Cara Christ

4:10-4:55pm

U OF A LITERATURE REVIEW
DISCUSSION
Outcome of Home vs. Hospital Births by Midwives: A systematic review and Meta-analysis

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Special Thanks

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• Cecilia Rosales, MD
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• Juliet Charron, MPH
• Hilary C. Rees, MPH
Background

Studies conducted in the US and other high income countries show that an increasing number of women elect homebirth.

- Reasons:
  - Considered safe by consumers
  - Often involves fewer medical interventions
  - Performed in the comfort of their own homes

**Objective**: To critically assess and summarize evidence on outcome of home versus hospital births attended by midwives.
Methods

• U of A performed a very extensive search of the literature
• 3-4 people searched the following databases (to February, 2013):
  • Medline/PubMed
  • Embase
  • Web of Science
  • EBSCO (PsycINFO and CINAHL)
  • Ovid

• The Cochrane Fertility Review Group Specialized Register
• Cochrane Pregnancy and Childbirth Group Specialized Register
• The Cochrane Central Register of Controlled Trials
Methods (continued)

• Unpublished data from the grey literature through Google and Google Scholar searches
• References in articles were hand searched to find additional resources
• Each identified article was assessed independently by 5 reviewers
• Reviewers came together to decide which articles were relevant
• Analysis done by PhD statistician
Methods (continued)

• Types of studies
  – Case-control studies
  – Randomized controlled studies
  – Cohort studies
  – Time-series studies

• Had to look at outcome of births attended by midwives in hospital/health facilities or in homes
Results: Child Health

- Nine studies were included in the meta-analysis of child health outcome of births attended by midwives in homes or in hospitals
- Analyzed 7 outcomes of child health:
  - Neonatal deaths
  - Prenatal deaths
  - Apgar<7 at 5 min
  - Intrapartum deaths
  - Low birth weight < 2500g
  - Birth seizures
  - Meconium aspiration
## Results: Child Health

<table>
<thead>
<tr>
<th>Factors</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Variance between studies</th>
<th>Pooled OR/RR</th>
<th>95% CI</th>
<th>Test for overall effect (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Q(p)</td>
<td>I² (%)</td>
<td></td>
<td></td>
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<tr>
<td>Child health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Neonatal death</td>
<td>2</td>
<td>1323536</td>
<td>0.24</td>
<td></td>
<td>28</td>
<td>3.11 (2.49, 3.89)</td>
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<td>2. Prenatal death</td>
<td>3</td>
<td>4400</td>
<td>0.04</td>
<td></td>
<td>68</td>
<td>0.70 (0.09, 5.29)</td>
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<tr>
<td>3. Apgar &lt;7 at 5 min</td>
<td>2</td>
<td>14807</td>
<td>0.27</td>
<td></td>
<td>16</td>
<td>0.86 (0.60, 1.25)</td>
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<tr>
<td>4. Intrapartum death</td>
<td>2</td>
<td>485709</td>
<td>0.66</td>
<td></td>
<td>0</td>
<td>0.82 (0.60, 1.12)</td>
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<tr>
<td>5. Low birth weight &lt;2500g</td>
<td>2</td>
<td>14807</td>
<td>0.43</td>
<td></td>
<td>0</td>
<td>0.71 (0.48, 1.05)</td>
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<tr>
<td>6. Birth seizures</td>
<td>2</td>
<td>1133575</td>
<td>0.36</td>
<td></td>
<td>3</td>
<td>1.49 (0.86, 2.58)</td>
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<tr>
<td>7. Meconium aspiration</td>
<td>2</td>
<td>1350153</td>
<td>0.77</td>
<td></td>
<td>0</td>
<td>0.90 (0.68, 1.20)</td>
</tr>
</tbody>
</table>
Results: Maternal Health

• Eight studies qualified for inclusion in the meta-analysis of the impact of setting (home or hospital) of births attended by midwives

• 13 outcomes were analyzed:
  • Spontaneous delivery
  • Vacuum extraction
  • Assistant delivery
  • Caesarean delivery
  • Forceps
  • Episiotomy
  • Lacerations/Perineal tear (3-4 degree)
  • Lacerations/Perineal tear (intact)
  • Cervical tear
  • Postpartum hemorrhage (>500 mls)
  • Retained placenta
  • Blood transfusion
  • Prolapsed cord
## Results: Maternal Health

