

Perinatal health status and health outcomes of offspring of pregnant women with disabilities in Taiwan: an assessment and recommendation study

Yu-Chia Chang ^{1,2,*}, **Cheng-Chia Yang** ²

¹Department of Long Term Care, College of Health and Nursing, National Quemoy University, Kinmen County, Taiwan

²Department of Healthcare Administration, College of Medical and Health Science, Asia University, Taichung, Taiwan

- Background and objective:** Approximately 10% to 12% of women of reproductive age have a disability, those are more prone to delayed prenatal care initiation and increased risk of adverse health conditions that can affect maternal and infant outcomes. Therefore, it is crucial to have a better understanding of their health status and needs to achieve health equity. The purpose of this study is to investigate the health outcomes on both mothers with disabilities during the pregnancy/delivery process and their offspring, and to compare the differences among various categories and levels of disability.
- Methods:** This retrospective population-based cohort study linked data from the 2014-2017 Taiwan Maternal and Child Health Database to the National Disability Registration System and National Health Insurance Databases to obtain medical claims. Generalized Estimating Equations with Poisson distributions and logistic regression models were used to evaluate the association between prenatal care, delivery and childbirth outcomes.
- Results:** A total of 15, 084 infants were born to mothers with disabilities between 2014 and 2017 in Taiwan. Pregnant women with intellectual and developmental disabilities (IDDs) had the lowest utilization of prenatal care services, compared to those with other types of disabilities. Their newborns were more likely to have pre-term birth, low-birth weight, shorter gestation, and lower Apgar score (less than 7). Their infants also had higher risks of admission to an emergency department, hospitalization, and death. Mothers with a very severe level of disability were more likely to have a pre-term birth, low or very low-birthweight and lower Apgar score newborns, and higher risk of accidental infant death, when compared to those with a mild level of disability severity.

Table. Multivariable Analysis of Health Outcomes among Pregnant Women with Different Categories and Severity of Disabilities and their Offspring

Variables	Category of disability (reference: Intellectual and Developmental Disability)						Severity of Disability (reference: Mild)					
	Sensory Disability		Physical Disability		Other Disability		Extremely Severe		Severe		Moderate	
	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI
mothers_pregnancy												
prenatal examination [#]	1.09	1.07 - 1.11	1.07	1.05 - 1.09	1.06	1.04 - 1.09	1.00	0.97 - 1.04	0.99	0.97 - 1.01	0.98	0.97 - 1.00
offspring_newborn												
preterm birth	0.72	0.61 - 0.85	0.86	0.75 - 0.98	1.12	0.96 - 1.30	1.47	1.17 - 1.85	1.28	1.10 - 1.50	1.03	0.92 - 1.16
low birth weight	0.74	0.63 - 0.87	0.80	0.70 - 0.91	1.10	0.94 - 1.28	1.62	1.29 - 2.02	1.29	1.10 - 1.52	1.10	0.98 - 1.23
very low birth weight	0.72	0.42 - 1.24	0.85	0.57 - 1.28	1.34	0.89 - 2.02	2.80	1.74 - 4.49	1.08	0.66 - 1.77	1.02	0.72 - 1.45
small for gestational age	0.65	0.42 - 0.99	0.74	0.53 - 1.05	0.92	0.62 - 1.36	0.79	0.38 - 1.65	1.11	0.73 - 1.68	1.11	0.83 - 1.48
large for gestational age	1.01	0.60 - 1.69	0.86	0.54 - 1.35	0.43	0.22 - 0.84	0.27	0.07 - 1.13	0.93	0.54 - 1.60	1.09	0.75 - 1.58
Apgar scores <7												
one minute	0.78	0.58 - 1.05	0.74	0.58 - 0.94	1.10	0.85 - 1.42	2.15	1.56 - 2.98	1.20	0.91 - 1.59	0.94	0.76 - 1.15
five minutes	0.34	0.16 - 0.75	0.47	0.27 - 0.82	0.82	0.47 - 1.44	2.31	1.10 - 4.85	1.00	0.48 - 2.08	1.61	1.04 - 2.49
offspring_infant												
number of emergency [#]	0.89	0.84 - 0.95	0.85	0.81 - 0.90	0.88	0.83 - 0.94	1.00	0.90 - 1.11	0.98	0.91 - 1.05	1.00	0.96 - 1.05
number of hospitalization [#]	0.95	0.87 - 1.04	0.97	0.90 - 1.04	0.92	0.84 - 1.01	0.93	0.80 - 1.09	1.01	0.92 - 1.11	1.00	0.94 - 1.06
accidental death	-	-	0.74	0.19 - 2.92	1.84	0.41 - 8.26	7.84	1.75 - 35.22	-	-	0.66	0.16 - 2.68
all cause death	0.34	0.16 - 0.75	0.44	0.25 - 0.77	0.93	0.52 - 1.65	1.77	0.77 - 4.07	1.70	0.95 - 3.03	0.96	0.60 - 1.54

note: All factors list in Table 1 excepted category and severity of disability were adjusted in this model. #: Generalized Estimating equations with Poisson distribution; aOR: Adjusted OR

- Conclusion:** Mothers with IDD, as well as those with very severe disabilities, not only received inadequate prenatal health services, but also had significantly worse health outcomes for their offspring.
- Relevance to HPH:** Health promoting hospitals and healthcare providers should provide appropriate health education and medical intervention for pregnant women with different types and levels of disabilities, so as to improve health equity for them and their offspring.
- Keywords:** Pregnant women with disabilities, Offspring, Health outcome, Health equity