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# Does women's time in domestic work and agriculture affect women's and children's dietary diversity? Evidence from Bangladesh, Nepal, Cambodia, Ghana, and Mozambique

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## ABSTRACT

There are concerns that increasing women's engagement in agriculture could negatively affect nutrition by limiting the time available for nutrition-improving reproductive work. However, very few empirical studies provide evidence to support these concerns. This paper examines the relationship between women's time spent in domestic work and agriculture and women's and children's dietary diversity. Using data from Bangladesh, Nepal, Cambodia, Ghana, and Mozambique, we find that women's domestic work and cooking time are positively correlated with more diverse diets. We also find differential effects depending on asset poverty status. In Mozambique, working long hours in agriculture is negatively associated with women's dietary diversity score in nonpoor women, but is positively associated with poor women's dietary diversity and poor children's minimum acceptable diet. This suggests that agriculture as a source of food and income is particularly important for the asset poor. Our results reveal that women's time allocation and nutrition responses to agricultural interventions are likely to vary by socioeconomic status and local context.

## 1. Introduction

Time is a key input to nutritional outcomes, insofar as it shapes practices around food consumption, child feeding, and childcare (Hull, 2013; Johnston et al., 2018), all of which traditionally fall within women's domain in most societies. Women also generally experience higher risk of ill health and poor nutrition owing to both biological and social vulnerabilities, such as increased nutrient requirements during pregnancy and lactation, combined with physically demanding agricultural work and domestic chores, and poor nutrient intakes (Harris et al., 2014). Understanding time burdens in the context of agriculture is therefore an important step in identifying the conditions in which agricultural programs could improve nutrition for both women and children.

While much of the literature that explores the gender dimensions of agriculture and nutrition tends to focus on women's instrumental role in achieving health and nutrition goals (for recent reviews, see van den Bold et al., 2013; Ruel et al., 2017), an examination of time allocation illuminates the very issues that critics of the instrumentalist approach have raised: that reproductive labor is not 'free' nor 'limitless', and could come at the cost of women's own well-being (Elson, 1999; Budlender, 2004; Molyneux, 2006; Chant, 2008). Thus, understanding

patterns of time use, particularly how productive and reproductive activities tasks are allocated, and how it is linked to women's nutrition and well-being, is one way to bring a sharper focus around work burdens and time trade-offs.

One of the conceptual pathways between agriculture and nutrition hypothesizes that increasing women's agricultural work can negatively impact nutrition by reducing women's available time for activities that enhance nutrition and health (Headey et al., 2012; Kadiyala et al., 2014). Although both men and women are affected by time constraints, women may experience more severe time trade-offs because of their heavier burden of unpaid work, and because their paid and unpaid work is often undertaken simultaneously, whereas men are seen as being more able to perform their activities sequentially (Blackden and Wodon, 2006).

Much of this unpaid work, across contexts, arises from women's central role within the household in the provision of practices that influence the underlying determinants of women and children's nutrition, namely, diets, care, and health (UNICEF, 1990). This unpaid "reproductive work" encompasses a variety of tasks, including food preparation, feeding of young children, breastfeeding, child social stimulation and monitoring, collecting and/or treating water, collecting cooking fuel, managing household (and children's) hygiene and

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sanitation, and accessing health services, such as antenatal care, regular health checkups, child vaccinations, health and nutrition information, and government food and nutrition programs (Glick, 2002; Smith et al., 2003; Bhalotra, 2010; Rani and Rao, 1995; Lamontagne et al., 1998). Both quantity (time spent) and quality (nature of the activities) of care matter (Engle et al., 1999). Given that women shoulder primary responsibility for these practices, an increase in the demand for women's time in agriculture may reduce both the time available for care and quality of care (Kadiyala et al., 2014). When time is short, certain care tasks may be skipped, reduced in frequency, or substituted. Caregivers may fetch water from a closer but less safe source, skip boiling water, prepare foods in a less sanitary way, or clean the child or child's environment less regularly. They may have reduced time to gather firewood for cooking, go to the market to acquire a variety of foods, and prepare healthy and nutritious meals, affecting dietary diversity of both child and mother. Quality of care also suffers if a caregiver is distracted, stressed, or paying less attention to a child.

Furthermore, women who work long hours in agriculture may be less likely to seek health services outside the household, which can reduce the likelihood of child vaccination, health check-ups, and access to other health and nutrition information (Bhalotra, 2010). However, women's time constraints may be minimized or offset by the presence of other household members who can take up the care work that can no longer be performed because of increased agricultural workloads (Johnston et al., 2018). When other adults substitute for mothers as caregivers, no impact was seen on child nutrition indicators of height-for-age Z-scores or stunting (Headey et al., 2012).<sup>1</sup> However, many studies have found that care provided by other children has adverse effects on height-for-age Z-scores (Headey et al., 2012; Lamontagne et al., 1998) and lower weight-for-height (Engle, 1991; Engle et al., 1999). When children provide care to other children, the quality of care diminishes. Because the needs of children vary by age, the nutritional tradeoffs between maternal productive versus reproductive work can shift over the lifecycle (Lamontagne et al., 1998).