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<tr>
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<tr>
<td>Maternal health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Spontaneous delivery</td>
<td>3</td>
<td>21488</td>
<td>0.03</td>
<td>71</td>
<td>1.64</td>
<td>(1.35, 2.00)</td>
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<tr>
<td>2. Vacuum extraction</td>
<td>3</td>
<td>29984</td>
<td>&lt;0.00001</td>
<td>92</td>
<td>0.51</td>
<td>(0.21, 1.23)</td>
</tr>
<tr>
<td>3. Assistant delivery</td>
<td>3</td>
<td>22871</td>
<td>0.0003</td>
<td>88</td>
<td>0.58</td>
<td>(0.40, 0.84)</td>
</tr>
<tr>
<td>4. Caesarean</td>
<td>5</td>
<td>39471</td>
<td>&lt;0.00001</td>
<td>88</td>
<td>0.55</td>
<td>(0.49, 0.60)</td>
</tr>
<tr>
<td>5. Forceps</td>
<td>4</td>
<td>30972</td>
<td>0.06</td>
<td>60</td>
<td>0.54</td>
<td>(0.33, 0.90)</td>
</tr>
<tr>
<td>6. Episiotomy</td>
<td>5</td>
<td>23750</td>
<td>&lt;0.00001</td>
<td>83</td>
<td>0.56</td>
<td>(0.41, 0.77)</td>
</tr>
<tr>
<td>7. Lacerations/perineal tear (3-4 degree)</td>
<td>4</td>
<td>23609</td>
<td>0.04</td>
<td>63</td>
<td>0.48</td>
<td>(0.32, 0.72)</td>
</tr>
<tr>
<td>8. Lacerations/perineal tear (intact)</td>
<td>3</td>
<td>10225</td>
<td>0.0001</td>
<td>89</td>
<td>1.94</td>
<td>(1.25, 3.01)</td>
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<tr>
<td>9. Cervical tear</td>
<td>2</td>
<td>9084</td>
<td>0.54</td>
<td>0</td>
<td>0.84</td>
<td>(0.21, 3.38)</td>
</tr>
<tr>
<td>10. Postpartum hemorrhage &gt;500ml</td>
<td>5</td>
<td>25445</td>
<td>0.002</td>
<td>77</td>
<td>0.60</td>
<td>(0.44, 0.81)</td>
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<tr>
<td>11. Retained placenta</td>
<td>2</td>
<td>9084</td>
<td>0.29</td>
<td>9</td>
<td>0.58</td>
<td>(0.40, 0.86)</td>
</tr>
<tr>
<td>12. Blood transfusion</td>
<td>3</td>
<td>10920</td>
<td>0.08</td>
<td>61</td>
<td>0.33</td>
<td>(0.08, 1.37)</td>
</tr>
<tr>
<td>13. Prolapsed cord</td>
<td>2</td>
<td>9084</td>
<td>0.52</td>
<td>0</td>
<td>0.40</td>
<td>(0.11, 1.48)</td>
</tr>
</tbody>
</table>
Discussion

• Child health:
  – The risk of neonatal death increased among homebirths (OR=3.11, 95% CI: 2.49-3.89)
  – Otherwise, there were no significant differences in infant health outcomes between home and hospital births attended by midwives
Discussion

• Maternal health:
  – Homebirths were more likely to result in a spontaneous birth with an intact perineum
  – There were fewer surgical interventions among women who elected to deliver with a midwife in the home
    • Hospital births by midwives were associated with increased risk of assisted delivery, caesarean sections, forceps, episiotomy, lacerations/perineal tear (3-4 degrees)
  – Decreased risk of postpartum hemorrhage >500mL and having a retained placenta among midwife attended homebirths
Discussion

• The findings of this meta-analysis have implications primarily for women with generally low-risk pregnancies and the midwives who may be their primary perinatal care providers, because low-risk women account for most of the sample analyzed
Discussion

• Findings suggest that homebirths attended by midwives may be equally safe if not safer for women with low-risk pregnancies

• Homebirths should only be recommended to women who are classified as low-risk, as this data demonstrates an increased risk of neonatal mortality among homebirths

  • Access to emergency services, prior consultation, and having a contingency plan with a nearby medical facility with appropriate obstetrical equipment is encouraged, in the case that a medical emergency occurs
Limitations

• Studies reviewed here tended to exclude high-risk pregnancies
  – Tendency for women with high-risk pregnancies to be referred to or to opt for obstetrical care
  – Lack of data and evidence on the safety and efficacy of homebirths for high-risk pregnancies

• Studies were included from several different countries
  – Education and regulation of midwives may differ from that in the United States
Limitations (continued)

• Lack of data on vaginal births after cesarean (VBAC), multiple births, and breech births
  – Not included in the analysis due to the fact that these are high-risk pregnancy conditions and are not typical of women elected for homebirths in attendance by midwives
Limitations

• Exclusion of patients who were transferred from home during labor/delivery
  – May have excluded some of the maternal outcomes
Conclusion

• This review of the literature, as it pertains to births that occur in the home versus a hospital, provides evidence that midwives are effective in assisting with low risk home and hospital deliveries

  – While there appears to be some increased risk for infants among births that occur in the home, there also appears to be fewer surgical interventions among women delivering with a midwife in the home and decreased assisted deliveries, c-sections, use of forceps, episiotomy, lacerations, and perineal tears