Letter to the Editor

Prevalence and Determinants of Low Birth Weight: A Case-Control Study in Marrakesh (Morocco)

*Elkhoudri NOUREDDINE, Baali ABDELLATIF

Laboratory of Human Ecology, Dept. of Biology, School of Sciences Semlalia, Cadi Ayyad University, Marrakesh, Morocco

*Corresponding Author: Email: noureddine.elkhoudri@edu.uca.ma

Dear Editor in Chief

The estimated number of Low birth weight (LBW) (<2500 g) babies is about 20 million (15.5% of living births) (1). Thus, decreasing 30% of LBW by 2025 is the third global target. Its rate rises to 17% in the developing countries, which is only 7% in developed countries (1).

The prevalence of LBW in Morocco is 11%, which is higher than those recorded in Algeria (7%), Tunisia (7%) and Jordan (10%) (1). besides, the LBW is a major determinant of infant mortality, and neonatal complications risk and morbidities in adulthood (1).Consequently, special and expensive costs are spent on LBW survivors (1). Many studies have identified the risk factors of LBW (1, 4). There is a growing interest in the risk factors as the health and genetic factors (4). However, the socio-demographic factors are insufficiently controlled (4).

In this context, studying the association of LBW with socio- demographic and health factors of Moroccan newborn groups in the city of Marrakesh is of our major interest. Data were collected through a survey conducted in six public health centers in Marrakesh in 2014. The sample included a total of 796 couples "mother-child". The mothers gave birth in the last 5 years preceding the survey. The birth weight of each child was gathered from the health records. The mothers were interviewed to collect socio-demographic and health information that might be associated with LBW.

To study the association between the LBW and the variables, the "case-control" method was adopted. Each LBW case identified in the investigation was matched to a non-LBW child (98 LBW cases matched to 98 control children, Ratio 1:1). Births resulting from twin pregnancies were excluded. A verbal consent was obtained from mothers to participate in the investigation. The data was entered into the SPSS Version 10.

The average birth weight was 3277 g (min= 1000; max=5600g). The average birth weight was 3312 g for boys, and 3242g (SD=600) for girls. The birth weights found in 1989 (6) and 1997 (6) in Marrakesh were 3300g and 3350g. These results are slightly higher than the average birth weight found in our survey. Boys and girls had relatively the same average weight; the noticed difference was not significant (*P*=0.11).

The prevalence of LBW representing 12.31% was calculated on all newborns birth weight (796). In the urban areas, it is found in 1997 (6) and in 2003 (5) to reach respectively 9% and 7.4%. This is close to that found by the WHO in 2004 for Moroccan newborns (11%) (1).

The proportion of LBW in boys (12.37%) and girls (12.21%) showed no significant differences. These findings are consistent with other works (1).Table 1 shows a statistical association between

the LBW and maternal age (35 years and over). This result is confirmed by other works (1).Similarly, the risk of LBW was high among women who had over three pregnancies. The impact of multiparity has been confirmed (4).

The socio-economic factors assessed in this study consider the standard of living of families did not have any effect on the LBW. This result is in disagreement with some works (4). The lack of association can be explained by the homogeneity of the studied group since the majority of mothers (70.9%) belong to low-income families. The cares provided by the public health centers are mostly used by disadvantaged social classes (5).

Moreover, a significant association was identified between LBW cases and the relationship between spouses. These findings are confirmed in Pakistan (2). Furthermore, the failed pregnancies are also associated with LBW (2).

The maternal morbidities during pregnancy are undeniably associated with LBW (Hypertensive Pregnancy: HP, Anemia). These associations have been proved (2).

The findings show that the number of the antenatal consultation (ANC) reduces the risk of having LBW. The protective effect of ANC is highlighted (2). In addition, women with stature less than 150 cm give birth to LBW neonates, as already confirmed (1, 4).Finally, unwanted pregnancies are significantly associated with LBW (3) which is not observed in this study. A binary logistic regression shows that the stature of women, morbidities during pregnancy, the relationship between spouses contribute to LBW. The number of ANC is a protective factor (Table 2).

It is obvious that socio-demographic and health factors has a significant association with LBW. Thus, enhancing maternal health conditions will reduce the prevalence of LBW.

Table 1: Association between low birth weight and socio-demographic characteristics of women

Variables	Modalities	Total	Cases %	Control %	Khi-2
Child gender	Boys	100	50.0	50.0	ns
	Girls	96	50.0	50.0	
Maternal age	< 35 yr	160	46.3	53.8	4.9*
	≥ 35 yr	36	66.7	33.3	
Parity (number of pregnancies)	≤ 3 pregnancies	162	45.1	54.9	9.1**
	>3 pregnancies	34	73.5	26.5	
Woman literacy	Illiterate	40	62.5	37.5	3.1 ns
	Literate	156	46.8	53.2	
Standards of living	Low	139	51.8	48.2	0.6 ns
	Medium to high	57	45.6	54.4	
Relationship with spouse	Yes	37	64.9	35.1	4.0*
	No	159	46.5	53.5	
Failed pregnancies	Yes	31	74.2	25.8	8.6**
	No	165	45.5	54.5	
Morbidities during pregnancy	Yes	36	66.7	33.3	4.9*
	No	160	46.3	53.8	
Number of antenatal care	<3	27	77.8	22.2	9.7**
	>= 3	169	45.6	54.4	
Stature of Women	< 150 cm	12	83.3	16.7	5.7*
	≥ 150 cm	184	47.8	52.2	
Desire of pregnancy	Yes	137	46.7	53.3	1.9 ns
	No	59	57.6	42.4	

ns : non significant;* : *P<0.05* ; ** :*P<0.01* ; *** *P:<0.001*

Table 2: Binary logistic regression model

Variables	β	Wald test	*p*	OR	CI pour OR 95%
Maternal age	-0.003	0.01	0.90	0.99	(0.94-1.04)
Parity	0.55	0.99	0.31	1.73	(0.58-5.14)
Relationship between spouses	-0.91	4.93	0.026	0.39	(0.17-0.89)
Failed pregnancies	-0.87	2.76	0.09	0.41	(0.14-1.16)
Morbidities during pregnancy	-0.94	4.93	0.02	0.39	(0.17-0.89)
Antenatal consultations	1.59	9.67	0.002	4.9	(1.8-13.51)
Stature of Women	-2.01	6.10	0.01	0.13	(0.02-0.66)

β: constant, *P*: significance level of the Wald test, OR: Odds Ratio, CI: confidence interval

Acknowledgements

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