquivel et al. 2008, Charmes, 2019). As in many other country surveys, the Nepal TUS aims to record the primary activity in a given time segment. In addition, as in some countries, the Nepal time-use module was a one-time addition in the 2010-11 NLSS, which does not allow generation of information for assessing changes over time. While Nepal has plans to implement a new LSS in 2022, for the time being the 2010-2011 NLSS remains the only source of national scale time-use data. The data limitation thus shapes methodological choices in this study, namely, to rely on cross-section analysis to make inferences, and to use an instrumental variables estimation to establish causality.

3. Conceptual Framework: Capability Approach and Unpaid Care

In this study we use the CA to conceptualize the consequences of caregiving for the care provider. The CA was first conceptualized by Amartya K. Sen in 1980 (Sen, 1980). CA is a departure from the mainstream economics understanding of well-being in terms utility maximization and income. While CA recognizes the importance of access to income and other non-market resources as

requisite for people's well-being, it emphasizes people's capabilities and functionings as the measure of their well-being. *Capabilities* are available opportunities that an individual has the ability to do and to be in their life. *Functionings* are the actual outcomes that an individual chooses from the available set of capabilities, the one that they assign the highest value. As a normative approach, the CA emphasizes expansion of people's freedom to experience different capabilities and to achieve their most valued functionings as the goal of economic and social policy. This approach is used widely to track progress in human development, as implemented in the suite of Human Development indices of the United Nations Development Programme (UNDP) .

Strenio (2020) developed the CA framework to examine the contemporaneous and long-term consequences of Intimate Partner Violence (IPV) by presenting a vicious cycle model and a lifecycle model that incorporate resources, capabilities, and functionings. Our study builds on her conceptual models to show how unpaid care work interferes with individuals' access to resources, their capabilities set, and desired functioning. In addition, we develop two complementary frameworks of impacts of unpaid care work within household: to illustrate intergenerational spillover effects and a "Caregiving and Well-being" framework to trace potential macroeconomic and overall well-being effects.

Feminist economists acknowledge the ambiguous nature of care work in expanding well-being. Within the framework of CA, first, the ability to care is a capability of the care provider, and second, care activities are unambiguously important for the care recipient's well-being (Robeyns, 2003). Provision of care has an important public good dimension because it improves productive human capabilities, and the benefits spill over to improve the well-being of the community as a whole (Folbre, 2006). However, excessive care burden can have negative repercussions for the caregiver, undermining their capabilities like employment, education, health,

and time autonomy. Thus, this third aspect of caregiving has a potential negative contribution to well-being while the first two dimensions of care are unambiguously positive for human well-being. Whether caregiving contributes to improved functionings of the caregiver depends on whether it is undertaken out of choice and the number of hours it entails (Robeyns, 2003). The time constraint of 24 hours in a day leads people to make tradeoffs between paid work, unpaid work, leisure, and rest (Carmichael and Charles, 2003; Heitmueller, 2007). In the absence of policy supports or community arrangements the time trade-off could undermine caregivers' ability to develop their own capabilities and that of their children.

The focus of this study is on the potentially adverse effects of care work for the care provider. In conceptualizing these consequences of caregiving, we highlight three capabilities: to earn a living which we capture through employment; to attain education; and to be healthy. Due to data limitations, however, the empirical analysis focuses only on employment and education capabilities.

Employment as capability: To be able to “earn a decent standard of living” has been identified as a capability and used in UNDP’s human development and gender indices. The most common proxies at the macro level to capture this capability is income measures like income per capita or LFP rate. Nussbaum’s (2003) list of capabilities identifies ‘control over one’s environment’ as a capability that refers to both the ability to make political choices that affect one’s life and the ability to secure one’s livelihood through employment and asset ownership, while Robeyns (2003) identified “paid work and projects” as a capability of individuals. This study uses employment as a proxy for earning a decent standard of living, and an indicator of individual well-being. It encompasses wage and salaried employment, working on own farm or

being self-employed. The burden of unpaid care work within household could interfere with people's ability to work outside home.

Education as a capability: Education or knowledge has been identified as a key capability in UNDP's Human Development indices. Being able to be educated is a capability on lists of central capabilities of both Nussbaum (2003) and Robeyns (2003). Unpaid care work can impede the ability of care givers to pursue their schooling, whether through gender norms that restrict young women's schooling beyond secondary school or through disproportionate unpaid caring responsibilities in the household.

Health as a capability: To "live a long healthy life" has been identified as a key capability in UNDP's human development and gender indexes. Life expectancy at birth is commonly used as the indicator to measure a long and healthy life as a component of Human Development Index (HDI). Nussbaum (2003) includes bodily health as one of the capabilities on her list. This capability refers to being able to have good health, including reproductive health; to be adequately nourished and to have adequate shelter. Further, Robeyns's (2003) list of capabilities includes life (being able to be born) and physical health (once born, being able to live a life of normal length in good health). In our study we consider health to be a capability that has both an intrinsic value and an instrumental role. We indicate how excessive unpaid care burden can deprive caregivers especially women from having a healthy life. For instance, women who engage in domestic chores like cooking with firewood in low-income countries have been found to have respiratory problems (Parikh and Parikh 2011). In addition, the double burden of paid and unpaid work leaves less time available for rest and personal care that could further affect individual's health. This time poverty has been found to be stronger for women (Gammage 2010).

Conceptual models

Vicious Cycle model: Figure 1 presents a vicious cycle model that describes the linkages between resources, capabilities and functionings of a caregiver. Caregiving is a non-monetary resource for household livelihoods, but it can deprive caregivers of time and money resources. The lower employment hours or low-quality of employment due to unpaid care work responsibilities could reduce individual's income resources. These limited resources in turn constrain caregiver's capabilities set (Link A). As a result, the caregiver is deprived of capabilities to earn a living; attain education, skills and on-the job training, and acquire adequate nourishment and avoid ill health. These deprivations further prevent them from achieving their most-valued functioning (Link B). The inability to achieve a specific functioning further impacts the attainment of resources, and thus the vicious cycle continues (Link C). An individual deprived of capabilities ends up having poor quality functionings and consequently poor quality or lower resources. Each of these links are shaped by "conversion factors", such as gender, ethnicity, class, that differentiate outcomes. In Figure 1 we illustrate gender as the conversion factor.

