

Epi Monthly Report

Office of Epidemiology and Disease Control



Miami-Dade County
HEALTH DEPARTMENT

Determinants of Preterm Births during 1998-2000 in Miami-Dade County

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Background

Preterm delivery (less than 37 weeks) of low-birth-weight (LBW) (<2,500 grams) infants remains a significant public health issue and a leading cause of neonatal death and long-term neuro-developmental disturbances and health problems (1). During 1998-2000, two-thirds of all LBW births were among preterm births in Miami-Dade County. Multiparous births were significantly associated with births being preterm (adjusted odds ratio 19.0, 95% confidence interval=17.4-20.8). Improving and preventing preterm births could reduce the percentage of LBW births. This analysis was designed to identify determinants of preterm birth among singleton infants in order to aid in the planning and targeting of Healthy Start services in Miami-Dade County.

Subjects and Methods

Data were obtained from 1998-2000 Miami-Dade County vital records. Of the 95,416 live births, 92,211 (96.6%) had complete data for all analyzed variables. Of these, 89,601 (97.2%) of them were singleton infants and thus included in the analysis. Of these infants' mothers, 18,847 (21.0%) were

non-Hispanic black, 50,507 (56.4%) were Hispanic, 5,302 (5.9%) were Haitian, 13,632 (15.2%) were non-Hispanic white, and 1,313 (1.5%) were other race/ethnicity.

Prenatal care was classified as adequate, intermediate, and inadequate based on Kessner's Adequacy of Prenatal Care Index. To examine the association between maternal demographics, medical risk factors, substance use habits, prenatal care utilization, sex of infants, and the defined outcome, crude odds ratio (OR), adjusted odds ratios (AOR), and 95% confidence intervals (95% CI) were calculated by Chi-square test and multivariate logistic regression analyses in SAS (2). An odds ratio is statistically significant if its confidence interval excludes 1.0.

Results

Maternal race-ethnicity: Of the 89,601 live births, 7,600 (8.5%) were preterm infants. The percentage of preterm births was 12.1%, 7.4%, 11.0%, and 8.8% among non-Hispanic black, Hispanic, Haitian and other women, and was significantly



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higher than the percentage (6.7%) among non-Hispanic white women (AOR 1.48, 95% CI: 1.36-1.62, AOR 1.12, 95% CI: 1.03-1.21, AOR 1.49, 95% CI: 1.32-1.68, and AOR 1.43, 95% CI: 1.16-1.76 respectively).

Sex of infants and birth order: Among the 89,601 singleton infants, 45,974 (51.3%) were male, and 43,627 (48.7%) were female. Univariate and multivariate analyses showed a higher risk of being preterm among male compared with female babies (AOR 1.10, 95% CI: 1.05-1.16%). Preterm births were more prevalent among 4th and above births (11.4%) compared with first (8.62%), second (7.4%) and third births (8.7%).

Age and education of mothers: The rate of preterm births was significantly higher among women younger than 19 and older than 35 years compared with women aged 20-34 years in univariate analysis (11.1%, 9.7% vs. 7.8%). While controlling other risk factors, the adjusted odds ratio for women older than 35 years was 1.26 (95% CI: 1.18-1.35) compared with women aged 20-34 years. There was no statistically significant association found between educational level and preterm birth.

Marital status of mothers: 36,492 (40.7%) of the mothers were unmarried. Compared with married mothers, unmarried mothers were at higher risk of delivering a preterm baby (AOR 1.19, 95% CI: 1.13-1.26).

Foreign born mothers: 51,012 (56.9%) mothers were born outside of the United States. Compared with births to U.S.-born mothers, infants to foreign-born mothers were less likely to be preterm (AOR 0.88, 95% CI: 0.83-0.93).

Smoking and alcohol use: 1,638 (1.8%) women reported smoking, and 151 (0.2%) women reported using alcohol during pregnancy. Some studies have suggested that smoking and alcohol use may be underreported on birth certificates due to a variety of factors (4-6). However, only smoking had a significant association with preterm birth in the multivariate analysis (AOR 1.36, 95% CI: 1.16-1.59).

Prenatal care utilization: When classified according to the Kessner index, 75,121 (83.8%) women

received adequate care. The preterm birth rate was 7.9%, 10.5%, and 17.0% among adequate, intermediate and inadequate care users respectively. Compared with mothers who received adequate prenatal care, a significantly increased risk of having a preterm birth was found for those with intermediate (AOR 1.14, 95% CI: 1.06-1.22) or inadequate care (AOR 1.71, 95% CI: 1.52-1.92%).

Maternal weight gain: Of the 89,601 mothers, 12,184 (13.6%) reported gaining fewer than 20 pounds during the pregnancy. The rate of preterm birth was 16.3%, 9.8%, 6.6%, and 5.3% among women with maternal weight gain of fewer than 20, 20-29, 30-39, and more than 39 pounds respectively.

