

Table 1 Distribution of all live births in the 5 years preceding the survey and birth weight according to background characteristics

Characteristic	All live births	Normal birth weight	Low birth weight ^a	Very low birth weight	P-value ^b
	No. (%)	No. (%)	No. (%)	No. (%)	
Total	9734 (100)	8386 (86.2)	1348 (13.8)	123 (1.3)	
Mother's age at birth of child (years)					< 0.001
< 20	424 (4.4)	329 (77.6)	95 (22.4)	9 (2.1)	
20–29	5061 (52.0)	4327 (85.5)	734 (14.5)	79 (1.6)	
30–34	2355 (24.2)	2099 (89.1)	256 (10.9)	15 (0.6)	
≥ 35	1894 (19.5)	1631 (86.1)	263 (13.9)	20 (1.1)	
Mean (SD)	28.8 (6.1)	29.0 (6.0)	28.2 (6.4)	27.8 (5.9)	
Mother's education					< 0.001
No education	190 (2.0)	155 (81.2)	35 (18.3)	6 (3.1)	
Primary	618 (6.3)	508 (82.2)	110 (17.8)	9 (1.5)	
Secondary	5842 (60.0)	4972 (85.1)	870 (14.9)	77 (1.3)	
Higher	3084 (31.7)	2751 (89.2)	333 (10.8)	31 (1.0)	
Birth order					0.004
1	2282 (23.4)	1914 (83.9)	368 (16.1)	43 (1.9)	
2–3	3799 (39.0)	3286 (86.5)	513 (13.5)	52 (1.4)	
4–5	2347 (24.1)	2056 (87.6)	291 (12.4)	18 (0.8)	
≥ 6	1306 (13.4)	1130 (86.5)	176 (13.5)	10 (0.8)	
Mean (SD)	3.22 (2.1)	3.24 (2.1)	3.11 (2.0)	2.57(1.8)	
Child's sex					< 0.001
Male	5074 (52.1)	4493 (88.5)	581 (11.5)	41 (0.8)	
Female	4660 (47.9)	3893 (83.5)	767 (16.5)	82 (1.8)	
Type of birth					< 0.001
Singleton	9391 (96.5)	8234 (87.7)	1157 (12.3)	87 (0.9)	
Twin	343 (3.5)	152 (44.3)	191 (55.7)	36 (10.5)	
Planned pregnancy					0.002
Yes	8781 (90.2)	7601 (86.6)	1180 (13.4)	104 (1.2)	
No	952 (9.8)	785 (82.4)	167 (17.5)	19 (2.0)	
Birth interval					< 0.001
< 24 months	2366 (24.3)	2030 (85.8)	336 (14.2)	21 (0.9)	
≥ 24 months	5032 (51.7)	4398 (87.3)	636 (12.6)	49 (1.0)	
First birth	2332 (24.0)	1958 (84.0)	374 (16.0)	53 (2.3)	
Father's education					< 0.001
No education	99 (1.0)	80 (80.8)	19 (19.2)	1 (1.0)	
Primary	1087 (11.2)	883 (81.2)	204 (18.8)	12 (1.1)	
Secondary	6119 (62.9)	5317 (86.9)	802 (13.1)	86 (1.4)	
Higher	2429 (25.0)	2106 (86.7)	323 (13.3)	24 (1.0)	
Region					0.002
Central	5950 (61.1)	5102 (85.7)	848 (14.3)	60 (1.0)	
North	2843 (29.2)	2482 (87.3)	361 (12.7)	48 (1.7)	
South	941 (9.7)	802 (85.2)	139 (14.8)	15 (1.6)	
Place of residence					0.564
Urban	7926 (81.4)	6822 (86.1)	1104 (13.9)	97 (1.2)	
Rural	1808 (18.6)	1564 (86.5)	244 (13.5)	26 (1.4)	

Table 1 Distribution of all live births in the 5 years preceding the survey and birth weight according to background characteristics (Concluded)

Characteristic	All live births	Normal birth weight	Low birth weight ^a	Very low birth weight	P-value ^b
	No. (%)	No. (%)	No. (%)	No. (%)	
Wealth index (centile)					
					0.046
Lowest	2230 (22.9)	1879 (84.3)	351 (15.7)	29 (1.3)	
Second	2166 (22.3)	1860 (85.9)	306 (14.1)	33 (1.5)	
Middle	2103 (21.6)	1846 (87.8)	257 (12.2)	22 (1.0)	
Fourth	1880 (19.3)	1637 (87.1)	243 (12.9)	21 (1.1)	
Highest	1354 (13.9)	1163 (85.9)	191 (14.1)	18 (1.3)	
Consanguinity					
					0.043
Yes	3288 (33.8)	2809 (85.4)	479 (14.6)	43 (1.3)	
No	6446 (66.2)	5577 (86.5)	869 (13.5)	80 (1.2)	
Smoking during pregnancy					
					< 0.001
No	8322 (85.5)	7232 (86.9)	1090 (13.1)	96 (1.2)	
Yes	1412 (14.5)	1154 (81.7)	258 (18.3)	27 (1.9)	

SD: standard deviation.

^aLow birth weight includes very low birth weight also.

^bChi-squared test.

The number of missing values may vary for each variable.

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

weight on death was in the neonatal (age 0–1 month) period: neonatal deaths were 6 times higher in babies born with LBW than those born with NBW (OR = 6.09, 95% CI: 4.17–8.91).

Discussion

It is encouraging to note that birth weight data from Jordan Population and Family Health Survey were available for 99% of births occurring in the 5 years preceding the survey. The availability of birth weight data for almost all infants in Jordan is not surprising because most deliveries in the country take place in health facilities, where health personnel usually weigh the newborn and record the weight on a health card.

The mean (SD) birth weight of the children in our analysis was 3.09 (0.66) kg, which is lower than the newborns on the United States of America (3.45 kg) on whom WHO’s reference standard is based (15).

The estimated prevalence of LBW in Jordan was 13.8% in 2012, which is higher than the average incidence of LBW of 7.0% in developed countries, but lower than the average incidence of LBW of about 17.0% in developing countries (2). Although, 2019 LBW estimates indicated that the global estimate of LBW had declined since 2000 (16), our results show an increasing trend in LBW in Jordan from 8.8% in 1990 to 13.8% in 2012, a 57% increase. Various reasons have been put forward to explain increasing trends in LBW, which include epidemiological transition, change in lifestyle and food habits, improvement in medical technology, and increasing trends in premature and twin births (17–20). During pregnancy, mothers’ metabolic demands increase due to modifications in mothers’ physiology and the requirements of a growing fetus (21).

Epidemiological transition, change in lifestyle and food habits or nutritional intake have many dimensions that affect maternal metabolism. Epidemiological transition such as increased cardiovascular disease, type 2 diabetes, blood pressure and osteoporosis are associated with adverse pregnancy outcomes including LBW (20–22). Lifestyle behaviours such as cigarette smoking, alcohol and drug use, weight gain during pregnancy, physical activity and stress play important roles in determining fetal growth (23,24). There is much evidence supporting the link between inadequate maternal nutritional status and adverse pregnancy outcomes (25–28). Detailed

Figure 1 Trends in low birth weight in Jordan, 1990–2012
Source: Calculated using data from Jordan Population and Family Health Surveys, 1990–2012 (8,11–14)

