

Table 2 Risk factors for low birth weight and very low birth weight, Jordan, 2012: logistic regression analysis

Variable	Low birth weight			Very low birth weight		
	β coefficient	P-value	Adjusted OR ^a (95% CI)	β coefficient	P-value	Adjusted OR ^a (95% CI)
Mother's age at birth of child (years)						
< 20	0.726	< 0.001	2.07 (1.52–2.81)	0.767	0.107	2.15 (0.85–5.47)
20–29	0.331	< 0.001	1.39 (1.17–1.66)	0.715	0.024	2.04 (1.10–3.80)
30–34 (ref)			1.00			1.00
≥ 35	0.326	0.002	1.38 (1.13–1.71)	0.963	0.012	2.62 (1.24–5.53)
Mother's education						
No education	0.675	0.002	1.97 (1.28–3.03)	1.564	0.003	4.78 (1.70–13.41)
Primary	0.592	< 0.001	1.81 (1.38–2.37)	0.845	0.045	2.33 (1.02–5.32)
Secondary	0.411	< 0.001	1.51 (1.29–1.77)	0.454	0.064	1.57 (0.97–2.54)
Higher (ref)			1.00			1.00
Father's education						
No education	0.170	0.142	1.18 (0.94–1.49)	0.165	0.535	1.18 (0.70–1.98)
Primary	–0.190	0.081	0.83 (0.70–1.15)	–0.113	0.783	0.89 (0.40–1.99)
Secondary	–0.287	0.379	0.75 (0.39–1.42)	–0.806	0.441	0.44 (0.06–3.47)
Higher (ref)			1.00			1.00
Birth order						
1	0.304	0.027	1.36 (1.08–3.01)	0.630	0.272	1.88 (0.61–5.78)
2–3	–0.685	0.066	0.50 (0.24–1.05)	0.716	0.028	2.05 (1.08–3.87)
4–5 (ref)			1.00			1.00
≥ 6	0.243	0.009	1.28 (1.10–2.92)	–0.889	0.048	0.41 (0.17–0.99)
Child's sex						
Male (ref)			1.00			1.00
Female	0.415	< 0.001	1.51 (1.34–1.71)	0.773	< 0.001	2.16 (1.46–3.20)
Type of birth						
Singleton (ref)			1.00			1.00
Twin	2.226	< 0.001	9.26 (7.22–11.88)	2.660	< 0.001	14.30 (8.68–23.54)
Planned pregnancy						
Yes (ref)			1.00			1.00
No	0.419	< 0.001	1.52 (1.23–1.88)	1.186	< 0.001	3.27 (1.74–6.16)
Birth interval						
< 24 months	0.196	0.047	1.22 (1.06–1.54)	0.082	0.776	1.08 (0.62–1.91)
≥ 24 months (ref)			1.00			1.00
First birth	1.071	0.003	2.92 (1.45–4.68)	0.572	0.213	1.77 (0.72–4.36)
Wealth index (quintiles)						
Lowest	0.178	0.047	1.19 (1.07–1.78)	0.121	0.700	1.12 (0.61–2.08)
Second	0.044	0.644	1.05 (0.87–1.26)	0.310	0.286	1.36 (0.77–2.41)
Middle (ref)			1.00			1.00
Fourth	0.067	0.512	1.07 (0.88–1.31)	0.255	0.426	1.29 (0.69–2.42)
Highest	0.221	0.035	1.25 (1.06–1.61)	0.532	0.138	1.70 (0.84–3.44)
Region						
Central	0.148	0.043	1.16 (1.00–1.34)	–0.502	0.018	0.61 (0.40–0.92)
South	0.285	0.012	1.33 (1.07–1.66)	0.116	0.713	1.12 (0.61–2.08)
North (ref)			1.00			1.00
Consanguinity						
Yes	0.149	0.024	1.16 (1.02–1.32)	0.280	0.174	1.32 (0.88–1.98)
No (ref)			1.00			1.00

Table 2 Risk factors for low birth weight and very low birth weight, Jordan, 2012: logistic regression analysis (Concluded)

Variable	Low birth weight			Very low birth weight		
	β coefficient	P-value	Adjusted OR ^a (95% CI)	β coefficient	P-value	Adjusted OR ^a (95% CI)
Smoking during pregnancy						
No (ref)			1.00			1.00
Yes	0.312	< 0.001	1.37 (1.16–1.64)	0.364	0.134	1.44 (0.89–2.32)

OR: Odds ratio; CI: confidence interval; ref: reference category.