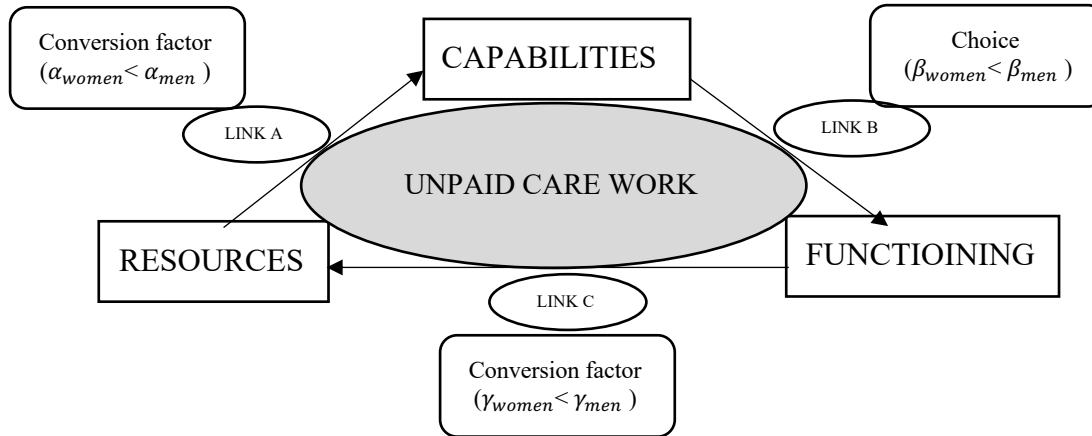
Let's say α and γ represent the conversion factors for Link A and Link C respectively, and β represents the choice factor for Link C. The gender differences in terms of deprivations can be understood in terms of lower conversion factors and lower choice factor for women compared to men.

$$\alpha_{\text{women}} < \alpha_{\text{men}}$$

$$\beta_{\text{women}} < \beta_{\text{men}}$$

$$\gamma_{\text{women}} < \gamma_{\text{men}}$$

Figure 1 Vicious Cycle Model



Below we list some examples to show how the conversion and choice factors differ between men (or boys) and women (or girls).

- i) Link A: $\alpha_{women} < \alpha_{men}$

Social norms surrounding gender roles define women as home makers and men as bread winners, more so in the lower-middle-income country. This leaves the task of unpaid caregiving mainly to women or girls, who end up having lesser time to undertake other activities like education, employment or personal care as compared to men or boys. In addition, lower monetary resources within the household, lead to a tradeoff between resource allocation to boys vs. girls, typically favoring boys over girls. The result is lower capability set for girls.

- ii) Link B: $\beta_{women} < \beta_{men}$

At this stage men and women have different capabilities sets, which conditions their choices to join the labor market. Further, the choice factor is more limited for women than men, because unpaid care work restricts choices of translating capability into functioning for women or girls more than for men or boys. In other words, the burden

of unpaid care work restricts women's ability to convert their education into a good quality (full-time, high-paying, formal sector) job/occupation and therefore divert to part-time, low-paying or informal sector jobs that offer flexibility in work schedules, allowing them to combine caregiving with employment. This constraint can be observed in gender-based occupational segregation.

iii) Link C $\gamma_{\text{women}} < \gamma_{\text{men}}$

Now that women end up with limited functioning options, their ability to achieve desired resources also gets affected by their chosen functioning. Gender occupational segregation and gender pay discrimination (being paid differently for same work) contribute to gender earnings gap and women's income poverty. Lower resources in turn, affects their capabilities and functionings in the vicious cycle model.

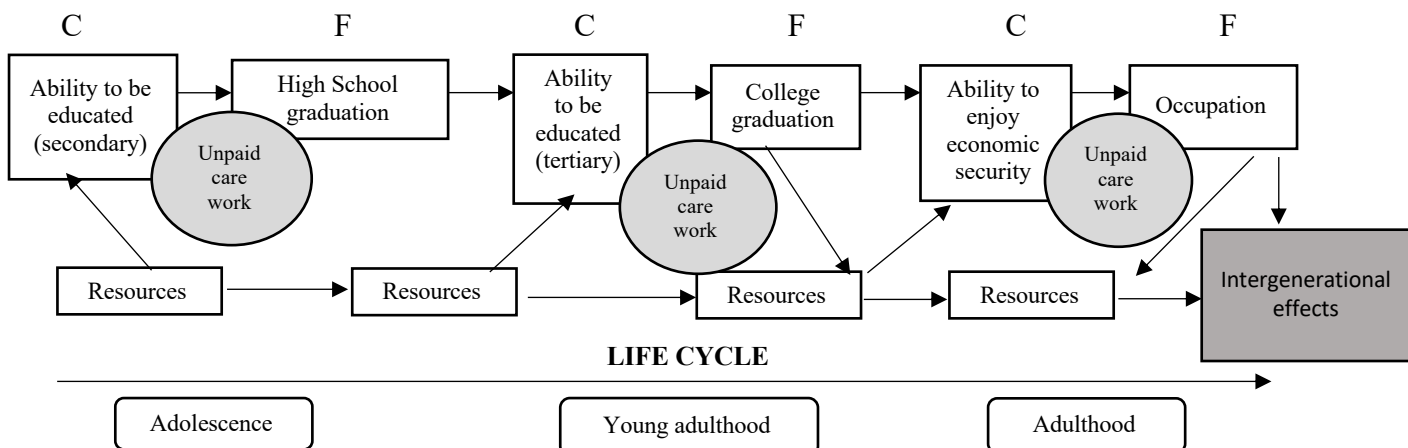
Lifecycle and Intergenerational Model: Figure 2 presents the life course of a woman (or man) who bears the disproportionate burden of unpaid care work within the household at every stage of her life from adolescence to adulthood. It is important to understand how unpaid care work interferes with individual's ability to attain specific capabilities, choose specific functioning, and acquire resources that affect their overall well-being contemporaneously and over the life span. We add an intergenerational component to the life-cycle model and argue that these deprivations could be passed on to the next generation through spill-over effects on children's capabilities.

