Maternal and Child Health

The health of pregnant mothers, infants, children, and adolescents is an important public health issue. Maternal and child health services such as prenatal care, primary and preventive care, immunizations, and medical treatment are vital because they have the potential to make a difference in health status and health costs over a lifetime.¹ The maternal and child health status indicators in this report include birth defects, inadequate prenatal care, and infant mortality.

Birth Defects

A birth defect is a problem in structure, function, or metabolism that occurs during fetal development and can result in physical disabilities, mental disabilities, or death. In the U.S., approximately 3% of babies are born with birth defects (about 120,000 babies annually). Birth defects are currently the leading cause of infant deaths in the U.S., and babies with birth defects are at greater risk of illness and disability than babies without defects. Most birth defects occur during the first three months of pregnancy when the baby’s organs are forming.² ³

Both genetic and environmental factors can play a role in the development of birth defects. Some common non-genetic risk factors include not getting enough folic acid, cigarette smoking, drinking alcohol, and maternal chronic health conditions like obesity or diabetes. However, about 70% of all birth defects currently have unknown causes.³ The birth defects mentioned in this section were evaluated because they are potentially preventable – studies have found associations between these birth defects and preventable factors such as low folic acid consumption, smoking, or obesity.⁴ ⁵

Neural Tube Defects

Neural tube defects (NTDs) are a group of birth defects that have a common origin in the failure of the neural tube to develop properly during the first month of pregnancy. The three main types of NTDs are anencephaly, spina bifida, and encephalocele. Anencephaly is the most severe, involving absence of the skull and missing or reduced brain hemispheres, and is always fatal. Spina bifida, the most commonly occurring NTD, is an incomplete closure of the spinal cord and is not usually fatal. Encephalocele, the rarest

Key Point: The prevalence of some birth defects – neural tube defects (NTDs), pyloric stenosis – was higher in South Texas than the rest of Texas and the nation. South Texas Hispanic mothers had a higher NTD prevalence than Hispanic mothers in the rest of Texas.

² ³ ⁴ ⁵
NTD, is protrusion of part or all of the brain through a defect in the skull and may be fatal.  

NTDs affect an estimated 1 of every 1,000 pregnancies in the U.S. The prevalence of reported NTDs in the U.S. is highest among Hispanics, followed by non-Hispanic whites, Native Americans, African-Americans, and then Asians. Studies have found that maternal periconceptional use of folic acid reduces the risk of NTDs. However, folic acid may not decrease NTD risk the same amount in all racial/ethnic groups, which suggests that genetic factors may be involved. Obesity has been associated with increased NTD prevalence, and studies also suggest that women with diabetes are at increased risk of having an infant with a neural tube defect.

Neural Tube Defects in South Texas

The prevalence of NTDs in South Texas was 9.8 cases per 10,000 live births in 1999-2003. This was higher than the prevalence of NTDs in the rest of Texas (6.6/10,000). A higher NTD prevalence was observed among Hispanics in South Texas (10.7/10,000) than among Hispanics in the rest of Texas (7.8/10,000) (Figure 6.1). Within South Texas, the risk of having a child with an NTD was almost two times higher for Hispanic mothers than for non-Hispanic white mothers (Figure 6.1). Older maternal age groups (35 or older) had slightly but not statistically significantly higher NTD prevalences than younger maternal age groups.

Figure 6.1. Prevalence of neural tube defects (NTDs) by location and race/ethnicity, 1999-2003. Source: Texas Birth Defects Registry, 1999-2003 data
Oral Clefts

Oral clefts are birth defects in which the lip or mouth tissues do not grow together properly during fetal development. There are two types of oral clefts, cleft lip and cleft palate. Cleft lip is a groove or separation in the upper lip caused by the failure of the maxillary and median nasal processes to join together. Cleft palate is a grooved depression or opening in the roof of the mouth that occurs when the two sides of the palate do not fuse properly. Cleft lip and cleft palate can occur together, separately, or along with other defects. Cleft lip is more common than cleft palate. Oral clefts often occur together with many different chromosomal abnormalities and syndromes.

In the U.S., the prevalence of cleft lip with or without cleft palate ranges from 4.8 to 17.5 per 10,000 live births, and prevalence of cleft palate without cleft lip ranges from 2.8 to 13.5. Oral clefts are more prevalent in male infants than in female infants. In the U.S., Asians have the highest risk of oral clefts. In Texas, however, Hispanics have the highest risk for cleft lip with/without cleft palate and non-Hispanic whites for cleft palate, while African Americans are at lowest risk of each.