Obstetric/medical risk factors: Mothers who had diabetes, hydramnios/oligohydramnios, chronic hypertension, pregnancy-associated hypertension, eclampsia, incompetent cervix, previous delivery of low-birth-weight or preterm infant, and uterine bleeding were more likely to deliver preterm infants (see table).

Conclusion

Our results suggest the occurrence of preterm births may be reduced by providing more social support and care to unmarried pregnant women, increasing prenatal care utilization, and providing health education services such as nutritional instruction.

References:

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Determinant Factors of Preterm Births (<37 Weeks) during 1998-2000 in Miami-Dade County

	>=37 weeks		<37 weeks		Crude		Adjusted	
	Freq.	Percent	Freq.	Percent	Odds Ratio	95% CI	Odds Ratio	95% CI
Age (yr.)								
20-34	60681	92.16	5162	7.84	1.00		1.00	
10-19	8935	88.95	1110	11.05	1.46	1.36-1.56	1.08	1.00-1.17
>=35	12385	90.32	1328	9.68	1.26	1.18-1.34	1.27	1.18-1.36
Race/Ethnicity								
White	12714	93.27	918	6.73	1.00		1.00	
Black	16575	87.95	2272	12.05	1.90	1.75-2.06	1.49	1.37-1.63
Hispanic	46793	92.65	3714	7.35	1.10	1.02-1.19	1.18	1.03-1.21
Haitian	4721	89.04	581	10.96	1.70	1.53-1.90	1.50	1.32-1.69
Others	1198	91.24	115	8.76	1.33	1.09-1.63	1.43	1.16-1.76
Educational Levels								
<=6 yr.	2299	90.19	250	9.81	1.00		1.00	
7-12 yr.	43764	90.45	4622	9.55	0.97	0.85-1.11	1.04	0.91-1.20
>=13	35938	92.94	2728	7.06	0.70	0.61-0.80	0.90	0.77-1.04
Marital Status								
Married	49307	92.84	3802	7.16				
Unmarried	32694	89.59	3798	10.41	1.51	1.44-1.58	1.19	1.13-1.26
Gender								
Female	40049	91.80	3578	8.20				
Male	41952	91.25	4022	8.75	1.07	1.02-1.12	1.10	1.05-1.56
Foreign-born Mother								
No	34945	90.56	3644	9.44				
Yes	47056	92.24	3956	7.76	0.81	0.77-0.85	0.87	0.82-0.93
Smoking								
No	80583	91.61	7380	8.39				
Yes	1418	86.57	220	13.43	1.69	1.47-1.96	1.36	1.17-1.60
Alcohol Use								
No	81873	91.53	7577	8.47				
Yes	128	84.77	23	15.23	1.94	1.24-3.03	1.06	0.65-1.72
Birth Order								
>=4th	7384	88.65	945	11.35	1.00		1.00	
3rd	12523	91.33	1189	8.67	0.74	0.68-0.81	0.92	0.84-1.01
2nd	26732	92.62	2131	7.38	0.62	0.58-0.68	0.88	0.80-0.96
1st	35362	91.38	3335	8.62	0.74	0.68-0.80	1.08	0.99-1.18
Weight Gain								
<20	10201	83.72	1983	16.28	1.00		1.00	
20-29	23061	90.16	2518	9.84	0.56	0.53-0.60	0.60	0.57-0.64
30-39	26008	93.43	1830	6.57	0.36	0.34-0.39	0.40	0.38-0.43
>=40	22731	94.71	1269	5.29	0.29	0.27-0.31	0.30	0.28-0.33
Kessner Index								
Adequate	69200	92.12	5921	7.88	1.00		1.00	
Intermediate	10758	89.51	1261	10.49	1.37	1.29-1.46	1.14	1.07-1.22
Inadequate	2043	83.02	418	16.98	2.39	2.15-2.67	1.72	1.53-1.93
Maternal Med. Conditions*								
Anemia								
No	81161	91.52	7516	8.48				
Yes	840	90.91	84	9.09	1.08	0.86-1.35	0.93	0.74-1.18

(*) Maternal Medical Conditions for this pregnancy



Determinant Factors of Preterm Births (<37 Weeks) during 1998-2000 in Miami-Dade County
(Continued)