^aAdjusted for socioeconomic, demographic and behavioural characteristics.

discussion on these issues is beyond the scope of our study. However, more research is needed to ascertain the underlying factors responsible for this increasing trend in LBW in Jordan. At the same time, appropriate interventions aimed at preventing LBW need to be taken immediately.

An important objective of our study was to identify the factors significantly associated with LBW in Jordan. We identified maternal age, maternal education, birth interval, consanguinity of the parents, maternal smoking, household wealth status, region of residence, birth order, sex of child and type of birth (twin/singleton) as significantly associated with LBW in Jordan. In agreement with many earlier studies, we found an increased risk of having a LBW baby in mothers younger than 20 years of age (29–31). This result is consistent with the finding of a study in North Jordan (32). The risk of LBW, however, showed a U-shaped pattern in relation to maternal age. A number of studies have noted that LBW increases at the two extremes of women’s reproductive life, that is, < 20 years and \geq 35 years (29–31). As with maternal age, birth order also showed a U-shaped relationship with the risk of LBW, which is consistent with the finding of others studies (33,34). The higher risk of LBW in mothers aged < 20 years or with first births, and older mothers or with higher order births might be due to reproductive and anatomical problems, lack of proper knowledge and use

of antenatal care, low socioeconomic status, unplanned pregnancies and more pregnancy complications (29,35).

Mother’s education might affect birth weight directly or indirectly through acquired knowledge of health processes such as antenatal care and nutrition. The results of our analysis are also similar to previous studies that showed that illiterate mothers were at a higher risk of delivering LBW babies than literate mothers (7,17,36). We did not find father’s illiteracy a risk for LBW as compared with higher educated fathers which is contrary to earlier research (37).

Our results showed that mother’s low economic status was an important risk factor for LBW. This finding is in agreement with previous studies which showed that poor economic status increased the risk of delivering a LBW baby (36,38). The effect of low economic status may be the sum of many unfavourable conditions that increase the risk of adverse pregnancy outcomes. Contrary to the findings of most other studies, our analysis also found a higher risk of having a LBW baby among the richest group of mothers compared with the middle-income group. It is possible that smoking and bearing children when 35 years or older are more prevalent among mothers in the higher economic group, which increase their risk of having LBW babies. Furthermore, contrary to the developed societies, mothers in developing and transitional societies who are of higher socioeconomic status are more likely to lead a sedentary life and consume high-calorie foods,

Table 3 Mortality rates for all, LBW and NBW children, and risk of death of LBW children (logistic regression analysis) at different ages

Age period at death ^a	Death rate per 1000 live births ^b			Risk of death		
	LBW (n = 1348)	NBW (n = 8386)	All (n = 9734)	P-value ^c	Adjusted OR ^d (95% CI)	P-value
Neonatal	51.19 (69)	7.27 (61)	13.36 (130)	< 0.001	6.09 (4.17–8.91)	< 0.001
Post-neonatal	3.91 (5)	1.44 (12)	1.77 (17)	0.051	2.41 (0.79–7.35)	0.123
Infant	54.90 (74)	8.70 (73)	15.10 (147)	< 0.001	5.57 (3.89–7.97)	< 0.001
Under-5	57.86 (78)	11.21 (94)	17.67 (172)	< 0.001	4.83 (3.45–6.77)	< 0.001

LBW: low birth weight; NBW: normal birth weight; OR: odds ratio; CI: confidence interval.

^aNeonatal deaths occurred within 28 days of birth; post-neonatal deaths occurred between 28 days and < 12 months; infant deaths occurred between birth and 12 months; and under-5 deaths occurred before 60 months of age.

^bFigures in parenthesis are the number of deaths reported.

^cP-values are based on t-test comparing proportion of deaths between LBW and NBW.

^dAdjusted for maternal age, education, household wealth status, birth order, sex of child, birth type (singleton/twin), region of residence and place of residence (urban/rural).

Source: Jordan Population and Family Health Survey, 2012 (9).