

# Gestational Diabetes Mellitus (GDM) Among Asian Subgroups, California, 2002

*Anura Ratnasiri, MS, Renato Littaua DVM, MPVM, Emmett Gonzalez, MD*

Maternal, Child and Adolescent Health Program  
Center for Family Health, California Department of Public Health

## Introduction & Methodology

### Background



Gestational diabetes mellitus (GDM) is defined as carbohydrate intolerance that begins or is first recognized during pregnancy. It is one of the major pregnancy complications during pregnancy.

- GDM is important because it is associated with increased risk for perinatal outcomes including fetal deaths, fetal macrosomia, maternal hypertensive disorders and cesarean delivery
- Fetal and neonatal complications associated with GDM include increased risk for miscarriages, stillbirths, birth defects and macrosomia.
- Maternal complications associated with GDM include pregnancy-induced hypertension and cesarean section deliveries.

Offspring of women with GDM are at increased risk of obesity, glucose intolerance and diabetes as children or adults.

Untreated gestational diabetes results in a baby's death either before or shortly after birth.

Rates of GDM are higher in certain Asian subpopulations; however, most studies investigating the association between ethnicity and GDM have focused on major racial/ethnic groups and have not looked at rates among the diverse Asian subgroups.

### Objectives

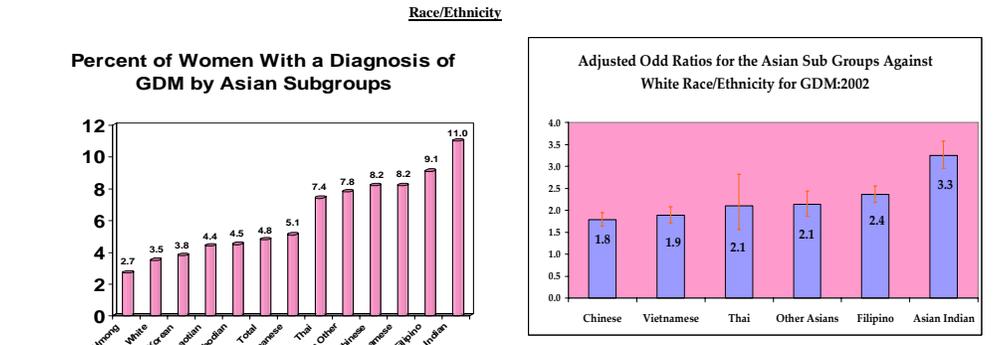
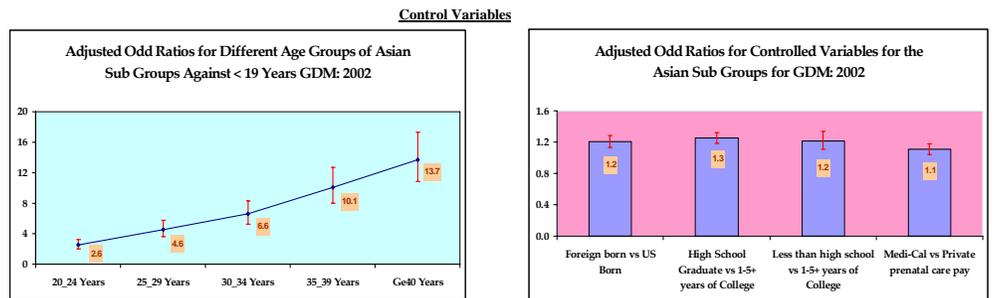
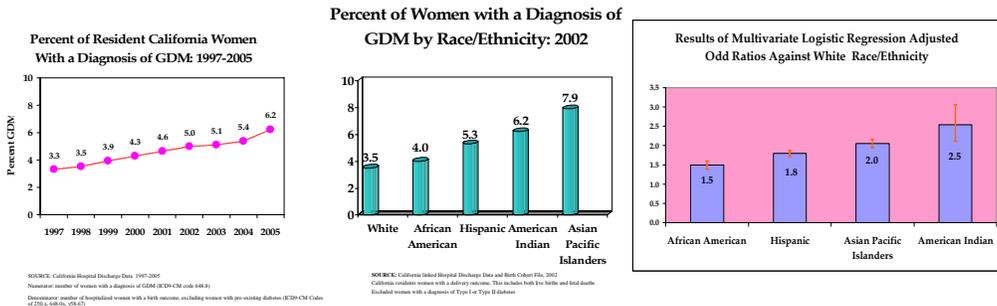
- To determine the trend in the prevalence of GDM in California.
- To determine the prevalence of GDM among California's Asian racial/ethnic subgroups.