Through Model 2, we show that at the adolescence and young adulthood stages care responsibilities can deprive individuals from capabilities by using the example of attaining education, both at secondary and tertiary levels. According to this model, unpaid care work can potentially interfere with the ability to attain education because more time devoted to unpaid care work can leave less time to attend school and do homework. Lack of quality education due to care

responsibilities further affects individual's capabilities in the following stage of adulthood, by restricting their occupation choice set. This in turn interfere with the ability to earn a decent standard of living. For example, women with only high school education will have very different occupation choices compared to a college graduate. Even when tertiary education is attained women tend to take up more flexible jobs due to unpaid care work burden. Choice of occupation further conditions access to economic resources. Such deprivations get passed on to the next generation in the form of more limited resources and standard of living that gets conditioned by the type of occupation of parents, their earnings and gender norms. Therefore, unpaid care work can adversely affect women's capabilities and functioning contemporaneously, which gets compounded over the life span and, spills over to the next generation.

Previous research suggests that mothers allocate resources and prioritize their children's well-being more than fathers (Thomas 1990; Doss 2013). When women control personal and/or family income, they spend it on food, health, clothing and education for their children, that has positive impact on household well-being as well as long-run human capital formation and economic growth (Food and Agriculture Organization (FAO) 2011). Women who are deprived of an earning, have been observed to have less bargaining power over decision making about consumption spending (Anderson and Eswaran, 2009). Lower ability to attain education affects women's employment opportunities and earnings, which potentially lead to lower bargaining position of women in the household, thereby affecting spending on children's well-being. This leads to intergenerational spillover of capabilities deprivation and affects skill formation. Moreover, unpaid care work through its negative employment effects perpetuates gender differences in labor market in terms of LFP, wages, and occupational segregation that have feedback loops and gets transmitted across generations.

Figure 2 Lifecycle and Intergenerational Model¹



Evidence for life cycle effects of unpaid work is available in the NLFS-2017/18. In Nepal, over one million working-age women (9 percent of the female population) were willing to work in a paid job, but they were not looking or were unavailable for jobs because of family responsibilities or family members considered they should stay at home (CBS 2019). In addition, in the NLSS 2010-11, one quarter (25.5 percent) of people reported the reason for never attending school as “Help needed at home.” Within this category, more women reported to have never attended school due to help needed at home than men (29.6 percent women vs. 13.5 percent men). Perceptions and social norms surrounding gender division of labor, forces women and girls to be restricted to household work or self-employment, that are associated with lower educational attainment as compared to the desirable occupations for men. The deprivations in terms of education and employment can then pass intergenerationally affecting overall development in Nepal, however due to lack of data we are unable to gather evidence on intergenerational effects.

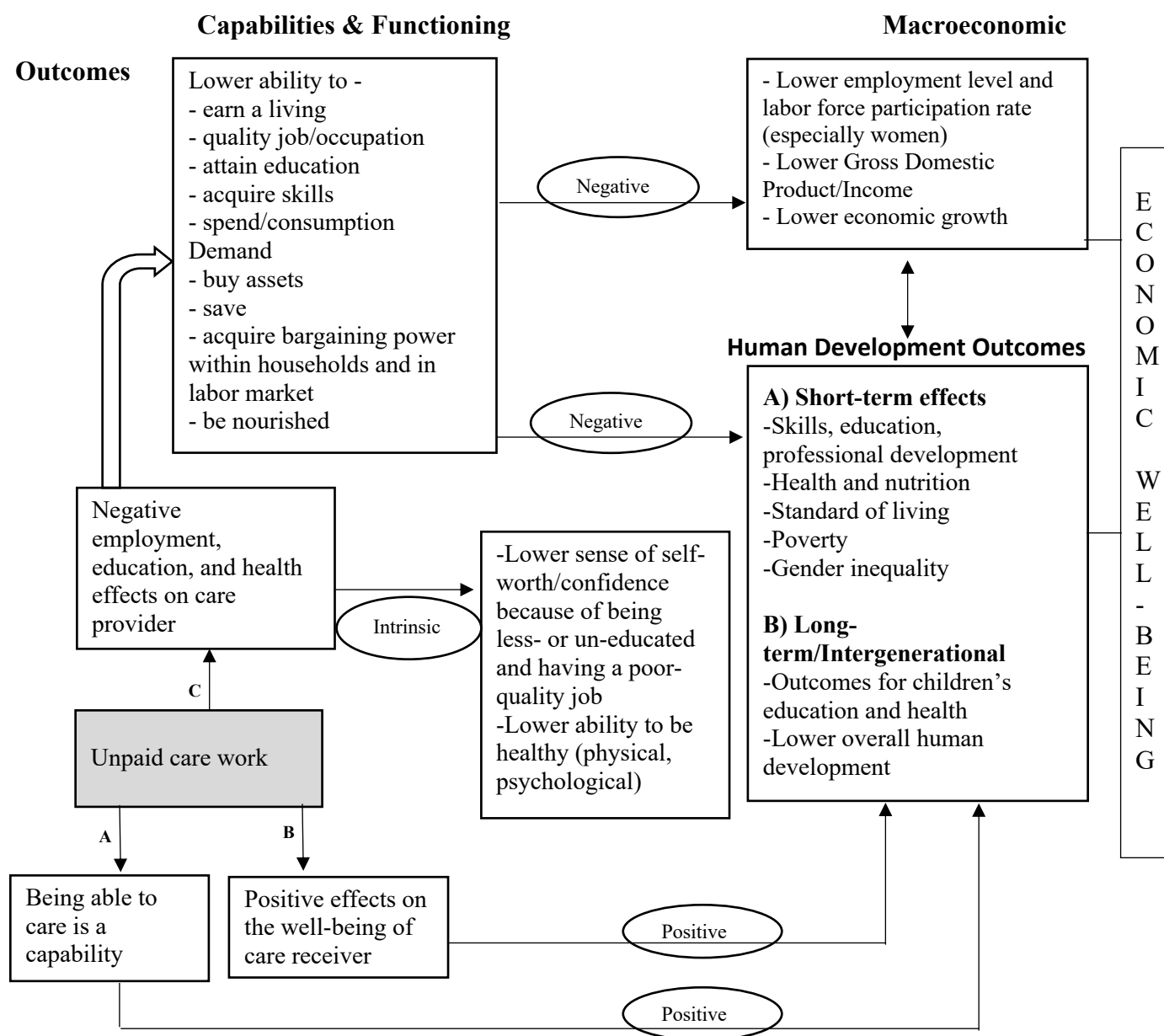
“Caregiving and Well-being Model: Figure 3 presents the third framework that incorporates the multiple linkages through which unpaid care work contributes to societal well-

