

the 1986–1992 guerilla war; (ii) high proportion of the population with unsatisfied basic needs; (iii) high levels of economic inequality; (iv) high levels of chronic child malnutrition; and (v) high rates of extreme poverty (Díaz *et al.* 2009; Sánchez & Jaramillo 2012b). The inclusion criteria for individual households are that the household must have at least one pregnant woman or at least one child less than 17 years old. The programme was implemented first in the districts with the worst indicators (Segovia 2011; Guzmán & Bethsabé 2013).

Households can stay in the programme as long as (i) they include a pregnant woman or at least one child no older than 16 years; (ii) the pregnant woman attends her antenatal care visits or the child is brought for health checkups at the health centre (Aramburú 2010; Perova & Vakis 2012; Sánchez & Jaramillo 2012a). In addition, if there are children between 6 and 16 years old, they have to attend school on at least 85% of scheduled days (Vargas 2011; Guzmán & Bethsabé 2013).

The Juntos programme has been evaluated several times using qualitative methods. These evaluations found an improvement in the quality of the meals received, a decrease in poverty and an increase in the use of health centres. In addition, the beneficiaries improved their agricultural activities and their children reported pressure to have better grades at school. The programme is also appreciated by the community because it allows mothers to participate in commercial activities and children to obtain their national identification cards (Jones *et al.* 2007; Alcázar 2009; Díaz *et al.* 2009; Perova & Vakis 2009b; Segovia 2011).

Other evaluations demonstrated good compliance with the requirements of the programme: school attendance, health checkups for children and at least six antenatal care visits for pregnant women. Moreover, children under 5 years old had lower risk of getting sick and having extreme chronic malnutrition, but not total chronic malnutrition. The findings were related to the level of

education of mothers and the amount of time enrolled in the programme (Trivelli & Díaz 2010; del Pozo & Guzmán 2011; Escobal & Benites 2012; Perova & Vakis 2012). These evaluations did not assess indicators of nutrition and health other than chronic malnutrition.

The objective of this study was to determine if Juntos had an impact on anaemia in women and children, acute malnutrition in children, post-partum complications, and underweight and overweight in women using data from the Peruvian Demographic and Health Surveys (DHS). In addition, we explored if participants in Juntos complied with the requirements to stay in the programme.

Participants and methods

Study design

Using serial cross-sectional surveys we evaluated the programme's impact using two methods: individual-level and district-level analyses. For the individual-level analysis, we estimated the effect of participating in Juntos by comparing outcomes for eligible mothers and children enrolled in the Juntos programme (treated group) with outcomes for eligible respondents who were not enrolled in the programme (control group). This analysis was restricted to the 481 districts where Juntos was offered during the study period (2009 – 2012). Juntos enrolment within these districts was not randomly determined, and was probably affected by characteristics other than the programme's listed requirements for participation. These characteristics may have influenced the health outcomes of interest for this study.

To account for this potential confounding, we also conducted a district-level analysis that compared outcomes for eligible mothers and children living in districts where Juntos was offered (treated group) to eligible respondents in districts where Juntos was not offered (control group). This analysis estimated the

Key messages

- Propensity score matching provides a better balance of measured covariates to reduce bias.
- Participants who were offered the Juntos program generally complied with conditions for staying in the program.
- Juntos appears to have reduced underweight and overweight in women, and anemia and acute malnutrition in children.
- There was less acute malnutrition but more anemia among children living in Juntos districts than in other districts, but these differences existed and were even larger prior to the implementation.