Environmental factors are considered to be less important than genetic factors in the etiology of oral clefts. However, maternal smoking and intake of anticonvulsant medications and vasoactive drugs have been associated with oral clefts in offspring, and studies have found that alcohol might increase the risk of oral clefts. Maternal use of multivitamins has been found to reduce the risk of oral clefts, and several studies have observed a decreased risk of oral clefts with folic acid use.

Oral Clefts in South Texas

The prevalence of oral clefts in South Texas (16.5/10,000) was almost identical to the prevalence in the rest of Texas (16.4/10,000) in 1999-2003. Race/ethnicity and sex patterns of oral cleft prevalence in South Texas mirrored what was seen in Texas as a whole and nationwide. In South Texas, Hispanic mothers had a slightly higher, but not statistically significantly higher, prevalence of oral clefts in offspring (16.9/10,000) than did non-Hispanic white mothers (14.6/10,000), and the prevalence of oral clefts was higher in male infants (19/10,000) than in female infants (13.7/10,000). The prevalence of oral clefts in offspring was higher among mothers residing in South Texas non-metropolitan counties (20.5/10,000) than among those who lived in metropolitan counties (16/10,000).

Other Selected Birth Defects

Studies have suggested that a reduced risk of several other birth defects may be associated with multivitamin and folic acid supplement intake, including some heart defects, limb reduction defects, pyloric stenosis, and omphalocele. In addition to NTDs and oral clefts, Canfield et al. (2005) observed decreases in birth prevalence for
transposition of the great arteries, upper limb reduction defects, pyloric stenosis, and omphalocele after U.S. grain fortification with folic acid. A decrease in prevalence of common truncus among Hispanics was also seen.\textsuperscript{17}

Omphalocele is an abdominal wall defect in which an infant’s bowels and other abdominal organs herniate into the umbilical cord, causing the intestines to stick out of the belly button.\textsuperscript{18,19} Male infants have a higher risk of omphalocele than female infants.\textsuperscript{18} Omphalocele is also associated with low birth weight, preterm birth, multiple gestation pregnancies, and intrauterine growth retardation. Mothers who are obese might be at increased risk of having an infant with omphalocele.\textsuperscript{18}

Common truncus and transposition of the great arteries are both conotruncal heart defects, or outflow tract defects. With common truncus, also called truncus arteriosus, only a single blood vessel exists to carry blood both to the body and the lungs, instead of a separate aorta and pulmonary artery.\textsuperscript{20,21} With transposition of the great arteries, the aorta and pulmonary artery get reversed so that the aorta carries oxygen-poor blood from the right ventricle to the rest of the body, while the pulmonary artery carries oxygen-rich blood from the left ventricle to the lungs.\textsuperscript{22} Surgery is necessary for infants with either of these birth defects to survive. Male infants have a higher risk of transposition of the great arteries than females, while truncus arteriosus is either more common among females or shows no difference in prevalence between the sexes. Maternal diabetes has been associated with an increased risk of conotruncal defects, and obesity has been linked to an elevated risk of defects of the great vessels.\textsuperscript{20}

Reduction defects of the upper limb involve the congenital absence of any part of the hands or arms. The severity of these defects can vary from missing fingers to the total absence of one or both arms.\textsuperscript{11,23} Two general types of limb reduction defects are transverse and longitudinal defects. Transverse defects look like amputations or missing limb parts (e.g., a missing forearm). Longitudinal defects are missing limb rays (e.g., a missing radius and thumb).\textsuperscript{11} In Texas, there is no significant difference in prevalence between male and female infants.\textsuperscript{11} Limb reduction defects have been associated with maternal diabetes, exposure to pesticides, and maternal intake of a handful of medications such as thalidomide and antiseizure medicines.\textsuperscript{23}

Pyloric stenosis results from the enlargement of the pylorus muscle, which blocks the passage of food from the stomach into the small intestine. Pyloric stenosis can cause severe vomiting, weight loss, and dehydration in infants.\textsuperscript{24} The prevalence of pyloric stenosis is highest for non-Hispanic whites, intermediate for Hispanics, and lowest for African-Americans and Asians. The risk of pyloric stenosis is three to six-and-a-half times higher in male infants than in female infants. One of the major risk factors for pyloric stenosis is a family history of the same defect.\textsuperscript{25}
Other Selected Birth Defects in South Texas

