Association between pregnancy planning and health behaviors: Results from the Behavioral Risk Factor Surveillance System (BRFSS) in seven states, 2013

Presented by
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For all women to be as healthy and ready for pregnancy as possible,

• Risk behaviors such as drinking and smoking, need to be reduced or eliminated well in advance of pregnancy; and

• Protective behaviors such as receiving recommended vaccinations and eating nutritious meals, need to be increased.
Assess the relationship between planning children in the future and changes in selected health behaviors among adult women of reproductive age (18-44 years old):

• Planning children by timing (within two years, two to five years, at least five years); and

• Planning children by birth history (no children, at least one child).
Data source: Behavioral Risk Factor Surveillance System (BRFSS), 2013

- Phone survey with a wide range of state and national population-based estimates of health status, health risk and protective behaviors, and chronic conditions;

- Unique in its partnership with all states and U.S. territories, in Connecticut since 1989;

- Reproductive Health Module, offered in seven states (Connecticut, Kentucky, Massachusetts, Mississippi, Ohio, Texas, & Utah).
Technique: Multivariate logistic regression;

Independent variable: Reproductive Health Module (reproductive history, family planning, infertility), offered to female respondents 18-44 years old, not currently pregnant;

Covariates: Age, race/ethnicity, housing arrangement, body-mass index;

Dependent variables: Leisure activity in the past 30 days, consume fruits and vegetables at least once daily, always use a seatbelt in a car, medical checkup in past 12 months, flu vaccination in past 12 months, smoke cigarettes every day or most days, heavy drinking in past 30 days, binge drinking in past 30 days.
# Results

Significance of Model Effects for Pregnancy Planning, 2013
Behavioral Risk Factor Surveillance System (BRFSS), Connecticut, Kentucky, Massachusetts, Mississippi, Ohio, Texas, Utah

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Timing</th>
<th>Birth History</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>F-Value</strong></td>
<td><strong>Prob</strong></td>
</tr>
<tr>
<td>Age</td>
<td>496.61</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td>2.33</td>
<td>0.1267</td>
</tr>
<tr>
<td>Housing Arrangement</td>
<td>10.11</td>
<td>0.0015</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>2.51</td>
<td>0.0816</td>
</tr>
</tbody>
</table>
Results (continued)

Significance of Pregnancy Planning and Selected Health Indicators
Behavioral Risk Factor Surveillance System, 2013
Connecticut, Kentucky, Massachusetts, Mississippi, Ohio, Texas, Utah

<table>
<thead>
<tr>
<th>Health Indicator</th>
<th>By Timing</th>
<th></th>
<th></th>
<th>By Birth History</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wald Stat</td>
<td>Significance</td>
<td>Wald Stat</td>
<td>Significance</td>
<td></td>
</tr>
<tr>
<td>Leisure activity in past 30 days</td>
<td>0.03</td>
<td>0.9859</td>
<td></td>
<td>2.05</td>
<td>0.3578</td>
</tr>
<tr>
<td>Consume fruit and vegetable at least once daily</td>
<td>3.24</td>
<td>0.1977</td>
<td></td>
<td>2.62</td>
<td>0.2696</td>
</tr>
<tr>
<td>Always use seatbelt in a car</td>
<td>19.66</td>
<td>&lt;0.0001</td>
<td></td>
<td>18.15</td>
<td>0.0001</td>
</tr>
<tr>
<td>Checkup in past 12 months</td>
<td>4.23</td>
<td>0.1205</td>
<td></td>
<td>3.51</td>
<td>0.1732</td>
</tr>
<tr>
<td>Flu vaccination in past 12 months</td>
<td>2.58</td>
<td>0.2754</td>
<td></td>
<td>4.10</td>
<td>0.1285</td>
</tr>
<tr>
<td>Smoke cigarettes every day or most days</td>
<td>14.67</td>
<td>0.0006</td>
<td></td>
<td>16.37</td>
<td>0.0003</td>
</tr>
<tr>
<td>Heavy drinking in past 30 days</td>
<td>11.21</td>
<td>0.0037</td>
<td></td>
<td>2.43</td>
<td>0.2972</td>
</tr>
<tr>
<td>Binge drinking in past 30 days</td>
<td>2.74</td>
<td>0.2545</td>
<td></td>
<td>7.95</td>
<td>0.0187</td>
</tr>
</tbody>
</table>

