

Introduction

Since 2003, Iraqi doctors report rising incidences of birth defects in Iraq, which they attribute to the environment changed by the war.

Research question

Is exposure to military pollution a risk-factor for giving birth to neonates with congenital anomalies in Iraq?

Hypothesis

High parental military-related heavy metal exposure is associated with worsened perinatal health outcomes through hypothesised exposure routes of Inhalation of heavy metal dust with subsequent deposition and accumulation in bone (and kidney), potentially leading to prolonged heavy metal exposure to parents. These heavy metals pass the placenta and blood-brain barrier, which could lead to giving birth to a child with a congenital anomaly.

Methods

Case-control study of parents from Fallujah with children with congenital anomalies (case) and parents without congenital anomalies (control) comparing military environmental exposure. 33 cases vs 69 controls recruited from Fallujah General Hospital for house visits. Interviews comprise in-depth health questionnaires comprising GPS residence history mapping, military exposure, environmental exposure, obstetric history, medical history, demographic and socio-economic status.

Results

We performed a multivariate logistical regression analysis. Ever diffuse military exposure of the mother, father having ever cleaned his house after military explosions and the total years of occupational construction work for father were statistically significant for an association with the risk of giving birth to neonates with a congenital anomalies, also after correction for consanguinity and age of mother.

Discussion

Study suggests indications of an association between military exposure and the risk of giving birth to children with congenital anomalies. Strengths of the study are an original contribution to a neglected field of war and environmental health, the lack of financial interests and its relevance for other past and current wars. The limitations of the study are a small number of participants, illiteracy of many participants which might decrease reliability of answers, recall bias of participants and residual confounding and no data available before 2017. More toxicological data, bio and environmental samples, will strengthen the study.

Predictors	case or control		
	Odds Ratios	CI	p
(Intercept)	0.03	0.00 – 0.33	0.008
ever diffuse exposure mother	10.59	2.12 – 82.98	0.009
ever cleaned father	0.23	0.07 – 0.66	0.009
total years occupational construction exposure father	1.07	1.01 – 1.15	0.033
consanguinity	1.20	0.39 – 3.73	0.744
age mother	1.11	1.02 – 1.21	0.015