Figure 6.2 shows the prevalence of selected birth defects (omphalocele, common truncus, transposition of the great arteries, reduction defects of the upper limb, and pyloric stenosis) in South Texas, the rest of Texas, and nationwide. Overall, the prevalences of each of these birth defects were higher in South Texas in 1999-2003 than in the rest of Texas during the same time period or nationwide from 1999-2001 (Figure 6.2). However, the prevalence of common truncus, reduction defects of the upper limb, and pyloric stenosis were statistically significantly higher in South Texas than in the rest of Texas, whereas prevalence of omphalocele and transposition of the great arteries were not statistically significantly higher. The prevalence of having a child with omphalocele, common truncus, or pyloric stenosis was statistically significantly higher for Hispanic mothers living in South Texas than for Hispanic mothers who resided in the rest of Texas, and the prevalence of reduction defects of the upper limb was higher for non-Hispanic whites in South Texas than non-Hispanic whites in the rest of Texas. No statistically significant differences between Hispanics and non-Hispanic whites were observed for any of these birth defects in South Texas.

Figure 6.2. Prevalence of selected birth defects by location.
References


**Inadequate Prenatal Care**

Prenatal care is vitally important to the health of pregnant women and their babies. Inadequate prenatal care has been associated with an increased risk of low birth weight, preterm births, infant mortality, and maternal mortality.\(^1\) Most policies and programs that attempt to improve pregnancy outcomes focus on improving the utilization of prenatal care services.\(^2\)

The major components of prenatal care include counseling about diet, avoidance of drugs, smoking cessation, and the diagnosis and treatment of any health complications.\(^3\)

African-American and Hispanic mothers are far more likely than non-Hispanic white mothers to obtain prenatal care late or not at all.\(^1,4\) Adolescent mothers are also at a higher risk of obtaining either late or no prenatal care than mothers of other ages. Low income has been shown to be a major predictor of insufficient prenatal care.\(^1\)

**Key Point: An estimated 25% of South Texas mothers receive inadequate prenatal care, a statistic similar to mothers in the rest of Texas. In South Texas, Hispanic mothers were at a much higher risk of having inadequate prenatal care than non-Hispanic whites.**

**Inadequate Prenatal Care in South Texas**

An estimated 25% of mothers in South Texas received inadequate prenatal care in 1999-2003. This estimate was very similar to the percentage of inadequate prenatal care seen in the rest of Texas (Figure 6.3). Even though the percentage of both Hispanic and non-Hispanic white mothers receiving inadequate prenatal care in South Texas was less than their counterparts in the rest of Texas, Hispanic mothers were still at a much higher risk of having inadequate prenatal care when compared to non-Hispanic whites (Figure 6.3). In South Texas, the percentage of inadequate prenatal care among Hispanic mothers (28.4%) was more than two times higher than the percentage of inadequate prenatal care among non-Hispanic white mothers (11.7%).
In South Texas, a higher percentage of inadequate prenatal care was seen among younger maternal age groups than among older maternal age groups. More than 35% of the mothers in the two youngest maternal age groups (ages 10-17) had inadequate prenatal care, whereas approximately 20% of mothers age 35 and older had inadequate prenatal care (Figure 6.4).

**Figure 6.3.** Percent of mothers with inadequate prenatal care by location and race/ethnicity, 1999-2003. Source: Texas Health Data (http://soupfin.tdh.state.tx.us/birth.htm)

**Figure 6.4.** Percent of mothers with inadequate prenatal care by age group, 1999-2003. Source: Texas Health Data (http://soupfin.tdh.state.tx.us/birth.htm)
Bexar County had a lower percentage of mothers with inadequate prenatal care (14%) than all of South Texas (25%). However, Webb County and the Lower Rio Grande Valley area had higher percentages of inadequate prenatal care than did South Texas; about 35% of mothers in each of these locations had inadequate prenatal care. Figure 6.5 illustrates the differences in percentages among Hispanic and non-Hispanic white mothers in each of these locations. It also shows the percent of inadequate prenatal care for African-American mothers in Bexar County, where there were sufficient numbers to calculate an estimate for this racial group.