¹ C and F in the figure refer to capabilities and functioning respectively.

being: i) as a capability of care provider (positive); ii) positive effects on the well-being of care recipients; and iii) negative effects for the care providers in terms of deprivations of other capabilities. We expand on the third pathway, to show that deprivation of capabilities and functionings of the care providers can lead to underutilization of the workforce and indirectly and adversely affect macroeconomic outcomes: country economic growth and labor market outcomes, and development outcomes through lower human capacities that get transmitted intergenerationally. Both outcomes combined are important for the overall well-being of an economy and have two-way linkages between each other (Ranis and Stewart, 2007).

Our hypothesis is that unpaid care work can adversely affect three main capabilities of care providers: the ability to earn a living through employment; ability to attain tertiary education; and ability to be healthy. All three are intrinsically important and have an instrumental role in further affecting other capabilities and functioning, which in turn affect societal well-being.

Figure 3 Caregiving and Well-Being Model



4. Data and Methodology

4.1 Data

We use data from NLSS-III, 2010-11, that sampled 4,926 individuals, of which 2,308 were men and 2,618 were women. The survey was conducted as part of the World Bank's household survey program, Living Standard Measurement Study (LSMS), and collected data on household welfare

using multi-topic questionnaire. Nepal's CBS carried out the first round of NLSS in 1993 with the objective of measuring people's living standards and for determining the extent and dimensions of poverty in Nepal. In its third round in 2010-11 the NLSS-III included a module featuring an activity list to capture time allocation of individuals, using an interview methodology with a recall period of one week (seven days a week). Since then, there is no survey that records time-use patterns of individuals in Nepal, other than small fieldwork studies (Budlender and Moussié, 2013; Ghosh, Singh, and Chigateri, 2017).

The survey includes gender-disaggregated data on time spent on child and elderly care; domestic chores including cooking, cleaning, shopping, house repair, food processing, knitting, animal care, firewood collection, fodder collection, and employment activities. The cross-section data for 2010-11 serves as the most extensive dataset to examine the effect of unpaid care work on likelihood of employment and number of work hours per week by controlling for a range of factors that can affect employment, such as age, marital status, household size, household income, educational status and time spent on domestic chores.

Our outcome variables of interest are employment and tertiary education. An individual is considered employed if they spend greater than zero hour in a week on work activities outside home. The primary explanatory variable in our analysis is unpaid care work. We use both binary and continuous care variables, such that the former compare outcomes for care provider versus those providing no care, and the latter captures effect of marginal caregiving above the average value on outcome variables. In addition, we classify care hours into "high-care" and "low-care" categories using a threshold of eight hours to capture effect of excessive caregiving. There is no consensus in the literature on the threshold defining high care. In this study "high-care" refers to more than eight hours of weekly care, while low care is less than or equal to eight hours of weekly

care.² We also examined other threshold hours, such as five, ten, sixteen, and twenty hours per week and found that as care hour threshold rises the magnitude of the negative effects on employment increases non-linearly. We do not find the relationship between unpaid care and employment to switch signs below and above the thresholds.

In Table 1 ³we describe the details of outcome and explanatory variables used in our analysis.

Table 1 Description of Variables, and the hypothesized directions of the Relationship between Outcome Variables and Unpaid Care Work

Indicator		Description	Hypothesis
<i>Outcome variables</i>			
Employment	Employment/work dummy	Binary “work” variable that takes the value of 1 if an individual is employed for more than zero hours in a week, and 0 otherwise.	↓
	Work hour per week	“Work hours per week” variable captures the extent of work by measuring the number of hours in a week spent on employment activity.	↓
Education	Tertiary education dummy	Binary “tertiary education” variable that takes the value of 1 if an individual is a college graduate that is the highest education level is bachelor or master, and 0 otherwise.	↓
<i>Explanatory variable</i>			
Unpaid care work	Any care	Takes a value of 1 if an individual provides care for greater than zero hours in a week /for any amount of care (in hours) provided in a week and 0 otherwise	
	Care hours per week	Sum of time spent on child and elderly/sick/disabled care in a week and captures the extent of caregiving	
	High care	Binary variable that takes a value of 1 for weekly care hours greater than eight and zero otherwise.	

The empirical model uses data for individuals aged 11 years and above, which lead to a decline in the sample size. Further, we lose some observations for work hours per week, tertiary education, and household income variables due to missing values and hence the sample size is

² Eight-hour per week caregiving threshold is also identified by Chai, Fu and Coyte (2021), while Carmichael and Charles (2003) use 10 hours per week, Heitmuller (2007) and Houtven et al. (2013) use 20 hours per week.

³ All tables followed by figures are placed after the reference list

lower in the regression tables.