Multivariate logistic regression was conducted for family planning by timing (not planning, planning within two years, planning in more than two years) and family planning by birth history (no plans with no children, planning with no children, planning with one or more child). Regression with pregnancy planning by timing was controlled for age, housing arrangement and body mass index. Regression with pregnancy planning by birth history was controlled for age, race/ethnicity, and body mass index. Analysis was conducted as described in Methods section.
Results (continued)

Adjusted Odds Ratios of Selected Health Behaviors versus Timing of Pregnancy Planning, 2013
Behavioral Risk Factor Surveillance System (BRFSS), Connecticut, Kentucky, Massachusetts, Mississippi, Ohio, Texas, Utah

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Seatbelt Use</th>
<th>Cigarette Smoking</th>
<th>Heavy Drinking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Timing of Pregnancy Plan</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ref = not planning)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within 2 years (imminent)</td>
<td>0.55 (0.39, 0.79)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 or more years (remote)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ref = 18-34 years old)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-44 years old</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Housing Arrangement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ref = own home)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rent/other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Body Mass Index</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ref = not overweight/obese)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obese</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Odds Ratio*
Results (continued)

Adjusted Odds Ratios of Selected Health Behaviors versus Pregnancy Plan by Birth History, 2013
Behavioral Risk Factor Surveillance System (BRFSS), Connecticut, Kentucky, Massachusetts, Mississippi, Ohio, Texas, Utah

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**Seatbelt Use**
- Pregnancy Plan by Birth History (ref = no plan, 0 children)
  - Plan, 0 children
  - Plan, 1 or more children (mother)
- Age (ref = 18-34 years old)
  - 35-44 years old
- Race/Ethnicity (ref = non-Hispanic White)
  - Minority
- Body Mass Index (ref = not overweight/obese)
  - Overweight
  - Obese

**Cigarette Smoking**
- Pregnancy Plan by Birth History (ref = no plan, 0 children)
  - Plan, 0 children
  - Plan, 1 or more children (mother)
- Age (ref = 18-34 years old)
  - 35-44 years old
- Race/Ethnicity (ref = non-Hispanic White)
  - Minority
- Body Mass Index (ref = not overweight/obese)
  - Overweight
  - Obese

**Binge Drinking**
- Pregnancy Plan by Birth History (ref = no plan, 0 children)
  - Plan, 0 children
  - Plan, 1 or more children (mother)
- Age (ref = 18-34 years old)
  - 35-44 years old
- Race/Ethnicity (ref = non-Hispanic White)
  - Minority
- Body Mass Index (ref = not overweight/obese)
  - Overweight
  - Obese

Odds Ratio

- Seatbelt Use: 1.97 (1.40, 2.77)
- Cigarette Smoking: 1.91 (1.36, 2.69)
- Binge Drinking: 1.76 (1.25, 2.48)
Compared to women who were not planning children in the future, women planning children were significantly:

- More likely to always use seatbelts;
- Less likely to engage in heavy drinking; and
- More likely (or at least not less likely) to smoke cigarettes.

Women planning children were no more likely to engage in leisure activity, consume fruits and vegetables daily, get an annual checkup, get an annual flu vaccination, or be binge drinkers.
Preconception care for women:

• Care received from a licensed health professional that is focused on maximizing health before pregnancy;

• Care provided to all women of reproductive age who are either planning pregnancy or who may plan pregnancy during their reproductive life stage.
Emphasis on health before pregnancy:

• Reduce or eliminate risk behaviors such as drinking and smoking; and

• Increase protective behaviors such as receiving recommended vaccinations and eating nutritious meals.

Increase awareness of the need for a family plan and regular well visits, and conscious changes in behaviors - well in advance of pregnancy.
Limitations

Small sample size:
• Aggregated categories;
• Negative results;
• Pregnancy *versus* reproductive health module age limits.

Selected health behaviors.

Planning children *versus* planning pregnancy.

Nonresponse bias, recall bias, selection bias.
Acknowledgements

Thank you!

Nearly 12,000 female citizen-volunteers in Connecticut, Kentucky, Massachusetts, Mississippi, Ohio, Texas, and Utah; State BRFSS coordinators; and CDC Reproductive Health Workgroup.

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A technical report describing the results of this study can be viewed at: http://www.ct.gov/dph/BRFSS