

Perinatal outcomes among Asian-white interracial couples

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BACKGROUND AND OBJECTIVE

Interracial couples represent a unique opportunity to study the interplay of genetics and environment on perinatal complications. Asian-white interracial couples represent a common and little-studied population.

We conducted a retrospective cohort study of white, Asian, and interracial Asian-white couples. We hypothesized that the outcomes of interracial Asian-white couples would differ from those of Asian and white couples. We also hypothesized that among interracial Asian-white couples, perinatal outcomes would differ in those with Asian mothers vs Asian fathers.

MATERIALS AND METHODS

We conducted a retrospective cohort study of all white, Asian, and interracial Asian-white couples who delivered at the Lucile Packard Children's Hospital at Stanford University from 2000 through 2005.

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OVERVIEW

Perinatal outcomes among Asian, white, and interracial Asian-white couples differ in significant ways.

The perinatal outcomes examined were gestational diabetes, hypertensive disorders of pregnancy, preterm delivery (at < 32 and < 37 weeks of gestation), birthweight > 4000 g, birthweight < 2500 g, and cesarean delivery. Mode of delivery was recorded for all couples in the study.

RESULTS

From 2000 through 2005, 3226 Asian, 5575 white, and 868 interracial Asian-white couples delivered at the hospital. Asian couples had the lowest median birthweight (3210 g) and white couples had the largest (3400 g), with interracial couples falling between the 2 (3360 g for Asian mother/white father, 3320 g for white mother/Asian father; $P < .001$).

The incidence of gestational diabetes was highest among Asian couples (5.73%) and lowest among white couples (1.61%), with interracial Asian-white couples having intermediate risk (3.91% for Asian mother/white father and 3.37% for white mother/Asian father; $P < .001$).

For macrosomia (> 4000 g), interracial Asian-white couples had an intermediate risk between that of Asian and white couples. Among interracial Asian-white couples, the risk was comparable regardless of which parent was Asian. For low birthweight (< 2500 g), interracial Asian-white couples had the lowest risk compared to Asian and white couples.

Of all groups analyzed, Asian mother/white father couples consistently had the greatest risk for cesarean delivery (Table). This risk progressively in-

creased as the multivariable analysis was narrowed from all deliveries (aOR, 1.3; 95% CI, 1.1-1.6) to only term deliveries (at > 37 weeks gestation) (aOR, 1.4; 95% CI, 1.2-1.7) to only term nulliparous or term labored deliveries (aOR, 1.7; 95% CI, 1.2-2.6, and aOR 1.7; 95% CI, 1.3-2.2, respectively), and finally to only term nulliparous labored deliveries (aOR, 2.0; 95% CI, 1.3-3.0). For all analyses, white mother/Asian father couples had the lowest rate of cesarean delivery.

COMMENT

We found that interracial Asian-white couples have unique perinatal risks and that differences also exist among interracial Asian-white couples depending upon whether the mother or father is of Asian race.

Interracial couples showed rates of gestational diabetes intermediate to the risk among Asians and whites and comparable regardless of which parent was of Asian race.

We found that Asian mother/white father couples were at a significantly increased risk of undergoing cesarean delivery. We also found in all analyses performed that white mother/Asian father couples had no additional risk of cesarean delivery. It is interesting to note that mean birthweights between these groups were very similar. Further, Asian couples had increased rates of low-birthweight (< 2500 g) infants, while interracial Asian-white couples did not.

Interracial Asian-white couples represent a population with distinct perinatal risks that differ depending upon which parent is of Asian race. Our findings support the theory that the increased prevalence of gestational diabetes among Asian couples may be attributed to an underlying genetic predisposition to the



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TABLE

Comparison of subgroups with multivariable logistic regression^a

Variable	Asian-mother/Asian-father ^a OR (95% CI)	Asian-mother/white-father ^a OR (95% CI)	White-mother/Asian-father ^a OR (95% CI)
Gestational diabetes mellitus	4.7 (3.6-6.2)	2.6 (1.7-4.1)	2.4 (1.1-5.8)
Cesarean delivery (CD)	1.0 (.92-1.1)	1.3 (1.1-1.6)	0.84 (0.58-1.2)
CD, > 37 wk	1.0 (.90-1.1)	1.4 (1.2-1.7)	1.0 (0.68-1.5)
CD, > 37 wk, labored	1.1 (0.88-1.5)	1.7 (1.2-2.6)	1.0 (0.45-2.5)
CD, > 37 wk, nullip	1.2 (0.99-1.4)	1.7 (1.3-2.2)	1.1 (0.66-1.85)
CD, > 37 wk, nullip, labored	1.4 (0.86-1.5)	2.0 (1.3-3.0)	0.83 (0.30-2.3)
Hypertensive disorder of pregnancy	0.94 (0.72-1.2)	0.99 (0.63-1.6)	0.85 (0.34-2.1)
Birthweight > 4000 g	0.35 (0.29-0.43)	0.78 (0.59-1.0)	0.68 (0.40-1.2)
Birthweight < 2500 g	2.1 (1.6-2.6)	1.1 (0.73-1.7)	1.2 (0.52-2.7)
Preterm delivery < 37 wk	1.1 (0.9-1.2)	1.1 (0.87-1.5)	1.1 (0.68-1.9)
Preterm delivery < 32 wk ^b	1.3 (0.99-1.8)	0.97 (0.55-1.7)	

^a Each group was compared with the White-mother/White-father group for the multivariable logistic regression. Models were controlled for maternal age, maternal education, parity, prenatal care visits, and insurance status.

^b Because no White-mother/Asian-father delivered at < 32 wk, an odds ratio cannot be estimated.

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disease. Our findings also support the increased risk for cesarean delivery among Asian mother/white father couples even though their fetuses' birthweights are only slightly greater than the other groups'. Further research into interracial couples may shed light onto the effects of genetics vs environment on perinatal outcomes.

CLINICAL IMPLICATIONS

- Interracial Asian-white couples represent a population with distinct perinatal risks that differ depending upon which parent is of Asian race.
- Risk for cesarean delivery is greatest among Asian mother/white father

couples even though their fetuses have only slightly higher birthweights.

- Risk of developing gestational diabetes is increased in Asian-white couples regardless of which parent is of Asian race.
- Clinicians should consider both maternal and paternal race when estimating a patient's risk for perinatal complications.