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Do boys eat better than girls in India? Longitudinal evidence on dietary diversity and food consumption disparities among children and adolescents

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ABSTRACT

This paper examines the dynamics of gender-based disparities in the intra-household allocation of food during childhood and adolescence in Andhra Pradesh and Telangana by using three rounds of longitudinal data from two cohorts. While boys are advantaged at all ages (except for the Younger Cohort at 12 years old), the pro-boy gap widens markedly at 15 years old. Specifically, mid-adolescent girls tend to consume fewer protein- and vitamin-rich foods such as eggs, legumes, root vegetables and fruit. This result is robust to gender differences between adolescents in terms of puberty onset, school enrolment, time use and dietary behaviours. Finally, gender disparities in dietary diversity during early and mid-adolescence do not vary by maternal education, poverty or place of residence, whilst they are moderated by levels of caregiver's educational aspirations at 15 years old.

1. Introduction

In India, undernutrition and micronutrient deficiencies are widespread, despite rapid economic growth (Deaton and Drèze, 2009; Coffey et al., 2013a). Analysis of the latest national-level data available (from 2005) shows no significant differences in stunting between boys and girls under the age of 5 years (Tarozzi 2012; Corsi et al., 2015). Employing the same data, Tarozzi (2012) documents a gender-neutral situation in terms of anaemia for children under 5 years old. The evidence on gender-based discrimination in feeding practices, conversely, is mixed: while infant girls appear to be systematically breastfed for shorter periods than boys (Jayachandran and Kuziemko, 2012; Barcellos et al., 2014; Fledderjohann et al., 2014), there is no conclusive indication of a systematic female disadvantage with regard to the intra-household allocation of food in the case of pre-school and primary school-age children (DasGupta, 1987; Behrman, 1988; Subramanian and Deaton, 1991 Boorah, 2004; Kehoe et al., 2014). For instance, Borooah (2004) demonstrates a pro-boy bias in dietary diversity only in the case of children aged up to 24 months born to illiterate mothers, while DasGupta, (1987) reports that infant girls and boys receive similar caloric intakes, although girls tend to be fed with more cereals while boys are given more milk and fats. In a more recent paper, Fledderjohann et al. (2014) also report higher chances of milk consumption for under-5 boys as compared to females. Further, Kehoe et al. (2014) report no gender differentials in the dietary patterns of 10-year-olds in South India.

The absence of evidence related to gender-based gaps in anthropometric indicators[1] and the relatively nuanced picture with regard to feeding practices contrasts to a wide literature documenting stark pro-boy biases in other dimensions of child development in India. Girls' disadvantage is systematically reflected in higher selective abortions and under-5 mortality rates (Jha et al., 2011; Tarozzi, 2012), as well as in lower levels of

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[1] Possible explanations for the absence of gender gaps in nutrition can relate to the mixed evidence on dietary practices or, as suggested by Marcoux (2002), to the higher biological resilience of girls.

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immunisation (Prusty and Kumar, 2014), worse educational outcomes (Deaton, 2003; Dercon and Singh, 2013; Woodhead et al., 2013) and lower aspirations (Dercon and Singh, 2013; Beaman et al., 2012). These pro-boy biases appear to start early – often even before children are born – and tend to increase as children are reaching adolescence (Pells, 2011; Dercon and Singh, 2013).

In contrast to the evidence for young children, the 2005 nationally representative data reveal sizeable gender inequalities in diets and nutrition indicators in the case of adults. Compared to males, Indian females aged 15–49 years old appear to be systematically consuming nutrient-rich foods less frequently and to be twice as likely as men to suffer from anaemia, a non-communicable condition often caused by nutritionally inadequate diets (IIPS 2007; Arnold et al., 2009). Using 2010 et al., 2015 data from four Indian states, Lee et al. (2015) found evidence of a male advantage among the elderly with regards to haemoglobin concentration, a marker for anaemia. The question of when such gender differentials in dietary and health outcomes emerge is, as yet, open, owing mostly to a dearth of large-scale surveys for groups other than pre-schoolers and adults (Kehoe et al., 2014). Longitudinal data are particularly scarce. In turn, the lack of systematic evidence on nutritional indicators disaggregated by age and gender stands as a critical knowledge gap for the optimal design of policies that target groups at particular risk of malnutrition, such as adolescent girls and pre-pregnant women (Subramanian and Deaton, 1991; Haddad et al., 1997; Deaton and Case, 2002; Coffey, 2015a,b).

This paper attempts to address this question for the first time by employing rich, longitudinal data from Young Lives. Specifically, by using three rounds of survey data collected in 2006, 2009 and 2013 on two cohorts of children in Andhra Pradesh and Telangana, which together account for the fifth-largest population in any state in India,[2] to document the associations between dietary diversity and gender at 5, 8, 12 and 15 years old, after controlling for a large set of child and household characteristics.