4.2 Empirical Issues

It is widely argued that cross-sectional estimates are confounded by endogeneity (Heitmueller 2007; Kalenkoski 2017). Reverse causation between remunerative work (hereafter work) and unpaid care exists because it is hard to be certain about whether individuals quit their job to provide care, or they provide care because they are not employed. Further, individual's unobserved characteristics, such as their innate nature and ability, may influence both their willingness to work and provide care, affecting the relative cost of providing informal care versus buying formal care services. Ciani (2012) for Europe argued that such time invariant unobserved heterogeneity matters more than time variant unobserved heterogeneity especially in caregiving for older and sick family members.

To overcome endogeneity and provide more robust results, studies have used panel data (Heitmueller 2007, Houtven et al. 2013; Fahle and McGarry 2018; Brimblecombe et al. 2020; Miller and Sedai 2021) and instrumental variables to control for time-invariant and variant unobserved heterogeneity. However, the panel data approach is not feasible due to the lack of regular time-use surveys in most countries. This confines most of the research in this field to estimating cross-sectional correlations between unpaid care, and labor supply, health, and time allocated to leisure (Henz 2004; Bauer and Sousa-Poza 2015; Stanfors et al. 2019).

One way of addressing endogeneity in cross-sectional data is to use instrumental variable (IV) approach. Commonly used instruments for care within households to predict LFP have been the number of siblings, number of grandchildren aged below 16 years, parental characteristics (such as widowed father, recent death of parent, parental education), household member health status, distance from family members (Wolf & Soldo 1994; Ettner, 1995; Johnson & Lo Sasso

2006; Heitmueller 2007; Bolin, Lindgren and Lundborg 2008; Nguyen and Connelly 2014; Chai, Fu and Coyte 2021). The choice of all these instruments is based on the underlying idea that they affect the likelihood of caregiving for the care provider, without being directly related to employment and education outcomes.

In our study, we use the presence of household members less than 6 years of age and/or greater than 69 years as an instrument for caregiving. This is a variation of an instrument used by Chai, Fu and Coyte (2021).⁴ Our IV is a binary variable that takes a value of 1 if there is presence of a household member in the above age group and 0 otherwise. The choice of this instrument is based on the idea that household members in this age group are the main care recipients and their presence in the household will increase caregiving responsibilities for other members. In Nepal, primary education begins at the age 6, when children generally start attending school. Since children start spending more time in school from this age their care needs within the household are expected to be lower than care needs of children less than this age. Further, older people, especially those over 69 years are more likely to suffer from health issues, and are less able to take care of themselves, thus relying on their children and grandchildren for care needs. Therefore, the presence of a household member in the proposed age group is positively correlated to caregiving by other household members, but we argue is unlikely to be related to the outcome variables, other than through caregiving or income to sustain the needs of household members which we use as covariates in our model.

4.3 Empirical Method

⁴ They use three instrumental variables for weekly caregiving hours, including the number of grandchildren aged below 16; whether the husband's father was widowed; and whether the wife's father was widowed.

This section examines the effect of unpaid care work on individual's capabilities in terms of employment and education outcomes in Nepal. We first perform 2 Stage Least-Squares (2SLS) IV regression to examine how unpaid care work affects the likelihood and number of hours of employment, for men and women aged 11 years and above. The presence of household members less than 6 years and/or above 69 years is an instrument for caregiving (here-after IVcare). We successfully tested the relevance and strength of our instrument using tests of under-identification (Kleibergen- Paap rk LM statistic), and weak identification (F-statistic of the instrumental variables in the first stage equation and Cragg-Donald Wald F test).

The analysis relies upon the following IV model:

$$E_i = \beta_0 + \beta_1(Care_i = IVcare) + \beta_i X_i + \varepsilon_i$$

where E_i represents employment variables which are the outcome variables of interest - binary work variable and hours of work; $Care_i$ is the explanatory variables of interest - binary for unpaid care, hours of unpaid care, and high-care versus low-care, given by caregiver 'i'. IVcare is the instrumental variable for caregiving; X_i is a vector of control variables; and ε_i is a random error term. In the baseline case the control vector X_i includes age, marital status, household size, household income, and education. In separate regressions we add time spent on domestic chores as a control.

The first stage of IV regression is estimated by

$$Care_i = \beta_0 + \beta_1(IVcare) + \beta_i X_i + \varepsilon_i$$

We find that IVcare is positively related to caregiving variables and the first stage F-test statistic is greater than 10, as required by the rule of thumb for it to be a relevant instrument (Staiger and Stock, 1997). In the second stage we find the causal effect of caregiving on employment.

Using the same IV we estimate the following 2SLS IV model to examine the effect of unpaid care work on the likelihood of attaining tertiary education for men and women.

$$TE_i = \beta_0 + \beta_1(Care_i = IVcare) + \beta_i X_i + \varepsilon_i$$

where TE_i represents the outcome variable - tertiary education dummy; $Care_i$ is the explanatory variables of interest - binary for unpaid care, hours of unpaid care, and high-care versus low-care, given by caregiver 'i'. IVcare is the instrument variable for caregiving; X_i is a vector of control variables that include age, marital status, household size, household income, employment status, and time spent on domestic chores; and ε_i is a random error term.

5. Results

5.1 Descriptive Statistics

Table 2 presents descriptive statistics for the entire sample disaggregated by gender and the *t-test* results to show the significance in the difference of means between men and women. In our sample, we do not find statistically significant gender difference for the variables, except marital status. We observe that unpaid domestic chores, care work, and work activities outside home are almost equally shared between men and women in our data from Nepal.

The average employment work hours per week are 25.17 for men and 25.30 for women. Women on average spend 0.27 hours more on care work per week than men (2.40 versus 2.13) and 0.83 hours more per week on domestic chores compared to men (15.86 versus 15.02).

Average age of men in the survey is 28.6 years compared to 28.76 for women, while the average age of men and women in the sample aged 11 years and above that we use for employment regression is 36.7 and 35.5, respectively. The average household size is 7 and average household income is Nepalese Rupee (NPR) 1,328.26 per month (refer to Table 2 notes). There is no statistical difference between men and women's education status, whereas we find small but statistically significant difference between men and women's marital status ($p < 0.001$).