Conversely, shifting women's time from reproductive work to agricultural or other productive work could potentially be beneficial, by increasing resources invested in nutrition, such as food, health services, and hygiene (Gillespie et al., 2012). Lamontagne et al. (1998) find a positive effect of mothers' work on weight/height indicators for slightly older children, between 12 and 18 months of age, which they attribute to the increase in available income for nutrition-related consumption. At this stage in child development, enhanced household dietary diversity, through food purchase or production, compensates for reduced care time (Glick, 2002). However, the effect of women's work earnings on child nutritional status is contingent on what she earns – her wages, or the quantity and variety of food she produces – and how it is used.

Intrahousehold relations influence the use and allocation of food produced. Whether earnings are budgeted for nutrition-enhancing goods depends on the preferences of the decision-makers within the household. A number of studies show that women's control over income increases spending on food and basic needs (see Gillespie et al., 2012). Yet, in a given food environment, food or income could have limited impact on child nutrition if women lack decisionmaking power over such resources, and the decision makers over food and income lack an understanding of nutrition, including appropriate complementary feeding and care practices.

However, if women's participation in work increases their decisionmaking power in the household (Kadiyala et al., 2014), increases in women's status are associated with better child nutritional outcomes (Smith et al., 2003). Recent studies using data from Asia and Africa suggest that women's empowerment positively affects maternal and child nutrition, but different aspects of empowerment (for example, autonomy in production and hours worked) matter for different

nutrition outcomes, and these relationships differ across social and cultural contexts (Bhagowalia et al., 2012; Sraboni et al., 2014; Malapit and Quisumbing, 2015; Malapit et al., 2015; Ruel et al., 2017; van den Bold et al., 2013).

Existing research indicates that the effects of women's time use on nutrition are highly contextual, and, because the impact is indirect, reliant on many mediating factors (Glick, 2002). A recent review by Johnston et al. (2018) provides some insights into how nutritional consequences may vary by household composition, nutrition indicator, season and work intensity, but the mechanisms for these interactions are not well-understood. Little evidence exists on which factors across contexts mediate the effects of women's time use in agriculture on child and maternal nutrition.

This study makes a specific contribution to closing this knowledge gap by examining the relationship between women's time allocation in domestic and agricultural work and women's and children's dietary diversity in different country contexts - Bangladesh, Nepal, Cambodia, Ghana, and Mozambique. We use data from the time module of the Women's Empowerment in Agriculture Index (WEAI; see Alkire et al., 2013), which was collected using a standardized questionnaire across all five countries, facilitating comparisons across these different contexts. Our goal in this paper is to test whether there are similar relationships between women's time allocation and dietary diversity across different countries, and to make recommendations on how time use methodologies can be improved for future research on time allocation and nutrition. We recognize that the time use patterns we observe in each country are embedded in a social and political context that reflects the consequences of local gender relations. In this paper, we offer empirical evidence as a starting point to help inform future multi-method research in uncovering context-specific factors and processes linking women's time use with women and children's nutrition.

## 2. Data and context

The study uses data from the Bangladesh Integrated Household Survey (BIHS 2011–2012); a baseline survey of a USAID-funded nutrition program called Suaahara in Nepal (2012); and population-based surveys from the US Agency for International Development (USAID) Feed the Future initiative in USAID's zones of influence (ZOIs) in Cambodia (2012), Ghana (2012), and Mozambique (2013–2014).<sup>2</sup> The datasets collected information on household and individual characteristics, food security, and maternal and child nutrition. In the Bangladesh, Cambodia, Ghana, and Mozambique surveys, primary female and male household members, usually the household head and spouse, responded to questions about their time use, degree of participation in decisionmaking in key economic activities, and group participation, which are part of the Women's Empowerment in Agriculture Index questionnaire (Alkire et al., 2013). In Nepal, the respondents were mothers of children younger than five, and their husbands, if available (Cunningham et al., 2013). We restrict our sample to agricultural households only.<sup>3</sup> The survey design for each country is detailed in Appendix A.

Each survey included a time use module, administered to respondents using a 24-h recall period in 15-min intervals. We define reproductive work to be the sum of activities related to cooking,

<sup>2</sup> We discuss the data sets by geographic region because the South Asian countries (Bangladesh and Nepal) have similar gender norms compared to Cambodia in Southeast Asia and Sub-Saharan Africa. Feed the Future data for Haiti, Uganda, and Zambia were also considered for inclusion but were not included in this paper because of data quality issues. A significant proportion of observations on the time use data in Uganda and Zambia exceeded 24 h in a day or totaled less than 1000 min. The data from Haiti required more data cleaning before further analysis can be conducted.

<sup>3</sup> Agricultural households are defined as those in which primary or secondary respondents engaged in agricultural activities in the past 12 months.

<sup>1</sup> The paper does not disaggregate the results by the sex of the adult.

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