Individual dietary diversity is a synthetic measure of dietary quality (Ruel, 2002). The indicator is associated with intakes of macro- and micronutrients in both children and adolescents, as well as with anthropometrics and health outcomes (Arimond and Ruel, 2004; Mirmiran et al., 2004). A diet that includes a balanced mix of foods rich in protein and vitamins – from items such as dairy products, eggs, meat and fish, and fruits and vegetables – is fundamental for the proper physical and cognitive development of children and adolescents, who are particularly vulnerable to malnutrition owing to their higher nutrient requirements and vulnerability to infectious diseases (Steyn et al., 2006). Qualitative evidence shows that both children and parents in the Young Lives India sample attach intrinsic value to a varied and good-quality diet, beyond its role in promoting health outcomes (Aurino and Morrow, 2015).

The analysis presented in this paper shows that while boys are favoured at most ages (except for 12 years old), the male advantage in dietary diversity is particularly wide at 15 years old. The pro-boy gap in mid-adolescence is mostly driven by the consumption of protein- and vitamin-rich foods, such as eggs, legumes, root vegetables and fruit. Adolescent boys are also advantaged in the consumption of milk and meat, although this is not statistically significant. The result is robust to the inclusion of indicators related to puberty, school enrolment, time use and dietary behaviours. Moderation analysis explores further whether gender gaps in diets during adolescence vary by levels of maternal education, poverty, place of residence, or caregiver's education aspirations as a proxy measure for parental attitudes towards the adolescent. While no differences are detected along the maternal education, poverty or place of residence axes, the treatment of adolescent boys and girls in respect of receiving a nutritious diet varied according to the levels of caregivers' aspirations. At 15 years old, the pro-boy gap is particularly marked amongst adolescents with caregivers that would like the adolescent to graduate at least from secondary school (Grade 12). Although the framework employed in this paper only allows for descriptive evidence and not full causal analysis, this result is suggestive that parental attitudes and aspirations towards the adolescent may constitute an exacerbating factor for gender differentials in diet during mid-adolescence.

This evidence is particularly relevant to the Indian context, for several reasons. First, the country is home to the highest population of 10–24-year-olds in the world (UNFPA, 2014). Adolescent health, particularly that of girls, has been made a key policy priority in order to enable the country to benefit from the demographic dividend, as underscored by the 2014 National Youth Policy (Government of India, 2014). Secondly, India bears one of the highest burdens of malnutrition globally, both for children and women (Coffey, 2015a; Deaton and Drèze, 2009; Coffey, 2015a,b). As child-bearing is concentrated in the age range in which Indian women are most likely to be underweight, improving dietary habits for adolescent girls and pre-pregnant women, beyond representing a development objective per se, can help to break the transmission of malnutrition from one generation to the next (Black et al., 2013; Coffey, 2015a,b).

This paper builds on the seminal work conducted by Deaton and colleagues to investigate intrahousehold inequalities in the allocation of food and other drivers of malnutrition in India (e.g. Subramanian and Deaton, 1991; Deaton and Drèze, 2009; Coffey et al., 2013a). In doing so, it hopes to contribute to the literature in various ways. First, this analysis adds to previous economics research on gender-based inequalities in children's dietary practices in the country (Behrman, 1988; Subramanian and Deaton, 1991; Borooah, 2004; Jayachandran and Kuziemko, 2012; Barcellos et al., 2014; Fledderjohann et al., 2014). In contrast to these studies, which mostly examine gender disparities for very young children (usually with cross-sectional data), this paper focuses on school-age children and adolescents, and presents a dynamic picture of gender differentials in dietary quality as children grow up and transition to adolescence. Further, by providing evidence from a large sample, it complements two strands of literature: on the one hand, it adds to the knowledge base on children and adolescents' dietary diversity in low-resource settings, which is still quite limited, and usually relies on rather small and cross-sectional samples (Kehoe et al., 2014; Mirmiran et al., 2004).[3] On the other, it complements previous anthropological and demographic evidence that documents gender-based variation in the intra-household allocation of food to children of different ages in India and South Asia (Gittelsohn, 1991; DasGupta, 1987, 1997; Palriwala, 1993; Harriss, 1991; Messer, 1997; Mondal, 2009).

The paper proceeds in the following way: Section 2 introduces the data, while Sections 3 and 4 respectively present the basic results and some possible explanations for the emergence of the gap during mid-adolescence. Section 5 explores the role of potential moderating factors in exacerbating or moderating gender differentials during adolescence. Section 6 concludes.

[2] These states were united until June 2014, with a joint population of 84 million people in 2011. Since the data I use were collected before the division, I will from now on generically refer to "Andhra Pradesh".

[3] An exception is Woldehanna and Behrman (2013) who use data from the Young Lives Younger Cohort children in Ethiopia to analyse dietary diversity for children at 5 and 8 years old.

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