Table 2: Descriptive Statistics by gender, NLSS 2010-11

Variables	Men (M)			Women (W)			Difference (M-W)
	Obs.	Mean	SD	Obs.	Mean	SD	p-value
Employment (binary)	2,308	0.72	0.45	2,618	0.73	0.44	-0.013
Work hours per week (hours)	2,079	25.17	26.90	2,349	25.30	25.37	-0.123
Any care (binary)	2,308	0.18	0.38	2,618	0.19	0.39	-0.013
Care hours per week (all care providers)	2,308	2.13	6.45	2,618	2.40	7.07	-0.27
Domestic chores ¹	403	12.2	10.8	490	12.81	11.6	-0.62
Total hh work (care and domestic chores)	2,308	15.02	18.26	2,618	15.86	18.12	-0.83*
Total work (care, domestic and employment)	2,079	41.97	34.02	2,349	43.47	33.82	-1.5
Age	2,308	28.61	21.9	2,618	28.76	20.55	-0.15
Education status ²	2,175	1.947	0.85	2,466	1.945	0.85	0.00
Marital status ³	2,308	1.69	1.01	2,618	1.86	1.16	-0.17***
Aggregate							
	Obs.	Mean	SD	Min	Max		
Household income (NPR ⁴)	4,926	1,328.26	7032.1	0	120,000		
Household size	4,926	6.64	2.98	1	23		

Descriptive statistics are for the entire sample. P-value column shows the p-value for *ttest* of significance of difference of means. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

1. Domestic chores include cooking, cleaning, shopping, house repair, food processing, knitting, animal care, firewood collection, fodder collection.
2. Education status includes 3 categories- never attended school/college (base,1), attended school/college in the past (2), currently attending school/college (3).
3. Marital status includes 7 categories- never married (base, 1), single married (2), poly-married (3), re-married (4), widow/widower (5), divorced (6), separated (7)
4. US\$ 1 = Nepalese Rupee (NPR) 74.53 (2011)

5.2 Regression Results (WIP)

Our regression results substantiate a negative effect of unpaid care work on employment outcomes in Nepal, which is more pronounced and significant for women, when controlled for age, marital status, household size, household income, and education. However, when we additionally control for time spent on domestic chores the magnitude of the negative effect on work hours per week declines but remains significant and becomes insignificant for likelihood of work. To estimate the effect of only the direct caregiving component of unpaid care work, it is crucial to control for time spent on domestic chores which is considered indirect care but overlaps with direct caregiving. This is an anticipated result, since greater time spent on domestic chores is also expected to have a negative effect on employment variables, and not controlling for it in the model would overestimate the negative effects of caregiving.

We first examine the effect of three care variables – binary of care, care hour per week, and high-care—on the likelihood of employment and the work hours per week for all individuals, and for men and women separately. Columns 1, 2 and 3 in Tables 3 to 8, present the baseline results with age, marital status, household size, household income and education as controls, whereas columns 4,5 and 6 show results when time spent on domestic chores is added to the set of controls.

In Table 3, columns 1, 2, and 3 shows how binary of care affects the likelihood of employment for the aggregate sample, men and women respectively. We find significant results for women. Probability of employment is 19 percentage points (pp) ($p < 0.05$) lower for women providing any care than no care, whereas it is 3 pp higher for men providing any care than no care, however the result is statistically insignificant. Further for the aggregate sample the likelihood is 10 percentage points (pp) lower for those providing any care versus no care, but this again is

insignificant. There is insignificant effect of caregiving on likelihood of employment when we additionally control for time spent on domestic chores (Table 3, columns 4,5 and 6).

Table 3 2SLS-IV, Effect of care provision (binary) on likelihood of work/employment

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Work (All)	Work (Men)	Work (Women)	Work (All)	Work (Men)	Work (Women)
<i>2SLS-IV</i>						
Any care	-0.10 (0.09)	0.03 (0.15)	-0.19* (0.11)	-0.04 (0.08)	0.10 (0.13)	-0.14 (0.10)
F-test first stage	198	63	128	243	81	167
(Cragg-Donald Wald F statistic)	181	61	123	247	86	163
(Kleibergen-Paap rk LM statistic)	185	61	128	225	77	151
Controls	Without domestic chores	Without domestic chores	Without domestic chores	With domestic chores	With domestic chores	With domestic chores
Observations	2916	1298	1618	2916	1298	1618

Note: Control variables include age, marital status, education status, household size, household income. Time spent on domestic chores is added to the set of controls in Columns 4, 5 and 6.

Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

In Table 4, columns 1, 2, and 3 show how binary of care affects work hours per week. We find that that provisioning of care lowers hours of employment in a week by 26.45 hours ($p < 0.01$) overall. However, we do not observe economically significant gender difference. Men who provide any amount of care work on average 26.64 ($p < 0.01$) hours less per week compared to men who provide no care and women who provide any care work on average 26.10 hours ($p < 0.01$) less per week than women who do not provide any care ($p < 0.01$). The magnitudes decline to 22.14, 21.11 and 22.53 ($p < 0.01$) for the combined sample, men, and women respectively when we additionally control for time spent on domestic chores (Table 4, columns 4,5 and 6).