### Methods

- Data Sets**
  - California hospital discharge data (HDD) files from 1997 to 2004.
  - 2002 HDD files were linked with the 2002 Birth Cohort File.
- Inclusion Criteria:**
  - California resident women with a delivery outcome as recorded in the HDD (ICD9-CM v27.x). This includes both live births and fetal deaths.
  - Women with a diagnosis of GDM (ICD9-CM 648.8) as recorded in the HDD labor and delivery records.
- Exclusion Criteria:**
  - Women with a diagnosis of Type I or Type II diabetes (ICD9-CM codes of 250.x, 648.0x, v58.67) as recorded in the HDD labor and delivery record.

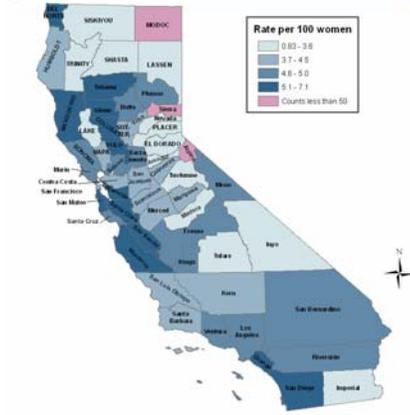
- Analysis:**
  - Prevalence: (number of women with GDM / number of women with a birth) x 100
  - Backward stepwise logistic regression was used to obtain adjusted odds ratios of the maternal characteristics associated with having GDM

## Results



- GDM has steadily increase in California from 3.3% in 1997 to 6.2% in 2005.
- In 2002, there were 497,762 Californian mothers, age 15-49 years with no pre-existing diagnosis of diabetes.
  - Five percent (24,756) were reported to have GDM
  - Asian/Pacific Islanders showed the highest prevalence rate which was 7.9 percent (4,740/60,309). They are two times more likely to develop GDM when compared with White race/ethnicity (OR, 2.1(95% CI, 2.0-2.2))
- After adjusting for socio-demographic factors,
  - Asian Indians are three times more likely to develop GDM when compared with White race/ethnicity.
  - Filipinos, Thai, Vietnamese and Chinese are two times more likely to develop GDM when compared with Whites.
  - Cambodians, Hmong, Japanese, Koreans and Laotians did not show increased risk of developing GDM compared to Whites.

Gestational Diabetes Mellitus (GDM) Rate in California: 2002



Source: California Child and Hospital Discharge Data and Birth Cohort File, 2002. California resident women with a delivery outcome. This includes both live births and fetal deaths. Excluded women with a diagnosis of Type I or Type II diabetes.

### Data Highlights:

- Rate of GDM is steadily increasing in California
- GDM is associated with age, race/ethnicity, education, birthplace, parity and plurality of birth.
- GDM risk strongly increases with age
- Asian Pacific Islanders and American Indian populations are at increased risk of developing GDM compared to White even after controlling for demographic characteristics
- Geographic disparities exist with the highest rates for GDM seen in Yolo, Tehama, Del Norte, Monterey and Santa Clara and exceeding 6%.
- Among Asians with GDM, several Asian sub-groups have a significantly higher prevalence rate for GDM. GDM prevalence was highest among Asian Indians (11%), Filipinos (9%) and Chinese (8%).

### Public Health Implications:

- Need to be aware that GDM is a significant risk factor for development of diabetes outside pregnancy and moreover poor maternal and birth outcomes
  - Create awareness that importance of prenatal care for early detection and promote testing
  - Clear understanding of risk factors for GDM (American Indian, Asian Indian, age of women, and women with a history of GDM)
  - The clinical component of the California Diabetes and Pregnancy Program is to outreach to women with increased risk for GDM for both health education and care
- Improve GDM Surveillance
  - GDM based on secondary data is underreported
  - Gestational Diabetes Act of 2006 (Senate Bill 3914)
  - Target Asian subgroups and American Indians