

Risk factors for cerebral palsy in Palestinian children: a case-control study

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Background Little is known about the risk factors for cerebral palsy in the occupied Palestinian territory (oPt). Indeed, the focus in studies so far has been on developed countries. We therefore assessed known prenatal and perinatal risk factors for cerebral palsy in Palestinian children, and three risk factors specific to Palestinian society—consanguineous marriage, delivery at private maternity homes that lack emergency facilities, and no prenatal doctor visits.

Methods Using questionnaires for the parents of children, we gathered data for prenatal and perinatal risk factors for cerebral palsy between January and August, 2011, and checked information against medical records from the national centre for Palestinian children with cerebral palsy (Jerusalem Princess Basma Center for Disabled Children) for cases and from outpatient clinics for controls. If information differed between the two sources, medical records were favoured. Cases were children who attended the Jerusalem Princess Basma Center for Disabled Children; they were selected by use of convenient sampling. Inclusion criteria for cases were diagnosis of cerebral palsy by a doctor and age younger than 15 years, and for controls any other diagnosis and age younger than 15 years. Controls were every other child attending ten paediatric clinics (UN Relief and Works Agency for Palestine Refugees in the Near East, private, and public) in the West Bank, matched to cases by location. We used SPSS (version 19.0) for logistic regression analyses with estimations of odds ratio and 95% CI. Ethics approval was obtained from all clinics, the Jerusalem Princess Basma Center for Disabled Children, and the Al-Quds University's institutional review board. All parents provided written informed consent.

Findings 107 children were cases (mean age 3·87 years [SD 2·71]) and 223 were controls (4·17 years [3·94]). In cases, the risk of cerebral palsy was highest after caesarean delivery (48 [45%]) and after hypoxia diagnosed by a doctor (49 [46%]). Other important and significant risk factors were low birthweight (25 [23%] cases *vs* 25 [11%] controls; odds ratio 4·6 [95% CI 2·6–8·1]), gestational age (35 [33%] *vs* 32 [14%]; 2·9 [1·7–5·0]), jaundice (20 [19%] *vs* 17 [8%]; 2·7 [1·4–5·6]), multiple births (ten [9%] *vs* two [$<$ 1%]; 11·4 [2·5–53·0]), infection during pregnancy (20 [19%] *vs* ten [4%]; 4·8 [2·2–10·9]) and delivery (14 [13%] *vs* ten [4%]; 5·0 [1·5–16·7]), congenital abnormalities (ten [9%] *vs* one [$<$ 1%]; 2·4 [1·3–4·4]), and other children with a disability in the family (15 [14%] *vs* four [2%]; 8·9 [2·9–27·6]). New, previously unassessed population-specific factors of significance were consanguineous marriage (51 [48%] cases *vs* 54 [24%] controls; 2·9 [1·8–4·6]), no prenatal doctor visits (12 [11%] *vs* five [2%]; 5·5 [1·9–16·1]), and delivery at private maternity homes lacking emergency facilities (67 [63%] *vs* 85 [38%]; 0·6 [0·3–1·1]). Associations of some risk factors with cerebral palsy remained significant after adjustment for gestation and sex: consanguineous marriage (4·3 [2·2–8·6]) and no prenatal doctor visits (6·6 [1·7–24·9]) but not for delivery at private maternity homes lacking emergency facilities (13 [12%] cases *vs* 43 [19%] controls; 0·43 [0·03–5·30]).

Interpretation Several of the known risk factors are preventable or modifiable. Behavioural changes might enable a reduction in the number of cases of cerebral palsy resulting from consanguinity or an absence of prenatal care and policy changes to regulate private maternity homes in the oPt.

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Contributors

SD designed the study, gathered and analysed the data, and wrote the first draft of the Abstract. LE-K provided intellectual input and supervised the research.

Conflicts of interest

We declare that we have no conflicts of interest.

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