Table 4 2SLS-IV, Effect of care provision (binary) on work hours per week

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Work hr per week (All)	Work hr per week (Men)	Work hr per week (Women)	Work hr per week (All)	Work hr per week (Men)	Work hr per week (Women)
2SLS-IV						
Any Care	-26.45*** (6.20)	-26.64*** (11.08)	-26.10*** (7.35)	-22.14*** (5.50)	-21.11** (9.53)	-22.53*** (6.65)
F-test first stage	262	58	124	214	72	145
(Cragg-Donald Wald F statistic)	224	59	117	231	81	151
(Kleibergen-Paap rk LM statistic)	242	955	114	197	68	132
Controls	Without domestic chores	Without domestic chores	Without domestic chores	With domestic chores	With domestic chores	With domestic chores
Observations	2664	1191	1473	2664	1191	1473

Refer to Table 3 notes

In Table 5, columns 1,2 and 3 shows that in response to a one-hour increase in weekly care above the average value, the probability of employment declines by 1 pp (insignificant) for the aggregate sample, by 1.7 pp ($p < 0.01$) for women, however it increases by 0.3 pp for men but is insignificant. The magnitudes decline to 1.2 pp for women when we additionally control for time spent on domestic chores, however the result is insignificant (Table 5, column 6).

Table 5 2SLS-IV, Effect of care hours per week on likelihood of work/employment

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Work (All)	Work (Men)	Work (Women)	Work (All)	Work (Men)	Work (Women)
2SLS-IV						
Care	-0.01 (0.01)	0.003 (0.82)	-0.017** (0.01)	-0.004 (0.01)	0.01 (0.01)	-0.012 (0.01)
F-test first stage	89	27	66	114	37	79
(Cragg-Donald Wald F statistic)	77	25	51	110	38	72
(Kleibergen-Paap rk LM statistic)	87	27	63	110	36	76
Controls	Without domestic chores	Without domestic chores	Without domestic chores	With domestic chores	With domestic chores	With domestic chores
Observations	2916	1298	1618	2916	1298	1618

Refer to Table 3 notes

In Table 6, columns 1, 2, and 3 show that in response to a one-hour increase in weekly care above the average value, weekly employment work hours reduce by 2.44 hours ($p < 0.01$) overall. Women on an average reduce their weekly employment work hours by 2.47 hours ($p < 0.01$) whereas men reduce it by 2.38 hours ($p < 0.01$) per week. The magnitudes decline to 2.02, 1.91 and 2.08 ($p < 0.01$) for the combined sample, men and women respectively when we additionally control for time spent on domestic chores (Table 6, columns 4, 5 and 6).

Table 6 2SLS-IV, Effect of care hours per week on work hours per week

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Work hr per week (All)	Work hr per week (Men)	Work hr per week (Women)	Work hr per week (All)	Work hr per week (Men)	Work hr per week (Women)
2SLS-IV						
Care	-2.44*** (0.60)	-2.38*** (1.03)	-2.47*** (0.72)	-2.02*** (0.52)	-1.91** (0.89)	-2.08*** (0.63)
F-test first stage	96	33	64	112	40	72
(Cragg-Donald Wald F statistic)	85	33	51	119	43	67
(Kleibergen-Paap rk LM statistic)	92	32	61	107	39	69
Controls	Without domestic chores	Without domestic chores	Without domestic chores	With domestic chores	With domestic chores	With domestic chores
Observations	2664	1191	1473	2664	1191	1473

Refer to Table 3 notes

In Table 7, columns 1, 2, and 3 show that probability of employment is 21 pp lower for those providing high-care versus low-care but is insignificant, however it is 40 pp lower for women providing high-care versus low-care ($p < 0.01$). Further, probability of employment is 8 pp higher for men providing high-care versus low-care, but it is insignificant even at 10 percent. The magnitudes decline to 28 pp for women ($p < 0.01$) and 8 pp for the combined sample when we additionally control for time spent on domestic chores, however the results become statistically insignificant (Table 7, column 6).

Table 7 2SLS-IV, Effect of high-care on likelihood of work/employment

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Work (All)	Work (Men)	Work (Women)	Work (All)	Work (Men)	Work (Women)
2SLS-IV						
High care	-0.21 (0.19)	0.08 (0.34)	-0.40** (0.24)	-0.08 (0.16)	0.21 (0.22)	-0.28 (0.20)
F-test first stage	80	25.2	58	103	34	71
(Cragg-Donald Wald F statistic)	71	24	48	106	37	69
(Kleibergen-Paap rk LM statistic)	78	25	55	99	34	68
Controls	Without domestic chores	Without domestic chores	Without domestic chores	With domestic chores	With domestic chores	With domestic chores
Observations	2916	1298	1618	2916	1298	1618

Refer to Table 3 notes

In Table 8, columns 1, 2, and 3 show that those providing high-care work 64.27 hours less per week than those providing low-care ($p < 0.01$). Men providing high-care, work 64.71 hours less per week on average compared to men who provide low-care ($p < 0.01$) whereas women providing high-care work 63.83 hours less per week on average compared to women providing low-care ($p < 0.01$). The magnitudes decline to 51.41 ($p < 0.01$), 48.88 ($p < 0.05$) and 52.83 ($p < 0.01$) for the combined sample, men and women respectively when we additionally control for time spent on domestic chores (Table 8, columns 4, 5, and 6). High-care burden leads people to drastically reduce their employment hours per week.

Table 8 2SLS-IV, Effect of high-care on work hours per week

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Work hr per week (All)	Work hr per week (Men)	Work hr per week (Women)	Work hr per week (All)	Work hr per week (Men)	Work hr per week (Women)
2SLS-IV						
High care	-64.27*** (16.28)	-64.71** (29.34)	-63.83*** (19.15)	-51.41*** (13.50)	-48.88** (23.50)	-52.83*** (16.36)
F-test first stage	65	21	44.4	79	28	53
(Cragg-Donald Wald F statistic)	61	21	40	87	32	55
(Kleibergen-Paap rk LM statistic)	63	21	43	77	27	51
Controls	Without domestic chores	Without domestic chores	Without domestic chores	With domestic chores	With domestic chores	With domestic chores
Observations	2664	1191	1473	2664	1191	1473

Refer to Table 3 notes

In sum, caregiving significantly affects women's likelihood of employment and weekly work hours whereas it only significantly affects men's weekly work hours. Gender difference is observed in the likelihood of employment such that as a result of caregiving women's likelihood of employment declines more than men. However, men and women reduce their weekly work hours by similar margins. Hence, we can conclude that unpaid care work affects care providers' employment capability and other related capabilities and functionings for both men and women in Nepal. However, since it significantly affects only women's likelihood of employment, there will likely be stronger adverse effects on women's well-being.