**Figure 6.5.** Percent of mothers with inadequate prenatal care in selected South Texas locations by race/ethnicity, 1999-2003. Source: Texas Health Data (http://soupfin.tdh.state.tx.us/birth.htm)

**References**


2. Frick KD, Lantz PM. How Well Do We Understand the Relationship Between Prenatal Care and Birth Weight? Health Serv Res 1999; 35:1063-1073.
Infant Mortality

Infant mortality is the death of any liveborn infant within the first year of life. The infant mortality rate is an important measure of overall community health, as high infant mortality rates could indicate poor maternal health, inadequate access to health care, or infant malnutrition.¹ In the U.S., the infant mortality rate has greatly declined over the past few decades, from 20 infant deaths per 1,000 live births in 1970 to about seven deaths per 1,000 live births in 2002. However, the U.S. still ranked 27th among industrialized nations in low infant mortality in 2000. This is mostly because of disparities that continue to exist among different race/ethnic groups in the US.² The infant mortality rate in Texas has been lower than the nationwide rate since 1979. In 2002, the infant mortality rate for Texas was 6.4 deaths per 1,000 live births, which was slightly higher than the previous few years.¹

In the U.S., the mortality rate for African-American infants in 2002 was 13.9 per 1,000 live births, which was higher than the mortality rate for Hispanics (5.6/1,000) or non-Hispanic whites (5.8/1,000). Teenage mothers and mothers ages 40 or older have higher infant mortality rates than other maternal ages. The mortality rate is also higher for male infants than for female infants.³ The leading causes of infant mortality in the U.S. are birth defects, disorders related to preterm birth and low birthweight, sudden infant death syndrome, and maternal complications.²³ Risk factors for infant mortality include no prenatal care, smoking, inadequate weight gain during pregnancy, and having a repeat pregnancy within six months or less.²³

Infant Mortality in South Texas

The infant mortality rate in South Texas from 1999-2003 was 5.6 deaths per 1,000 live births. The South Texas infant mortality rate was lower than the mortality rate in the rest of Texas (6.3/1,000). Infant mortality rates were similar between Hispanics and non-Hispanic whites, both in South Texas and the rest of Texas (Figure 6.6).

Key Point: The South Texas infant mortality rate was lower than the mortality rate in the rest of Texas, and was similar between Hispanics and non-Hispanic whites.
For both Hispanic and non-Hispanic whites, the gender pattern for infant mortality in South Texas was the same as that seen nationwide – male infants had a higher mortality rate (6.3/1,000) than females (4.9/1,000). The Lower Rio Grande Valley region had a lower infant mortality rate than all of South Texas, while Webb County’s infant mortality rate was similar (Figure 6.7). The rate for Bexar County was higher than the South Texas rate, perhaps because this county has a relatively high percentage of African-Americans residents, compared to other South Texas areas, and African-Americans have a higher infant mortality rate than Hispanics and non-Hispanic whites.
Figure 6.7. Infant mortality rate in selected South Texas locations, 1999-2003.
Source: Texas Health Data (http://soupfin.tdh.state.tx.us/birth.htm)

References


**Summary – Maternal and Child Health**

**Table 6.1.** Summary table of birth defect prevalence, percentage of inadequate prenatal care, and infant mortality rates in South Texas, the rest of Texas, and nationwide.*

<table>
<thead>
<tr>
<th>Health Indicator</th>
<th>Prevalence, Incidence, or Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neural Tube Defects</td>
<td>9.8 per 10,000</td>
</tr>
<tr>
<td>Oral Clefts</td>
<td>16.5 per 10,000</td>
</tr>
<tr>
<td>Omphalocele</td>
<td>2.5 per 10,000</td>
</tr>
<tr>
<td>Common Truncus</td>
<td>1.3 per 10,000</td>
</tr>
<tr>
<td>Transposition of the Great Arteries</td>
<td>5.3 per 10,000</td>
</tr>
<tr>
<td>Reduction Defects of the Upper Limb</td>
<td>4.9 per 10,000</td>
</tr>
<tr>
<td>Pyloric Stenosis</td>
<td>22.1 per 10,000</td>
</tr>
<tr>
<td>Inadequate Prenatal Care</td>
<td>24.9%</td>
</tr>
<tr>
<td>Infant Mortality</td>
<td>5.6 per 1,000</td>
</tr>
</tbody>
</table>

*Nationwide estimates were not available for all health indicators in the table. “----” signifies that no nationwide incidence/mortality rate or prevalence of the health indicator could be found.