Low birth weight as a risk factor for undervaccination in Ghana: evidence from a population-based cohort


Abstract

In this thesis I analysed population-based data on 22955 infants enrolled in a neonatal vitamin A supplementation trial in rural Ghana to investigate whether low birth weight (LBW: born weighing <2.50kg) was a risk factor for under-vaccination. I also investigated whether under-vaccination among LBW infants was occurring within a broader context of poorer health outcomes such as increased mortality, illness and health facility admissions and lower care-seeking. I additionally investigated how using routine contacts with health services (opportunities for vaccination) could be used to improve their vaccination. Compared to non-LBW (NLBW) infants, LBW infants were less likely to be vaccinated in both the neonatal and postneonatal period. The smaller the baby at delivery the less likely they were to be vaccinated (p-trend <0.0001). By the end of the neonatal period, moderately LBW (MLBW) infants (1.50-1.99kg) were 1.6 times (adjusted odds ratio (aOR)=1.64; 95%CI:1.30-2.08), and very LBW (VLBW) infants (<1.50kg) were 2.4 times (aOR=2.42; 95%CI:1.50-3.88) more likely to be BCG unvaccinated. In the postneonatal period, VLBW infants had an almost 40% lower DTP1 vaccination rate at age 10 weeks (adjusted rate ratio (aRR)=0.58; 95%CI:0.43-0.77) and 18 weeks (aRR=0.63; 95%CI:0.50-0.80). MLBW infants had vaccination rates approximately 25% lower at these time points. Similar results were observed for DTP3. LBW infants had much higher mortality rates in infancy compared to NLBW infants. Infants weighing 2.00-2.50kg were >2 times (adjusted hazard ratio (aHR)=2.13; 95%CI:1.76-2.59); MLBW infants were >8 times (aHR=8.21; 95%CI:6.26-10.76), and VLBW infants were >25 times (aHR=25.38; 95%CI:18.36-35.10) more likely to die. The trend of higher mortality with lower birth weight was seen in each of the neonatal, early and late infant periods, but the magnitude of the association declined over time. There was also some evidence that LBW infants had increased illness rates in the neonatal period, and in each of the neonatal and early infant periods. An absence of care seeking was found for MLBW infants in the first year of life (aOR=1.46; 95%CI:1.18-1.81), and in
each of the neonatal (aOR=3.30; 95%CI:1.98-5.48) and early infant periods (aOR=1.74; 95%CI:1.26-2.39) respectively. No association was found in the late infant period (p-interaction=0.0002). Among all infants (NLBW and LBW) with opportunities for vaccination, most opportunities were missed. There was no association between birth weight and uptake of opportunities. In conclusion LBW infants are under-served by vaccination in Ghana. Given their poorer health outcomes, efforts to improve their access to care services, including vaccination are warranted. Further research into the barriers and facilitators of vaccination of LBW infants is warranted, including qualitative research targeting care givers and vaccine providers.
A population-based case-control study. MedLine Citation: PMID: 12472913 Owner: NLM Status: MEDLINE. Abstract/OtherAbstract: OBJECTIVES: To investigate if low birth weight as a consequence of intrauterine malnutrition is a risk factor for the later development of diabetic nephropathy. DESIGN AND SUBJECTS: In a case-control set-up a group of type 1 diabetic subjects with diabetic nephropathy (n = 51) and a matched control group with normal kidney function (n = 51) were compared. Diabetic nephropathy and normal kidney function were defined as urinary albumin excretion rate above 200 microg min-1 ... CONCLUSION: We found no evidence of low birth weight as a risk factor for the development of diabetic nephropathy. Authors Design: Population based, historical cohort study using the Danish medical birth registry and Statistic Denmark’s fertility database. Subjects: All women who had a low birthweight infant (<2500 g) (index birth) and a subsequent liveborn infant (outcome birth) in Denmark between 1980 and 1992 (exposed cohort, n=11 069) and a random sample of the population who gave birth to an infant weighing ≥2500 g and to a subsequent liveborn infant (unexposed cohort, n=10 211). Main outcome measures: Risk of having a low birthweight infant in the outcome birth as a function of changes in male partne Low birth weight (LBW) is defined as birth weights that are less than 2500 g at birth, and it is the single most important risk factor in neonatal and infant health [1 - 3]. LBW occurs in 15.5 % of all live births or about 20.5 million infants per year worldwide [2, 3]. LBW occurs in preterm babies (less than 37 completed weeks. Low birth weight was explored as a function of categorical (nominal) factors such as demographics and maternal characteristics by contingency tables. Associations between low birth weight and these factors were examined by chi-squared tests of the contingency tables.