Determinants of stunting in children younger than 5 years between 2006 and 2010 in the occupied Palestinian territory: a cross-sectional study

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Background Stunting, according to WHO's definition, in children younger than 5 years in the occupied Palestinian territory (oPt) increased from $7 \cdot 2\%$ in 1996 to $10 \cdot 9\%$ in 2010. However, the rates in the West Bank and Gaza Strip reversed for the first time in 2010, with higher stunting in the West Bank ($11 \cdot 5\%$) compared with the Gaza Strip ($10 \cdot 4\%$). The sociodemographic determinants of stunting in the oPt were investigated to understand the possible causes of stunting.

Methods Data were obtained from the nationally representative 2006 and 2010 Palestinian Family Health Surveys (data for 9613 and 8934 children, respectively, included in the analyses). The design of the surveys was similar for the years, with control for sampling weights in the analyses. Logistic regression analyses were used to assess the odds of stunting separately for the 2006 and 2010 surveys. Independent variables in the analysis were sociodemographic, educational, and economic characteristics of the household, and breastfeeding. Odds ratios were adjusted for these variables. Statistical analyses were done with Stata (version 12.1).

Findings The prevalence of stunting in children younger than 5 years in 2006 was 8.5% in the West Bank compared with 15.3% in the Gaza Strip (odds ratio 0.56 [95% CI 0.48-0.66]). In 2010, the prevalence of stunting in the West Bank was 11.9% compared with 10.1% in the Gaza Strip (1.27 [1.08-1.49]). In both surveys, household wealth was a significant predictor of stunting: in 2006 and 2010, children in the richest wealth quintile were 30% (0.70 [0.55-90]) and 32% (0.68 [0.52-90]), respectively, less likely to be stunted than were children in the poorest wealth quintile. Similarly in 2010, we noted that children whose fathers were active in the labour force were 18% (0.82 [0.69-0.97]) less likely to be stunted. Maternal education was a significant determinant of stunting in 2006, with every year of a mother's education associated with a 3% reduction (0.97 [0.94-0.99]) in the likelihood of the child being stunted. In 2010, registered refugee children, irrespective of their residence, were 19% less likely to be stunted (0.81 [0.70-0.95]), and children living in rural areas were 22% less likely to be stunted (0.78 [0.63-0.95]).

Interpretation The results of this study show that there is deterioration in child growth indicators in the oPt, especially in the West Bank between 2006 and 2010, where for the first time stunting is more prevalent than in the Gaza Strip. Household socioeconomic status was an important indicator of child growth in both surveys, and seems to be of greater importance in 2010. Lower odds of stunting in refugee populations might be attributed to the greater availability of services provided by the UN Relief and Works Agency for Palestine Refugees in the Near East, and might be connected to residence in the Gaza Strip (where about two-thirds of the population are refugees). These results need further analysis because the situation in the West Bank and Gaza Strip is volatile and affected by many independent factors such as closures of areas by the Israeli military and the recent Egyptian efforts to close tunnels between Egypt and the Gaza Strip that have been a lifeline for the Gaza Strip during the siege.

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Contributors

WH participated in the conceptualisation of the Abstract, did the analysis, and drafted the Abstract. SH participated in the conceptualisation of the Abstract, assisted in the analysis, and participated in revising the Abstract. DH participated in the conceptualisation and analysis plan, and provided feedback on the drafts of the Abstract.

Conflicts of interest

We declare that we have no conflicts of interest.

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