	>=37 weeks		<37 weeks		Crude		Adjusted	
	Freq.	Percent	Freq.	Percent	Odds Ratio	95% CI	Odds Ratio	95% CI
Cardiac Disease								
No	81807	91.52	7583	8.48				
Yes	194	91.94	17	8.06	0.95	0.58-1.55	0.91	0.54-1.54
Acute or Chronic Lung Dis.								
No	81898	91.51	7594	8.49				
Yes	103	94.50	6	5.50	0.63	0.28-1.43	0.62	0.27-1.43
Diabetes								
No	81121	91.59	7448	8.41				
Yes	880	85.27	152	14.73	1.88	1.58-2.24	1.45	1.21-1.75
Genital Herpes								
No	81773	91.51	7586	8.49				
Yes	228	94.21	14	5.79	0.66	0.39-1.14	0.66	0.37-1.18
Hydramnios/Oligohydramnios								
No	81659	91.57	7519	8.43				
Yes	342	80.85	81	19.15	2.57	2.02-3.28	2.57	1.99-3.30
Chronic Hypertension								
No	81838	91.58	7526	8.42				
Yes	163	68.78	74	31.22	4.94	3.75-6.50	3.55	2.64-4.77
Preg. Assoc. Hypertension								
No	80691	91.76	7249	8.24				
Yes	1310	78.87	351	21.13	2.98	2.64-3.36	2.92	2.57-3.31
Eclampsia								
No	81951	91.58	7539	8.42				
Yes	50	45.05	61	54.95	13.26	9.12-19.29	11.91	8.01-17.69
Incompet cervix								
No	81929	91.54	7571	8.46				
Yes	72	71.29	29	28.71	4.36	2.83-6.71	3.91	2.46-6.24
Previous infant >4000 grams								
No	81919	91.52	7594	8.48				
Yes	82	93.18	6	6.82	0.79	0.34-1.81	0.57	0.23-1.41
Prev. Preterm or SGA Infant**								
No	81926	91.59	7526	8.41				
Yes	75	50.34	74	49.66	10.74	7.78-14.82	9.41	6.69-13.23
Renal Disease								
No	81918	91.53	7585	8.47				
Yes	83	84.69	15	15.31	1.95	1.13-3.38	1.54	0.85-2.78
Rh Sensitization								
No	81974	91.52	7596	8.48				
Yes	27	87.10	4	12.90	1.60	0.56-4.57	1.44	0.46-4.54
Uterine Bleeding								
No	81912	91.56	7555	8.44				
Yes	89	66.42	45	33.58	5.48	3.83-7.85	5.49	3.77-8.01
Other Related Conditions								
No	77583	91.73	6999	8.27				
Yes	4418	88.03	601	11.97	1.51	1.38-1.65	1.39	1.27-1.53

(**) Previous preterm or small-for-gestational age infant



Monthly Report

Selected Reportable Diseases/Conditions in Miami-Dade County, April 2002

Diseases/Conditions	2002	2002	2001	2000	1999	1998
	this Month	Year to Date	Year to Date	Year to Date	Year to Date	Year to Date
AIDS *Provisional	111	429	477	538	562	544
Campylobacteriosis	10	29	31	20	27	18
Chancroid	0	0	0	0	0	0
<i>Chlamydia trachomatis</i>	335	1316	1075	1105	1499	671
Ciguatera Poisoning	0	0	0	0	0	0
Cryptosporidiosis	1	2	5	1	3	2
Cyclosporiasis	0	0	0	0	0	0
Diphtheria	0	0	0	0	0	0
<i>E. coli</i> , O157:H7	0	0	0	1	0	1
<i>E. coli</i> , Other	0	0	0	0	0	0
Encephalitis	0	0	0	0	0	0
Giardiasis, Acute	21	54	73	3	15	15
Gonorrhea	171	626	567	750	1056	480
Granuloma Inguinale	0	0	0	0	0	0
<i>Haemophilus influenzae</i> B (invasive)	0	0	1	1	0	0
Hepatitis A	30	49	51	22	17	46
Hepatitis B	3	6	13	7	11	17
HIV *Provisional	158	645	460	521	526	580
Lead Poisoning	23	71	130	N/A	N/A	N/A
Legionnaire's Disease	0	0	0	0	0	1
Leptospirosis	0	0	0	0	0	0
Lyme disease	0	0	1	2	0	0
Lymphogranuloma Venereum	0	0	0	0	0	0
Malaria	2	4	8	2	6	6
Measles	0	0	0	0	0	0
Meningitis (except aseptic)	0	2	3	6	11	7
Meningococcal Disease	3	7	6	7	5	2
Mumps	0	0	0	1	2	0
Pertussis	1	1	1	3	2	7
Polio	0	0	0	0	0	0
Rabies, Animal	0	0	0	0	0	1
Rubella	0	0	0	0	0	0
Salmonellosis	17	69	49	37	50	61
Shigellosis	23	63	28	27	38	50
<i>Streptococcus pneumoniae</i> , Drug Resistant	2	35	60	68	56	25
Syphilis, Infectious	15	56	63	48	24	10
Syphilis, Other	72	315	179	273	353	191
Tetanus	0	0	1	0	0	0
Toxoplasmosis	3	7	4	0	0	0
Tuberculosis *Provisional	15	73	39	80	74	111
Typhoid Fever	0	1	0	0	14	2
<i>Vibrio</i> , <i>cholera</i>	0	0	0	0	0	0
<i>Vibrio</i> , Other	0	0	0	0	0	0

* Data on AIDS are provisional at the county level and are subject to edit checks by state and federal agencies.

** Data on tuberculosis are provisional at the county level.



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