Percentage of preterm births is associated with year of mothers' age in African-American (AA) adolescent pregnancies

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Partial Support: Grant T76-MC00011 Health Resources and Services Administration, USDHHS
Introduction

• Seeking biological explanation for lack of fitness in infants of adolescents is "unwarranted" (Geronimus 1986)
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• Life History Theory predicts decreased fitness in infants of youngest mothers

• Clinical and demographic studies in small populations demonstrate AA adolescent mothers likely to bear pre-term infants (Martin et al., (CDC) 2003, Olausson et al., 1999, Hediger et al., 1997, Garn & Petzold 1983)
Menarcheal age and age at conception of a typical group of AA adolescents

Rees JM. 2005 (unpublished)
Objective

- Evaluate influence of mothers’ age on prevalence of preterm births to adolescents
Methods

• National Center for Health Statistics Linked Birth/Infant Death Data Sets – 1997-99
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• All US births linked to corresponding birth certificates
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- All US births linked to corresponding birth certificates
- 1,757,793 singleton live births to AA mothers 10-54 y
- Percentage of infants born at <37 wk gestation to mothers, at each year of age
- Analyzed those with ≥ 100 cases per y, and gestational age or prenatal care category
Methods

- National Center for Health Statistics Linked Birth/Infant Death Data Sets – 1997-99
- All US births linked to corresponding birth certificates
- 1,757,793 singleton live births to AA mothers 10-54 y
- Percentage of infants born at <37 wk gestation to mothers, at each year of age
- Results stratified by initiation of prenatal care, representing socioeconomic status/engagement with the health care system
# Population

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total births to AA (1997-99)</td>
<td>1,757,793</td>
<td>100.0%</td>
</tr>
<tr>
<td>Preterm births</td>
<td>279,809</td>
<td>15.9%</td>
</tr>
<tr>
<td>Preterms excluded (&lt;100 cases/ y age)</td>
<td>129</td>
<td>0.05%</td>
</tr>
<tr>
<td>Reporting on prenatal care / preterm birth</td>
<td>265,584</td>
<td>100.0%</td>
</tr>
<tr>
<td>initiated during 1&lt;sup&gt;st&lt;/sup&gt; trimester*</td>
<td>180,094</td>
<td>67.8%</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; trimester*</td>
<td>58,484</td>
<td>22.0%</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; trimester*</td>
<td>11,841</td>
<td>4.5%</td>
</tr>
<tr>
<td>no prenatal care*</td>
<td>15,165</td>
<td>5.7%</td>
</tr>
</tbody>
</table>

*Exclusions (<100 in cases/ y age)
Results

- Shown as plots of percent of preterm births versus mother’s age
Percent preterm births (<37 wks) by prenatal care: US 1997-99 AA singleton live births

N>100 for each data point plotted

- Total Pre-term (N=279,680)
- Pre-term with Prenatal Care (N=250,311)
Percent preterm births (<37 wks) with and without prenatal care: US 1997-99 AA singleton live births

Only data points with N>100 are plotted.

- **Total Pre-term** (N=279,680)
- **Pre-term with Prenatal Care** (N=250,311)
- **Pre-term without Prenatal Care** (N=14,967)
Percent preterm births (<37 wks) with prenatal care: US 1997-99 AA singleton live births

Only data points with N>100 are plotted

- Pre-term: 1st -3rd month start PNC (N=179,720)
- Pre-term with Prenatal Care (N=250,311)
Percent preterm births (<37 wks) with prenatal care: US 1997-99 AA singleton live births

Only data points with N>100 are plotted

- Pre-term: 1st -3rd month start PNC (N=179,720)
- Pre-term: 4th -6th month start PNC (N=58,324)
- Pre-term with Prenatal Care (N=250,311)
Percent preterm births (<37 wks) with prenatal care: US 1997-99 AA singleton live births

Only data points with N>100 are plotted.

- Pre-term: 1st -3rd month start PNC (N=179,720)
- Pre-term: 4th -6th month start PNC (N=58,324)
- Pre-term: 7th -9th month start PNC (N=11,519)
- Pre-term with Prenatal Care (N=250,311)
Conclusion

• Young age, representing lack of physical maturation, is a strongly associated with preterm birth among AA gravidas decreasing fitness as predicted by Life History Theory.
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• Socioeconomic status, represented by trimester of initiation of prenatal care, does not negate this relationship

• While this association may be responsible for a relatively small difference in overall preterm rate, it should be of interest to human biologists

Data shown when $p<0.05$