Examination of effects of caregiving on caregivers' tertiary education outcomes shows significant negative effect on the likelihood of attaining education for women, which drives the results in the aggregate sample. Table 9 shows that women who provide care are 18 pp ($p < 0.10$) less likely to attain tertiary education compared to women who do not provide care. Further, in response to a one-hour increase in weekly care above the average value, the probability of attaining tertiary education declines by 1.6 pp ($P < 0.05$) overall and by 1.6 pp ($p < 0.1$) for women. For the

aggregate sample, the probability of attaining tertiary education is 43 pp ($p < 0.05$) lower for those providing high-care versus those providing low-care. Women providing high-care are 48 pp ($p < 0.1$) less likely to attain tertiary education than women providing low-care. We do not find significant effects of care variables on men's likelihood of attaining tertiary education. In other words, care burden only affects women's tertiary education opportunities thereby perpetuating gender inequality.

Table 9 2SLS-IV, Effect of care variables on tertiary education

Variables	(1) Education (All)	(2) Education (Men)	(3) Education (Women)
2SLS-IV			
Any Care	-0.18*** (0.07)	-0.18 (0.12)	-0.18* (0.09)
F-test first stage (Cragg-Donald Wald F statistic)	100 78	35 28	62 49
(Kleibergen-Paap rk LM statistic)	87	32	54
Observations	909	411	498
Care	-0.016** (0.01)	-0.014 (0.01)	-0.016* (0.01)
F-test first stage (Cragg-Donald Wald F statistic)	37 28	18 13	19 15
(Kleibergen-Paap rk LM statistic)	35	17	18
Observations	909	411	498
High-care	-0.43** (0.19)	-0.37 (0.25)	-0.48* (0.27)
F-test first stage (Cragg-Donald Wald F statistic)	32 25	16 12	17 13
(Kleibergen-Paap rk LM statistic)	31	16	16
Observations	909	411	498

Note: 1. Control variables include age, marital status, household size, household income, employment status, and time spent on domestic chores. Due to low sample size for education regressions, we do not have enough observations for all categories of marital status. Hence, we construct a dummy variable, such that never married=0 and married at least once (single, poly, re-married, divorced, widowed, separated)=1.

2. Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Negative employment and education outcomes within households have the potential to adversely affect macroeconomic growth and employment outcomes because these channels affect the

utilization and quality of the labor force. The lower ability to be educated and to earn a living will also have poor human development consequences for the care providers and their children, albeit we could not examine intergenerational effects empirically due to data limitations. Further, these pathways could exaggerate labor market gender inequalities, such as LFP gap, gender earnings gap, occupational segregation, and women taking up more part-time jobs or being self-employed. According to NLFS 2017/18 female LFP rate is 26.3 percent compared to the male LFP rate of 53.8 percent, and women's median monthly earnings are two third of men's earnings.

6. Conclusion and Policy

In this study we provide a Capability Approach framework to examine how unpaid care work within households can negatively affect care providers' well-being outcomes, and how these could have adverse consequences for the macroeconomy and human development outcomes.

The empirical results using NLSS-III 2010/11 substantiate that unpaid care work can negatively affect individual's, mostly women's, employment, and education outcomes, in Nepal. This in turn can adversely affect overall economic well-being of the country. The results of this study underscore the importance of integrating unpaid care work in development-related policymaking as called for by Sustainable Development Goal (SDG) 5 (UN, DESA 2016). SDG Target 5.4 have recognized the need to address women's disproportionate unpaid care work burden globally and to develop care infrastructure to reduce and redistribute it. If the responsibility of caregiving continues to be borne disproportionately by women, without adequate publicly provided support, it will have long-term gender-unequal consequences that would hinder not only achieving the goals of gender and class equality (Razavi 2011), but also likely disrupt economic growth and expansion of living standards (Rai, Brown, and Ruwanpura 2019).

Motivated by Elson's (2017) 3R (Recognize, Reduce, Redistribute) strategy, we draw three broad policy recommendations in the context of Nepal based on our results. First, it is crucial for Nepal to recognize unpaid care work by conducting regular time-use surveys to capture details on individual's time-allocation patterns, including simultaneous activities. Such statistics will allow greater research in this field. It is also crucial to spread awareness amongst households about the definition of "work", especially unpaid care work. Second, there is need to reduce the burden of unpaid care work on households mainly on women, through public investment in electricity, water, gas, and transportation infrastructure. Third it is important to redistribute unpaid care work amongst households, state, and market. In other words, public investment in child and elderly care services can provide alternatives to informal care provisioning, thereby allowing caregivers within households to allocate their time to develop capabilities and achieve the most-valued functioning.

However, we recognize that in the context of low-income countries like Nepal the 3R strategy is difficult to implement due to two main reasons- i) low fiscal capacity pose limitations for conducting regular time-use surveys and for social spending on care infrastructure and, ii) poverty that prevents affording market substitutes of unpaid work. Hence, we recommend alternative measures like community-based initiatives that would allow sharing the care burden among households. For instance, household members in a neighborhood can come together to develop crèche system where community members can voluntarily take turns to provide child and elderly care or provide these services at affordable rates. The role of the state could be to support such efforts and make them sustainable by, for example, setting up a common community center that could be used for various activities including care. This would be more cost-effective than developing stand-alone care infrastructure – like day care centers.

Overall, the study draws important implications for Nepal, which is a subsistence agrarian economy with strong patriarchal norms. Unpaid care work is affecting women more negatively than men, which has broader gender unequal consequences. The life-cycle-intergenerational model and the caregiving & well-being model introduced in this paper suggest that capabilities deprivation of individuals in Nepal will prevent it from experiencing a high development trajectory. Hence, development-related policymaking must recognize the well-being costs of unpaid care work that people in Nepal experience every day.

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