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Gender Effects of Agricultural Cropping Works in Kebbi State

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Abstract

Increasing women and men's access to mechanized farming tools could reduce women's energy exertion and improve their nutritional status. The introduction of new equipments also account for the physical differences between women and men, and its implications on work burdens. When new technologies are introduced, men might take over the tasks previously assigned to women. Women do not lose control over the proceeds of the agricultural products they were previously responsible for. Further, mechanization could displace farmers who are poor and low skilled and consequently reducing their incomes and nutritional status. While increased agricultural production could improve nutritional status by increasing agricultural income and food. The gain in nutritional status could be offset by an increase in work effort of doing agricultural work. Our results suggest that it is possible that, access to equipment reduced effort for one production activity but increased work for other activities in the production process such as in harvesting. Furthermore, we find that women in households with a hand powered sprayer is positively related to time spent in weeding, fertilizing, and non-harvest activities, while it is negatively correlated for men. In addition to individual-level food consumption, will be the key to accurately capturing energy expenditure.

Keywords; Women, Gender, Agriculture, Mechanization, Fertilizer

Introduction

Agriculture is an important source of food and income in developing countries, especially for the poor. In Nigeria, agriculture accounts for 26 percent of the GDP and three quarters of the population (Ruel *et. al.,* 2013). Over 80 percent of economically-active women are employed in agriculture. However, agricultural work could also cause women to increase their work effort and

lengthen working hours (Kadiyala *et. al.,* 2014). While there is a growing body of literature on the linkages between agricultural production and nutrition, evidence on the effect of household agricultural production on women's anthropometry is limited and so far inconclusive (Girard *et. al.,* 2012).. Some find that although the nutrition effect of agricultural production exists for children, it does not exist for adults (Malapit *et. al.,* 2015). For example, in Nigeria, higher crop output value and livestock ownership have a positive effect on children's anthropometry, but there is no evidence of any impact on adult anthropometry (Ruel *et. al.,* 2013). Similarly, in Niger, production diversity is positively associated with child anthropometry, but there is no effect on maternal anthropometry (Malapit *et. al.,* 2015). Lack of evidence of a direct link between agricultural production and women's anthropometry may occur if agricultural work entails having to exert more energy. Therefore, while agricultural interventions may lead to increased caloric consumption or intake of micronutrient-rich foods, it may explain why few studies have identified a direct effect of agricultural production on women's nutritional status (Johnston *et. al.,* 2018). Rural people, farmers and crop consumers could benefit from the relative merit of identifying different types of crops species existing in their study area and their relevance in providing natural protein sources. The result will be useful to researchers in building upon the existing knowledge base. The main objective of the study is to investigate the gender effects of agricultural works in Kebbi state. The specific objectives are;

1. To investigate the extent to which time spent in agricultural production affects women and men's nutritional status.
2. To test whether the impact of agricultural work is modified by access to agricultural equipment.
3. To test whether there is a gender difference related to agricultural works.
4. To investigate whether does owning agricultural equipment increase or decrease the burden of agricultural works.

Method of Data Collection

I use publicly available data which was collected by the households in the first wave, which grew to 3,786 households in the second wave, and 5,010 households in the third wave. Samples increased over time because the survey teams were able to track and interview households that split and grew. The interviews were conducted in different months spread out throughout the year. The survey collects information on socio-economic characteristics, height and weight for all household members, and includes a detailed agricultural module administered to the household members that manage and/or own each plot.

RESULTS

Table 1. Sample size by time spent in cropping work

Sex	Time (days)	Percentage
Men	59	62.1
Women	36	37.9
Total	95	100

Men spent more time (59 days) than women (36 days) in total farm work and in land preparation and planting. In a separate study, (FAO, 2010) found that, in Northern parts of Nigeria, men were largely responsible for land clearing and ridging in preparation for planting, whereas women were less responsible for planting and weeding especially for cassava.

DISCUSSIONS

Livestock maintenance and fetching water and firewood have implications on physical work effort, and the responsibilities are determined by gender roles. Men are more likely to be responsible for keeping large livestock (cows, bulls, calves or heifers) while women tend to be responsible for keeping small livestock (goats and sheep) and poultry. Women (65 percent) disproportionately bear the burden of collecting water, and almost a third of women are responsible for collecting firewood versus only 10 percent of men. Approximately, 19 percent of women live in households with no adult male, which could potentially increase their workload. Women are more likely to live in households with fewer agricultural equipment and with smaller plots of land.

An individual's responsibility in collecting water, firewood, or keeping livestock entails different work intensities. A study in rural areas reports that drawing water from a well, carrying two water containers on the head, walking with a load of firewood, and chopping firewood involve significant energy costs compared to, for example, cleaning an animal shed (Rao, *et. al*., 2009). Government funded water investment projects reduced the time burden of women responsible for collecting water (Barkeret, *et. al*., 2006). Since the difference in work intensity in domestic livestock maintenance is likely to affect nutritional status, we include dummy variables indicating whether the person is responsible for collecting water, firewood, for keeping large livestock, small livestock (goats or sheep), and poultry.

LIMITATIONS

There are several limitations to the study. First, in the survey, the time of reference for the agricultural activity is only recorded in the number of days. Yet, the length of the day (in hours) could vary by agricultural work.

Second, it is not clear whether cropping activities include post-harvest activities, which women are more likely to be responsible. Ignoring post-harvest activities is likely to underestimate women's overall agricultural work burden.

Third, the ownership or use of agricultural equipment is recorded at the household level and not at the individual level. Therefore it is not clear whether an individual used the equipment or not even when it is available at the household.

Lastly, because the data does not contain individual level food consumption, while these variables do not control for unequal intra-household food distribution. Recent study on rural farm households in India showed that household-level and individual-level dietary indicators are positively correlated, suggesting that household level food consumption expenditure data is a good proxy for individual food consumption (Kadiyala *et. al*., 2014).

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